Mac & Power Mac

MacWorld

Mac SE

2nd Edition

ResEdit from Apple Computer
Speed Disk from Symantec’s Norton Utilities
DiskTop from PrairieSoft
Color It! from MicroFrontier
TempoEZ from Affinity
MultiClip Lite from Olduvai
WYSIWYG Menus from Now Software
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Power to Go for PowerBooks from Central Point Software
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by David Pogue
Macworld Magazine’s “Desktop Critic” &
Joseph Schorr
Macworld Magazine’s Contributing Writer

IDG BOOKS
Why Readers Love This Book!

I just picked up *Macintosh SECRETS* and find it to be the absolute BEST book I have found yet! You know you have a good book when you scratch the surface and find TONS of great tips and secrets. Please keep this book going. I'll love seeing an updated edition down the road!

John T. Child, Ogden, Utah

Thank you for *Macintosh SECRETS*. The 9MB of software legitimately smokes the cover off any book/collection I have found to date. You could not put together this set of tools for under $200 and a half-dozen hours crawling the on-line services. Outrageous value for the money.

Earl Wirth, Calgary, Alberta, Canada

*SECRETS* is fabulous! Best I've read! Insightful, humorous, educational without being boring. Every night, I read a bit more, and then-rewind it. Who else would tell me how Macintosh got its misspelled name, or where the model names came from?

Bob Bender, Marion, Ohio

Based on your reassurances, I've made my first forays into the insides of my Mac via ResEdit, and can now empty trash, restart, shut down and make aliases, all without using the menus. Thanks for one of the most helpful and informative Mac books I've ever bought.

Chris Perez, CompuServe forum leader

How in the world did two mere mortals have the time and ability to compile so many tidbits in one lifetime? It's hard to read more than a few pages before I want to run over to the Mac to try out some of your SECRETS.

Barry Diamond, Miami, FL

Thanks for the great book. My wife thinks it's quite weird that I can read a quasi-techie book like that from cover to cover.

Scott Pierson, Aberdeen, WA

You have produced by far the most informative book on the Macintosh. They can bury the so-called *Mac Bible*. Congratulations!

Jonathan W. Crawford, Mill Valley, CA

I am writing to congratulate you on *Macintosh SECRETS*. It is the best technical manual I have ever seen on any computer topic. I learned new things about PowerBooks, QuickKeys, and ClarisWorks that have made using my PowerBook even better...Only my wife is not delighted. She thinks that *Macintosh SECRETS* has monopolized me for the past week.

Jan A. Witkowski, Ph.D., Cold Spring Harbor, NY

In one week, I used it for reference four times — I got the answer quick all four times. I value this book more than all my Mac books and magazines in total.

Vern Kappelman, Moorhead, Minn

A truly amazing selection of information! I couldn't wait to see what was on the next page. I've only read two books I wished were longer: this one and "The Lord of the Rings."

Robert M. Caldwell, Twinsburg, OH

What did I like most about this book? Pages 1 to 1020! The most fabulous Mac book ever. Very funny as well. Wow, wow, wow.

Paul L. Jarrett, Cleveland, OH
This book is an absolute must for any Mac user, but especially consultants. It runs circles around the *Macintosh Bible.*

James Hyde, Greenwich, CT

The best computer book I’ve read. Once you start reading it, you can’t stop. The disks are fantastic! I’m looking forward to the next edition.

Peter Hammar, Tyresö, Sweden

Fantastic! Awesome! Interesting! Useful! Dynamite! Very thorough! Top-of-the-line material!

Jason Tomita, Honolulu, HI

I feel as though I’ve been inducted into the inner circle of knowing and knowledgeable people. Every page has a gem on it!

Bob Allen, Pasadena, MD

My new office companion has become *SECRETS.* Not a day goes by that something from that book isn’t tried. Many thanks to David Pogue and Joseph Schorr! Thanks to the ResEdit chapter, my trash can overfloweth and my hard-drive icon, which is a dog, has a ball to play with!

Ann Loftin, Charleston, SC

Pogue & Schorr’s casual, atypical, yet efficient writing style typifies the whole Mac mentality. Others, who write about Macs in that dry, manual-like monotone, just miss the whole point.

Randy Fippinger, New York, NY

One of the best written and best INDEXED books out there! It’s gotten me out of some real scrapes, system failures, etc. Your “Dialogues,” à la “Point/Counterpoint,” were a brilliant idea and help bring issues down to a more understandable level.

Pete Matulavich, San Dimas, CA

I MUST thank you for this book. Nowhere do I find that anything was left out because a discussion of the subject is too technical for the masses. I just hate it when authors write for “the vast majority of individuals who can’t program their VCRs.” I don’t believe this “majority” exists. Your book will be my first recommendation to every Mac owner I meet.

Jeffrey Zahourek, Kansas

Thank you for Macintosh *SECRETS*— the GREATEST Mac book I have ever read (and I’ve amassed quite a collection). The disks were great, the tips were great, the Secrets were great, and it read like a charm.

Rob McCutcheon, Georgetown University

When I got your book yesterday, I put it to the acid test. I looked at 10 pages throughout the book at random, and found something useful I didn’t know on every single page. Impressed the hell outta me.

Cherry Cappe~, New Orleans, LA

Finally, someone told me what A/ROSE was!

James Terry, Hoboken, NJ

I laughed. I cried. I zapped my PRAM! Thanks for writing the book. Now if I can just put it down and get to sleep....

David G. Sheridan, Healdsburg, California
The IDG SECRETS™ Advantage

*Macworld Mac & Power Mac SECRETS* is part of the SECRETS series of books, brought to you by IDG Books Worldwide. The designers of the SECRETS series understand that you appreciate insightful and comprehensive works from computer experts. Authorities in their respective areas, the authors of the SECRETS books have been selected for their ability to enrich your daily computing tasks.

The formula for a book in the SECRETS series is simple: Give an expert author a forum to pass on his or her expertise to readers. A SECRETS author, rather than the publishing company, directs the organization, pace, and treatment of the subject matter. SECRETS authors maintain close contact with end users through column feedback, user group participation, and consulting work. The authors’ close contact with the needs of computer users gives the SECRETS books a strategic advantage over most computer books. Our authors do not distance themselves from the reality of daily computing, but rather, our authors are directly tied to the reader response stream.

We believe that the author has the experience to approach a topic in the most efficient manner, and we know that you, the reader, will benefit from a “one-to-one” relationship, through the text, with the author. The author’s voice is always present in a SECRETS series book. Some have compared the presentation of a topic in a SECRETS book to sitting at a coffee break with the author and having the author’s full attention.

And of course, the author is free to include or recommend useful software, both shareware and proprietary, in a SECRETS series book. The software that accompanies a SECRETS book is not intended as casual filler. The software is strategically linked to the content, theme, or procedures of the book. We expect that you will receive a real and direct benefit from the included software.

You will find this book comprehensive whether you read it cover to cover, section to section, or simply a topic at a time. As a computer user, you deserve a comprehensive and informative resource of answers that *Macworld Mac & Power Mac SECRETS* delivers.

David Solomon  
Publisher
There is no nicer, more articulate, better-versed group of people than the Mac experts who helped us with this book. As you’ll discover, this book contains a lot of information that’s unpublished and hitherto unproven. These Mac folks helped us uncover and confirm all the good stuff.

How about this unmistakable sign of the times: we’ve never even met these people! We made friends, signed agreements, and collaborated on this book over the telephone lines. By fax and phone, yes, but mostly by modem. In the electronic party rooms of America Online, we encountered our future friends, sources, and collaborators, from Apple programmers to coauthors and shareware writers. All of them helped immensely in making this book (and the accompanying disk set) come about.

Foremost among these friends-we’d-never-met is Macworld writer and computer guru Gene Steinberg. First we asked him a lot of techie questions. Then we asked him to be a mistake-catcher for the book. Next thing we knew, he agreed to write the glossary and edit the software-documentation chapters. Finally, he consented to research and write the first drafts of the most technically daunting chapters: NuBus, SCSI, printing, and CD-ROM.

Macromedia networking god John Stroud was also instrumental in making this book happen. He expertly answered a zillion questions and ghostwrote Chapter 31. Macworld author and prodigy Charles Seiter stepped into that chapter, too, to decipher PowerTalk for this edition.

Jeff and Lisa Bierly, who run the best Apple dealership in New York/New Jersey (Atlantic Computer Systems) made themselves available, six days a week, to run little tests for us on specific Mac models we didn’t have.

Our 2nd Edition assistants-by-modem-we’ve-never-met are Peter Stoller, Leslie Jones, Robert Howe, Randy Slafsky, and Charles O’Rourke, each of whom knocked himself out to provide editorial and research help — just for the fun of it. (We hold nothing against Charles for turning out to be 13.) Thanks, especially, to Apple’s Jeff Robbin for going beyond the call of duty again and again.

The tricks and tips in this book come from hundreds of sources. Among them are friends like page-layout queen Margaret Styne; first-edition readers David Pomarede, Robert J. Clay, David Sheridan, Roger Levit, Joe Asheer, and Geoffrey Alexander; Apple’s Performa-team member Paul MeiJer; Apple programmers Eric Trauk and Gil Spencer; multimedia gurus Elise Dorsey (Ready to Go), David Goldman (Medior), and Karen Lynn Robinson (Bliss images); Apple Computer’s Whitney Greer, Mary Devincenzi, Jackie Promes, Stacy Williams, and the Apple PR staff; the beautiful, brainy Kimberlee Luedee; the authors of the FWB Hard Disk Toolkit manual; Patricia Pane and Rich Blanchard of Adobe; Quark; Noah Price; Pieter Paulson; Mark Eelpers (Sigma Designs); Bill Evans (Manhattan Graphics); Marshall Goldberg; Andrew Jeffrey and Sam Tan; and Stephen Sondheim.

Thanks, too, to our sharp-eyed technical editor, Claris Corp.’s Dennis Cohen, and his steel-trap — no, make that Patriot-missile — mind. And our gratitude to the authors of the shareware programs who gave us permission to include their work on the disks with this book.
Thanks to Marta Partington, who edited the first edition, and Andy “No-Problem” Cummings, who edited this one without once showing any signs of stress. When you also consider the contributions of managing editor Mary Bednarek, editors Corbin Collins, Kathy Simpson, Tracy Barr, Pam Mourouzis, Kathy Cox, Laurie Smith, Kristin Cocks, and Shawn MacLaren, production director Beth Jenkins and her layout staff (Cindy Phipps, Tony Augsburger, Mary Breidenbach, Sherry Gomoll, Drew R. Moore, Steve Peake, and Kathie Schnorr) and IDG Books’ president, the communicative, supportive, spare-no-expense Mac fan John Kilcullen, you’ll realize why you’ll never hear these authors complaining about their publishing company.

Finally, our gratitude gushes to those we wanted to spend more time with, but couldn’t, while we were immersed in this project. They include Allison, for her constant support; Alexandria, who sacrificed hours of Kid Pix for the sake of this book; the lovely Dr. O’Sullivan; Uncle Freddie and MTI; Tracy and Michael; Bill McIntosh and the city of Charleston; and our editors at Macworld.

A word about the commercial software

Suppose you ran a software company. Would you have enough security and faith to give away your company’s crown jewels with a book like this?

But that’s exactly what happened. Claris, Symantec, Bitstream, and other companies have given us non-demo, non-time-limited software to include on the disks with this book! You get something great without having to pay for it. They hope that you’ll like the stuff so much you’ll buy more of their software, or that you’ll upgrade to the new versions, or that (if we’ve included one component) you’ll order the full collection. (Discount coupons to further entice you are at the back of the book.)

Here are the names of the product managers and other personnel at the participating software companies who were visionary, trusting, and forward-thinking enough to let us include their software:

Advanced Software: Larry Lightman
Affinity Microsystems: Rick Barron
Bitstream: Jim Welch
Casady & Greene: Michael Greene, Karen Thompson
Central Point Software: Michael Gama, Tom Swinford
Claris: Michelle Kraus, Rob McHugh
MicroFrontier: Charlie Bork
MindVision: Steve Kiene
Now Software: Lynn Halloran, Adrian Russell-Falla
Nova Development: Roger Bloxberg
Olduvai Software: Gabriel Foux, Michael Moore
PrairieSoft: Paul Miller, Sue Nail
Symantec: Elissa Murphy

The publisher would like to give special thanks to Patrick J. McGovern, without whom this book would not have been possible.
About the Authors

Ohio-bred, Yale-educated, Manhattanite David Pogue is the author of the #1 Mac bestseller *Macs For Dummies* (IDG Books, 15 printings, 15 languages) and its inevitable sequel, *MORE Macs For Dummies.* He writes the monthly Desktop Critic column in *Macworld.* His novel *Hard Drive,* a Macintosh thriller (Berkley Publishing Group), has been translated into three languages, has been optioned for film, and is being produced as an interactive CD-ROM adventure. His Mac students include Stephen Sondheim, Carly Simon, Mike Nichols, Gay Talese, and Mia Farrow.

In his other lives, David is a dinner-table magician, occasional Broadway conductor, and, with collaborator Joseph Schorr, composer of such little-known musicals as *Downtown Local* and *Odysseus: The Man and His Music.* He welcomes electronic mail on America Online (address: Pogue).

Joseph Schorr is a journalist and playwright who contributes regularly to both *Macworld* and *MacUser.* A 1985 graduate of Yale University, he spent seven years as a reporter with *The Oregonian* newspaper in Portland, Oregon, and is currently the editorial production manager of a Mac-based publishing company in Eugene, Oregon. He wrote *Mac SECRETS* while living in an absurdly remote town in the White Mountains of Arizona, where he communicated with the outside world solely via America Online (address: Schorr). His plays have been produced at Yale, Off-Off Broadway, and at Wolf Trap.
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Launched in 1990, IDG Books Worldwide is today the #1 publisher of best-selling computer books in the United States. We are proud to have received 3 awards from the Computer Press Association in recognition of editorial excellence, and our best-selling ...For Dummies™ series has more than 12 million copies in print with translations in 25 languages. IDG Books, through a recent joint venture with IDG’s Hi-Tech Beijing, became the first U.S. publisher to publish a computer book in the People’s Republic of China. In record time, IDG Books has become the first choice for millions of readers around the world who want to learn how to better manage their businesses.

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President and CEO
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Introduction

Macworld
Mac & Power Mac
SECRETS
Second Edition
Who This Book Is For

There’s no question that you’ll get some good out of this book no matter how much of a Mac expert you are. Heck, even if you throw away the book, the nine megas of spectacular software — which fill up three high-density disks — will make you mighty glad you picked it up.

But we may as well admit that this book completely skips over the basics of using a Macintosh. If you don’t already know how to point and click, open windows, insert a disk, use a menu, and open a control panel, you should take a moment to play with the animated program called either Mouse Practice or Macintosh Basics that came with your Mac. Read a manual. Read Macs For Dummies, a really good beginner’s book from IDG Books (written by one of your present authors). Do whatever you have to do.

As a matter of fact, here are the terms we’re going to be tossing around without any definition:

⌘-key, Apple menu, backup copy, click, control panel, cursor, Delete key, desktop, double-click, File menu, floppy disk, folder, font, hard drive, icon, K (kilobyte), keyboard, launch a program, MB (megabyte), menu, menu command, monitor, mouse, numeric keypad, Option key, point, quit a program, Return key, scroll bar, System 7, title bar (of a window), Trash.

On the other hand, this book doesn’t go to the very technical ends of the Mac universe, either. It doesn’t talk about programming in C language or using DAL or hooking up to a mainframe. And we wouldn’t tell you what you can accomplish by going inside your Mac with a soldering gun — even if we knew.

This book is for everybody in the middle — everybody who’s no longer impressed by the way the Trash can bulges when something’s in it but wouldn’t mind knowing how to change a file’s icon or unlock the hidden 5MB of storage space on every hard drive.

Dialogue

Why We Wrote This Book

DP: Everybody who’s ever worked with a Mac already knows that you discard a file by moving its icon to the Trash can, that you select text by dragging across it, and that you end the day by choosing Shut Down from the Special menu. The world doesn’t need another book to define scroll bar.

JS: So when we started writing this book, we worked from one simple, overarching concept: Under no circumstances would we define scroll bar.

DP: Instead, we decided to tell secrets: secrets about how a Mac really works, secrets that software programmers buried in programs but forgot to tell the manual writer, secrets that answer some of the most frequently asked (and seldom answered) questions about Macintosh computing, secrets like how to recover a file after you’ve dragged it to the trash — and emptied the Trash.

JS: Or what would happen if you didn’t choose Shut Down and just switched the Mac off. What are
you supposed to do when you try to select text, but the mouse seems jerky, sticky, and out of control? And what about those times when your Mac appears to be going just plain berserk — when turning the machine off doesn’t even turn it off?

DP: All those elusive, mystical Option-Shift-Tab-Question Mark key sequences that are whispered at little-known user groups...

JS: The little animated surprises that lurk inside commercial programs...

DP: The trick to connecting two Macs together with a piece of phone wire or getting your PowerBook safely through the X-ray machine or making your icons invisible to prying eyes...

JS: ...at last, it's all been collected into one substantial paperback written by a couple of former college roommates.

DP: Is there anything else you think we should mention?

JS: Do the words free software mean anything to you?

DP: Good point. We've included an incredible stash of great programs on three disks at the end of the book.

Secrets of This Book

The biggest secret to getting the most out of this book is understanding its structure. Each topic is divided into two halves. The first part is a general discussion, like a miniarticle. It’s followed by the Secrets: thousands of excellent, undocumented, often never-before-published hints and tips for pushing your Mac to its max.

Part by Part

Here’s how the primary book sections are broken down:

Part I: System Software Revealed unearths insider information about the free software you got with your Mac — namely, the System software that fills that mound of white System disks. But we won’t mention only the Finder (and aliases and labels and Trash and the Desktop file), but also the important Installer, your control panels, and your Apple menu. And, best of all, this part identifies all the System-folder clutter you can throw out.

Part II: Secrets of the Machine takes you into the actual mechanics of the Mac. You won’t go so far in that you’ll need a degree in electrical engineering; you’ll just learn enough of the inner workings to be useful. This part, for example, actually gives a decent explanation of how to use virtual memory. It includes a Disk Chapter, a Memory Chapter, and special coverage of the PowerBook laptops. Chapter 11 even contains detailed Mac-by-Mac model descriptions so that you’ll know what you bought, how it can be upgraded, and how much technology has marched on since you bought your machine. Chapter 11 is also Power Mac Central if you’re into that.

Part III: Application Tips covers the programs you probably use in day-to-day work: major players like Word, Excel, and FileMaker, as well as software like ResEdit that can help make the Mac more yours. This part is a whole book-within-a-book, with enough expert insight to make you say “Wow” at least once per page.
Part IV: Attachments is about everything you attach to your computer — printers (and, therefore, fonts), modems (and what to dial up with them), scanners, CD-ROM players, NuBus cards, and networks (including remote networks and using AppleTalk Remote Access). At the end of this part is a troubleshooting chapter that, among other things, contains our Rule of Three: a troubleshooting trick that solves about 99% of typical mysterious Mac crashes and odd behaviors.

Part V: The SECRETS Software Vault describes the 45 fantastic programs that come with this book. And, incidentally, we've provided the Macintosh SECRETS Software on three high-density 1.4MB disks. If your Mac can't read these disks — if you get a "This disk is unreadable" message, that is — call IDG Books at 800-434-3422. IDG Books will send you the older, 800K disks.

Sidebars

Along the way, we intend to spice things up with special minitopics:

**ANSWER MAN**

Each Answer Man sidebar contains an actual question asked by an actual imaginary Macintosh user, and our actual attempt to answer it.

**MACINTOSH SECRET**

A Macintosh Secret has, we suppose, much in common with a regular Hint or Trick or Tip. But to qualify for its own special sidebar, a Macintosh Secret has to have particular juiciness, a surprising element, or special pertinence to the discussion at hand.

**CASE HISTORY**

Case Histories are true stories from real life, reflecting the genuine agony of trying to solve a computer problem as deadlines loom. Of course, we've selected only stories with happy endings.

**TRUE FACT**

True Facts, however, may not end happily. These are fun tidbits from the world of high-powered Silicon Valley politics: tales of Apple intrigue or Adobe warfare, and other trivia.

JS: We were both sick of reading books that tell you about some great software and then send you to your local user group or store to find it. So we decided from the outset that this book would be different. If we mention something you need, we included it with the book.

DP: And not only shareware. We've also included commercial software, from actual software companies like Symantec Software, Advanced Software, Now Software, Claris Corporation, and Nova Development. And we've even thrown in a couple of programs written especially for this book — totally exclusive software. All of this adds up to a book that delves into the inner workings of the machine, the hardware behind the hardware, the raw code, the...

JS: Wait a minute, this isn't going to be one of those horribly dry, technical, IBM-style books that probes the depths of programming and discusses things like — like DIP switches, is it?

DP: DIP switches won't even be mentioned.

JS: So then why is there a "DIP Switch" entry in the index?

DP: Because you just said DIP Switches. Once you say it, it goes in the index. Now it's part of the book.

JS: Just because I said it.
As you can imagine, writing a tightly integrated book like this is difficult for one person. We found that it may even be tougher for two; sometimes we (JS and DP) simply couldn't agree. In those instances, you'll get both sides of the story in the form of a Dialogue between your coauthors. You'll hear the conservative, careful view (usually Joe's) versus the devil-may-care, it's-under-warranty-anyway stance (usually David's).

Finding the Good Parts

Finally, you'll find icons in the margin of this book. Here's what they're about:

**Exclusive** icons point to something that we're particularly proud of because we discovered it ourselves.

**Software Included** icons let you know that, whatever the current discussion is about, you don't have to go out and buy some program to make it work. The software you need is on a disk, right at the back of this book.

**Strange But True** icons indicate an oddity we bet you didn't know. Even though the Mac is the world's most self-explanatory computer, there's a lot of weirdness going on behind that platinum-colored plastic.

**Worth Learning** icons mark a technique most people don't bother with. But we, as seasoned veterans, have found a tip marked by this icon particularly worth making part of your work routine.

**System 7.5** is the most dramatic software enhancement since System 7.0, and its effects touch almost everything you know about using your Mac. This icon shows the way.

Power Mac icons alert you to special discussions or considerations of the Power Macintosh models — which, within two years, will be the only Macintosh models, as you've probably heard.
What's New in Secrets 2.0

Actually, the question is: what isn’t new?

As you know, computer years are like dog years — seven of them for one of our years. This second edition hit the shelves only a year after the first one appeared, because it had to; so many aspects of Macintosh life had changed that a major overhaul was already appropriate.

You’ll find changes on almost every page. System 7.5, the Power Macintosh line, Word 6, and other major developments affected almost every discussion in this book — and meant, of course, that we had to double-check every single Secret to make sure it still works.

We did more to Chapter 11, our model-by-model coverage of every Mac ever made, than just update it to include the latest models. We quadrupled our discussion of the Power Macintosh series, and threw in a few Secrets that, until now, were only known to a few Apple programmers.

We’ve added two entirely new chapters. First, there’s our System Software Museum (Chapter 5), to help you keep track of the differences between System 7.1, 7.0.1, 7.1.1, and so on. (As a bonus, we threw in our guide to AppleSpeak, so you’ll also know the difference between QuickTake, QuickTime, and QuickTalk.) Then there’s Chapter 13, “Power Mac and AV Technologies,” which unveils the truth about speech recognition, CD-quality audio, TV input and output, and so on.

Finally, we overhauled the disks that come with this book. We’ve added even more commercial programs: Norton Speed Disk, TempoEZ, Color It, and MultiClip Lite, which you could purchase on your own for — no kidding — hundreds of dollars. We also made two important changes suggested by owners of the first edition; first, we got rid of the two demo programs we’d had (everything here is now functional and non-time-limited); and second, we’ve listed all the software together in one big chapter, alphabetically for quick reference. MindVision, a leading developer of software installers, created a beautifully simple Installer especially for us — now you don’t have to know what disk a certain program is on, and you don’t have to unstuff anything yourself. Just shove in Disk 1, select the programs you want, and cruise.

That last paragraph should tell you something: when you fill out the feedback card at the back of this book, we read it. Every single one gets Xeroxed and sent to us. Point out our mistakes, please, and send us the Secrets you uncover, and tell us how we could improve the next edition. We’re secure people; we’re prepared to suffer the slings and arrows of reader feedback if it’ll help produce a better book the next time around.

Your FREE! quarterly updates

This may be the second edition, but you have to check the copyright page (that 10...9...8 business) to see what printing you have. Every few months — each time the publisher prints up a new batch — we update the material in this book.

So we had a wacky thought: instead of just sending the updates to our editor, why not post them on America Online and eWorld, where everybody can get at them? That’s exactly what we’ve done. After you sign on with your modem, use keyword MACWORLD and look in the software libraries. There you’ll find our update documents, complete with page numbers, so you can make your copy match the latest printings! (Sorry, these documents are available only electronically — but then again, you can sign onto America Online free for ten hours.)
Chapter 1

Your First Software: The Finder

In this chapter:

- Icons: Moving, renaming, and making them invisible
- Window and list-view shortcuts and undocumented features
- The Desktop File: What it is, how to see it, and how to slim it down
- The inside story on copying and deleting files
- Aliases: What they are and how to use them
- Details on drag-and-drop and Macintosh Drag and Drop
The Finder: The Unknown Program

If we asked you to name the first program you ever ran on the Macintosh, would you answer correctly? It's the Finder. The Finder is the program that displays your familiar startup world: the Trash can, icons, folders, and the gray backdrop.

Most people don't immediately think of the Finder as a program. After all, you don't double-click an icon to launch it, as you would with, say, HyperCard. And no Quit command lets you exit the Finder, as it does with other programs. The Finder is just always there, waiting as your home base, whenever you exit your other programs.

Nonetheless, the Finder is a program. Yes, it runs automatically when you turn on the Mac, but you can double-click the Finder's icon to launch it. And you can quit the Finder.

The Finder has several functions, all relating to managing your documents, disks, and programs: organizing, renaming, discarding, copying, and opening them. We'll cover these topics one by one.

If you've ever had to use an IBM-compatible computer, by the way, you'll understand the beauty of the Finder. Compare, for example, the file naming systems on Macs and IBMs. A Macintosh file's name can be up to 31 letters long. A file called Mac SECRETS Second Draft on a Mac would have to be called McScets2d.txt on an IBM.

Furthermore, the Mac displays each file as an icon that you can move around on the screen. But even under Windows, you can't drag your files around as icons on an IBM.

When you use System 7, it's easier to understand the Finder as a program because it shows up in the Application menu. It's listed there along with any other programs you're running, exactly as though it's just another program (see Figure 1-1).
A Few Words About Icons

Before the Finder can perform any of its tasks, you have to indicate which files you want to move (or rename, or discard, or whatever) by selecting their icons. Selecting something by highlighting its icon is the cornerstone of the entire Macintosh way of life. It’s the Macintosh interface.

Selecting icons

In the days of System 6, there was only one way to highlight an icon: by using the mouse. System 7 makes the crucial act of selecting icons much more efficient by giving you a wealth of keyboard shortcuts for selecting specific items. (When we say “System 7,” by the way, we mean 7-point-anything. It’s the same with “System 6.”)

Suppose that yesterday you were working on a document called Valentine’s Party Invite, but you don’t remember which folder you put it in. You press ⌘-F (the shortcut for choosing Find from the File menu). The Find dialog box appears. You type valen and press the Return key. The Mac opens a folder somewhere on your hard drive and highlights a file called Valentine’s Party Guest list—not what you wanted.

However, you see the icon for the file you really wanted sitting there within the same window. Because the file is next in alphabetical order, you press ⌘-G (the Find Again command) to highlight it. Now that your file is selected, you can press ⌘-O to open the file for editing. During this entire process, you never once had to move your hands from the keyboard to use the mouse.
Similarly, in a messy folder full of icons, you can highlight a specific file icon without even being able to spot it. Simply type the first few letters of the file's name. That's especially handy when you want, for example, to change your speaker's volume level. With the Control Panels folder open, just type SO to highlight the Sound icon and then press ⌘-0 to open the panel.

Figure 1-2 shows some other keys you can press to select icons within a single window.

To select a group of icons, press Shift and click each one in succession. To exclude a highlighted icon from a group, Shift-click it again. Of course, you can also select groups of icons by drag-enclosing them (see Figure 1-3). You can even select more than one icon in a window without using the mouse; you can read about Easy Access in Chapter 3.
Chapter 1: Your First Software: The Finder

After you've drag-selected icons as shown in Figure 1-3, by the way, don't forget that you can select additional groups of icons (or deselect some of the ones you already highlighted) within the same window by Shift-dragging or Shift-clicking them.

For more far-flung selections, use the Find command (see Chapter 2).

After icons are selected, you can move all of them as a unit by dragging any one of them.

So who cares about avoiding the mouse? Efficiency fans, primarily. Every time you have to stop your work at the keyboard while one hand reaches for the mouse, you stop your flow of thinking (and typing). As you become more familiar with your Mac, you'll use the mouse less and get your work done more quickly.

But in System 7, you can do much more with icons than just select them, as our first batch of Macintosh Secrets clearly explains.

Icon Secrets

Make icons jump neatly into position...or not

Using the Views control panel (see Chapter 2), you can specify that you want all your Finder icons to fall into points on an invisible grid so that they're always in a neat line (see Figure 1-4).

Figure 1-4:
The Finder aligns the icons in a grid.

[Image of System Folder]

Here's the tip: If you press the ⌘ key while you drag an icon, you can set the icon down anywhere, even if it's not in a grid-defined position. (Technically, the Mac only cares whether or not the ⌘ key is being pressed when you release the mouse; you don't really have to press the key all the time you're dragging.)

If the grid option isn't turned on in the Views control panel, the ⌘ key has the opposite effect. It makes the one icon you dragged jump into grid position. If, like most people, you don't have the Finder grid permanently turned on, keep the ⌘ key in mind when you want to put a couple of icons exactly side-by-side. When you set each icon down while the ⌘ key is pressed, they'll jump into perfect horizontal alignment.
**Change windows but keep your icons highlighted**

You probably think that when you select a bunch of icons, any click in another window deselects them all. Does that mean that you can never bring another window to the front without losing your selection?

No, you can do it — if you know where to click. Click the scroll bar of the other window. Your icons in the first window stay selected.

**Replace an icon**

Replacing an icon isn't really much of a secret anymore, but it's worth repeating in case you missed it. In System 7, you can create your own icons for any file, folder, or disk. Imagine etching your initials onto a folder, reducing the size of the icons for unimportant files, and making your hard drive icon look like Neil Diamond.

Here's how to do it. First, highlight the icon you want to replace. From the File menu, choose Get Info. The Get Info box appears for the icon you selected. Click the icon in the upper-left corner (see Figure 1-5).

Choose Copy from the Edit menu to copy this original icon to the Clipboard.

To customize the icon, you need some kind of painting program. Any kind of program from MacPaint to Photoshop works fine. (You can also use HyperCard or the HyperCard Player, if you don't mind working in black and white.) Color It, included on the SECRETS disks, is also a good choice.

Choose Paste from the Edit menu so that the original icon appears where you can edit it (see Figure 1-6).

Now, using the painting tools, create a replacement icon. You can doctor the original, or just use the original as a size guideline and create something completely new. Try not to paint an icon larger than the size of a real icon, which is 32 pixels (screen dots) square.
When you’re done, copy the new icon. Go back to the original icon’s Get Info box, click the icon, and paste the replacement. (If it’s too big, the Mac shrinks it to fit the square box, sometimes with lousy results.) That’s it! You replaced the original icon.

If you’re using color and you discover that the color leaks out of your new icon, go back into the painting program. Enclose any light-colored part of the icon with a dark outline. (Or just enclose the entire icon in a solid-outline square.) Repaste this modified icon into the Get Info box.

P.S.—The Mac won’t let you change certain icons: any open document icon; the special ones used for the System, Control Panels, Apple Menu Items, Extensions, and Startup Items folders; and the Trash. You, however, as the savvy owner of this book, can change these icons if you’re determined, by using ResEdit (included on the SECRETS disks). Check Chapter 21 for details on how to use it.

Electronic Post-it notes

Use the method described in the previous tip to replace a folder’s icon with a plain white square you copied from a graphics program. A floating piece of text appears (the file’s name) with no icon attached.

You can use this idea for all kinds of interesting effects. For example, you can use it to give a desktop folder a two-name title (see Figure 1-7, top). Or, handler still, you can duplicate this doctored folder endlessly. Just make sure that you give each copy a new folder name, such as Meet Tracy at noon today. Then leave these notes strewn about your desktop as little reminders (see Figure 1-7, bottom).
Select icons in a list view

In System 7, selecting a group of icons in a list view is easy. Drag the cursor in any direction, starting anywhere; each item in the list turns black as you move the cursor, and you've got 'em.

Here's the oft-ignored secret: To select an icon in a list view, you don't have to click on its name or icon. You can click on any component of the listed file info — the date, version number, size, whatever. Likewise, you can drag-select over any portion of the listed information to grab a group of icons.

In System 6, however, highlighting doesn't appear when you're dragging the mouse. Furthermore, it seems as if you can't highlight multiple items by dragging at all, because as soon as the pointer touches an icon and your mouse button is down, you start dragging it.

Our Secret here is that you can select items in a System 6 list view — if you start your drag from the very bottom or right edge of the window (see Figure 1-8). (You may have to make the window very wide to get enough margin on the right side.)

Another icon-replacement Secret

If you're going to do a lot of icon-replacing — and we hope you do — try this little-known Secret. Open the Get Info box for the file whose icon you want to change. Instead of actually clicking the existing icon, you can just press Tab.

Make any file completely invisible

You can make any file — folder, document, or application — completely disappear from your desktop. (This procedure isn't the same as making just its icon disappear, which you can do using the Secret described earlier.)

There's a good reason most people don't hide their icons regularly: it takes special tools. Fortunately, we've provided you with the ideal tool: DiskTop (on the SECRETS disks).
Launch DiskTop and highlight the name of the file or folder you want to make invisible. From the DiskTop menu, choose Preferences. Make sure you're in Technical mode and click OK. Then choose Get Info from the same menu. A technical-looking dialog box appears (see Figure 1-9).

![Figure 1-9: DiskTop's Get Info window.](image)

Select the Invisible checkbox and click Change. The deed is done. Reverse the procedure to make the icon reappear. (DiskTop can see invisible files, even if the Finder can't.)

The nice thing about an invisible document is that you can still open it from within a program. You can open an invisible Word file by using Word's Open command, for example. The document shows up in the Open File list box just fine.

**The non-draggable icon**

Here's a weird stunt to amaze and confound your friends. Duplicate a file icon (click it and choose Duplicate from the File menu). Rename the two icons so that they are only one character apart — Memo 4 and Memo 6 work well, for example.

Drag one icon carefully until it's exactly on top of the other one (see Figure 1-10). Keep trying until they are perfectly aligned; then select them both at once by dragging them enclosing them.

![Figure 1-10: Astound your friends by creating a lockjaw icon.](image)

At last you're ready to bring the victim into play. Ask somebody to drag the icon. All you want them to do is try to move it. They'll discover that they can't see the icon as it's being dragged because the dotted outlines of the two superimposed icons cancel each other out. The result appears to be an icon that remains stubbornly rooted to its spot. Only when your victim releases the mouse button that the superimposed icons jump to a new position.
Quick-and-easy invisible folders in 16-color mode

If you have a color monitor and it's set to 16-color mode (use the Monitors control panel or Color Coordinator, included on the SECRETS disks), here's a strange and interesting way to make folders disappear.

Use the Labels control panel to make one of the label colors almost white. (See pages 92-93 for instructions on changing a label color.) That is, make Hue = 1, Saturation = 0, and Brightness = 65535.

To make their names disappear, too, replace the names with spaces or Option-spaces. What's especially eerie about this trick is that, in list views, the triangle even disappears (see Figure 1-11). (You can do this trick in 256-color mode, but the icons will only be invisible in list views. In icon views, they reappear.)

This method of making folders invisible leaves them operational for you, the master who knows of their existence. Contrast this with the DiskTop method, described in a previous tip, which makes a file or folder invisible even to the Finder, so that it can't be double-clicked or selected. They're two different methods of gaining a little security when other people may use your Mac.

The icon that won't open

If you enjoyed the nondraggable icon tip, you'll love the nonopenable icon Secret. Ask some unsuspecting coworker to double-click any control panel, document, or program icon to open it. No matter how hard he or she tries, the icon simply won't open! It just blinks dumbly.

The Secret: unbeknownst to the victim, you're pressing the Shift key during all of this. The Mac thinks that the double-click is a select-and-deselect (two separate clicks), so it doesn't bother opening the file. This technique may be a good way to bring some humility to an arrogant Mac guru.

To launch or not to launch a program or document icon

You can use one of several ways to open a program or document icon that's staring you in the face in the Finder: double-click it, select it and press ⌘-O, and so on.

There's only one way, however, to stop a document or program from opening after you launch it: press ⌘-period. Fast. And repeatedly. If you press this keystroke just after launching a document or program, you go right back to the Finder as though you never opened a thing.
Renaming icons

System 6 makes renaming file icons easy — too easy. When a file, folder, or disk is highlighted, anything you type replaces the icon’s existing name. All it takes is a finger, a stack of papers, or a cable pressing continuously on a key while an icon is highlighted, and you wind up with an icon named something like QQQQQQQQ. Unless you immediately recognize what happened and backspace completely over the erroneous name, you have no record of the original name.

Apple engineers came up, therefore, with a new method of renaming icons under System 7. It’s a blessing, because it’s almost impossible to rename a file accidentally. And it’s a curse, because it’s not easy to figure out how you rename one. The new method requires relearning for former System 6 users. In any case, here’s the System 7 method:

- **If the icon is already selected**, press the Enter or Return key to make the “renaming rectangle” appear around the existing file name. Type the new name. (Figure 1-12 shows an icon before and after the renaming rectangle appears.)

Figure 1-12:
Under System 7, you can only rename a file when its “renaming rectangle” is visible, as shown at right. You don’t have to delete the old name first; just start typing.

- **If the icon isn’t selected**, click the file name itself. After a moment — the moment of inactivity called the *rename delay* — the rectangle appears, signaling you that it’s okay to type the new name.

Now then, about this rename delay. First we’ll tell you why it exists; then we’ll tell you how to eliminate it.

Apple engineers used human guinea pigs to learn how people expect icons to work. Everybody knows that you double-click an icon to launch it. Trouble is, under System 6, if you accidentally double-click an icon’s name, you don’t launch the file; you just plant your cursor in its name as though you want to change it. Result: frustration.

In System 7, you can double-click a file’s name to open the icon. And that’s why there’s a pause between your first click on an icon’s name and the moment the renaming rectangle appears. The Mac is waiting to make sure you’re not going to click again. In other words, it makes sure that you really meant to click just once (to edit the file’s name) and not twice (to launch the file).

You can use one of the following three ways to shorten or eliminate the delay between the time you click a file’s name and the time the renaming rectangle appears:

- **In versions of System 7 earlier than 7.1**, to shorten the rename delay, open your Mouse control panel and select a faster setting. At last you know what on earth the mouse double-click speed has to do with renaming an icon: the rename delay exists to see if you’re in the middle of a double-click.

- **If you’ve clicked an icon’s name**, you can make the renaming rectangle appear instantly just by moving the mouse. A little twitch, and you can begin typing the new name.
If you prefer not to bother with either of those workarounds, you can lengthen, shorten, or even turn off the rename-delay feature altogether using System 7 Pack, included with this book on the SECRETS disks. This method works for all versions of System 7, too (see Chapter 33 for instructions).

**Icon-renaming Secrets**

**The Mac’s wacky alphabet scheme**

The Mac alphabetizes things a little bit oddly, in that spaces and symbols come before letter A. And 20, believe it or not, comes before 3.

To make a file appear first in an alphabetical list (in a list-view window, for example), type a space at the front of the name. To make the number 3 come before the number 20, put a space before the 3.

Incidentally, one symbol the Mac absolutely does not let you use when you name an icon is the colon (:). When you’re in the Finder, if you type a colon as part of a file name, the Mac substitutes a hyphen (-) without even so much as a by-your-leave.

**System 6’s even wackier alphabet scheme**

If you’re trying to force a file to come first in an alphabetical list, as advised in the previous Secret, you’ll discover that System 6 won’t let you begin a file name with a space. Unless you outsmart it, that is. Begin the file name with a dummy letter followed by a space. Then just delete the dummy letter! The result: a file name that, after all is said and done, begins with a space.

**Renaming is just like word processing**

The Edit menu’s Cut, Copy, and Paste commands (and their keyboard equivalents) work while you’re editing a file name. That’s useful to remember when you’re naming a bunch of files in a row. Suppose they’re supposed to be called Koyyanisquatsi 1, Koyyanisquatsi 2, Koyyanisquatsi 3, and so on. Just copy “Koyyanisquatsi” to the Clipboard. Then, each time a file’s name is highlighted for renaming, press ⌘-V to paste the word, and type the rest of the file name (the digit).

Other typical Mac word-processing techniques work, too. You double-click a word to select it instead of dragging through it, and highlighted text gets instantly replaced by anything you type (so that you don’t have to delete the old file name before typing a new one).

If you begin typing a new name and suddenly realize you’re renaming the wrong icon, just press ⌘-Z, the Finder’s Undo command. The icon’s original name will reappear. And if you start typing a new name and then decide to you want to replace what you’ve typed with a completely new name, you can use the Select All command (⌘-A) to reselect the entire icon name.

You can also use the arrow keys to move the insertion-point cursor. When the renaming rectangle first appears, for example, press the right-arrow key to deposit the insertion-point cursor at the very end of the file name (or the left-arrow key to pop it at the beginning).
Once you start typing, of course, the right-arrow and left-arrow keys move the cursor through the icon name one character at a time, forward or backward. But you can still jump straight to the beginning or end of a name by pressing the up-arrow and down-arrow keys.

**Deactivating the renaming rectangle**

We've already told you how to activate a selected icon's renaming rectangle: Press Enter or Return. Now we'll tell you how to deactivate it, so that your icon is still selected, but you're no longer in renaming mode: Press Return or Enter again.

And why would you want to do this? To select another icon without using the mouse. (If you tried to select another icon from the keyboard with the renaming rectangle active, you'd just end up renaming the currently selected icon.)

We should point out that there is one way to select another icon without first deactivating the renaming rectangle: Press Tab. This key always moves you to the next icon in alphabetical order, even if the current icon's name is selected for renaming.

**Nice-to-know automatic naming conventions**

In System 6, when you make a copy of a file called, say, Party Project, the Mac names it *copy of Party Project*. If you think about it, that's incredibly dumb. Suppose, in an alphabetical list view of files in a folder, you click Party Project, down in the P's. Then you duplicate the file (using the File menu's Duplicate command). Now you can't find the copy because it suddenly jumps up in the list to the files beginning with C (*copy of...*).

In System 7, the duplicate file is named *Party Project copy*, making it appear next in the list after the original file. What happens if adding the word "copy" to the end of a file pushes it over the Finder's 31-character limit for file names? The Finder automatically starts hacking letters off the end of the original file name to make room for the word "copy."

Likewise, in System 6, a new folder is automatically named Empty Folder. In System 7, it's called *Untitled Folder*, which usually means that it appears at the bottom of whatever list-view window you're using.

**A really amazing re-alphabetizing Secret**

Over and over again, in this book and others, you'll be told to put spaces in front of your icons' names if you want them to rise to the top of an alphabetical list. For example, a file called Zebra will come *before* one called Aardvark, as long as you put a space in front of the Z. You can put that trick to particularly good use in your Apple Menu Items folder, so that you can put your Apple menu names in any order.

Trouble is, you can see those spaces. Your icons' names look stranger and stranger, the more spaces you put in front of the actual names. Here's a much better way.

Open the Note Pad. Press Return, thus creating a blank line. Select the blank line and copy it. Now click the name of icon — the one you'd like to appear first alphabetically — in readiness for renaming it. Press the left arrow key to move the cursor to the beginning of the file's name.

Now paste that invisible Return character you copied. The existing name seems to disappear; just press Enter, and it returns.
MACINTOSH SECRET

The deadliest file name

As a general rule, don't begin your file or disk names with a period.

It's a very good rule, by the way. The Mac's operating system believes files beginning with periods to be drivers, those invisible programs that run your disk drives, serial ports, and other input or output jacks. If your file names begin with a period, the Mac can potentially get confused and treat your file as a device driver instead of a plain old data file.

Worst of all, don't name anything .Sony. Doing so will trash your hard drive!

When we first heard this, we hooted with sinister glee. How anti-Sony was the Mac programmer who planted that little trap into the Mac operating system?

Turns out there's nothing so evil going on. Instead, .Sony is the name of the invisible floppy disk driver that controls your floppy drive! If you give a file that name, the Mac may try to address it as though it's a floppy drive. All kinds of hard drive corruption may result.

P.S. — As this edition went to press, a Sony rep called us. He said that the .Sony hazard was eliminated starting in System 7. Said he was quite sure. Well ... okay.

Incredibly, your renamed file now appears first in any alphabetical file list, but it doesn't look any different!

Furthermore, a file with two blank Returns at the beginning of its name comes before one with only one Return; a file with three appears even before that...and so on.

(April Fool's Day stunt: use the blank-Return technique to make all the files in your System folder appear in reverse alphabetical order. Amaze your friends!)

Techie Note: This trick may befuddle programs that refer to linked files. For example, a Quark or PageMaker document won't work with graphics files whose names you've doctored this way.

Prevent renaming

You can't rename a locked file, of course. The easiest way to prevent somebody from renaming a file, therefore, is to select the icon, choose Get Info from the File menu, and then select the Locked checkbox.

Any Mac-savvy person knows how to unlock a file, however. To prevent somebody from renaming a file — but to avoid making it easy to thwart — use DiskTop (included on the SECRETS disks). Select the file and choose Get Info from the DiskTop menu (you must be in Technical mode; choose Preferences from the menu). Select the checkbox called System and then click Change.

Now the Mac thinks that your file is a System file — and, of course, changing the name of a System file is a no-no! Nobody can rename your file until you reverse the DiskTop process.

The Truth About Finder Windows

Ah, windows. No aspect of any computer has been the subject of so much attention — and so much litigation. Xerox, the developer of the concept of movable, overlapping panes to display computer information, sued Apple for ripping off the idea. And then Microsoft created Windows, a program for IBM computers, and Apple sued Microsoft.
But heck, that'd be like Kleenex suing Puffs. You just can't keep a great idea down, and now windows have cropped up on every computer from NeXT to the Apple II.

Mac windows have a number of special properties — some cryptic, some completely hidden. Window-manipulation skill is particularly necessary in the Finder, when the mere act of opening your Extensions folder requires you to open three windows (hard drive, System folder, Extensions). If you’re not careful, your screen will clutter up with so many windows you can’t get any work done.

**Window Secrets**

*Drag a window without bringing it forward*

When two Finder windows overlap, you can bring the rear window forward (make it active) by clicking in any visible part of it.

If you want to move a rear window *without* bringing it to the front, press the `key as you drag it. The window will stay to the rear.

**The definitive window-manipulation keyboard guide**

To close a window, press `W.`

To close *all* open windows, press Option-`W (or Option-click a window’s close box). (Even the wording of the Close Window command in the File menu changes when you press Option. Check it out.)

To enlarge a window just enough to see all the icons in it (System 7 only), click the Zoom box (see Figure 1-13).

*Figure 1-13:*

When you click the Zoom box, the window gets just big enough to show all the icons in it.

To enlarge a window to fill your monitor: Option-click the Zoom box. (The Zoom box *always* works this way in System 6, even without the Option key.)

When we wrote the first edition of this book, we wondered why anyone would actually want to do this. Why on earth would you choose to fill your monitor with empty white space?

Well, one reader, Randy Slafsky, actually came up with a reason: If the boss happens to walk by when you’ve got something up on your screen that you shouldn’t — like a game or the résumé you’re submitting to the rival company — you can quickly cover the entire screen with one mouse click. Yes, the Option key could, conceivably, save your job.
By the way, once the boss walks away, you reshrink the window by clicking the Zoom box again.

**The golden Option-key window trick**

There are several ways to open a folder. You can double-click, of course, or you can use any of the keyboard shortcuts outlined below. No matter how you open a folder, however, remember that the Option key is your anti-window clutter power tool — any time you press Option as you open a window, the previous window closes itself.

**Backtrack to an outer window**

Suppose you double-click the System folder to open its window. Then you double-click the Control Panels folder to open it. You can jump back to the System folder window (or any enclosing window) by pressing the 3€ key as you click the current window's title. A pop-up menu appears, from which you can choose the name of any folder you had to open in reaching your current location (see Figure 1-14).

Useful combo trick: Use this keyboard trick with the golden Option-key trick described above — in other words, press both Option and 3€ as you choose a window name from the title bar pop-up menu. The result: you backtrack to an outer window and close the window you were in.

**What disk is this folder on?**

You find yourself viewing the contents of a window called System folder. But you have two hard disks. Each one has a System folder. Which System folder are you perusing?

The quick way to find out is to 3€-click the title of the window, exactly as described in the previous Secret. In this case, of course, you're not trying to backtrack through windows; you just want to know which disk contains the folder you're looking at. The disk name always appears at the bottom of the pop-up menu.

**Close — and backtrack — windows from the keyboard**

If you burrow into several consecutive nested folders, you can, of course, return to an outer folder using the hidden title-bar pop-up menu as described in the previous Secret. But you can do the same thing from the keyboard by pressing 3€-up-arrow key to return, one nested folder at a time, to the outer window.
Or, once again, combine this trick with the golden Option-key trick described previously; that is, press Option-⌘ up arrow to close the window you're in and jump to the previous window.

**Open a selected icon from the keyboard**

If you highlight a folder or a file (by typing its name, for example), you can open it in one of four ways:

- Press ⌘-O.
- Press ⌘-down arrow.
- Choose Open from the File menu.
- Double-click the icon.

But if you press Option while performing any of these steps, you close the icon's enclosing window in the process.

**Jump to the desktop level from the keyboard**

If a folder or disk window is open, you can select the desktop level by pressing ⌘-Shift-Up arrow. (Why would you want to select the desktop level? To select or open an icon on the desktop, such as a disk icon you want to eject, without having to use the mouse.)

**List-view Secrets**

**Viewing your icons as an outline**

You view the contents of a folder in any of several organizational arrangements, as shown in Figure 1-15. If you want to switch from one view to another, use the commands in the View menu.

The bottom commands in the View menu — everything except by Icon and by Small Icon — display your icons as a sorted list.
You change how the list is sorted — by file name, file size, and so on — by choosing the appropriate View menu command. But it's usually quicker to click the appropriate column heading in the window (see Figure 1-16).

**Figure 1-16:**
A quicker way to re-sort files in a window. Click Size, for example, to see largest files listed first.

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**Shortened dates in list views**

Take another look at Figure 1-16. Notice that the dates are displayed in shortened form: 3/3/93 instead of March 3, 1993. The concise numeric format makes for more compact, easier-to-manage windows.

In System 7.0, there's no way to switch to this "short date" format. (You can truncate dates to some degree, however, using ResEdit. The instructions are in Chapter 21.) In System 7.1, you have a bit more control; you can use the Date and Time control panel to eliminate specific parts of the date — you can get rid of the weekday and year, for example — but you still can't get the dates to display in shortened, numeric form.

You can do this, however, using System 7 Pack, which is included on the disks that come with this book. See Chapter 33 for details.

**Manipulating nested list-view folders with the keyboard**

If you use System 7, you probably already know what happens when you click the little triangle next to each folder name: it turns sideways, and the contents of its folder are listed in an indented format, like an outline (see Figure 1-17).
It's more efficient to manipulate list-view folders by typing on the keyboard, however. Here's how:

- Type a few letters of a file name to select it.
- Press the up- or down-arrow keys to select icons higher and lower in the list.
- Press Tab to highlight the next file alphabetically. (Shift-Tab takes you to the previous file alphabetically.)
- After a folder is highlighted, press ⌘-right arrow to expand it (to see what’s inside). Press ⌘-left arrow to collapse it again.
- Press ⌘-Option-right arrow to expand a selected folder and all folders nested inside it. Press ⌘-Option-left arrow to collapse a selected folder and all folders within it.
- While this isn't exactly a mouse-free technique, you can also collapse or expand a folder and its sub-folders by Option-clicking the triangle.
- Press the Page-Up or Page-Down keys (if you have an extended keyboard) to scroll the list of files up or down by a windowful. Press Home to jump to the top, or End to jump to the bottom.
- If you're looking for a file at the end of the alphabet, it's annoying that typing its first letter makes the file appear at the bottom of the window so that you can't see what comes after it alphabetically. The solution is to press the End key and then type the first letter.

**Showing how much disk space is left (or not) in list-views**

When you look at your files in a list view, do you see an extra strip of disk-space information (see Figure 1-18)?

If it doesn’t appear and you’d like it to, open your Control Panels folder and double-click Views. Turn on the “Show disk info in header” checkbox. (Or, if you do see this strip but want to hide it, turn off that checkbox.)

**Copying Files**

Has it ever struck you as odd that there’s no command for copying a file? After all, making a copy of a file is one of the Finder’s primary duties, and yet the method for copying a file to another disk by dragging it is something you just have to know. By scanning the menus, you’d never discover the secret.
Copying files in System 7.0 through 7.1 is much, much slower than it is in System 6. Apple has improved copying speeds with each successive version of System 7, but in the original System 7.0 release, copying a file took about four times longer than it did in System 6.

One reason for this delay is related to System 7's multitasking nature. Multitasking means several computer operations can be going on simultaneously, right? Yet, before System 7, whenever you were copying a big file (or a bunch of files), you were condemned to staring at a bar graph on the screen until the copying was finished. In System 7, on the other hand, you can start a bunch of files copying, and then jump back into your word processor and continue working, while the Finder continues copying your files from one disk to another.

This remarkable feat explains why System 7 requires so much more memory than System 6. Because the Finder is now a first-class citizen, so to speak, among other programs, it needs enough RAM to go about its business even in the background.

Nonetheless, almost nobody we know actually uses this background-copying feature. To make it work, you have to decide which word processor (or other program) you want to use and launch it before you begin copying. (You can’t launch a program while files are being copied.) And you have to use the Application menu in the upper-right of your menu bar, or click in the application’s window, to switch to your other program.

Therefore, our urgent message to you is this: if you don’t regularly use the background-copying feature, wouldn’t you like to regain all that memory and speed which Finder 7 reserves for background copying?

That’s exactly why we’ve given you System 7 Pack (on the SECRETS disks). It speeds up Finder copying by three times, at the expense of background-copying speed. In other words, copying files in the background (in the unlikely event that you actually use that feature) takes a little longer when you’re using System 7 Pack, but copying files in the foreground is much faster!

**File-copying Secrets**

*Copying a file to another folder*

You already know how to copy a file onto a different disk: just drag its icon to the other disk’s icon or window. But dragging an icon from one place to another on the same disk doesn’t copy the file — it only moves the file.

If you want to copy a file on the same disk, press Option while you drag the icon into a different folder.

*Changing the “copying files” message*

While the Finder is copying files, you see a dialog box that says “Items remaining to copy: 2.” If you’re feeling particularly grumpy one day, you can change this message to say something different (“All I ever do is copy,” for example). You can do this with ResEdit (included on the SECRETS disk), as described in Chapter 21.
Moving the "copying files" message
The little window that says "Files remaining to copy" has a title bar, just like any other window. That means you can move the window anywhere on screen, even while copying is in progress. You just drag the title bar.

Opening, trashing, or copying icons from different windows simultaneously
If you think about it, you can't really select icons from different windows at once; as soon as you click an icon in one window, you deselect any highlighted icons in other windows.

There's a simple solution: drag the icons to the desktop first, even if the icons come from different disks (see Figure 1-19). From there, you can select all at once. After they are selected, you can drag them to the Trash, open them all (by pressing ⌘-O), or make a backup by dragging them all to a different disk.

![Figure 1-19: You can manipulate many icons at once, even if they come from different disks; just deposit them on the desktop first.](image)

When you're finished, you don't have to drag the icons painstakingly back to their original folder locations. Just select all the icons, then choose Put Away (⌘-Y) from the File menu.

Your First Database: the Desktop File

A database, of course, is an organized collection of repetitive information: a phone book, for example, or a set of flash cards. Commercial database programs include FileMaker or 4th Dimension — but your Mac comes with a free database called the Desktop.
Normally, the Desktop file is invisible. And normally, you, the user, aren’t meant to interact with it; the Desktop database is supposed to be used exclusively by the computer itself. You’ll find an invisible Desktop file on every single disk: floppy or hard, removable or fixed.

What’s in the Desktop file

The Desktop file stores all kinds of information about the icons in your Finder universe: what their actual icon pictures look like; which file icons were created by which programs; what comments you typed into their Get Info boxes (the window that appears when you select an icon and choose Get Info from the File menu); what shape and position your windows are in; and how icons are displayed in each window (by name, by icon, and so on). Each time you insert a disk, the computer takes a moment to study the icons on it and record their vital statistics in your invisible Desktop database.

The presence of the Desktop database accounts for a number of mystifying events that may occur in your computing career:

- You’ve never in your life seen a completely empty disk. Even a brand-new, freshly-initialized floppy disk starts out with 1K in disk. At last you know what’s taking up that room: your invisible Desktop database.

- You view a disk using a program — such as DiskTop, ResEdit, or even Word — that can “see” all files on your disk, including invisible files. And you see files called Desktop DB and Desktop DF.

Contrary to popular Mac-publishing industry myth, DB doesn’t stand for Database. It actually stands for Desktop BNDL. (BNDL is the four-letter code for bundle, which is what they call the relationship between a certain program or document and its icon. If you start getting blank generic icons on your desktop one day, you know something’s happened to your bundles — and, thus, something’s gotten corrupted in your invisible Desktop DB database.)

DF stands for Desktop Files. This is the database that records what files you’ve got and where they are (in whatever folders).

Hereafter, though, we’ll refer to this pair of files collectively as the Desktop file.

ANSWER MAN
Desktop Manager? Desktop File? Desktop DB? Huh?

Q: I’ve read Mac magazines for years, and I’ve never understood all this. What’s the Desktop Manager? What’s the Desktop file? What’s going on?

A: In part, your confusion stems from the fact that System 6 uses one mechanism for tracking files and icons, and System 7 uses another. In System 6, it’s a single file called the Desktop File. In System 7, as we’ve said, there are two files, Desktop DB and Desktop DF. They’re managed by a program called the Desktop Manager.

Desktop Manager is a much better file-tracking system than the old Desktop File. It handles many more files, for one thing. It’s more stable, for another. And, most important of all, Desktop Manager allows the files it manages to be shared with other Macs over a network.

This Desktop Manager software is built right into System 7, so you never see it. Interestingly, though, you can install a version of the Desktop Manager if you’re using System 6. It’s an init that you install into your System folder.

The wonderful thing about the Desktop Manager init is that it eliminates that annoying desktop-rebuilding that occurs on your hard drive every time you ever switch from using System 6 to System 7. That’s because the Desktop Manager creates those same two invisible files — Desktop DB and Desktop DF — used by System 7.

So where can you get Desktop Manager? It comes with Apple’s networking/server software, AppleShare, that you’re supposed to buy.

However, it’s probably worth pointing out quietly that the Desktop Manager init for System 6 is also available from Mac user groups all over the place. If that desktop-rebuilding annoys you, seek it out!
When you put a floppy disk into your disk drive, its icon never pops up onto the screen immediately. It always takes a few seconds because the Finder is consulting the new disk's Desktop file to find out what the disk's icons should look like.

Every Mac book, manual, and magazine urges you never to turn off the Mac simply by flipping off the power switch. Instead, you're constantly exhorted to use the Shut Down command in the Special menu, which always makes you wait several seconds before the screen goes dark. Now you know the reason: the Mac must take a moment to update its database, reflecting any changes you made to the status of your file icons.

Curing a troubled Desktop file

Each time you insert a floppy disk or introduce new files onto your hard drive, your Desktop file stores the pictures of any icons it's never seen before. File icons aren't insignificant in terms of disk space. A typical Mac program has not one, but nine different icons. They come in three sizes — corresponding to Icon, Small Icon, and list views in the Finder — and in three degrees of colorfulness, depending on the fanciness of your monitor.

As all these icons (along with the Get Info comments you add to them and other information) are memorized, the Desktop file grows. Over the months, it takes up more and more space on your hard drive, and the potential for corruption (getting its information mixed up) increases. After awhile, several unpleasant symptoms may interfere with your work:

- The icons for certain files may appear as generic, featureless pictures (see Figure 1-20). In this case, your Desktop database has lost track of which icon pictures belong with which icons.

  Figure 1-20:  
  When the Desktop file gets confused, a file that once had a pretty picture icon (left, before) may turn into a generic icon (right, after).

- Windows seem to take longer to open, files seem to take longer to launch, and your system definitely seems slower than it used to be. At this point, your Desktop file has to wade through so much superfluous information that you're actually having to wait for it.

- When you start up the computer (or, under System 6, when you quit a program), it seems to take a long time for the Finder to appear. Once again, the Desktop file is having to struggle to produce the information needed to display your windows and icons correctly.

In these instances, the solution to an overgrown Desktop file is simple: force the Mac to reinspect the current status of icons and windows, and create a new, slimmer Desktop file that's free of obsolete information. This process is called rebuilding the desktop. Here's the simplest method:

Restart the Mac. As it's starting up, press the ₤️ and Option keys down until you're finally asked if you want to rebuild the desktop on the disk in question. If you have more than one disk — for example, a hard drive and a floppy in the disk drive — you'll be asked separately about each one.

Important: under both System 6 and System 7, rebuilding the desktop deletes all your Get Info comments. (If you have a modem, dial up your local BBS or online service; there you'll find the freeware program Comment Keeper, which eliminates this problem.)
Desktop file Secrets

De-bloat a floppy disk
The invisible Desktop file on a high-density floppy disk is generally between 1K and 7K. If you encounter a seemingly empty floppy disk whose window header says 13K in disk, your first (and correct) guess should be that its Desktop file is bloated.

But rebuilding the desktop in System 7 usually doesn’t restore a floppy disk to its native “1K in disk” status. Because of an obscure bug in the Finder, you need to use this goofy tip: copy one small file to (or create a new folder on) the disk. Then rebuild the Desktop and throw away the small file. Somehow, having a file on the disk when the Desktop is rebuilt seems to unlock the excess kilobyteage.

Rebuild without restarting
It’s common knowledge, as described previously, that you have to restart the Mac to rebuild the Desktop file.

Not so. For this System 7 stunt, quit any programs you’re running — except the Finder. Then press ⌘-Option-Esc. Your Mac will ask you if you’re sure you want to force quit the Finder.

Yes, you’re sure. Click Force Quit and then immediately press the rebuild-the-Desktop keys, ⌘ and Option. The Finder relaunches itself and, because you’re pressing those magic keys, it asks if you want to rebuild the Desktop. You do.

Similarly, if you use At Ease, you can’t rebuild your Desktop normally as the Mac is starting up. Instead, choose Go To Finder from the file menu; now press ⌘-Option as usual.

Rebuild in System 6
System 6, too, has a trick for rebuilding the Desktop without having to restart the Mac. (You can’t use MultiFinder for this trick.) All you have to do is launch some program — Word, or whatever. Then, when you quit the program, press ⌘ and Option until you’re asked if you want to rebuild.

Emptying the Trash
As everybody knows, you delete a file by dragging its icon to the Trash can. The Trash icon bulges to show that something’s inside. As long as the bulge is there, you can still retrieve the file by double-clicking the Trash and dragging the icon out of the Trash window. However, in System 6, if you turn off the Mac or launch a program, the file is deleted automatically (and the Trash can stops bulging).

In System 7, however, the Trash can resembles a regular folder more than it does a trash chute. Any file you drag into the Trash can stays there forever, or until you choose Empty Trash from the Special menu. (Your cheerful authors have met more than one beginner whose hard drive had mysteriously filled up, even though they had been diligently discarding old files. They had no way of knowing that every file they’d ever dragged to the trash was still sitting there, taking up hard-drive space, waiting for the Empty Trash command.)
In fact, in System 7, the Trash is a folder — an invisible one. If you need convincing, take a floppy disk you used in System 7 and insert it into a System 6 Mac. Lo and behold, you’ll see a folder called Trash. In it you’ll find everything you thought you’d thrown away from that disk. Until you choose Empty Trash (in System 7), that stuff will stay in the invisible Trash folder.

Every disk that’s ever been used in System 7 has a Trash folder, invisible or not.

Here are several clever tips for customizing the behavior of the Trash.

**Trash Secrets**

**How to empty the Trash when files are locked (EZ method)**

Have you ever seen the message in Figure 1-21?

![Figure 1-21](chart.png)

One or more items cannot be deleted because they are locked.

To delete locked items, hold down the Option key while you choose Empty Trash.

The solution is spelled out for you in the message: press the Option key as you choose Empty Trash from the Special menu. The trash, locked files and all, will be emptied.

The point is that the next time there’s something locked in the Trash — or if you use a version of the System software (like System 6) that doesn’t give you this hint — you can remember to press Option the first time, without encountering any error message at all.

**How to empty the Trash when files are locked (old method)**

Of course, you can also use the old-fashioned method: double-click the Trash can to open it. Make the window very wide so that you can see the tiny padlock icon (see Figure 1-22).
**ANSWER MAN**

Q: Hey, what's the deal? I've got a completely empty floppy disk. I'm trying to copy a 100K file onto it from my hard drive, and the darned thing tells me there's not enough room! What gives?

A: Your floppy disk is full. So how come it says 0 items? Because the items on the disk are in the Trash, which is an invisible folder on the disk.

All you have to do is choose Empty Trash from the Special menu, and everything in the Trash—regardless of what disks they came from—will be erased. Your floppy will now be truly empty.

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Figure 1-22:
Find out which files aren't letting the Trash empty by looking for their padlock icons at the far right side.

To unlock the file, click one of the locked icons, choose Get Info from the File menu, and then click the Locked checkbox.

**How to eliminate the confirmation message**

Whenever you choose Empty Trash from the Special menu, the Mac asks you to confirm your action, as shown in Figure 1-23.

Figure 1-23:
To shut up the Trash, turn off the Warn before emptying check box in the Trash icon's Get Info box.

If you prefer not to be bothered with this message each time you empty the Trash, select the Trash can and choose Get Info from the File menu. Click “Warn before emptying” so that it’s no longer selected. That’s all there is to it.

If you usually like the confirmation message, but you want to shut it up just this time, press your Option key while you choose Empty Trash from the Special menu.

**Trash can positions in System 6 and System 7**

In System 7, you’re allowed to keep the Trash can anywhere on the screen; just drag it wherever you find it convenient. (In fact, you can have it in more than one place, if you make an alias of it.)

In System 6, however, the Trash can always jumps back to its original position when you restart the Mac.
**Rename, or redraw, the Trash**

You may have noticed that the Mac won’t let you rename the Trash can. Nor will it let you paste in a new icon, as you can for any other file or folder — at least not in the usual way.

This Secret is only a referral to the Chapter 21 (ResEdit). There you’ll find the secret solution to renaming or replacing the Trash icon.

**Awesome tip: Recovering trashed items**

Most Mac people know they can recover an item from the Mac’s trash can with a file recovery program such as Norton Utilities (or CP Undelete, which is on the disks that came with this book). But did you know it’s possible to drag files into the Trash, empty the trash, and then recover the trashed files, **without** using any third-party utility?

Here’s the secret: As soon as you empty the Trash — and realize you just dumped something you shouldn’t have — turn your Mac off. Don’t perform any other commands. Don’t use the Shutdown command. Don’t restart. If you’re using a PowerBook, don’t put it to sleep. Just turn off the power. Pull the plug if you have to. Then start up again. When your desktop appears, you’ll find that your most recently trashed items have miraculously returned from the dead; they’re back in the Trash can, as if they were never deleted.

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**All About Aliases**

Authors of Mac books and manuals have described System 7’s aliases as remote controls, beepers, signposts, stand-ins — the metaphors are almost endless.

The point is that, although aliases may appear to be **duplicates** of existing files, they’re not. They’re just look-alike icons that provide a shortcut back to the original file they represent. If you make an alias of a folder, for example, double-clicking the alias opens the original folder — not a copy of it.

That’s why aliases are frequently referred to as **pointers**. When you double-click an alias, the alias simply tells the Finder which file, folder, or disk you want to open and points the way back to the original item, wherever it may be (see Figure 1-24).

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**Figure 1-24:**

The alias always points the Finder back to the file from which it was created.

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In essence, this process lets you stash a file in several places at once without having to make multiple copies of the file. You can keep a document or application neatly tucked away in one folder and place aliases of it in as many different locations as you like (see Figure 1-25).
Making an alias

Here's how you make an alias: select a disk, file, or folder in the Finder and then choose Make Alias from the File menu. You see what looks like an exact copy of the original item appear, overlapping slightly with the selected icon (see Figure 1-26).

The alias is identical to the original icon in every way except that its name appears in italics and has the word "alias" appended to it. After you create the alias, you can rename it just like any other icon and drag it wherever you'd like, even to another disk drive.

Here are some of the best ways to use aliases to streamline your work:

- An all-time favorite: add aliases of frequently-used applications and documents to the Apple menu. To do this, put the aliases in the Apple Menu Items folder (located within the System folder). Because the Apple menu is always available, you have continuous access to the files you use the most.

- Place aliases of files and folders you open frequently right on the desktop (see Figure 1-27).

- Make aliases of the control panels you use the most and put them in the Apple menu, on the desktop, or in other convenient spots.
ANSWER MAN

Breaking the alias chain

Q: I made several aliases of one document, but then unthinkingly changed the name of the original document. Will my aliases still work?

A: Remarkably, yes. An alias can always find the original file from which it was created — even when the original is renamed or moved. Unbeknownst to you, the Mac's system software assigns every file a unique ID number. Even duplicate copies of the same file get different ID numbers.

When an alias is created, it's programmed to open a file with a prescribed ID number. The name of the file doesn't matter. In fact, if you create a new document and give it exactly the same name as the original file from which you made an alias, the alias will ignore the new document and still find the original.

Here's where things get interesting. Suppose that you drag the new, identically named file into the same folder as the one the alias refers to. The Mac asks if you want to replace the original file. If you say OK, then the alias will point to the new file instead of the old!

Smart little computer, isn't it?

Figure 1-27: It's perfectly okay to leave stuff out on your desktop. Put aliases of frequently used files and folders there.

Normally, when you want to make a control panel adjustment, you start by choosing Control Panels from the Apple menu. That opens the Control Panels folder; then you have to double-click the control panel you want. Making an alias of a specific control panel bypasses two steps.

(It could have been worse. The Control Panels folder listed in your Apple menu is itself an alias. If it weren't there, you'd really have to do some digging to get to a control panel.)

- Put aliases of the Trash in as many folders as you'd like (see Figure 1-28). Whenever you have to trash a file, you can just drop it in the nearest trash can.
Part I: System Software Revealed

Figure 1-28: How many Trash cans? Multiple Trash cans are especially handy on big monitors. (Only the real thing bulges when it has contents, though.)

- Aliases can greatly simplify setting up file sharing for users connected to a network. Here’s how: When you’re on a network and you’ve brought another Mac’s hard disk onto your desktop (see Chapter 31), make an alias of any shared program, document, or folder. When you’re off-line and you’d like to reconnect, just double-click the alias. Your Mac automatically looks for the original item, locates it on the other Mac on the network, and establishes a connection in order to retrieve it.

- A hierarchical Apple menu is one that displays submenus for any folders listed there, as shown in Figure 1-29.

Figure 1-29: An Apple menu “hierarchical-izer” like MenuChoice or Now Utilities gives you instant access to the contents of a folder listed in your Apple menu.

You can buy commercial Apple-menu expanders such as HAM, Hand-Off, and Now Utilities. You’ll also find one included on the disks with this book, called MenuChoice. It’s so good that Apple incorporated it into System 7.5. If you have any other version of System 7, see Chapter 33 for instructions on how to install MenuChoice.
In any case, these programs give you a special alias trick that's incredibly handy: make an alias of your hard disk icon and put it into the Apple Menu Items folder. By sliding from submenu to submenu of your Apple menu, you can choose and open any file or folder on your entire hard drive (see Figure 1-30).

![Submenu](image)

*Figure 1-30: Submenu redux. Using MenuChoice, included with this book, you can have direct access to any folder or file on your entire hard disk without ever having to double-click an icon.*

### Finding the missing alias

Of course, at some point, you may actually need to find an original file and not its alias. If you want to copy a file to a floppy disk, for example, you can't just drag the alias to the floppy — you need the actual file.

If you forget where the original file is located, you can easily find it. Select the alias and choose the Get Info command from the File menu. Just above the Comments box, you see a boldface heading that says Original, followed by a hierarchical list pointing the way back to the original file. If the listing is Hard Drive: Word: Current Projects: Manuscript, for example, it means the original file from which the alias was made is called Manuscript and is located in the Current Projects folder, within the Word folder, on the drive named Hard Drive (see Figure 1-31).

If you want to access the original file, just click the Find Original button at the lower right corner of the Get Info box. The Finder opens the appropriate window and highlights the original item. If you delete the original file, you get a message telling you the original file can't be found.

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**Techie note:** If you installed the complete System 7.5, including Apple Events, you'll see a listing in your Apple menu called Useful Scripts. Several of its contents are super-useful in handling aliases; Find Original, for example, finds the original for a highlighted alias with much less fuss than the Get Info method.
More alias notes

Some other points to keep in mind when working with aliases:

- You can create an alias of virtually any disk, document, application, or folder. You can make aliases of your whole hard drive, a control panel, the System folder — any item you'd like to be able to grab and open easily and quickly.

- Aliases take up very little room — generally from 1K to 3K each — so you can make as many as you'd like without crowding your hard drive. Even an alias representing a document several megabytes in size will take up no more than a few kilobytes. (The larger the hard drive, the larger the alias; for the rationale, see Chapter 7.)

- A single item can have as many aliases as you'd like. Disk space is the only limitation. So, if having 15 aliases of a single item is going to save you a lot of opening and closing of folders and windows, go ahead and make them. Avoid making aliases of aliases, though. You can certainly do it, but you increase the risk that, by accidentally throwing one of them away, you'll "break the chain" that points from alias to alias all the way back to the genuine file.

Alias Secrets

El cheapo floppy-disk archiving

Here's how you can have all your floppy-disk files stored on your hard disk — and yet not.

Make sure your floppies all have distinct names and label them. Make aliases of all their contents and copy the aliases to your hard drive. (You should probably keep the aliases all in one folder, called something like Floppy Archives.) Next time you need one of these files, double-click its alias on the hard drive. The Mac shrewdly calls for the appropriate floppy disk, by name.
Create a program-launching bay in 30 seconds

Make a new folder on your desktop and title it Launcher. Make it tall and skinny, and drag it to the left edge of your screen. From the View menu, choose By Name.

Then choose Find from the File menu and click More Choices. Set up the pop-up menus as shown in Figure 1-32.

![Figure 1-32: To find all your programs, set up the Find dialog box like this.](image)

Click Find. The Mac highlights the icons of every program on your disk. Careful, now — no random clicks, or you'll deselect all the highlighted icons.

Choose Make Alias from the File menu to make aliases of all the highlighted programs at once. Drag any one of the newly-minted alias icons into the Launcher folder on your desktop. (All the others, of course, go along for the ride, as long as they are all selected.) The result: a handy program launcher that is always open on your screen (see Figure 1-33).

![Figure 1-33: You can make a handy slimline program launcher in 30 seconds.](image)

What's especially nice is that you can drag a document icon on top of any of these listed programs' icons for quick and easy launching.
Three other neat things to do with aliases

1. Make an alias of anything — a sound file, a program, a document, a control panel — and put it into the Startup Items folder inside your System folder. Next time (and every time) you turn on the Mac, the original of that file or program behaves exactly as though you just double-clicked it.

2. Put an alias of any file into the Apple Menu Items folder (another folder that's hidden in the System folder). This item — file, folder, disk, program, control panel, anything — now appears in the Apple menu.

3. Early versions of Microsoft Word and similar programs don't spell-check unless the program is in the same folder with its spelling dictionary file. That's too bad, because it means you can't leave the Word icon out on your desktop for easy clicking. That's where aliases come in: make an alias of the Word icon and put that out on the desktop. The original icon is still in the Word folder where it likes to be.

Drag-and-Drop

Mac users had actually been using the feature called drag-and-drop long before Apple coined the term. From Day 1, you used drag-and-drop to place a file into a folder: you dragged the file icon on top of a folder icon (which then turned black to signal you that you'd got it), and then released the mouse button to drop its icon into the folder.

With System 7, however, Apple did more than give this technique a cute alliterative name; it also expanded the icon-on-icon principle to make it much more versatile. The most often mentioned use of System 7's drag-and-drop feature is that you can drop a document icon onto an application icon to launch the former with the latter, no double-clicking required (see Figure 1-34).

![Figure 1-34](image)

Launching a document with drag-and-drop, albeit pointlessly.

Your cheerful authors normally applaud features wherever they may occur. However, on this occasion, we must point out that, frankly, if a document icon is handy enough that you can drag it over to an application icon, why not simply double-click the document icon to begin with? Is this the Emperor's New Feature?

Fortunately, there's something much more useful you can do with D-and-D — the second most mentioned technique. In this variation, you drag a document icon onto the icon of a program that didn't create it. The classic example is dragging a MacWrite document icon onto the Microsoft Word program icon; in so doing, you open the document in Word. It opens, just as though you launched Word and then uses its Open command to open the MacWrite document (see Figure 1-35).

![Figure 1-35](image)

Drag-and-drop's more useful use: open a text or MacWrite document with your favorite word processor by dropping the icon of the former onto that of the latter.
We can think of only a few other cases when this kind of document-opening is useful: opening a text file with Word; opening a PICT graphic file with a specific graphics program; or opening a MIDI file with a specific sequencer (playback) program.

In all of these drag-and-drop moments, note that you get immediate visual feedback as to whether your dropping action is going to accomplish anything: the program's icon gets highlighted. You can't, for example, open a Word document with MacPaint. If you try to drop the Word document's icon on the MacPaint icon, the latter won't turn black, so you know your attempt is a failure.

Finally, soothe your psyche on this fact: when a drag-and-drop is in progress, the document's icon always snaps back to its original window location. Even if you drag an icon out of its window in order to drop it on a distant program icon, you haven't really disturbed the document's position.

### Drag-and-drop Secrets

#### A text file onto Word (or WriteNow, or WordPerfect...)

Drag a text file, an old-style MacWrite file, or a TeachText file (all illustrated in Figure 1-36) on top of your favorite word processor icon to open it.

Even an America Online e-mail file (or any other kind of log, from CompuServe, for example, or your fax/modem's call log) is really a special flavor of text file. As such, it's generally openable by dropping its icon onto your word processor's icon.

#### A “Picture 1” file onto TeachText

Yes, the chintzy little text-editor program called TeachText (or SimpleText), which comes with almost every program on earth including System 7, actually opens PICT graphics files.

Of course, the easiest way to create such a file is to take a picture of your own screen, using System 7's built-in camera feature. Just get your screen the way you like it and then press % Shift-3. (More on this in Chapter 2.) You hear a nice camera-shutter sound, and then there's a new file on your disk called Picture 1. You drag these Picture files on top of any graphics program — TeachText, Canvas, Photoshop, whatever — to view them.

#### Multiple files

You can also drag a whole bunch of selected files onto an appropriate icon. Even if some of them aren't appropriate, the ones that are will open properly. (Example: Select three text files and one music file. Drag them on top of ClarisWorks' icon. Only the text files will open.)
A font suitcase onto another font suitcase

In System 7.1, you can combine font files — whose icons resemble little suitcases — by dropping one on top of another. The result: A single font suitcase that contains the contents of both original suitcases.

Macintosh Drag and Drop

Drag and Drop — the official, Apple-capitalized version — takes drag-and-drop to a new level of utility and, well, coolness.

This feature, which debuted in System 7.5, lets you drag graphics or blobs of highlighted text from one window to another (instead of copying and pasting). Of course, we really won't know Drag and Drop utopia until every software company updates its programs to be Drag-and-Drop savvy.

But Drag and Drop is awesome even in the System 7.5 Apple-supplied programs that offer it, such as the Scrapbook, SimpleText, the Note Pad, the Finder, and the Jigsaw Puzzle. You can slide a picture right off the Scrapbook and onto the desktop, for example, where it becomes a PICT file called picture clipping (see Figure 1-37). Or you can drag a block of text off the Note Pad and into a Simple Text document. You get the idea.

Hint: for a quick way to read saved e-mails from online services (and other text files), drag their icons into the Scrapbook or Note Pad window!

We think Apple really did it right this time.

Figure 1-37: System 7.5 takes dragging and dropping to a new level — you can slide text or graphics right out of the Scrapbook and onto the desktop. Or vice versa.
In this chapter:

- Highlights of the File, Edit, View, Label, and Special menus
- Three hidden Finder commands
- Buried Apple menu treasures
- Getting more mileage out of the Find command
- Four ways to clean up icons

The Finder has over 40 menu commands. (And this is the most user-friendly computer?)

We’re going to assume that you can manage without a book to tell you about commands like New Folder, Open, Close Window, Get Info, and Duplicate. And we’ll get deep into the About This Macintosh command in Chapter 8.

However, you’ll find some goodies locked away behind some of the other commands.
The Apple Menu

The Apple menu, strictly speaking, isn't just a Finder menu. But you create and manage the Apple menu's contents exclusively in the Finder. The menu is used for launching files and programs, just like the Finder, and its first command, About This Macintosh, provides a wealth of fundamental information that seems right at home in the Finder.

In System 6, the Apple menu is good for exactly one thing: listing your desk accessories. But System 7's Apple menu is a powerhouse. It can list anything: disks, files, folders, the Trash, the System folder, a control panel — anything with an icon in the Finder.

So what happens to good old desk accessories (DAs)? When System 7 was under development, the rumor went that DAs would be completely eliminated — that they'd be indistinguishable from programs. Indeed, DAs are moving in the direction of becoming standard application programs. If you double-click a DA suitcase file, for example, you see inside the resulting window what looks like a tiny application icon. You can't double-click this icon while it's still in the suitcase window. But if you drag it outside the window, it gets converted into a bona fide, double-clickable program (see Figure 2-1).

![Desk accessories have almost become regular programs, but not quite. One of the few remaining differences: the icons for desk accessories are "left-handed" (the left two icons in this figure).](image)

This suitcase-to-application conversion process is exactly what happens when you drop a DA suitcase file on top of the System folder (which is how you install a DA into the Apple menu). The Mac automatically strips away the familiar suitcase-shaped shell — one of the few times it ever deletes an icon you named without asking you first — and plants the nugget program into your Apple Menu Items folder within the System folder. (Now it appears in your Apple menu.) If you look inside your Apple Menu Items folder, you see that, once again, the desk accessory's icon looks much like that of a regular program.

Apple menu Secrets

Quick access to the Apple menu (conventional method)
As you probably know, anything you place in the Apple Menu Items folder (in the System folder) is instantly listed in your Apple menu, whether it's a file, a folder, a program, or the alias of a disk. Trouble is, the Apple Menu Items folder isn't very convenient, nested as it is inside the System folder.

If you frequently add or remove things from your Apple menu — and using the Apple menu as a launch pad for your current crop of files is a smart idea — make an alias of the Apple Menu Items folder. Leave the folder out on your desktop (see Figure 2-2).
An Apple Menu Items folder alias gives you quick access to the Apple menu item list. Leave it in the lower-left corner of your screen.

To add something to your Apple menu, just drop it on top of this folder alias. To remove something, double-click the folder alias and drag the item out of the window.

Quick access to the Apple menu (discreet method)
The previous Secret works wonderfully, but it also leaves a big clunky folder out on your desktop. Here's a subtler, less obtrusive technique for creating a neat little drop-slot on the desktop that shovels items directly into the Apple Menu.

Follow the steps in the previous trick. Instead of leaving the image of the folder alias out on your desktop, make the icon itself invisible (see the “Electronic Post-It notes” Secret in Chapter 1). You can also replace the name of the folder alias with a few blank spaces.

The result is an iconless folder with no name — all that you see on the desktop is a white rectangular slot. Click the rectangle and drag it just under your Apple menu (see Figure 2-3).

Then, whenever you want to add an item to the Apple menu, all you have to do is drag it over and pop it in the slot (the white rectangle). Anything you slip into it instantly disappears from the desktop and reappears as an item in the Apple menu.

When you want to remove or rename something in the Apple menu, double-click the little slot itself. The Apple Menu Items folder opens.

Rearranging the Apple menu
The Mac normally alphabetizes the items listed in your Apple menu. To force these items into a different order, you can, of course, buy an Apple-menu managing program, such as Now Utilities.

If you’re a do-it-yourselfer, on the other hand, try this. Open your Apple Menu Items folder. Bearing in mind that a space comes alphabetically before any letter, rename the items in the folder. You can make Zither come before Armadillo, for example, if you type a space before the Z. Figure 2-4 shows an Apple Menu Items folder that's been realphabetized by using spaces. (Instead of spaces, you can also use a pasted return character, as described in Chapter 1’s “Icon-renaming secrets.”)
As a final cosmetic flourish, you can create separator lines to place your Apple menu items into separate groups (programs and documents, for example). To do so, make a new empty folder. Change its name to a bunch of underlines or dashes — preceded, of course, by the correct number of spaces so that the folder will fall, alphabetically, in the right place among the other items. Finally, use the Electronic Post-It notes tip in Chapter 1 to make the separator folder’s icon invisible.

We much prefer using spaces to force the rearrangement of the items in your Apple menu. We grudgingly include the following information as well, since it’s the advice most frequently given.

Instead of spaces, you can also use peculiar symbols like ø, ◇, and • in front of the names of your Apple menu items. (You create these symbols by pressing Option-Shift-K, Option-Shift-V, and Option-8, respectively.) Or you can type hyphens. (Avoid starting file names with periods, though, as we mentioned in Chapter 1.) The symbols come alphabetically after the regular alphabet, while spaces, hyphens, and periods come before.

Visit scenic Silicon Valley

The first item in Finder 7’s Apple Menu normally says About This Macintosh. When you choose this command, you see a useful minwindow that reveals your Mac’s model number, memory usage, and System version. (See Chapter 8, The Memory Chapter, to find out how to interpret this information.)

The Secret: If you press Option as you choose the first command in the Apple menu, the wording changes to say About the Finder, and you see a rustic moonlit picture of a valley — presumably the “silicon” one in which Cupertino (Apple’s headquarters) sits.
If you believe the old-timers, this same scene is what choosing About the Finder always displayed on the very first versions of the Finder.

And if you press ⌘ and Option as you choose About the Finder, you get both a scenic moonlit scene and a cursor with an attitude. (Wait patiently if you want to view the scrolling credits, too.)

All kinds of things to put into your Apple menu

You can put virtually any icon into your Apple Menu Items folder (in your System folder). Here's what happens if you choose each kind of item from the Apple menu itself:

Choose this from the Apple menu... ...and this happens.

A sound It plays.
A folder It opens into a window.
The Trash It opens into a window.
An alias of the Apple Menu Items folder itself This sounds a little recursive and nutty, but it's useful. It opens the Apple Menu Items folder so you can toss something out of, or into, your Apple menu without burrowing through three folders.
A program It launches.
A document It opens.
A PICT graphics file The Mac offers to open it with TeachText (if it's on your disk).
A control panel The control panel's window opens.
An extension, a Prefs file You get an error message.
An alias of your Clipboard file (from your System folder) A window opens, displaying the contents of the Clipboard.
An alias of your Note Pad file (which resides in your System folder) The Note Pad desk accessory opens.
An alias of one of your disks It opens a window showing the disk's contents.

The File Menu

Incidentally, did you ever wonder about the parts of speech used in menus? Originally, they were all supposed to be verbs. File is a verb here! So is Edit, Label, and View. (The theory breaks down when you get to Special, of course.)
Print

Here's a little-known fact: the Finder actually has two Print commands. The one at the top of the File menu is available only if you select one or more document icons. It prints those documents by launching whichever program created them, printing, and then quitting that program. (You can even select document icons created by different programs. The Finder launches each, as necessary, to do its printing.)

The other Print command, at the bottom of the menu, is Print Window. It prints a picture of whichever window is open. If no window is open, or if you select the desktop by clicking it, the command changes to say Print Desktop, which prints the Finder icons on the desktop, using as many pieces of paper as are required to print the entire screen.

The Print Window command, by the way, is especially handy when you're testing a printer or troubleshooting printer problems; it allows you to send a job to any Chooser-selected printer without having to open any documents or launch a single application.

Get Info

You click an icon; you choose Get Info from the File menu; you read all about it. We've found two items worth reporting here.

First, the Where: line in the Get Info box gives you a little bit of insight into how the Mac tracks your files with a string of smaller and smaller locations. It may say Hard Drive:System Folder:Control Panels:, for example. At last you know why the colon (:) is the only character you're not allowed to use when you name a file. Can you imagine how confused the Mac would get?

Second, it may interest you to know why there are two different sizes given for the file or folder you select; it says something like 25K on disk (19,112 bytes used). Well, as anybody knows, 25 is not 19 (see Figure 2-5).

The explanation for this oddity actually provides a fascinating glimpse into the soul of your Mac. The surface of a typical Mac's hard disk is divided into thousands and thousands of little one-kilobyte parking spaces for information. When you save a file, the Mac finds the appropriate number of blank 1K parking spaces, or blocks, and stores the file there. (As you'll learn in Chapter 7, the actual sizes of these blocks may be different on your drive. But let's use the 1K example for this explanation.)

But the little storage chunks on our typical disk don't come in smaller sizes. They're 1K or nothing. That's the solution to our dual-size mystery — the Mac can't subdivide a block. Therefore, some space almost always gets wasted because the Mac rounds up the amount of space taken up by a file to the nearest kilobyte.
Suppose, for instance, that a file is 1.3K. The Mac must reserve two kilobytes for that file because the file won't fit in one block (1K), and consequently a second block gets used up even though it's not fully filled by the file.

Want to make an impression at Silicon Valley cocktail parties? Let this terminology fly: the number of blocks used up is the physical file size. The actual size of the file, which is always smaller, is called the logical file size. The two numbers you see in the Get Info box are the physical and logical sizes of the file. The first number, the physical file size, is always expressed in K; the second number, the logical file size, is always given in bytes.

There's only one more strange aspect of file sizes. We just said that the physical file size (the first number in the Get Info box) is always larger than the second number because it reflects a certain amount of wasted space. But if you look at Figure 2-5, you'll see an apparent contradiction! The example there says 903K in disk (922,112 bytes used) — the first number is smaller than the second! Right?

Wrong! Don't forget that there are not 1000 bytes in a kilobyte, despite what your high school lessons in Greek prefixes told you. Because a computer can count only in powers of two, there are actually 1024 bytes in a kilobyte! Therefore, the sentence “903K in disk (922,112 bytes used)” is perfectly logical. If you do the math, you'll discover that the Get Info box is really saying 903K in disk, 900K used! And, as we said, the first Get Info number is truly larger than the second number. Always.

Sharing

We've got an entire chapter devoted to this little gem. Look for it in Chapter 31.

Make Alias

We have quite a bit to say on this topic, too, but it's in Chapter 1 in the section about aliases.

Put Away

Oh, what a glorious command! We love this command. We use it on everything! On disks, on files, on trash — the Put Away command works housekeeping magic.

The best part of Put Away is that its keyboard shortcut, -Y, is the only way to eject a floppy disk without touching the mouse. (We all know how dumb the Eject Disk command in the Special menu is — sure, it pops the disk out, but why bother? The Mac immediately starts demanding that you reinsert it, because the disk's ghost icon remains on the screen.)

"Ah," you protest, "but you do have to use the mouse, because you have to select the floppy's icon before you can use -Y!" No, not if you've read Chapter 1 carefully. We know where you're coming from, though; if some Finder window is open on the screen, you can't type a few letters of the disk's name to select it, right?
Yes, you can, if you first press ⌘-Shift-Up Arrow, the keystroke that selects the desktop and makes all open windows inactive. Then type the first couple letters of the disk name, then press ⌘-Y. You’ve got it!

Also remember that Put Away refiles any icon that’s sitting out on your desktop into the original folder from whence it came, no matter how deeply buried. Put Away is therefore a great trick to use after you’ve put a bunch of icons on the desktop that live on different disks (for copying or trashing all at once, for example). Put Away makes them leap back into their original disk and folder locations.

Put Away is also great to use on icons that you tried to copy by dragging to another disk icon — and just missed, leaving the icon sitting there on the desktop right next to the disk icon (or the Trash icon). It’s also great if you succeeded in dragging an icon to the trash, something you’d now like to recover. Open the Trash window, select the icons you put there, and choose Put Away. They hurl themselves back into their original folders.

In fact, the only downside to Put Away is that it doesn’t know what to do with icons it thinks were created on the desktop. (These icons could be files that you saved onto the desktop from within a program, for example, or that you Option-dragged there from within a folder.) In fact, the Put Away command gives you a message saying that they were “created on the Desktop.”

The Find Command

Under System 6, it’s a running joke: they call the desktop the Finder, even though it has no Find command. (System 6 users instead get a desk accessory, called Find File, that locates files with all the pep of a petrified slug.)

System 7 has a Find command right in the File menu. It goes one better than all previous finding programs (including the ones you buy, like Fast Find): instead of simply typing out the location of the file you’re looking for, the Finder actually opens the appropriate folder and highlights the icon you want. (A little note: capitalization doesn’t matter when you tell the Mac what to search for — the Find command is not case-sensitive.) In fact, the only thing wrong with the Find command in the Finder is that it’s in the Finder.

Therefore, System 7.5 features the return of the Apple-menu Find File command, so that you don’t have to switch back to the desktop every time you want to look for some file while you’re working in a program. (See Chapter 3 for details on this DA.)

The presence of the Find command isn’t big news to System 7, of course. Not everybody, however, is aware of the power packed into the More Choices button (see Figure 2-6).
Figure 2-6:
When you choose Find from the File menu, the Find dialog box appears (top). Click More Choices to view some useful hidden options (bottom).

Using the pop-up menus in the expanded Find dialog box, you can restrict the search to a particular disk, to files created recently, or to files that have a specific label. Look for examples in the following Secrets.

Find-command Secrets

Search only on one disk (faster)
The Find command is still not blazingly fast, particularly if you have a couple of hard disks attached to your Mac. To cut down your search time, use the third pop-up menu to restrict your search to the hard disk you suspect your missing file is on. Figure 2-7 shows how to set things up for this approach.

Figure 2-7:
If Cabinet is the name of a hard disk (or a SyQuest cartridge, for example), this is how you set up the Find dialog box to search for only one disk.
Successive, ever-narrowing searches

In System 7.5, you can search for two or more criteria at once in the expanded Find File dialog box — by date and by name, for example. (See Chapter 3 for specifics.)

To do the same thing in earlier versions of System 7, you have to perform repetitive searches, gradually narrowing down the icons you select until you isolate one specific group. Suppose, for example, that you want to find only the files created between January 1 and January 6.

First, rule out all the older files by setting up the dialog box as shown in Figure 2-8.

Figure 2-8: Specify that you want only the files created on 1/1 or later by choosing the "date created" and "is after" options from the pop-up menus. To set the date, you click the arrow buttons (you can't type in numbers, as you can in the Alarm Clock desk accessory!). Be sure to select the "all at once" checkbox.

The "all at once" checkbox is powerful, slowish, and a little scary. Instead of simply highlighting one icon, it highlights all icons matching the scenario you set up. When you click Find, the Mac creates one mammoth list-view window using the nested-folder/triangle mechanism shown in Figure 2-9.

Figure 2-9: The "all at once" option highlights every icon on your disk that matches your search criteria, even if it has to open dozens of folders to do so. (If the Finder finds too many files, it tells you that it can't show everything at once, and you have to do your search in two passes. In that case, use DiskTop, included with this book. See Part V for details.)
Now, here’s where things get good. Whatever you do, *don’t click the mouse button now*, or you’ll deselect everything and have to start over!

Instead, choose the Find command again from the File menu. (Yes, it’s okay to click the mouse in a *menu* at this point.) This time, you’ll rule out all the files created after January 6 by setting up the dialog box as shown in Figure 2-10.

![Figure 2-10: The important thing here is to choose the “the selected items” option from the third pop-up menu. In other words, you want the Mac to search through only the items you highlighted the first time around.](image)

You’ve just done it; the first search ruled out the files created before 1/1, and the second search ruled out (from the first group) those created after 1/6.

Incidentally, you don’t have to spend half an hour after each “all at once” search painstakingly closing folders that were opened by the Find command. In two keystrokes, you can collapse all those list-view folders:

- Select everything in the window by pressing ⌘-A (or choose Select All from the Edit menu).
- Press ⌘-Option-left arrow to collapse all the open folders in the outline view.

(Alternatively, switch to icon view and back.)

**Find all locked files at once**

Use the Lock item in the first pop-up menu to locate all the locked or unlocked files on a disk or in a certain folder. (You use the third pop-up menu to limit the search to the folder that is open on the screen.)

**Save time in a folderful**

We don’t know about you, but when we use the Find command, we rarely turn up what we’re looking for on the first try. You’re looking for a file called Trolley Cars, so you type TROL into the Find: box and the Mac proudly presents you with the Control Panels folder.

That’s why there’s a Find Again command, whose keyboard equivalent is ⌘-G. Find Again automatically presents you with the next icon whose name matches your search word.
Sometimes, however, you get into a nightmarish situation where the Finder finds a folder full of files whose names all contain the search words. If you search for Trolley Cars and you type TROL, you may open a folder crammed with graphics files called Trolls Dancing, Trolls in Repose, Trolls Trolling, and so on. If you rely on the ⌘-G keystroke (or the Find Again command), you can spend endless hours among those icons, highlighting one after another, impatiently waiting for the Finder to come to the end of the Trolls icons so that it can start searching in a different folder.

So here's the trick: The instant you realize that the Finder has opened a window that doesn't hold the file you want, close the window. The Finder understands the message; your next ⌘-G skips the remaining files in that window and hunts through other folders.

In fact, your cheerful authors have gotten into the habit of leaving one finger permanently on the ⌘ key. The other fingers handle the F, W, and G commands — F to start searching, and W and G alternately to close "nope, not here" windows and continue the search.

**Search for fonts — and maybe sounds**

In versions of the System up through 7.0.1, you can't search for a screen font file (Times 12, for example). Even though these fonts are individually double-clickable, trashable, and viewable as icons, the Find command won't find them. They're hidden inside the System file; ditto with sound files, ditto with keyboard-layout files.

In System 7.1 and later, however, the Find command works for font files because they are stored in the Fonts folder. In fact, if you use the trick in Chapter 21 for storing sounds in the Fonts folder, you can even search for those, too.

### The Edit Menu

What is there to edit in the Finder, you may ask? Plenty, as it turns out.

#### Undo

Interestingly, Undo almost never does anything useful in the Finder. It doesn't work after you move an icon, or empty the Trash, or rename an icon, or change a setting, or apply a label, or enlarge a window. And it certainly doesn't work after you eject a disk.

What's especially strange is that Undo rarely works even when you cut, copy, clear, or paste things (to or from the Scrapbook, for example), even though (a) the command isn't dimmed, as it's supposed to be when unavailable, and (b) it should work to undo Edit menu commands.

Anyway, the Undo command in the Finder exists for just one reason: to help you when you're editing a file's name. The Undo command can take back the last text editing you did.
Cut, Copy, Paste, Clear

It may not occur to you to use the Cut, Copy, Paste, and Clear commands in the Finder, where there’s no text or graphics, really, to work with. But these commands do work in a surprising number of different Finder contexts.

- Click an icon. The Copy command grabs the icon’s name and puts it on the Clipboard. If you press Return so that the icon’s renaming rectangle appears, the other Edit commands work, too.

- Select a group of icons. The Copy command, believe it or not, grabs all the icons’ names (up to 255 characters). Here’s a handy trick — open up a word processor and paste. You’ve just made yourself an instant list of a folder’s contents.

- In the Get Info box for an icon, click the icon. The Cut, Copy, Paste, and Clear commands now apply to the icon graphic.

- Open the Scrapbook. All of the Edit commands work to transfer pictures, sounds, QuickTime movie clips, or text in or out.

- Open the Puzzle or Jigsaw Puzzle desk accessory. The Edit commands copy and paste graphics into the puzzle itself (see Chapter 3). The same thing works with the Map control panel.

- Open the Sound control panel. You can select a sound’s name and copy the sound, clear it, or cut it. If a sound is already on the Clipboard, you can paste it in. (See Chapter 23 for much more fun with copied sounds.)

Show Clipboard

Did you even know this command was here? Show Clipboard opens a window that displays whatever text or graphics you most recently copied from any program.

Even if you knew that, we’re sure you don’t know this: If you Show Clipboard after copying a sound (from the Scrapbook or the Sound control panel), you see a solitary button that says Play Sound, which does what you’d think.

The Clipboard isn’t terribly bright about QuickTime movie clips, however. It shows only the first image of the movie, you can’t play it like a movie, and it’s identified as a “picture.” Still, if there is a movie on the Clipboard, it’s genuinely a movie, and you can paste it anywhere fine movies are pasted — into a Word document, or the Scrapbook, or the Simple Player (see Chapter 23), or whatever.

The Label Menu

With System 7’s Label feature, you classify your folders, files, and disks by tagging any icon with text labels of up to 31 characters each (“Hot,” “Momentous,” “Nugatory,” or whatever). Text labels don’t show up in Icon and Small Icon views, but you see them in any of the list views. On color Macs, labels are color-coded; labeling a file assigns its icon a corresponding color.
Seven label categories already are set for you when you install your system software — the classic Essential, Hot, In Progress, and so on. You redefine these categories using the Labels control panel (see Figure 2-11), and then use these classifications to find and sort your files.

Figure 2-11: Open the Labels control panel to define your seven labels, which will then appear in the Finder’s Label menu.

To apply a label, select its icon (or a whole group of them) and then choose one of the labels from the Labels menu.

**Finding and sorting by label**

After you’ve applied labels to your icons, you can use the labels to sort file lists and search for items:

- **To sort a list of files by label**: If you’re in any list view, just click the word Label at the top of the window; the files rearrange themselves by label (see Figure 2-12). The Mac prioritizes the labels according to the order in which they appear in the Label menu.

Figure 2-12: A list of files will be sorted by label if you click the word Label (underlined in this illustration) in the strip at the top of the window.
Chapter 2: Finder Command Secrets

To search for a file by label: Choose Find from the File menu. Click the More Choices button. Choose “label” from the first pop-up menu. (If you want to search for something that has anything but a certain label, choose “is not” from the second pop-up menu.) When you search by label, the field to the far right becomes a pop-up menu containing the seven label categories (see Figure 2-13). Select the label you want to use in the search. You can also search for files that have no label by selecting None from the third pop-up menu.

![Figure 2-13: You can search for files by label using the Find command.]

More on labels

A few more Label points:

- Even though you can’t see text labels when you’re viewing a window’s contents by icon, you can still apply them to the files and folders. On black-and-white monitors, you won’t notice any change in the icons, but you’ll see their new labels when you switch to a list view.

- If your monitor is black-and-white, and you’re in icon view, you may think that there’s no way to know what label you’ve given a certain icon (because you can see neither color nor its text label). Actually, it’s easy: select the icon and pull down the Label menu — a check mark appears next to the icon’s label.

- Ever wonder what the Label menu would show if you highlighted two icons that have different labels? Would there be two check marks in the Label menu? Would there be no check marks?

Turns out that if the selected icons have different labels, you get little hyphens in the Label menu (see Figure 2-14).

![Figure 2-14: A Label factoid: If multiple icons are selected that have different labels, the usual check mark in the Label menu turns to a bunch of hyphens.]

- Important
- Significant
- Worthless
- Ancient
- Special
To view files by label, you must have the Show Labels checkbox in the Views control panel selected (see Figure 2-15). If you don't, View by Label won't appear as an option in the Finder's View menu (and it won't appear as a column heading at the top of Finder windows), even if you've applied labels to the icons.

If your monitor is set to display 16 colors or grays (except on the gray-scale PowerBooks and Duos), files and folders appear as outline drawings rather than solid shapes, so label colors will be applied only to the outlines. This technique produces some interesting results; if you create an almost solid white label (see page 58), applying it to icons makes them disappear completely (see Figure 2-16).

MACINTOSH SECRET

Lock in your labels

After you set up your label categories, you may not want anybody changing them; just picture the consequences of someone redefining your "Hot Items" as "Insignificant Twaddle" and vice versa. There's an easy way to prevent this from happening: Throw away the Labels control panel. Once you've defined your labels, the control panel itself is completely dispensable (it's used only to change them). With the control panel gone, you can still apply labels; you just can't redefine them. (And on PowerBooks, where every drop of disk space counts, chucking unneeded control panels makes good sense.)
When you make an alias of a labeled item, the alias inherits the original's label. However, you can remove or change the label of one without affecting the other.

Are labels useless?

We'd like to conclude this section with a frank confession: We don't actually use labels very much, and we surmise that there are plenty of others like us. If the Label menu seems like a useless appendage hanging purposelessly over your desktop, we have a few suggestions:

- Use them as an aid to backing up your work. Obviously, you don't need to make backups of your programs and System software. (You've got it all on the original floppies.) Nor do you need to make safety copies of stuff you've already backed up. So here's the idea:

  Make a label called Backup. As you go through your work week, apply this label to each new document you create or each file you modify.

  When it's time to back up, use the Find command to find all files tagged with the Backup label. Use the Find command's "all at once" option (see the section about the Find command earlier in this chapter). Drag the highlighted icons, en masse, to your backup disk.

- Use the Label menu as a message center. Open the Labels control panel and edit what the little labels say. Make all the labels white so that they become invisible and then replace the label names with a pithy message. You can type an epigram of up to 217 characters (spread over seven lines, of course). The result looks like Figure 2-17.

  ![Figure 2-17:](image)

By changing the slots in the Labels control panel, you also change what your Label menu says. (If you need to create a blank line in your message, type a space into one of the control panel slots.)

- Best idea of all! Install Label Secrets, the handy control panel written exclusively for this book. Drop it into your System folder. Every day, when you turn on the Mac, the Label menu shows you a new Macintosh Secret. It's like a word-a-day calendar — but much more useful! (See Figure 2-18; and see Chapter 33 for instructions on how to use Label Secrets.)

  ![Figure 2-18:](image)

Label Secrets is a year's worth of handy tricks and tips for the Mac. And it's yours free!
Part I: System Software Revealed

The Special Menu

Here it is: the only non-verb Finder menu title. Special, in this case, really means miscellaneous.

Eject Disk

In general, don’t use this command. It ejects a floppy disk or removable cartridge but leaves its image on the screen. Therefore, the Mac believes the disk is still around. At the least provocation — your clicking the ghosted icon, for example, or launching a program, or trying to shut down the Mac — the computer asks you to give the disk back. This, need we add, is a royal pain if you’ve already put the disk back in its box on a shelf somewhere.

Instead, use the Put Away command to eject disks.

There are two exceptions to this advice. First, if you insert a locked floppy disk, and you need to copy stuff onto it (thus requiring it to be unlocked), then you should use Eject Disk. When the disk pops out, unlock it and stick it right back in. This routine is actually faster than using Put Away and reinserting the disk.

The second exception: You have to use the Eject Disk command when you’re copying files from one floppy to another, but only have one disk drive.

TRUE FACT
Finder Unlimited?
The Finder has a few built-in limits. But you’ve got to be a serious mega-user to reach these numbers:

- Maximum number of open files on your Macintosh at once: 346
- Maximum number of Apple Menu Items: 50
- Maximum number of applications running: No built-in limit (except how much memory your Macintosh has)
- Maximum number of volumes (disks) available at once on the Desktop: 32
- Maximum number of sounds, fonts, and keyboard layouts installed in the System File: 32,767 or 16 megabytes
- Maximum memory you can allocate to a program: 99,999K
- Maximum number of colors in an icon: 256, even on a Mac with 24-bit color
- Maximum disk cache: 1/4 of physical RAM
- Maximum number of files on a disk: 65,536
- Maximum number of nested folders: 64
- Maximum number of items in a folder by list view: Up to 32,000 depending on the computer and RAM.

(But, according to Apple: “Attempting to view large amounts of data in one window, something in the range of 500-1500 files, will create very slow opening times and drop-out viewing problems. The specific number depends on RAM and CPU.”)
Erase Disk

We have a couple of little-known morsels to share here.

Disk-erasing Secrets

Erase fast

You can highlight the icons of more than one disk simultaneously (such as a floppy and a SyQuest cartridge) and use the Erase Disk command to wipe out both of them simultaneously. There's not much time savings, actually, but at least you don't have to encounter all those confirmation dialog boxes more than once.

Erase even faster

Apple makes a wonderful, superbly designed program called Apple Disk Copy. You can get it from a dial-up modem service such as America Online or CompuServe, or you can get it from a Mac user group, such as BMUG (415-549-BMUG). As a matter of fact, this is about the only useful piece of utility software for which we couldn't get the rights to include with this book. Apple wanted us to pay so many thousands of dollars (a "licensing fee") that this book would have cost $85, and you probably wouldn't be reading it. (Weird, since they give it away free on those dial-up services...)

Anyway, Apple Disk Copy does one thing very, very well: it duplicates floppy disks. You insert the disk you want to copy; Disk Copy spits it out and then asks for the disk you want to copy onto. You can make as many additional copies as you want without ever having to reinsert the original disk.

It's much faster than making copies the usual way, and it's more accurate. Disk Copy doesn't even care whether it's a Mac or a DOS disk you're copying.

Best of all — and this is why this tip is here — Disk Copy doesn't waste any time initializing or erasing a disk before making a copy. Even if you insert a brand new disk, Disk Copy makes a perfect copy of the original disk (including window positions, icon positions, file names, disk name) without even having to initialize.

When you buy a new box of disks, we recommend that you initialize the first one (name it Blank or something). Instead of painstakingly initializing each of the other nine in the box in the usual way, just duplicate the empty disk using Disk Copy. This technique is faster and better.

Express route to the Erase Disk command

If you hold down the ⌨, Option, and Tab keys while inserting a disk into your Mac's floppy drive, the Erase Disk command will be activated automatically as soon as the disk mounts. You'll see the standard dialog box asking if you want to completely erase the disk you just inserted. Hit return and the erasing begins.

Clean Up

The Clean Up command, in the Special menu, has about a thousand variants. Here's the complete list.
Clean Up Secrets

Clean up only selected icons

When you view icons in a window, the command says Clean Up Window. It adjusts the position of every icon so that it's aligned to the nearest spot on an invisible grid. If you press Shift, however, the command says Clean Up Selection. It makes only the highlighted icons snap to the invisible grid (see Figure 2-19).

Figure 2-19:
The Clean Up command is a many-splendored thing. Press Shift to make it affect only the highlighted icons.

Sort and neaten simultaneously

This is a really useful Secret. If you press Option, the command says Clean Up by Name (or Size, or Date, and so on). The sorting method is determined by the sort method you used the last time the window was displayed in a list view. The command makes icons snap to a grid, just as the normal Clean Up command does, but instead of moving each icon to the nearest grid position (and leaving gaps), this command places them neatly, one after another, in sequential rows at the upper-left of the window. If you’re viewing by Small Icon, your files fall neatly into columns.

Here’s an example. Suppose that you want the icons in a window arranged in size order, largest files first. Choose View by Size from the View menu and then choose by Icon from the same menu. Hold down Option and choose from the Special menu — the deed is done.

Hint: Since this special version of Clean Up puts icons side-by-side in rows so that they precisely fill up the window they’re in, be sure to adjust the window before using this command so that it’s the size and shape you want.

Clean up icons on the desktop

Oft-neglected factoid: You can also clean up your desktop icons. First, select the desktop, either by clicking there or by pressing ⌘-Shift-Up arrow. Then, while pressing Option, choose Clean Up All from the Special menu. The Finder instantly arranges all those loose desktop icons along the right side of your screen.
Chapter 2: Finder Command Secrets

The Help Menu

The Help menu, of course, is the little question-mark icon at the top of the System 7 screen. It's how you turn Balloon Help on and off (see Figure 2-20). In some programs, like Quicken, it's how you access the built-in help features. And in System 7.5, it's how you bring up the Apple Guide screens (see Chapter 5).

We've heard conflicting reactions to Balloon Help. Some people absolutely hate it. They think it's the dumbest thing alive. Others think it's genuinely helpful. Your cheerful authors kind of like it, having been seriously helped out by using it in a couple of user-hostile programs.

In any case, Apple automatically makes balloons pop up whenever you point to a standard Macintosh interface element: a scroll bar, a zoom box, an icon, and so on. And it has included balloons for all the system software: the desk accessories, control panels, TeachText, the Finder, and so on.

But you'll discover that Balloon Help doesn't work in certain programs, because a software company has to sit there and write all those balloons. Each program's menus, window contents, tool palettes, and dialog boxes require custom-written balloon text — and many software companies just don't think it's worth it. (The same goes for Apple Guide screens. They're even more effort to write.)

Anyway, you can certainly live a rich and rewarding life even if you leave Balloon Help off all the time. You can even get rid of the little question-mark menu altogether, if you use a shareware program called Helium.
How many balloons?

One of your cheerful authors was contracted to write Balloon Help for a program last year. He'd like to share with you one of the reasons some programmers opt not to write Balloon Help for their programs. Take a look at Figure 2-22.

This, ladies and gents, is BalloonWriter. You buy this program from Apple's development-support group. It's a very, very buggy program. One of Apple's own representatives suggested that we probably ought to steer clear of it.

The design of Balloon Writer, though, is ingenious. You just point the cursor at any object in the application you're writing about, and a little empty balloon pops up. You just type in what needs to be said.

Actually — and this is our point here — you can't just write one balloon for each menu command or dialog box item. As shown in Figure 2-21, you actually have to write up to four balloons for each item! The text is supposed to change, depending on whether a menu command (for example) is checked, dimmed, or both. As you can imagine, this means that some poor slob has to compose up to four balloons for every knob, slider, and button in a program. It's work.

Figure 2-21: The indomitable BalloonWriter.

The Keyboard/International Menu

We doubt you've been wondering about this menu, since you probably have never even seen it. In fact, you have to go to a considerable amount of trouble to make it show up. When it does appear, it's at the right side of your menu bar between the Balloon Help and Application menu icons (see Figure 2-23).
The idea is that this menu lists several different keyboard script systems. A script system is a set of files that describes how a particular language should work on the Mac: does the typing appear right-to-left? What do the letters look like? What’s the order of the keys on the keyboard? And so on.

If you have more than one script system installed, you’ll see them listed in the International menu that appears without any action on your part. By choosing a command from this menu, you switch your entire keyboard to a different layout. The feature (in System 7.1 and later) that permits the wholesale conversion of the Mac into a foreign language system is called WorldScript.

Before you can make any of this happen, you have to buy script systems. Last we heard, there was only one available from Apple — the Japanese script, for $249. Other scripts are sold only overseas. And then you have to buy programs that are WorldScript-ready. The only big-name program we’ve heard of that comes in a WorldScript-ready version is Nisus.

Hidden Finder Commands

Actually, the Finder has even more than the 40 or so menu commands we’ve already covered. A good number of other useful ones don’t appear in any menu; they’re activated purely by keystrokes.

Hidden Finder command Secrets

Take a picture of the screen

“If you have an ImageWriter printer, press ⌘-Shift-4. The Mac will print a copy of whichever window is active on your screen. If the Caps Lock key is also down, you’ll print out the entire screen (not just the window).” How many times have you read that old saw? Guess what: it’s not true. Hasn’t worked since the Mac Ilex. It never worked in color, and doesn’t work in System 7.
If you have any other kind of printer, however, you can capture and print the screen. First, press ⌘-Shift-3. (In System 7, you hear a satisfying camera-click sound.) The Mac creates a graphic file, a PICT file on your hard disk, called Picture 1. (In System 6, it's called Screen0.) If you take additional screen shots, they'll be named Picture 2, Picture 3, and so on. By the way, this will work even if you have a large monitor, though the resulting PICT files may be huge.

To edit or print this graphic, you need a painting program, like Color It (included with this book). Or, if you have System 7, double-click the Picture 1 icon to open the image with TeachText or SimpleText. If you have a large monitor, your PICT screen shot may be too big for TeachText to open. However, SimpleText (which is included with System 7.5) doesn't have any trouble opening even large PICT files. See Chapter 17 for more on both TeachText and SimpleText. If you're missing TeachText, it's on your white system disks.

Once in TeachText, you can print the graphic or even drag-select a region of it to copy, cropping out stuff you don't want. Paste what you've copied into a word processor and print that.

Of course there's a method that's much simpler than all of this. You, as a SECRETS owner, possess a wonderful screen-capture program called Flash-It (on the disks with this book). In Chapter 33, you'll find out how easy it is to capture or print any portion of any screen at any time.

**How to eject a disk by using only the keyboard**

- ⌘-Shift-1 ejects a disk from the Mac's built-in disk drive.
- ⌘-Shift-2 ejects a disk from the external disk drive (or the second drive if you have a Mac with two built-in floppies).
- ⌘-Shift-0 ejects a disk from a third disk drive if there is one. (Some Macs have two built-in drives, plus an external.)

Keep in mind that all of these commands eject the disk without removing its image from the screen, so you run the risk of getting the “Please insert the disk:” message over and over again. (You can try pressing ⌘-period several times. As we'll discuss in Chapter 7, this sometimes makes the message go away.)

To prevent this, use ⌘-Y to completely eject a selected disk in System 7. In System 6, you press ⌘-Option-E to achieve the same effect (eject a disk and get rid of its icon). Keep pressing the Option key until the disk is ejected.
Chapter 3
Control Panels, Extensions, and DAs

In this chapter:

- Secrets of the nine standard desk accessories
- Secrets of the five standard extensions
- Secrets of the 20 standard control panels
- The 106 extensions and control panels of System 7.5
- Which System Folder junk you can throw away
- Special PowerBook control panels

You thought that the standard 4MB System 7 System Folder was bad? Now you can enjoy System 7.5, for which a full installation scarfs down more than 20MB of your hard drive.

Obviously, that huge swath of your primary drive is creaking with files and features that most people never use. In this chapter, for the first time anywhere, you'll find out what every single piece of System Folder junk is for. More important, you'll find out which stuff is safe to trash, saving yourself memory and disk space. You'll also learn a few surprising features of the desk accessories and control panels that you've always taken for granted.
Desk Accessories

Figure 3-1 shows the suite of six desk accessories that have come with every Mac since the earliest days. They're showing their age, yes — and they're already beginning to disappear. System 7.5's Apple menu, for example, is conspicuously free of the Alarm Clock and the Puzzle.

Figure 3-1: A few of Apple's aging desk accessories.

Alarm Clock

You can use one of two ways to set your Mac's clock (which you have to do twice a year, unless you live in Arizona or Indiana, where they refuse to observe Daylight Savings Time). One way is to use the General Controls panel, described later. The quicker way is to use the Alarm Clock.

To change the time or date (or to set an alarm — the Alarm Clock's ostensible purpose in life), click the tiny flag to the right of the time. The editing controls open (see Figure 3-2). Here's the nonintuitive part: Click the picture of the clock to change the time. Click the 21 in the middle (which, by the way, is not a 21; it's supposed to represent a desk calendar with page 1 being ripped out) to change the date. To set (or turn off) an alarm, click the alarm-clock icon at bottom right. You can enter numbers from the keyboard or click the up and down arrows that appear whenever numeric text is selected.

Figure 3-2: The Alarm Clock control panel, where you can set the time, date, or one alarm.

The alarm feature isn't wildly impressive. You can set only one alarm. When the alarm time arrives, the system's default alert sound plays once. (You specify which sound this is by opening the Sound control panel and clicking a sound's name.)

When the alarm goes off, a tiny alarm-clock icon appears superimposed over the Apple menu icon and flashes intermittently.

If you'd rather have a decent reminder system running on your Mac, install Remember, an outstanding calendar/reminder program on the disks that come with this book.
Chapter 3: Control Panels, Extensions, and DAs

Alarm Clock Secrets

Time and date stamping
You can use the Alarm Clock as a time/date stamp. Just choose the Copy command while the clock is open. It won't look like anything happened, but if you paste what you copied into another application, the exact time and date will be stamped into your document.

Turning off the Alarm
OK, so maybe this isn't much of a Secret to you. But we've met more than one Mac-savvy user whose Apple menu is still blinking after two or three years, who has no clue that this isn't the usual state of affairs, and who never suspects that this might be the Alarm Clock waiting to be turned off.

To turn the alarm off, open the Alarm Clock, click the little flag next to the time, click the alarm-clock icon, and click the little “T” nub next to the alarm time (see Figure 3-2 again).

AppleCD Audio Player

One of the nice aspects of owning a CD-ROM player has always been that it can double as a music CD player. You can crunch numbers to the strains of Carly Simon, for example.

Over the years, Apple has continually refined the desk accessory used to control the audio CD. The basics of Version 2.0, shown in Figure 3-3, appear in Chapter 28 — the obvious place, because that's the CD-ROM chapter. But here are a couple of hidden functions.

Figure 3-3: The front panel of your freebie audio CD player is riddled with hidden features.
AppleCD Audio Player Secrets

Use your keyboard, pal

This desk accessory is filled with keyboard shortcuts. You can start and stop the music by pressing the spacebar or the Enter key. Press the up- and down-arrow keys to control the volume slider; press the right- and left-arrow keys to "click" the Previous and Next Track buttons. You can "click" the Eject Disc button by pressing ⌘-E.

Name those tunes

You're not condemned to listen to your CD's songs in the same old unimaginative sequence every time. Audio Player actually allows you to rearrange the tracks, repeat songs, or leave the irritating songs out of your listening order.

To do so, click the tiny triangle to expand the panel, as shown in Figure 3-3. If the songs aren't already named, click the NORMAL button, click the first track name, and begin typing the song titles (press Return after each title to move down to the next blank). While you're at it, click the words Audio CD and type the name of the disc, too. After you do all this, the Player automatically remembers the album and song titles the next time you insert the disc. (How does it do that?)

Finally, click the PROG button. Now you can drag any title on the left side to any slot on the right side (again, see Figure 3-3). You also can drag titles up or down on the right side. Feel free to drag the same song twice or to leave songs out of the play list on the right side.

Tweak to your satisfaction

When the Audio Player is open, please don't disregard the Options menu that appears. This menu allows you to change the color scheme of the Player panel. (We've come up with some very cool combinations.)

Please note, too, the resize box in the lower-right corner. There's no reason not to drag this box and make room to display your CD's entire track list.

Battery

For 100-series PowerBooks (and pre-280 Duos) only: a fuel gauge for keeping track of how much juice your battery has left (see Figure 3-4).
Chapter 3: Control Panels, Extensions, and DAs

The Battery DA serves one other useful function: if you click the tiny lever at the right edge, a new panel expands. This lower panel contains a big button that you can click to make the PowerBook go to sleep on cue. For older non-Duo PowerBooks, this button is the only way to make the laptop go to sleep without switching back to the Finder and choosing Sleep from the Special menu. (In the PowerBook chapter to come, you'll find a couple of even more efficient ways to put your laptop to sleep.)

Beginning with the PowerBook 500 series and Duo 280, Apple replaced the Battery DA — an aesthetic clunker — with the much more graceful Control Strip, described later in this chapter.

Calculator

With the four-function Calculator, you can add, subtract, multiply, and divide numbers of up to 13 digits. You can enter numbers by typing them on the keyboard or by clicking the calculator buttons.

The Cut, Copy, and Paste commands all work with the Calculator; you can paste numbers from a word processing or spreadsheet document right into the Calculator (see Figure 3-5). After you calculate the answer, you can copy and paste it back into the document. You also can paste an entire equation, such as 123-44*16/2=, into the Calculator. (In computerese, * means times, and / means divided by.) The on-screen keys flash madly, as though they're being punched by a ghost, and the Calculator instantly computes the answer.

![Calculator](image)

**Figure 3-5:**
You can paste numbers and whole equations into the Calculator. The arrow indicates the hidden pixel handle.

Calculator Secrets

**How to correct errors in long calculations**

The Calculator's worst feature is that, unlike most real calculators, it has no CE button to clear only the last entry. If you inadvertently enter a wrong number, you have no choice but to click the Clear button, which erases the entire equation, and then begin the entire calculation anew. For this reason, whenever you have a lengthy string of numbers to crunch, we recommend **always** typing your equation in the Note Pad desk accessory first and then pasting the equation into the Calculator.

**Secret scientific-notation keystroke**

Press the E key when using the Calculator, and your calculations appear in scientific notation! Now the Calculator can work with bigger numbers.
The Calculator’s secret one-pixel handle

The Calculator has a hidden handle that nobody knows about. Because this handle is at the bottom of the Calculator, it’s a safety handle for dragging the Calculator back into the window if it is accidentally moved off the top of the monitor.

This hidden pixel is in the lower-left corner, where the curve joins the vertical (see Figure 3-5). This pixel is the only spot on the Calculator that’s draggable (other than the title bar).

(If you enjoy being on the cutting edge, by the way, don’t miss our awesome keyless-calculator trick, featured in Chapter 21.)

Chooser

The Chooser is the most significant desk accessory. Don’t think of it as being a convenience or a diversion; it’s a necessity if you plan to print anything, fax anything, or connect your Mac to a network of any kind.

The Chooser is the Mac’s Ellis Island; it acknowledges, administers, and translates for the arrival of any Mac attachment whose cable goes into the Mac’s modem or printer ports. (Printers and fax/modems are the primary examples.) For the Mac to communicate with any such external device, the Chooser must be able to locate a piece of software in your Extensions folder called a driver (a translator between the Mac and this outside device). You use the Chooser to tell the Mac which driver to use for a given task.

If your network has more than one printer and your usual one is tied up, you can use the Chooser to select an alternate. You also can use the Chooser to turn AppleTalk on and off (part of any PowerBook owner’s daily routine, because AppleTalk gulps down battery power, but see the “Control Strip” section later in this chapter).

What’s especially nice about the Chooser is that you don’t have to close it or restart the computer to make its changes take effect. When you first attach a new printer, open the Chooser and click the appropriate driver. The instant you plug the cable into your new printer, the printer’s name appears in the list on the right side of the Chooser (see Figure 3-6). For more information on this fascinating window of opportunity, see Chapter 25.

Figure 3-6:
The Chooser is the control center for any equipment plugged into the serial ports (modem and printer jacks).
Control Panels

Why isn’t this System 7 desk accessory called Control Panel, as it was in System 6 days? Because it isn’t a desk accessory at all! The Control Panels listed in System 7's Apple menu actually is an alias of the Control Panels folder that lives in the System Folder.

To make switching from System 6 to System 7 easier for people, Apple made the new Control Panels scheme work as much like the old Control Panel desk accessory as possible. You still choose Control Panels from the Apple menu, but instead of opening a DA, you open the folder full of Control Panel icons. See “The Control Panels: Blow by Blow” later in this chapter for details.

Find File

The Find File that you’ll find in the Apple menu (System 7.5 and later) is virtually identical to the Find command in the Finder’s File menu. Why, then, did Apple duplicate its efforts? For a darned good reason: If you’re working in a program — Excel, say — and you need to find a lost document, it’s too much trouble to switch back to the Finder just to invoke the Find command. With the words Find File always available in the Apple menu, you can do quick searches no matter what program you’re using.

The new Find File is a bizarre blend of past and future. When it finds what you’re looking for, the command no longer highlights the actual icon on your Desktop, as the previous System 7 Find command did. Instead, a separate Results window opens, listing the search results — a strange throwback to the days of the System 6 Find File desk accessory. As in that DA of old, you must click a file’s name in the top half of that window to see where it’s filed (which appears in the bottom half; see Figure 3-7).

Figure 3-7:
At top, the expanded Find File dialog box after the More Choices button has been clicked, exposing the second set of search criteria. At bottom: the Results window, showing all the files that match your search request. Notice that you can drag the central beam up or down (A) to change the relative sizes of the two panes. You also can double-click any listed folder icon (B) to open its real Finder counterpart.
Part I: System Software Revealed

There's a big difference between this Find File and the System 6 Find File, however: in the new Results window, you can double-click any listed file to launch it directly. (Considering the number of times, under the System 7 Find File system, that you found the wrong file on the first try, this list-and-open system saves a lot of time and makes a lot of sense.)

By choosing Open Enclosing Folder from the File menu, you also can make this Find File open the selected icon's window, wherever it may be, and highlight the icon — in other words, the new Find File will work exactly like the previous System 7 Find File command. Having had the advantage of surveying the complete list of matching files first, however, you're less likely to waste your time opening the wrong file.

Another prominent difference between the new and the old Find File, of course, is that the new one opens directly to the criterion pop-up menus. In the System 7 Find File dialog box, you had to click the More Choices button to display those options. Maybe Apple thought that America's beginners could handle the extra flexibility.

Find File (7.5) Secrets

Bring back the old Find File again

If you really hate the new Find File, you're not condemned to use it. You can, if you want, use the old, less complicated Find File from the System 7 versions of old. To do so, just press Shift as you choose Find File from the File menu (or while you type ⌘-F).

More, more, and more choices

Find File introduces a unique twist to Apple's standard interface behavior: the More Choices button. Generally, clicking this button expands a dialog box to show a few more choices. With the new Find File, however, you can continue to click this button over and over again, expanding the dialog box more and more, until you see as many as eight search criteria (see Figure 3-8).

Figure 3-8:
If you can't describe the file you're looking for with eight descriptive phrases, you probably don't know what you're looking for.

Interestingly, you can drag an icon from your desktop into one of these blanks — even onto a pop-up menu — to specify search criteria. (Another tip: press Option as you pull down the left-hand pop-up menu for a set of secret options!)
With this knowledge, it doesn't take a rocket scientist to figure out how you'd search for all Excel files you created between August and September of last year, even if you can't remember the name of the file you're looking for.

Which brings us to another important Find File attribute: for the first time, those criterion pop-up menus allow you to type four-letter Type and Creator codes, as described in Chapter 16. For the techno-savvy, that's a handy way to search for specific files (say, a Word file).

**Hold it right there**

The really annoying thing about the old Find File was that if you canceled a search part way through, you lost any good work that Find File had done. The new Find File, however, displays a continuous readout of how many matching files the program has found. You can press ⬃-period (or click the Stop button) at any time. You'll be asked whether you want to see what Find File has found so far --- a time-saving way to find out how well you set up your search.

If you see that Find File is turning up 18,000 matching files, for example, there's a good chance that you accidentally searched for file names containing the letter A instead of Aardvark, which you meant to type. You can safely cancel the search, confirm the problem at a glance, and try again.

**Awesome drags and drops**

To make an alias of any icon in the Items Found window, ⬃-drag it out of the window. Or drag something to a different disk (to copy it) or folder (to move it). Both of those tricks require the Finder Scripting Extension — choose either Easy Install or AppleScript when installing System 7.5.

**Key Caps**

The Key Caps window looks like a minikeyboard. By holding down various modifier keys (such as ⬃, Option, Shift, or Control) while Key Caps is open, you see which keys produce which characters. This feature is useful for figuring out which keys to press to produce special symbols or non-English characters, such as © or ™ in certain fonts. You can type a sample sentence to see what you're getting, too (see Figure 3-9).

![Figure 3-9: The Key Caps window reveals which keys produce which characters in every font available. In this example, the Option key is being held down, and the resulting display shows where the fancy symbols live.](image-url)
Incidentally, you’re not limited to viewing characters in the Chicago font. You may not have noticed it, but whenever Key Caps is open, you see a new menu on-screen: the Key Caps menu, which lists all the fonts in your System. Choose options from this menu to change fonts. (You are limited to viewing characters in 12-point size, however.)

Key Caps Secrets

Copy & paste: the keyless keyboard

The fact that you can type a sample sentence in the Key Caps window can be a life saver when something goes wrong with your keyboard. If the E key breaks when you’re within a few pages of finishing your doctoral dissertation, for example, you can type an E in a crippled sort of way. Open Key Caps, click the E key on-screen, and then copy the E you typed from the Key Caps text display to your word processing document wherever you need an E.

In fact, Key Caps works in a crisis when you have no keyboard attached to a Mac (take it from consultants like us: it happens). You can actually rename a file or a folder using nothing but the mouse, Key Caps, and the Copy and Paste commands.

Dead keys, diacritical markings

When you press Option while the Key Caps window is open, you see little dark outlines around certain keys, as shown in Figure 3-9. These rectangles identify the dead keys — keys that, when pressed once, type nothing on-screen. However, when you type another key — a normal letter, for example — it appears with the dead key’s displayed marking over it. So to produce the n in niño, you press Option-N and then type an N.

A better Key Caps

Günther Blaschek has written a remarkable replacement for Key Caps that lets you find special characters and insert them into your document without having to type or copy a thing. This replacement is the remarkable PopChar, and Blaschek has given permission for us to include it with this book (on the SECRETS disks). See Chapter 33.

Avoid painfully slow typing

Key Caps does its duty (displaying any symbol you type) even if it’s not the front window. If you ever discover that typing in your word processor has become as slow as rubber cement, check to make sure that Key Caps isn’t open somewhere, intercepting every key press and bogging down the works.

Note Pad

You type short notes and memos into the Note Pad (see Figure 3-10). There actually are two different Note Pads: the old and the new.
The old version, which came with every Mac until System 7.5, is pretty limited. This Note Pad has only eight tiny pages, each capable of storing only 257 characters, and you can’t store graphics or retain text formatting. The new Note Pad still has only eight pages — but they can hold much more information, they have scroll bars, they can be resized, you can search them with a Find command (check the menu!), and you can choose whatever font and size you want (check the Preferences command). We also like the little page-turning sound.

Figure 3-10: The new Note Pad: an eight-page repository for brief notes and memos.

Note Pad Secrets

Multiple Note Pads

Like the Scrapbook, the Note Pad saves its contents in a separate file called the Note Pad File in the System Folder. If you drag the Note Pad File out of the System Folder (or give it a new name), the Note Pad starts a clean, new Note Pad File the next time you open it.

Using this method, you can keep multiple Note Pad files. Just remember that only the file in the System Folder named Note Pad File is accessible from the Note Pad. To switch from one to another, give the ingoing and outgoing files the proper names and put them in the proper places.

Retrieving the entire Note Pad File

Suppose that you need to retrieve and copy all eight pages of notes that you stored in the Note Pad. Most people would do this by painstakingly copying and pasting the eight tiny pages, one at a time, into another document.

But there’s a much easier way: open the Note Pad File (not the Note Pad itself) with a word processor like Microsoft Word. In Word’s Open dialog box, choose All Files from the List Files of Type pop-up menu. Then choose the Note Pad File in the System Folder. All eight pages of text stored in the file will be opened in one document.

By the way, you can’t perform this maneuver in reverse; you can’t create a large note in Word and save it back into a Note Pad File. (Word can’t save the file in the special format read by Note Pad.) Furthermore, those killjoys at Apple have ensured that this trick doesn’t work in the new (System 7.5) Note Pad.
Puzzle or Jigsaw Puzzle

The original Puzzle probably is the least-touched of the standard desk accessories. It’s an electronic version of the maddening old children’s game in which you manipulate 15 squares to unscramble a picture or sequence of numbers. In the electronic edition, you click a tile to shift it to the adjoining empty spot.

The scrambled picture in this case is the Apple logo. But if you prefer to unscramble numbers, choose Clear from the Edit menu. The puzzle tiles change to the numbers 1 through 15 (see Figure 3-11).

If you successfully complete the puzzle, you get a tiny reward for your efforts. As you slide the final tile into place, a hilariously deadpan male voice intones, “Ta-da.” If you complete the Apple logo puzzle, the lines between the tiles suddenly disappear, and the picture becomes a solid image. If you complete the numbers puzzle, a tiny Apple logo fills the vacant spot in the puzzle.

After 10 years of service, however, the cherished original Puzzle was retired. In its place, Apple has included, beginning with System 7.5, the glitzier but far less challenging Jigsaw Puzzle (see Figure 3-12). In this desk accessory, you must begin by choosing Start New Puzzle from the Options menu. You’re offered a choice of puzzle-piece sizes.

After making your choice, simply drag the jigsaw pieces with the mouse; as you place hunks in the proper positions, they latch onto the adjacent pieces. (They latch even when they’re not in the right place, but only adjacent to the right pieces.) You can move these increasingly larger hunks around by dragging until you complete the entire alphabet picture. The sound you hear as a reward is a little xylophone riff.
Puzzle Secrets

Puzzle pasting
You can replace the Puzzle's Apple logo with the picture of your choice to make a custom puzzle. Copy the graphic you want to turn into a puzzle, open the Puzzle or the Jigsaw Puzzle, and choose Paste from the Edit menu. Your graphic automatically is sliced into pieces and scrambled (see Figure 3-13).

To avoid ending up with an overly distorted image, use graphics that are the same size as the Puzzle.

The Puzzle nobody knows
Incredibly, you can edit the numbers in the original Puzzle, change the font or size, or change the numbers altogether.

Here's the Secret:
Open the Puzzle. If the Apple logo puzzle is displayed, choose Clear from the Edit menu to switch to the number tiles. Then choose Copy from the File menu.

Now open an object-oriented graphics program (MacDraw, Canvas, Microsoft Word's graphics window, and so on), and paste what you copied. Regardless of how scrambled the numbers were when you copied them, they appear in the correct order when you paste them.

In your graphics program, each number and each gridline appears with its own handles as an individually selectable, movable graphic object. (Click a blank white area to deselect all the handles, and you'll see what we mean.)

You can change the type or change the numbers, but put everything back in the original grid when you finish playing with it. Finally, copy the whole numbers graphic again and paste it back into the Puzzle.

A really devious original-Puzzle trick
Here's a great way to humble hotshots who think they've mastered the Puzzle: doctor the number tiles so that the Puzzle becomes virtually impossible to complete.

The trick is to change the order of the numbers by editing the picture. Use the previous Secret to paste the Puzzle numbers into a graphics program; then drag the numbers around. Try switching the 4 and 7, for example (see Figure 3-14).
When you finish, the number-tile puzzle looks the same, but the numbers will be scrambled. By editing the graphic, you fooled your Mac into thinking that the wrong order is the right order. When the tiles are arranged in what appears to be the right order, the Mac will think it's wrong. Your victims won't hear the triumphant "Ta-da!" announcement. They can't win!

We don't condone this kind of prank, but if you're feeling particularly vicious, you also can use the method described above to remove a number from the puzzle. Take out the 7, for example, and replace it with another 6. That'll really confound your friends.

**A charming and inoffensive Puzzle trick**

If the previous Secret seems too unspeakably low, here's a more benign trick.

Use the puzzle graphic-editing method outlined in "The Puzzle nobody knows" Secret to remove the numbers and replace them with your own message. You'll have to build the message one letter at a time and drag one letter into each tile. When you paste the finished product back into the puzzle, the letters will be scrambled, and you can have your friends try to decode the message (see Figure 3-15).

**A large-print Puzzle**

One more variation on the preceding method: After pasting the number tiles into a graphics program, select all the numbers. Then change the font, size, style, and so on. Using this method, you can create a large-print puzzle in the font of your choice (see Figure 3-16).
A fast Puzzle cheat

Suppose that somebody gives you a customized Puzzle to solve. Here's the quickest way to see what the heck you're working on. With the Puzzle open, choose Copy from the Edit menu, and click the Desktop (so that you're back in the Finder). Then choose Show Clipboard from the Edit menu. You'll see what the puzzle will look like when you finally solve it.

A FREE!! graphics viewer

Pasting isn't the only way to get new graphics into the Jigsaw Puzzle; you also can choose Open from the File menu to import any PICT graphics file on your disk. Therefore, you can use the Jigsaw Puzzle as an especially handy, Apple-menu-based graphics viewer (when you need a quick glance at a screen shot you took, for example).

Keep in mind, too, that the Jigsaw Puzzle works with Drag and Drop (see Chapter 5). In other words, you can drag any graphic (from the Scrapbook, the Desktop, or any other Drag-and-Drop-savvy program) directly into the Puzzle "frame" to en-puzzle it without even copying and pasting.

Recent applications, recent documents...

The presence of these three items in your Apple menu — Recent Applications, Recent Documents, and Recent Servers — is a telltale sign that you're using the Apple Menu Options control panel. These items, introduced with System 7.5, mark the debut of submenus to official Apple System software. (See "Apple Menu Options control panel" later in this chapter for details.)

Scrapbook

The Scrapbook is a more-or-less-permanent holding tank for graphics, passages of text, sounds, or QuickTime movie clips that you'd like to keep on hand for future use. Items stored in the Scrapbook are retained in a special Scrapbook File in the System Folder.

You probably already know how to copy and paste items to and from the Scrapbook, but here are a few lesser-known Scrapbook tidbits.

Scrapbook Secrets

Store sounds from the Sound control panel

You can store recorded sounds in the Scrapbook. If you recorded a new sound using the Sound control panel, here's how you can easily move it to the Scrapbook. In the Sound control panel, select the name of the sound and choose either Copy or Cut from the Edit menu. Open the Scrapbook and choose Paste. A speaker icon and a Play Sound button appear in the Scrapbook window (see Figure 3-17).
Part I: System Software Revealed

**Figure 3-17:**
When you paste a recorded sound into the Scrapbook, a Play Sound button appears. (The newer, System 7.5-flavor Scrapbook is shown here. The older Scrapbook lacks the information bar at bottom.)

Store movies in the Scrapbook
You also can paste QuickTime movie clips into the Scrapbook. (See Chapter 23 for details on QuickTime movies.)

When there’s a QuickTime clip in your Scrapbook, you should see the little playback control bar shown in Figure 3-18. **Should**, but **will** only if you have the special version of the Scrapbook that comes with QuickTime (the QuickTime Starter Kit, a System 7.1 Upgrade Kit, or System 7 Pro or 7.5).

**Figure 3-18:**
The older-style, but movie-ready, Scrapbook.

If you have the pre-QuickTime Scrapbook, here’s a Secret: You can paste QuickTime clips into it, but you can’t play the clips (no playback controls appear). You can copy the “picture” from the Scrapbook and paste it wherever fine QuickTime clips are pasted, and you’ll still get the entire motion picture that you originally pasted into the Scrapbook.
The text formatting really is still there

Text pasted into the Scrapbook from a word processor always appears in a plain 12-point Geneva font, but don’t let that fool you; the Scrapbook stores the text’s formatting, too, but hides it. When you paste the text back into another document, all the formatting — including font, size, and style — is restored. (Providing, that is, that you’re pasting the text into the same word processor or a compatible one.)

The new, improved Scrapbook Pro

The Scrapbook introduced with System 7.5 has a number of useful features. It’s the first resizable Scrapbook; you can make the window as large as you like. It also has an information strip (refer to Figure 3-17) that contains data about each Scrapbook-page item: file size, duration, dimensions, file type, and so on. This new Scrapbook is Drag-and-Drop savvy: you can drag any Scrapbook page (if the file type is appropriate) to the Desktop (where it becomes a Clipping file), to the Note Pad or the Jigsaw Puzzle, to a Simple Text document, and so on. Pure genius.

However, there is such a thing as a better Scrapbook. It’s MultiClip, included with this book. MultiClip allows you to see all your pages at the same time, in thumbnail view; can handle more than one Scrapbook file; and can auto-paste into your open applications. See Chapter 33 for details.

• ShutDown

This little Performa/System 7.5 program simply shuts down the Mac. Since it’s in the Apple menu, you don’t have to return to the Finder to quit for the day.

Multiple Scrapbooks

You can keep multiple Scrapbook files. Just drag the Scrapbook File (not the Scrapbook) out of the System Folder or rename it. Either way, the Scrapbook automatically creates a new, empty Scrapbook File the next time you use it.

To reopen the original Scrapbook file, drag it back into the System Folder and restore its name: Scrapbook File. The Scrapbook can open a file only if it’s named Scrapbook File.

Stickies

Technically speaking, Stickies isn’t a desk accessory at all; it’s a full-fledged application. But because it’s stored in the Apple Menu Items folder (beginning with System 7.5), it shows up in the Apple menu.

Anyway, this ingenious little program does just what you’d think: allows you to jot notes to yourself and stick them on your monitor, as Mac fans have done with real Post-it Notes™ for years (see Figure 3-19).
Each little note has a miniature title bar (so you can move the note around), a zoom box in the upper-right corner (so you can shrink the note), and a resize box in the lower-right corner (so you can resize the note). To make a new note, just choose New Note from the File menu.

There aren’t many Secrets for Stickies that you can’t uncover yourself by exploring, but we want to call to your attention the supreme usefulness of the Preferences command. Among its options is “Launch at system startup”; that simply means that your Stickies will be on-screen waiting for you when you turn on the computer each morning — a terrifically useful and convenient reminder system.

The Control Panels: Blow by Blow

In System 6, the Control Panel is a single window with several buttons, each controlling one Mac function. The concept has grown to the point that in System 7.5, more than 40 control panels may be nestled in the Control Panels folder, each panel being a tiny double-clickable program unto itself.

The overall look of the Finder and Desktop, the feel of the mouse, the sound your Mac makes when it wants your attention — all these elements are managed by the control panels included with your System software.

Usually, you access these little self-contained programs by choosing Control Panels (actually an alias of the Control Panels folder) from the Apple menu. The Control Panels window opens so that you can double-click the specific control panel you need (see Figure 3-20).

Here’s a guide to all the little goodies that you’ll find crammed into the Control Panels folder — and those that you can ditch to save space.
Apple CD Speed Switch

This little panel, which used to come with Apple's dual-speed CD-ROM drives, allows you to turn the double-speed feature on or (for old, incompatible CDs) off. If you have the AppleCD Audio Player desk accessory in your Apple menu (described earlier in this chapter), you don't need the Speed Switch.

Apple Menu Options

As you'll find out in Chapter 5, what makes System 7.5 is its large assortment of extra extensions and control panels, many of which began life as shareware programs. Apple Menu Options is no exception: it is, in fact, a polished-up version of MenuChoice, the shareware program included with this book.

MACINTOSH SECRET

A panel-free Mac

It seems unbelievable, but you don't need any control panels to run your Mac. You can change your preferences with the Control Panels. The preferences themselves, however, are not stored in the control panels but in your Mac's PRAM (a tiny piece of memory permanently sustained by your Mac's built-in lithium battery). After you pick a Desktop pattern and decide how fast you like to double-click your mouse, or choose a color for highlighted text, or pick an alert sound, you can drag all your control panels to the Trash, clearing at least several hundred K out of your System folder. (If you have a 2-gig hard drive, you might not care about a few hundred kilobytes, but if you have a PowerBook with a 40MB hard drive, those Ks add up.)

If you do decide to trash your control panels, store them on a floppy disk. If you need to change any of your preferences later, just insert the floppy disk and open the appropriate control panel (no need to install it or to restart the machine).
Apple Menu Options adds two extremely useful functions to the Apple menu. First, it adds a submenu to any folder listed in the Apple menu (such as Control Panels), listing that folder's contents (see Figure 3-21). Choose a submenu item to open it.

**Figure 3-21:**
You now are the master of your own Apple menu's submenus.

Second, the Recent Items control adds three new folders to the Apple menu: Recent Applications, Recent Documents, and Recent Servers (i.e., networked disks). The control panel keeps track of the last few items you worked on and lists them in these submenus. It does so by creating an alias of each item you open and putting that alias in the Recent Documents folder (or other appropriate Recent folder). We mention this fact so that when you fear that the boss might be walking by your desk soon, you can open your System Folder, open the Apple Menu Options folder, open your Recent Applications folder, and throw away the Super Mario Tetris Plus! Pro alias. Nobody will suspect what you've really been doing...recently.

**At Ease Setup**

This control panel, which comes with Performas (but can be purchased for all Macs), allows you to control which jumbo icons appear on the At Ease screen. See Chapter 14 for details.

**ATM GX**

ATM GX is a specially modified version of Adobe Type Manager (see Chapter 24) — specially modified, that is, to work with QuickDraw GX (see Chapter 25). ATM GX comes with System 7.5 and gives you smooth type on-screen for PostScript fonts.

**Auto Power On/Off**

The name says it all: this control panel allows you to specify times at which you want your Mac to turn itself on or off.

Actually, there's one thing that the name *doesn't* say: Auto Power On/Off works with only a few Mac models, such as the 840AV or the Power Mac 7100 or 8100. If you double-click its icon and get an error message, trash this control panel.
AutoRemounter

AutoRemounter isn’t used by many people, we’re guessing. In fact, it’s only for people with PowerBooks and another Mac, too (such as a network at the office). AutoRemounter comes only with System 7.1, and it doesn’t work with PowerBook models 100 through 170.

Suppose that you have two Macs, one of which is a PowerBook. When you’re at your desk, you like to bring the hard drive of some other Mac (or two) to your PowerBook Desktop over a network so you can transfer files easily. AutoRemounter is responsible for bringing the other Mac’s icon back to your PowerBook’s screen each time the PowerBook wakes up from having been asleep or off.

If security is a concern, click the button called Always Entering Passwords. Each time a network disk begins to come on-line, you’re asked for its password.

In general, however, we don’t really trust AutoRemounter. In fact, we managed to reduce our daily allotment of system crashes by removing it.

Brightness

One of the great Macintosh mysteries: why does the Installer put this control panel on every Mac model when almost no Mac models use it?

It doesn’t, really. The Installer installs Brightness only if you click Customize and select, from the list of items to be installed, Software for Any Macintosh. Anyway, all Mac models except the black-and-white Classics have brightness and contrast dials right on the monitor. Unless you have a Classic, this control panel doesn’t even open. Get rid of it.

Cache Switch

The Cache Switch is used exclusively on Macs whose brain is the Motorola 68040 chip, such as the Quadra and Centris models. If you have any other model, throw out this control panel.

Double-click the Cache Switch to see its On/Off switch (see Figure 3-22). The caches — yes, there actually are two (one for data and one for program instructions) — constitute an internal speed enhancement on the '040 Macs. If you click Off, you avoid using the internal cache, thus slowing your computer to about half its usual processing speed.

Why on earth would you want to do this? Because certain programs — generally, those that are older or whose programming doesn’t comply with Apple guidelines (mainly games) — are incompatible with the '040 chip, and will produce system crashes and other headaches unless you turn off the cache.

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Figure 3-22:
Cripple your '040 Mac on purpose.
Cache Switch Secrets

On and off without restarting

Normally, you're directed to restart the Mac after turning the Cache Switch on or off. If you Option-click the On or Off radio button, however, you switch the cache instantly and save yourself a restart.

This is a great Secret, actually. The only '040 Mac that it's not perfect for is a Quadra 700 on a network; switching its cache without restarting may garble the messages it sends out over the network.

Hidden message

"Wink, Wink!" That's what you'll be told if you turn on Balloon Help and point to the version number. This Secret, and $1.25, will take you anywhere you want to ride on the New York City subway system.

Roll credits

When the Cache Switch control panel is open, press Option and click the version number to see the programmer's credit.

Close View

Close View, like Easy Access (described soon), is designed to help Mac users with disabilities — in this case, the visually impaired. It magnifies a portion of the screen, making the screen image 2 to 16 times larger; most people wind up tossing it.

After you install Close View, you can switch it on and off by pressing Option-O (see Figure 3-23). To increase or decrease the degree of magnification, hold down Option, and press the up- or down-arrow key. The enlarged screen view follows the insertion point — an arrangement that takes some getting used to.
In addition to providing screen magnification, Close View allows you to reverse your monitor's display so that black becomes white and white becomes black. Some people find this inverted-video setup easier on the eye for long-term Mac work. (On color monitors, all the colors are inverted.)

**Color**

With this control panel, you can change the color of text highlighting and the tint of windows in the Finder. If you don't have a color or gray-scale monitor, toss this.

The first pop-up menu gives you a choice of ten highlight colors. If none of those colors pleases you, choose Other from the menu to open the standard Macintosh Color Picker. Click a new color and then click OK (see Figure 3-24). You can set the highlight to almost any color that is displayed on your Mac, but dark, heavily saturated colors are bad choices; they make it too hard to see the highlighted characters.

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**Figure 3-24:**
Choose Other from the pop-up menu to mix your own highlight color.

Be careful when you use the Color control panel to select a highlight color. If you choose pure white (the spot at the center of the color wheel), you'll end up with solid black highlighting! Furthermore, highlighted text will invert to white, exactly as though you were using a black-and-white Mac. Apple obviously hopes to protect you from yourself; if you truly chose white as the highlight color, you'd never be able to tell whether something was highlighted!

You can see how awful white highlighting is in only one place: the Color Picker itself. For kicks, set the highlight color to pure white. Then try to drag through the numbers at the left side of the Color Picker. Weird — it looks as though nothing's being highlighted.
If you choose a color that is very close to white, but not white itself, the results are even stranger. You’ll see black highlighting on black text, obliterating whatever you select. To view this effect (shown in Figure 3-25), change the numbers in the top three Color Picker text boxes to 3357, 4145, and 65535.

Mr. Smith was about as angry as anybody I’d ever seen. He stared at the smoldering remains of his house, then at the still-burning match in my hand. And, as best as I can remember, his exact words were: “You...!!!”

For Finder windows, you have to choose one of the nine color options provided in the second pop-up menu. The standard window color is light purple; the eight other options include regular black-and-white, in which windows lose their 3-D appearance. Unlike the highlight color, there’s no Other option for windows. The color you select appears in the outline of window title bars, scroll arrows, and scroll sliders.

**Color control panel Secrets**

*Shave milliseconds from your work*

It’s no secret that a black-and-white monitor repaints itself far faster than a color monitor.

Stretching this fact to its limit, however, some Mac fans we know have advocated using the Color control panel’s Window color control to select Black & White. This option makes scroll bars and title bars of windows look exactly the way they do in System 6, with no three-dimensionality at all. The argument goes that even this slight removal of color from your screen makes things in the Finder happen just a tad more quickly.

We doubt it, but now you know enough to experiment for yourself.

**Crippled PowerBooks**

Certain gray-scale-screen PowerBooks, such as the Duo and PowerBook 160, always have black-and-white window tinting no matter what color scheme you select in this control panel. It’s normal. The Enabler file (see Chapter 4) is responsible.

**Roll credits!**

Click the words Sample Text, and the text is replaced with the words by Dean Yu. Click again, and you see the name of Dean’s collaborator, Vincent Lo.
Chapter 3: Control Panels, Extensions, and DAs

ColorSync System Profile

As you'll find out in Chapter 25, ColorSync is Apple's solution to the age-old problem of printed colors that don't match the colors on-screen. Each piece of color equipment — scanner, monitor, printer — is supposed to have its own ColorSync Profile file that identifies its peculiar color quirks. Unfortunately, profiles for non-Apple equipment may be hard to find.

In any case, this control panel gets installed with System 7.5, or QuickDraw GX, or the software for some monitors. You use this control panel's sole pop-up menu to select the kind of monitor you're using — Apple 16-Inch, Performa Color Display, and so on — so that the behind-the-scenes software will know how to keep colors consistent on other color units.

Control Strip

This one's only for PowerBooks, but we think it's the Control Panel of the Year.

The Control Strip is a floating rack of PowerBook-specific control tiles, as shown in Figure 3-26. Each tile actually is a tiny pop-up menu. Hold the mouse button down steadily on a tile, and then slide up or down to the command you want.

[Figure 3-26: The awesomely handy PowerBook Control Strip.]

The original tiles provided by Apple include the following:

- AppleTalk on/off switch
- Battery/recharging gauge (the pop-up menu allows you to hide the power graph)
- File Sharing on/off switch (and indicator), for when you're working on a network
- A power-conserving Spin Down Internal Hard Disk command (and a spinning/not spinning indicator)
- A tile for adjusting the overall power conservation/speed balance of your laptop's screen, disk, and system sleep functions
- A tile with an instant-sleep command
- A handy sound-level slider
- A Video Mirroring control, which appears only when your PowerBook is hooked up to an external monitor or projector

See Chapter 12 to get an idea of why these controls are important.
All these tiles float in a handy strip above whatever other windows are open. The only possible downside to this elegant, powerful tool is that because it comes free with all recent PowerBooks, it deals a dirty blow to all the software companies that had been selling similar PowerBook utility software.

**Control Strip Secrets**

*Move it, baby*

The Control Strip is much more flexible than it looks. For example, you can shrink it to any length by tugging its little end tab. If you simply click the tab, in fact, the Strip collapses so that only the tab appears, at the very edge of your screen — waiting for another click to expand again.

Furthermore, if you press Option, you can drag the entire strip up or down the side of your PowerBook screen — or sideways, to the opposite edge. You can't drag the Strip to the middle of the screen, however: it must hug the right or left side.

*Permanently rearrange, add, or remove tiles*

The Option key has another handy effect on the Control Strip: if you drag one of the little tiles while pressing Option, you can slide the tile horizontally to a new position. (Combine this feature with the drag-to-stretch feature in the preceding Secret, and you can customize the Strip to show only the tiles that you find useful.)

One of the great aspects of the Control Strip, however, is its modular construction. Open your System Folder; inside, open your Control Strip Modules folder. Simply remove any modules whose tiles you don't want to include in your Strip. By the same token, you can add new modules as they're written by shareware (or commercial-ware) authors simply by adding them to this folder.

*Roll credits!*

So far, we haven't mentioned the control panel itself — only the Strip that it creates. The actual icon inside your Control Panels folder is pretty tame; it has only two buttons (for showing and hiding the entire strip).

If you Option-click the version number, however, you'll discover that the author of this glorious tool is Steve Christensen, who wrote the classic SuperClock! control panel (which also was adopted by Apple and made part of System 7.5).

**CPU Energy Saver (and Energy Saver)**

This control panel is part of Apple's multipronged effort to conserve electricity (and to qualify its Macs for the EPA's Energy Star seal of approval). CPU Energy Saver offers controls for turning the Mac off automatically — 15 minutes after the last time you actually work, for example, or every night at midnight (see Figure 3-27). You get this control panel with System 7.5 or certain recent Macintosh models; it works with any Mac that turns off completely when you choose Shut Down. (That rules out the Quadra 610 and Power Mac 6100, for example, which require a physical switch to be turned off.) If the monitor's power cord is plugged into the Mac, the monitor shuts off, too.
The Options button gives you access to this panel’s additional intelligence — you can instruct it not to shut down while the modem or printer ports are being used, for example.

In any case, when the Mac’s time comes, you’ll think that the world is ending. With a sound like an air-raid siren, and with an enormous bright-red full-screen countdown, the Mac gives you 30 seconds of shrill notice before it actually turns off (see Figure 3-28).

Incidentally, CPU Energy Saver isn’t to be confused with the control panel called simply Energy Saver; the latter is a monitor-only version, and it works only with specific, recent Apple-brand monitors.

**Date & Time**

This control panel comes with System 7.1 and later (see Figure 3-29). With it, you can change the way times and dates are displayed anywhere the Mac displays them: in Finder-window list views, for example. The usual value is the default one — American — but in keeping with the internationalization of System 7.1, you can make dates appear in European format (day of month first) or in any zany order you can think up.
Figure 3-29:
The new, improved Date & Time control panel. (The System 7.1 version includes only the controls pictured in the top half here.) Hint: click the time display in your menu bar to see the date.

If you click a number in the date or time display, you can change the Mac's clock or calendar by typing numbers or clicking the up- or down-arrow buttons to change the time.

If you're an American Mac user using System 7.1 or earlier, we suggest that you chuck this control panel; clutter is clutter. But if you're using System 7.5 or later, hang on to Date & Time. This control panel is the only remaining means of setting your Mac's clock; it also allows you to control the handy menu-bar clock that for years was known in the shareware world as SuperClock (included with this book).

Two undocumented morsels: (1) Option-click the time display in your menu bar to hide it or reshow it. (2) On a PowerBook, Control-click the battery gauge to put your laptop to sleep.

Desktop Patterns
Focus groups strike again.

For years, the Mac's General Controls panel has included a tiny painting square, in which you could draw your own Desktop background patterns (see "General Controls [original]"). Apple's studies indicated that too many people had trouble figuring out how to work that mini-pattern editor. Thus, on the Performa Macs, the background patterns aren't editable; the Performa General Controls panel merely offers a pop-up menu of ready-made, but attractive, Desktop patterns.

Beginning with System 7.5, Apple has mainstreamed this principle; today's General Controls panel doesn't have any controls for adjusting the background pattern. Instead, you get Desktop Patterns, which allows you to scroll through several dozen ready-to-use patterns (see Figure 3-30). On one hand, you can't edit them (unless you use ResEdit, included with this book; see Chapter 21). On the other hand, these patterns are bigger and nicer-looking than anything Apple has provided before.

And besides: if you really don't like any of the patterns they give you, just paste in a new pattern "tile" of your own design. Are you listening, Photoshop fans?

A SECRETS exclusive: if you press Option, the button changes to say Set Utilities Pattern, which changes the background pattern used by the Calculator, Find File, Jigsaw Puzzle, Key Caps, and Scrapbook!
Easy Access

Easy Access is designed to make using the keyboard easier for people who type with one hand or find it difficult to use a mouse. If you don’t fall into this category, save yourself the disk space and throw away Easy Access.

Mouse Keys

Turning on Mouse Keys allows you to use the numeric keypad, instead of the mouse, to control the pointer. The 5 key becomes the mouse button; the number keys surrounding it move the pointer up, down, diagonally, and so on. You can change the speed of the pointer (Maximum Speed) and the length of the delay before the pointer starts moving (Initial Delay). (See Figure 3-31.)

Figure 3-31:
You can make your keyboard slow, sticky, or mouselike with Easy Access.
Sticky Keys

With Sticky Keys, you type keyboard shortcuts by pressing the key combinations *successively* rather than *simultaneously*. For example, the keyboard shortcut for turning on the Mouse Keys feature is 88-Shift-Clear. Normally, you have to press those three keys at the same time for the shortcut to work. But with Sticky Keys on, you press the keys one at a time, in a sequence. First press the 88 key, then the Shift key, and finally the Clear key (see Figure 3-32).

Figure 3-32: When Sticky Keys is on, a little indicator appears at the far right side of the menu (leftmost figure). When you press a modifier key (Shift, Option, or 88) once, a little arrow appears (middle). That's a signal that Sticky Keys is waiting for a nonmodifier key (such as a letter) to complete the keystroke. If you press a modifier key twice, you lock it down. As you type letter keys now, the Mac acts as though the modifier key is being held down continuously (right).

You can turn on Sticky Keys from the keyboard by pressing the Shift key five times in a row. The five keystrokes can be separated by several seconds, or even several minutes, as long as the mouse doesn't move between key presses. You hear a neat little starting-up chirp as confirmation that Sticky Keys is on. (To turn Sticky Keys off, press the Shift key five times again, or press any two modifier keys simultaneously.)

Slow Keys

Slow Keys delays the acceptance of each keystroke. At its highest setting, the Mac won't acknowledge a keystroke unless you hold the key down for at least a second and a half. This feature helps screen out inadvertent keystrokes.

Express Modem

This control panel is confusing, because you may need it even if you don't have an Express Modem (Apple's internal PowerBook modem). In fact, it's more likely that you will use this control panel because you have a GeoPort Telecom Adapter on your Power Mac or AV Mac; the same software is used for both.

In any case, this control panel allows you to choose *Express Modem* or *External Modem*. These controls originally were provided for the PowerBook so that you could choose between its built-in modem and (if you had one attached) an external modem.

But when you're using a GeoPort, a paradox arises: is the modem an *Express Modem*, because it uses the Express Modem software, or is it *External*, because the Telecom Adapter dangles off the back of the Mac? Guess carefully — if you choose the wrong setting, your GeoPort modem won't work.

Answer: use the Express Modem setting.
Extensions Manager

When Apple added 60 control panels and extensions to System 7.5, somebody decided that it might be nice to provide you, the humble user, with some means of controlling them all. After all, if you’re settling in for a nice afternoon of word processing, you might not need the 24 PowerTalk extensions, 37 CD-ROM extensions, and 53 QuickDraw GX extensions.

Extensions Manager is very simple. When you turn on your Mac, hold down the spacebar. You see a list of all control panels and extensions, and you can click to turn off the ones that you won’t be needing during this work session. For every item that you turn off, you’ll have fewer conflicts, more memory, and a faster startup sequence.

(We enjoy Extensions Manager so much, in fact, that we included it with this book. It works in any flavor of System 7, not just 7.5. See Chapter 33.)

File Sharing Monitor

As its name denotes, this control panel provides an overview of your file-sharing activity at any given moment. It displays a list of all your shared files, folders, and disks, and allows you to keep track of which network users are currently connected to your Mac. For details, see Chapter 31.

General Controls (original)

The General Controls panel is responsible for several of the most basic elements in the Macintosh work environment: the current date and time, menu and insertion-point blinking, and the pattern and color that appear on the Mac Desktop.

Setting the date and time

You probably already know how to set the date and time; click a number to edit it by typing, or click the up and down arrows that appear whenever numeric text is selected (see Figure 3-33).
Changing the Desktop pattern

Changing the Desktop pattern also is pretty basic, but it’s such a quintessentially Macintosh activity that we’d be remiss to ignore the essentials. Click the little triangles (or click just outside them) at the top of the mini Desktop to cycle through the dozen or so Desktop patterns that come stored in the Mac. Click the mini Desktop (below the little triangles) to apply the selected pattern to your actual Desktop, as shown in Figure 3-33.

The real fun comes from creating your own Desktop patterns. To do so, change the colors of the individual dots in the upper-left square, which is an enlargement of an 8-by-8-pixel (screen dot) area on the Desktop. Each tiny square represents one pixel. Below the mini Desktop is a palette of eight colors. To edit the enlarged pattern, click a palette color and then click the tiny dots in the enlarged view to change their colors. When you finish the new pattern, click the mini Desktop to apply the pattern to the entire screen.

To change a color in your palette of eight, double-click its tile to open the Macintosh Color Picker (see Figure 3-34). Using the color wheel, you can change each color and adjust its hue, saturation, and brightness.

![Figure 3-34: The Color Picker. If the colors appear too dark, drag the brightness slider — the scroll bar at right — all the way to the top. Otherwise, just click any color you see to select it. See the square near the top left? Click the bottom half to restore the original color.](image)

The point to remember when you create new Desktop patterns is that single-clicking the mini Desktop applies the selected pattern to your Finder background and that double-clicking saves the new pattern permanently. If you don’t save your current Desktop pattern, it disappears the next time you change patterns.

Insertion point blinking rate

Elsewhere in the control panel, you can change the rate at which the insertion point blinks (the insertion point is the I-beam cursor that appears whenever you’re editing text). The Slow setting produces 30 blinks per minute; the Fast setting goes at a hyperactive 100 bpm. The middle setting is roughly 50 times per minute.
Menu blinking

When you release the mouse button after choosing a command from a menu, the command blinks: black-white-black. You may never even have noticed it. The menu-blinking setting specifies how many times it should blink.

Why should a menu command blink at all? About the only reason we’ve ever heard is that it gives you a split second to confirm what you just did. Frankly, we don’t see the logic in this. Think about it. The menu blinks after you let go of the menu — when it’s too late to change your mind!

Furthermore, suppose that it takes one second for a command to blink three times. If you use, say, ten menu commands an hour, that means that if you work a typical work week, in ten years you’ll have wasted two and a half days — full 24-hour periods — doing nothing but sitting in front of your Mac waiting for menus to blink.

We can think of many other things that we'd rather do with a free weekend. The best choice for this setting is Off.

General Controls (7.5 and later)

The Performas, of all things, are determining the course of Apple’s mainstream System software, as this completely redesigned control panel clearly shows (see Figure 3-35).

When you turn off “Show Desktop when in background,” for example, every time you launch a program, the world of Finder icons and windows disappears. You’re now protected from inadvertently switching to the Finder when you accidentally click outside your document window. You also have a one-click method of launching your favorite programs and documents: this control panel now offers auto-opening of the Launcher, once more adopted from the successful ease-of-use formula of the Performas. (See “Launcher” later in this chapter.)

More in the protect-them-from-themselves category: the Protect System Folder checkbox prevents little hands (or mischievous ones) from dragging icons out of the System Folder’s root level. If you use the Launcher, click the Protect Applications Folder checkbox to prevent your programs from being trashed while you’re off at the movies.

Finally, the era of “Where did I file that darned document?” cries ends with the Documents-folder option, yet again modeled on the Performa’s features. This setting specifies what folder’s contents you see whenever you choose Save As or Open from a program’s File menu. Novices will appreciate the “Documents folder” choice, which makes all new documents fall into a central Documents folder on the Desktop. Most people will enjoy the “Last folder used in the application” choice, which is good for keeping all related project documents together in their appointed folders. The ungrammatical “Folder which contains the application” option is what people had to endure before System 7.5, meaning that all new documents get dumped into the folders that contained their creator programs, no matter how deeply buried and hard to find the documents become.
By the way, do you notice anything missing? The Desktop pattern tools are gone (see “Desktop Patterns” earlier in this chapter). So are the clock-setting controls, which, with the concurrent death of the Alarm Clock, now are available only in the Date & Time control panel.

**Keyboard**

The Keyboard control panel (see Figure 3-36) lets you switch from one keyboard layout to another. (A *keyboard layout* is a little file placed in your System file that defines what key the Mac understands when you press each key on your keyboard. Using ResEdit, included on the *SECRETS* disks, you can make an *R* appear on-screen when you type *W*. See Chapter 21 for instructions on how to perform this operation.)

**Why rearrange your keys?**

Other than to create the world’s cruelest practical joke, why would you want to rearrange the layout of your keyboard? Here are a few reasons:

- Replace your current layout (called U.S.) with the famous Dvorak layout: an arrangement of keys scientifically designed to be easier and more efficient to use. Using Dvorak requires you to spend a couple of weeks adjusting, which isn’t made any easier by the fact that your keyboard *keys* are labeled the old way, even though pressing them produces a different set of characters. But many people who have made the switch swear that the Dvorak layout is more comfortable and less conducive to typos.

- Replace only two symbols of the keyboard: < and >. Why replace these? Because they’re what come out if you type a period or comma while the Shift key is down, and that usually leads people to type things like P->O> **Box 234** by accident. If you replace the < and > symbols with another comma and period, you won’t have that trouble anymore.

- For PowerBook users only: equip your keyboard with a numeric keypad. That is, create a keyboard layout in which pressing a certain key — Ctrl, say — turns the letter keys on the right half of your keyboard into a numeric keypad: K is 5, L is 6, and so on.
To switch between the System 6 and System 7 keyboard layouts. Believe it or not, Apple switched the locations of a few obscure symbols. See Chapter 24 for details.

For non-American Mac users: if you buy System 7.1's WorldScript software, you can use the Keyboard control panel to switch between an American key set and yours.

Except for these examples, the Keyboard control panel is a prime candidate for the Trash. We admit that 95 percent of Americans will never use any layout except the one that came with the Mac.

**Key Repeat Rate**

The Keyboard control panel also controls two minor functions involving repeating keys. The Key Repeat Rate setting controls the rate at which characters repeat when you hold down a key. At the slowest setting, characters repeat once every two seconds — an utterly pointless choice. It's much faster to just press the key repeatedly.

**Delay Until Repeat**

The Delay Until Repeat setting controls how long you have to hold a key down before it starts repeating the character. At the slowest setting, the delay is less than one second; at the fastest setting, repeats begin almost instantly. You can disable repeating keys by choosing Off in the control panel — an excellent choice for beginners who are used to nonrepeating typewriters.

Honestly, though, after you make these settings, you probably won't ever need to adjust them. Feel free to throw this control panel away.

**CASE HISTORY**

**How to lose a manuscript**

We once saw a certain international best-selling novelist — a beginning Mac user — fill ten pages of his word processing document with spaces when he inadvertently leaned a book on his spacebar. If the Delay Until Repeat setting in the Keyboard control panel had been Off, this accident would have produced only a single space on-screen.
Labels

As described in Chapter 1, System 7's Label feature enables you to apply text and/or color labels to your files and folders. You use the Labels control panel to set up the label categories and pick the color associated with each label (see Figure 3-37).

When you open the Labels control panel, the top label name is selected. To replace the label text, just start typing. Press the Tab key to cycle through the seven label fields. Label names can be up to 31 letters and spaces long.

![Figure 3-37: Name your labels in the Labels control panel.](image)

To change label colors, click the rectangular color tile next to a label name. Clicking a tile opens the Macintosh Color Picker, where you click a new color or type new values in the text boxes for Hue, Brightness, Saturation, and so on.

We've got only one Label control panel Secret. It takes a little more work than most, but it's weird. Select and delete all seven label names in the control panel so that all the fields are blank; then restart your Mac and check out the Labels menu. Read vertically, the labels spell out the names alan and jef — the two programmers.

Launcher

Apple actually has blessed us with two Launchers. The original Launcher control panel gave the Performa its user-friendly features, such as the Documents folder and automatic Finder-hiding (see Chapter 14). Then there's the Launcher introduced with System 7.5 (and with recent PowerBooks and Performa models).

Because the Apple menu is so convenient, some Mac fans won't see the point of yet another frequently used file launcher. But set up a Mac for kids or novices, and you'll begin to understand.

Here's how it works. In the System Folder is something called Launcher Items. Anything you put in this folder instantly appears in the Launcher window as a jumbo icon (see Figure 3-38). (In many ways, this process resembles adding items to the Apple menu.) One click in the Launcher window (focus groups found that double-clicking was too hard to remember) suffices to open that icon.
Chapter 3: Control Panels, Extensions, and DAs

The modern-day Launcher window even offers separate screens, each listing a different array of jumbo icons. For example, three large topic buttons appear at the top of the Launcher on a new PowerBook. These buttons might say Applications, Quick Tips, and Service/Support; appropriate icons appear, depending on which button you most recently clicked (see Figure 3-38 again).

The Launcher has several confusing aspects. Not the least of them: when you double-click the Launcher control panel, the Launcher window appears — not a set of controls and checkboxes, as would with any normal control panel.

Figure 3-38: The Launcher window of a 1994-era PowerBook.

Launcher control panel Secrets

Make your own Launcher buttons

If you poke around a little, you’ll find out how Apple makes those big topic buttons appear at the top of the Launcher window. In your System Folder, in the Launcher Items folder, are subfolders. The name of each subfolder is preceded by a bullet (•). Turns out that any folder name bulleted this way shows up in the Launcher window itself as a big button name — and the folder’s contents appear as jumbo icons when you click the folder’s name. Figure 3-39 should make this relationship clear.

Add as many topic buttons (bulleted folders) as you want; the Launcher window will do its best to display them all. You can even resize or reshape the Launcher window, and the topic buttons, like Silly Putty, will stretch and reconfigure — becoming stacked vertically, for example — to accommodate your nutty design impulses.

Quick access to Launcher Items

As you customize your Launcher setup, you may find it an increasing hassle to burrow your way into the System Folder, into the Launcher Items folder, and from there into your individual topic folders. Of course, if you have System 7.5 and installed the System 7.5 Update (see Chapter 5), you’re not complaining — you can add icons to the Launcher just by dragging them there. Otherwise, read on.
Part I: System Software Revealed

Figure 3-39: To change the names of the big Launcher topic buttons (top), change the names of the bulleted folders in the Launcher Items folder (bottom). You can make other bulleted folder buttons, too; each will appear in the Launcher window as a topic button. (Option-8 makes the bullet symbol.)

Fortunately, there's a speedy shortcut: Option-click any topic button. (As you press Option, your cursor turns into a tiny folder, to let you know that you're doing the right thing.) You'll be teleported directly into that topic folder within Launcher Items.

Change the Applications topic button

You may have discovered that there's no bulleted folder for the first topic button, called Applications. Any icon that's loose in the Launcher Items folder appears on the Applications screen of Launcher-window icons.

Most people cannot change the name of the Applications button. You, however, can, if you use ResEdit (included with this book). To do so, launch ResEdit. Open the Launcher control panel inside your System folder. Double-click the icon called STR#.

In the list of numbers, double-click 4033. Scroll down until you see the item called Applications. Change this word to whatever you wish your programs folder to be called.

And one more thing: you'll notice frequent references, in these Launcher ResEdit adventures, to Mashie. Free book to the first person who tells us what, or who, that is!

Roll credits

Hold down ⌘ and Option-click over the gray area of the Launcher window (the thin margins around the folder buttons) to see the secret About box.
Macintosh Easy Open Setup

If there's one thing that frustrates novices and old Mac salts alike, it's seeing that infernal message "Application not found" when you double-click an icon. Various attempts have been made to rectify the situation: allowing you to drag a file onto its program's icon, automatic document-substitution programs like Hand-Off and System 7 Pack (included with this book), and so on. All these solutions have one flaw in common, however: they all assume that you know what kinds of programs can read the mysterious icon you're trying to open.

That's why Apple came up with Macintosh Easy Open. (It comes free with System 7.5 and some Mac models, including Power Macs; you also can buy it.) With this control panel installed, when you double-click an icon, you don't get an error message — you get a dialog box that lists the programs you own that can open the mystery file (see Figure 3-40).

Alas, Macintosh Easy Open has its drawbacks. The primary problem is that it will be years (or forever) before software companies make their own programs compatible with Easy Open. Until that day, Easy Open can intervene only when you double-click a text file or a PICT file — exactly the same situations that System 7 Pack or Hand-Off can handle.

Figure 3-40:
Macintosh Easy Open intervenes when the "Application not found" box otherwise would appear.

The document named "Text doc" was not created with the application program "Scriptable Text Editor".

To open the document, select an alternate program, with or without translation:

- Scriptable Text Editor
- SimpleText
- Microsoft Word

Show only recommended choices

Cancel  Open

ANSWER MAN

Desktop under permanent construction

Q: What the heck is going on? My Mac sometimes rebuilds its own Desktop, unbidden. I'm not pressing any keys; I'm not doing anything — except waiting and waiting for it to finish. What's going on?

A: Calm down. You've got Macintosh Easy Open, right?

Q: How'd you know?

A: Macintosh Easy Open's job is to suggest programs to open the mystery document you're double-clicking, right? As a result, it has to know what programs you have. Therefore, when you do anything that signals Easy Open that you might have added or removed programs, Easy Open insists on rescanning your disk to make sure that it knows what's what. Generally, starting the Mac with the Shift key down is what makes Easy Open rebuild your Desktop. That's because the Shift key disables Easy Open. The next time you start up, Easy Open wants to find out what went on behind its back.
Map

If you need to know the exact time in Ulan Bator (a city in northern Mongolia), or if you’re called upon to calculate the mileage from there to your office, the Map control panel is indispensable.

Click any spot on the world map, and the Map displays the current time at that locale, along with its precise longitude and latitude (see Figure 3-41). You can scroll around the world by dragging the pointer to the edges of the map window.

The Map already knows about most major cities, as well as Mount Everest and the Middle of Nowhere (a spot in the South Atlantic Ocean — try it by typing MID and pressing Return).

If you’re not sure that a city is listed or don’t know how to spell it, type just the first letter or letters and then click Find. The Map jumps to the nearest match.

To see all the locations that the Map already knows about, hold down the Option key while repeatedly clicking Find (or pressing Return). This action cycles through all the cities that the Map is programmed to find by name.

To make practical use of the Map, you have to make sure that you’ve set your home city, which becomes the reference point from which all distances and times are measured. To do this, locate your city on the Map, using the Find command, and then click the Set button. Your city now becomes mile zero and displays the current time. The Map calculates all distances and time differences based on your home city’s location and time.

If your home isn’t among the cities listed in the Map, use an atlas to determine the exact latitude and longitude of your home. (Or if you’re not fussy, just click the approximate spot, as best you can.) Use this information to add your city to the map: type the name of the city, along with its coordinates, and then click Add City.

Before we get started with the Map Secrets, can somebody please tell us why this is a control panel, for heaven’s sake, and not a desk accessory?
Map Secrets

No clock-resetting for the PowerBook traveler

If you have a PowerBook (or travel a lot with your desktop Mac), you can reset the Map’s home city when you go on a trip. By resetting the map to your destination city, the time on the Mac’s internal clock automatically changes to match the time in the new city. This way, you don’t have to set your Mac clock at the end of each flight.

Instant intercity distance readout

You can use the Map to quickly ascertain the distance between any two spots on Earth. Suppose that you live in Chicago but need to know the distance between Miami and Budapest. This is easy: type Miami in the location field, click Find (or press Return), and then click Set. As far as the Map is concerned, you just changed your home city. Next, type Budapest in the location field and press Return. The Map jumps to Budapest, and you’ll have your answer: 5,330 miles.

Miles-to-kilometers calculator

The Map control panel contains an undocumented feature for converting miles to kilometers and vice versa. The distance between two map points is displayed in the lower-left corner of the Map window. If the distance is displayed in miles, click mi, and that number is instantly converted from miles to kilometers. Click the km text and the distance again is converted, this time to degrees. Click again to return to convert the figure back to miles.

Map zooming

You can view the map at three levels of magnification: normal size, twice normal size, and four times normal size.

Magnify the map by 200 percent by pressing the Shift key while opening the Map control panel. To do this, you need to first double-click the Map icon and then press the Shift key (an icon won’t open if you hold down the Shift key while double-clicking).

To magnify the map by 400 percent, hold down the Option key while opening the control panel.

For an even more magnified view, try opening the Map while pressing both the Option and Shift keys. (Again, you need to press Shift right after you double-click.)

A better Map

If you have a color or gray-scale Mac, you can replace the uninspiring black-and-white map in the Map control panel with the splendid color world map stored in the Scrapbook. To make the switch, copy the color map from the Scrapbook. Open the Map control Panel, click the map picture, and choose the Paste command. (The result is shown in Figure 3-41.)

You also can copy the map graphic from the Map control panel. Click anywhere on the map, and choose Copy. You now have a neat little world map that you can paste in any other program.
Part I: System Software Revealed

A new Map graphic
Actually, you can paste any graphic into the Map, although few choices other than a world map make any sense (see Figure 3-42).

Figure 3-42:
You can replace the Map with a picture of Neil Diamond — but why?

A multilingual Map
You won't find this one anywhere but here. As we mentioned earlier, you can repeatedly press Option-Return to see every city in the Map's database. If you continue past Zürich, the Map starts at the top of its list again — but this time, it tells you each city's name in the native language spoken there!

What's the time difference?
You can find out the difference between any spot in the world and your own time zone. First, click somewhere on the map (or type the city name, such as Paris, and click Find). Then click the words Time Zone. The Time Diff. box now shows the time difference between the cities. (The tiny + or - symbol at the right indicates whether you're ahead or behind.)

Roll credits!
Click the version number at the right side of the control panel, and the words v7.0, by Mark Davis are inserted into the city-name field. The message disappears when you release the mouse button.

Memory
The Memory control panel (see Figure 3-43) manages several important memory-related functions: the disk cache, virtual memory, RAM disks, Modern Memory Manager, and 32-bit addressing. For explanations of the real-world uses for these functions, see Chapter 8 (the memory chapter).
The Memory control panel automatically hides or shows controls, depending on your Mac model. For example, the original Mac LC doesn't work with virtual memory, so no virtual-memory options appear. And only Power Macintosh models offer the Modern Memory Manager choice.

**Figure 3-43:** The many panels of Memory.

### Memory control panel Secrets

**Roll credits!**

For this one, you need a Mac that supports virtual memory. First, turn on Virtual Memory. Hold down the Option key while clicking the pop-up menu used to choose a hard drive. Instead of a list of available drives, you see a hierarchical menu containing the names of the programmers. The submenus contain comments about each of the programmers.

**Power Macintosh cleverness**

If you own a Power Mac, *use virtual memory*. Everything you've ever been told about virtual memory is wrong, and virtual memory can save you hundreds of dollars' worth of real RAM. See Chapter 8 for instructions and the lowdown.
Monitors

If your Mac’s monitor shows color or shades of gray, use the Monitors control panel to set the number of colors your monitor displays (for example, to switch from color to black and white). The range of options depends on your Mac’s video capability; the more video RAM, or VRAM, you have installed, the more colors your Mac can display. (Details on VRAM appear in Chapter 10.) The options range from two colors (black and white) to 16.7 million (see Figure 3-44).

Why not always display the maximum number of colors possible? In a word: speed. Working with more colors slows a Mac’s display. So if you’re working on a large page layout, switch to black-and-white mode to conserve memory and speed screen redraws. As a general rule, the lower the color setting in the Monitors control panel (16 colors, 256, and so on), the faster your screen gets repainted.

You’re supposed to use the Monitors control panel to make the switch, selecting the number of colors you want to display. The long rectangle at the bottom of the control panel displays the full spectrum of colors you selected.

If you find that you change the number of colors displayed with some frequency, you may want to make an alias of the Monitors control panel. Put the alias in your Apple menu as a stand-alone item so that you can get to it more easily than through the Control Panels folder.

For even faster switching, however, use Color Coordinator, included on the disks that come with this book (see Chapter 33).

Getting back to the Monitors control panel: you also use it to set up multiple monitor configurations if you have more than one monitor attached to your Mac. A common example: a PowerBook or Duo with a color monitor attached. The Monitors control panel, in this setup, determines which monitor — the laptop’s built-in screen or the external color — is considered to be the main screen.

Each monitor connected to your system is represented in the Monitors control panel by a tiny monitor icon. See Chapter 10 for a juicy exploration of multiple-monitors Secrets.
Monitor Secrets

Roll credits!

In the upper-right corner of the control-panel window, click the version number (such as 7.1.3). You see a pop-up list showing the names of the six programmers.

The fun isn’t over yet. Keep holding down the mouse button (so that the list stays visible), and press the Option key. The tiny face next to Jim Straus’s name sticks out its tongue each time you press the Option key. Press the Option key 11 times; the first and last names in the list begin to rearrange themselves and get replaced with the words Blue and Meanies. (The Blue Meanies are the System 7 test-and-cleanup SWAT team.)

Correcting the gamma

You make subtle adjustments to the color balance on your monitor by using an undocumented feature in the Monitors control panel. To unlock the feature, click the Options button while holding down the Option key. If you’re using your Mac’s built-in video or an Apple video card, you see a dialog box with a checkbox marked “Use Special Gamma.”

Apple monitors are manufactured by Sony. Apple found the overall image a little bit dim, however, so Apple decided to adjust the gamma settings to create a brighter, whiter picture. Apple calls its preferred gamma setting Standard Gamma. Uncorrected gamma, on the other hand, is the original, unmodified Sony Trinitron setting. Some Apple monitors, such as the Apple 16-inch monitor, offer additional gamma settings. Try each to see whether there’s a gamma setting that you prefer.

Mouse

This control panel provides access to two vital mouse controls: tracking and double-click speed (see Figure 3-45).

Figure 3-45:
Fine-tune your mouse
with the Mouse control
panel. If you have a
PowerBook and version
7.2 or later of this
panel, you also have an
option for thickening
your cursor.

Mouse tracking is the ratio between the physical movement of the mouse on your desk and the movement of the pointer on your monitor. The higher the setting, the less you have to slide the mouse to move the pointer. In other words, at the fastest of the seven available settings, a tiny one-inch movement of the mouse on your desk may move the cursor three inches across the screen — or even more: the exaggeration of the cursor’s movement is associated with how fast you move the mouse.
Even at the fastest tracking setting, when you move the mouse very slowly, the cursor on the screen moves exactly that much — one inch per inch of desk space. (That makes life easier when you’re doing fine editing in a graphics program.) Yet if you move the mouse that same inch very quickly, the cursor on the screen may jump most of the way across your monitor. (Your cheerful authors once were privy to a thick Apple document — a bound dissertation on mouse-acceleration research, believe it or not — in which the pros and cons of various cursor-speed logarithmic scales were discussed and tested at length.)

The higher settings are best for most applications. You’re less likely to run out of mouse-pad (and desk space), and you can zip the pointer from one end of the monitor to the other with the flick of a wrist. We’ve heard it argued that the slower settings are good for graphics work, because a slow-moving pointer provides better control. Yet as we said, even at the Fast setting, a slow-moving mouse gives you a slow-moving cursor. (You can make the mouse even faster using ResEdit; see Chapter 21.)

How does the Mac know the difference between a double click and two single clicks? Using the Mouse control panel’s Double-Click Speed setting, you tell the Mac how fast the two clicks must occur to qualify as a double-click. When adjusting this setting, watch the little picture of the mouse. The mouse button flashes to indicate the new double-click rate. Obviously, the rate determined in this setting represents the slowest you can click and still have the Mac consider the result to be a double-click. Picking the slower setting doesn’t prevent you from clicking faster when you want to.

In System 7.0 and System 7.0.1, the setting you make here also determines the amount of time you have to wait between (a) the time you click an icon’s name to change it and (b) the appearance of the renaming rectangle that actually allows you to begin typing (see "Renaming icons" in Chapter 1).

**Network**

The Mac, in its wondrous multilingual way, can talk to several different kinds of networks. It can talk to LocalTalk (the built-in networking system). It can talk to the faster, more expensive Ethernet or Token Ring. The Mac even can communicate with such a thing as a remote network, which is what you become when you use Apple Remote Access to dial in. (See Chapter 31 for details on networks.)

You have to use this control panel to direct the Mac’s attention to the correct kind of network. For example, if your Mac is hooked up to a laser printer by Ethernet, and you now want to connect your PowerBook 180 (which doesn’t have Ethernet) to transfer some files, you’ll have to switch the Mac to LocalTalk by opening Network and clicking the corresponding icon.

**Numbers**

This control panel also first appeared in System 7.1. Like Date & Time, the Numbers control panel was necessitated by System 7.1’s "world-ready" feature.

This control panel determines where the commas and periods appear in big numbers. (In France, for example, periods are used instead of commas to separate the thousands, as in “you owe me a grand — yeah, 1,000 bucks.”) Use the little pop-up menus to change the punctuation to serve as the decimal point and the thousands separator (see Figure 3-46), or simply type the punctuation mark in the box.
The right side of the control panel also allows you to control the way money amounts are displayed (such as what currency symbol appears).

Changing the Separators affects numbers in the Finder; a file that says "1,233K" will say "1.233K" after you restart the Mac. But we can't think of anyplace where the Currency changes would have any effect. In any case, you probably can see where we're headed with this: after you check out this control panel, throw it away.

**PC Exchange**

This handy control panel further breaks down the barriers between Macs and IBM-compatibles. With PC Exchange installed, you can, for the first time, insert a DOS disk into your Mac disk drive and see its icon on the Desktop, just like a Mac disk. (Apple is finally making good on its years-old marketing promise of providing a disk drive that can read both kinds of disks. Before PC Exchange, you had to run the clunky Apple File Exchange program before inserting the PC disk.)

The control panel itself (included with System 7.5 and recent Mac models) is designed to enable you to map various kinds of DOS or Windows files to appropriate Macintosh programs that know how to open them (see Figure 3-47). After you established these assignments, you can double-click a Word for Windows word processing document on that IBM disk you inserted, and the document will open smoothly in your Mac version of Word.
Portable

This control panel came with PowerBook models 100, 140, and 170. It serves as your sole defense against premature battery-charge depletion (see Figure 3-48).

Sleep, of course, is the PowerBook condition of being not quite off. This control panel allows you to decide how soon the laptop goes to sleep automatically — that is, after a certain number of minutes of inactivity on your part.

System sleep (the top slider) is the kind of sleep you’re used to, in which the screen goes dark and the computer appears to be off. Hard Disk sleep simply means that the hard drive — the largest single consumer of battery juice — stops spinning (and thus stops sucking energy). When the hard disk isn’t spinning, you can use the Mac, but the hard disk will respin every time the Mac decides that it needs some information stored there. Details on all this stuff are in Chapter 12.

The disadvantage of having the hard disk spin down (stop spinning), of course, is that each time the disk has to start spinning again, you have to wait for 15 seconds or so, staring at the wristwatch cursor. When your Mac is plugged into the wall, therefore, you’d probably just as soon have it never go to sleep on its own. That’s why we recommend selecting “Stay awake when plugged in.” When this option is on, the Mac goes to sleep automatically only when it’s running on battery power.

Power Macintosh Card

As you’ll read in Chapter 11, there are two ways to turn a standard Mac into a Power Macintosh: install a small PDS circuit board, or get a complete motherboard replacement. Depending on your Mac model, you may be able to use one or both options. If you get the upgrade card, you get only the speed boost of the PowerPC chip without any of the other Power Mac features (such as CD-quality sound and speech recognition). That’s the disadvantage.

The big advantage of the upgrade card, on the other hand, is that you can turn it off, restoring your Mac to its pre-Power Mac state. You might want to do that if, for example, you have a Quadra 800 and want to run Excel 4.0 (which, as a non-“native” program, runs faster on the Quadra than on the Power Macintosh chip). Or you might want to run some game that doesn’t work properly on the Power Mac.

This control panel is a simple on/off switch for the upgrade card. If you click Off and restart your Mac, it reverts to its old, pre-Power Mac self.
Chapter 3: Control Panels, Extensions, and DAs

PowerBook & PowerBook Setup

The PowerBook control panel, born with System 7.1, is like a grownup version of the Portable control panel; its purpose in life is to save battery power at the expense of computing horsepower.

When you drag the little switch (see Figure 3-49) into the Custom position, the dialog box expands to display three individual controls: System (how quickly the Mac goes to sleep after you stop using it), Screen Dims (how quickly the backlighting turns off), and Hard Disk Spins Down (how quickly the internal hard drive stops spinning). The farther to the left you place these sliders, the more battery power you'll save — and the more irritating it will be to try to get real work done.

![Figure 3-49: The PowerBook control panel offers far more control than the Portable control panel that it replaces.](image)

The two checkboxes eke out a few more dribbles of battery power by allowing your Mac's processor chip to rest between bursts of activity (“Allow processor cycling”) or by slowing it (“Reduced processor speed”). You can really feel it when these options are turned on, too — your menu clock updates erratically, After Dark animations get jerky, and typing isn't quite as responsive — but each battery charge does indeed last longer.

Beginning with version 7.2 of this panel (introduced with the Duo 250 and 270c, and also installed with System Update 3.0; see Chapter 4), you get a terrific feature. As in the commercial PowerBook utility kits, you can save one set of settings (quick-to-sleep) for battery use and another (maximum speed) for when the Mac is plugged in. Choose options from the pop-up menu at the bottom of the dialog box as appropriate.

If your PowerBook comes with version 7.2 (or later) of the PowerBook control panel, you have an additional panel called PowerBook Setup (see Figure 3-50). This panel contains SCSI Disk Mode settings for more flexibility when you're using SCSI Disk Mode (see the “Portable” section earlier in this chapter, and also see Chapter 12) and Automatic Wake-Up. There's not a word about this Wake-Up thing in the PowerBook manual, so we're not exactly sure what it's for. I guess we'll just murmur something about letting this feature wake the PowerBook at a specified time in the middle of the night to receive a fax from Japan, and leave it at that.
PowerBook control panel Secrets

Why you're confused

With every new generation of PowerBook models, Apple revamps these control panels. If your older PowerBook's software looks nothing like our illustrations, you have the old PowerBook control panel (before version 7.2). The older panel also contained today's PowerBook Setup controls (SCSI Disk Mode and so on).

We mention this in case you just bought a new PowerBook and wonder why your beloved Automatic Wake-Up feature seems to be missing. It's not missing; it's just been moved.

Where are my battery-savings checkboxes?

If your PowerBook uses an '040 chip (such as the PowerBook 500 series or Duo 280), you're probably wondering why you don't have the two energy-saving checkboxes called "Allow processor cycling" and "Reduced processor speed."

Well, you don't have "Reduced processor speed" because your mile-a-minute '040 chip can't slow down; that's a feature only of '030 chips.

You do have processor cycling, though — it's just hidden. To access it, flip the control panel's upper-right switch to the Easy position (if it's not already in that position). Then, while pressing Option, slide the switch to Custom. When the panel opens next time, you'll see the processor-cycling checkbox, awaiting your command.

Roll credits!

Option-click the version number (PowerBook 7.2 or later); then tap the Option key repeatedly. Sooner or later, you'll find Elvis.

There's even a (boring) hidden credit in PowerBook Setup. Again, Option-click the version number.
PowerBook Display

When Apple figured out how to add a video-out jack to a PowerBook, it opened all kinds of possibilities for people who make presentations. You can plug an external monitor or projector into the video port, and your audience can watch the monitor while you watch your PowerBook screen.

This control panel simply allows you to turn mirroring on or off. When your two monitors are mirrored, the same image appears on both screens; you and your audience see the same thing. When mirroring is off, though, you have two independent monitors. Your audience can be watching slides on the external screen while you're privately reading your notes on the PowerBook screen. It's pretty great.

Earlier versions of this control panel also control how fast the built-in screen's backlighting goes off. (Backlighting is another big battery-juice consumer.) After a specified period of inactivity, the backlighting goes off, only to reawaken when you touch a key or move the trackball. Apple eventually removed the Screen Dimming control, because a much more powerful screen dimmer is built into the PowerBook control panel (7.2 or later).

Screen

This little panel works only on specific models (such as the LC 500 series, Color Classic, and Mac TV), which tend to be Macs with built-in color monitors. These monitors have no knobs to adjust; therefore, this control panel was born so that you can tweak the brightness, contrast, and automatic dimming. If you have any other model, toss this control panel.

Serial Switch

For the MacIIfx and Quadra 950 only; otherwise, out it goes. This tiny on/off switch affects the modem port speed — and, therefore, your success at getting MIDI software and modem programs to work. Switch the setting to Compatible if you use any kind of music software, or it's bye-bye, MIDI.

Sharing Setup

Each Mac connected to a network must have its own identity. The Sharing Setup control panel allows you to assign your Mac a unique network name and to identify yourself as its owner (and, therefore, the one who determines which items on your Mac are shared and which aren't).

Mostly, however, you use this control panel to turn File Sharing on and off. For details on File Sharing, networking, and this control panel, see Chapter 31.

Sound

Why should you be content with a nondescript beep when you can make your Mac squeak, giggle, roar, burp, or play the theme song from "Hee Haw"?
With the Sound control panel (see Figure 3-51), you can change your Mac's alert sound, add sounds to and delete sounds from its repertoire, and adjust the overall volume of your Mac speaker. If you have the new Sound control panel (right in Figure 3-51), you also can record and play from your Mac's CD-ROM drive, if you have one.

![Sound control panels](image)

**Figure 3-51**: The old (left) and the new (right) Sound control panels. The new comes with everything from Apple since early 1994: System 7 Pro; the AV and Power Macintosh models; the PowerBook 500 series; System Update 3.0; and so on.

If you have the new Sound control panel, it may take you a while to get used to its multiple-panel approach. The point is that each time you change the setting in the pop-up menu, the controls change in the panel portion. Chapter 13 covers some of the effects you can achieve by using different settings.

When the Sound panel's pop-up menu is set to Alert Sounds (the only setting for the older control panel), you see the Mac's small set of alert sounds: a quack, the Wild Eep, a droplet, and so on. To play a sound, click its name in the list or click the volume adjustment bar. Whichever sound is selected when you close the control panel becomes the standard alert sound. That's an important fact to remember if you have long sounds in your arsenal, which are utterly annoying as error beeps (because the Mac is incapacitated until the sound finishes playing).

**Record a sound**

To record sounds, your Mac needs some kind of microphone. Some models (Classic, LC, IIsi, and so on) require (and came with) the old-style gray Mac mike. Recent models (Quadra 605, Power Mac, and so on) require the longer-plugged PlainTalk mike ($20). And if your older model doesn't even have a sound-input jack on the back, you have to buy a mike that plugs into your modem port, like a MacRecorder (Macromedia).
To record, click the Add button, which opens a panel with tape recorder-like controls (see Figure 3-52). Click Record to begin recording your sound. Be ready to click Stop promptly when you finish, so that you don't record a block of dead air at the end of your sound. To save what you recorded, click Save and assign the sound a name. It now appears in your list of available alert sounds.

Figure 3-52: Recording a new sound.

Remove a sound
After you select the name of a sound you want to remove, you can get rid of it in three ways:

- Click the Remove button. A dialog box appears, asking whether you're sure that you want to remove the sound. If you click Yes, the sound is deleted from your System file. (You never can remove the Simple Beep.)

- Choose Cut from the Edit menu, or type the keyboard equivalent: \^X. If you use this method, you don't get the warning dialog box. (After you cut the sound, you can paste it into your Scrapbook for long-term storage.)

- The easiest way is to press the Clear key in the numeric keypad.

You can add as many sounds as you want to your system file, but watch out: digitized sounds take up lots of disk space. A seven-second sound file can be as large as 150K. Adding too many sounds can bloat your System file quickly.

Sound control panel Secrets

How to rename a sound
You may think that there's no way to rename a sound after you record it. Not so — here's how.

In the Sound control panel, select the sound that you want to rename. Remove it from the list, using the Cut command (Edit menu). Next, use the Paste command (or press \^V) to paste the sound back into your list. When you do so, you are asked to give the sound a name (see Figure 3-53). Type a new name, and click OK.

Figure 3-53: Naming a new sound.
Distributing or backing up your sounds

Any sound that you create with the Sound control panel becomes a draggable, trashable, movable icon, but it's somewhat buried. To see it, open your System folder; then double-click your System file to open it. You'll see all your sounds listed in the window. Manipulate them as you would any other icons.

Startup Sound Memos

If your Mac is equipped with a microphone, you can use the Sound control panel to leave audio messages for yourself or the next person who uses your Mac.

Record a message, using the Sound control panel. Double-click your System Folder; double-click your System file. Then drag the sound file that contains your message out of the System file and into the Startup Items folder (also in the System Folder). Your message automatically plays back the next time the Mac is turned on.

What happened to my beep!?

It happens to everybody sooner or later: your system's error beep changes. Instead of having that charming, rich, bulbous sound, it suddenly turns into a glassy ping with much less character.

It's a feature, not a bug: you or someone you love has installed the new Sound Manager software, the invisible driver that controls sound on your Mac. This event also may be marked by a change in your Sound control panel; when you get the new panel, you also get the new ping. And of course, every new Mac and System from Apple since late 1993 comes with the new Sound Manager preinstalled.

Unfortunately, the cute little error beep isn't the only casualty of the new sound driver; the sound and music on many games and CD-ROM discs stop working, too. There's nothing for it but to pressure manufacturers to make their stuff compatible with Sound Manager — or to remove the Sound Manager extension from your Extensions folder. (Easier yet, disable the Sound Manager extension by using Extensions Manager, included with this book.)

Why it's called Sosumi

Ever wonder about the names of the sounds that come with System 7? For the most part, they're onomatopoetic, spelled like they sound: "Wild Eep," "Quack," and so on. But what about that staccato E-flat diminished triad called "Sosumi"?

Early in Apple's career as a computer-making superstar, there was a little legal trouble. (Apple's always in legal trouble somewhere in the world.) And that trouble was with, believe it or not, the Beatles. The Beatles' private record label was called Apple Records. The Beatles' lawyers claimed that Apple, in making a computer with sound capabilities, was trying to get into the recording industry, causing confusion in consumers' minds. After all, these two companies had the same names and were doing the same things, right?

So Apple sighed and promised Apple Records, in writing, that it would never get into the recording industry. Apple Records backed off, and Macintosh went forth into the world.

A couple of years ago, however, Apple started including a microphone with most Mac models. And guess what you're supposed to do with that mike? Yup — make recordings! It certainly would take a hypersensitive record company to interpret giving away a free microphone as "entering the recording industry." But you never know. Some wily Apple engineer, recognizing the potential litigation, gave the alert sound a name that serves as a subtle tribute to Apple Records: Sosumi.
Roll credits!

Do you have the new-style Sound control panel? Press Option as you make a selection from the pop-up menu. You're treated to an utterance by a very drugged-out programmer — or somebody acting like one — and a quote from Jung.

Speech Setup

You only need this control panel if you have an AV Mac or a Power Mac and you want to talk to it — or, rather, talk to it and have it respond. We're referring, of course, to Apple's PlainTalk speech recognition feature, discussed in detail (along with this control panel) in Chapter 13.

Oh, yeah — there's a hidden credit in here. Turn on Balloon Help, and point to the version number. Wowww.

Startup Disk

Startup Disk tells your Mac which disk it should start up from. Throw it away unless you have more than one disk attached to your Mac. Only disks (or disk partitions; see Chapter 7) that have System folders appear in the control panel. Click the one that you want to be the startup disk the next time you turn on or restart the computer (see Figure 3-54).

If you have more than one hard drive, if you have a partitioned hard drive, or if you have a hard drive and a SyQuest cartridge system, it's handy to have both System 7 and System 6 available — one System Folder on each drive. You use this control panel, in this case, to specify which System you want to be in control the next time the Mac starts. (Sometimes, Startup Disk doesn't correctly select the partition you prefer — only the disk to which that partition belongs.)

If you have only one hard drive, you can safely pull this one out of your System Folder.
Text

This special control panel, introduced in System 7.5, works in conjunction with WorldScript foreign-language systems. It allows you to specify (if you’ve purchased any foreign-language kits) which kind of writing system (Roman, Kanji, and so on) to use, and in which direction text should proceed across the page. We guess that this is a good one to throw away.

Trackpad

This control panel (see Figure 3-55) is, of course, useful only on PowerBooks — such as the 500 series — on which you control the cursor by touching a trackpad. The Trackpad panel’s controls are exactly the same as those in the Mouse control panel (see the “Mouse” section earlier in this chapter).

So why keep Trackpad and Mouse? Because you may want to use your PowerBook at home with a real mouse plugged into it, and yet use the trackpad when you’re on the plane. By giving you two separate control panels, Apple makes it easy to set up separate degrees of responsiveness for each device. (This isn’t true of the 100-series PowerBooks, in which the Mouse control panel controls both trackball and mouse sensitivity.)

Users & Groups

You use the Users & Groups control panel to determine which network users (or groups of users) have access to the shared items on your Mac and the degree of access each user is granted. Look for full details in Chapter 31.

Views

The Views control panel (see Figure 3-56) can change the font for all text in Finder windows. It also allows you to specify the information included in list views.

In the Icon Views portion of the control panel, you can specify how you want icons to be displayed: along a straight or a staggered invisible grid. Select the “Always snap to grid” checkbox if you want icons to snap in line with an invisible grid when you drag them in Finder windows.
You choose the font from the pop-up menu near the top of the control panel. Smaller fonts work best, especially if you have many files and folders crammed into Finder windows. But you can choose any size up to a whopping 36 points (see Figure 3-57). Sizes larger than 24 points aren’t listed in the pop-up menu, but you can type larger point sizes directly in the size box, which is selected for editing as soon as you open the control panel. (Hint: select a font that’s built into the Mac, such as Geneva, Chicago, or Monaco; TrueType and ATM-ready fonts take the Mac longer to display.)

For list views, you also can specify the size of the icons that are displayed next to each file’s name. The largest of these views produces icons as big as the full-size icons.
The checkboxes in the bottom portion of the control panel allow you to select the information you want to see in list views. List views look much better if you eliminate categories that you don’t use. If you don’t use Labels on your files, for example, deselect the “Show labels” checkbox. If you don’t make a habit of typing comments in a file’s Get Info box, eliminate comments from list views. If the version number of each file is not important to you, get rid of that, too. If you deselect all the options, your list views show only the names of files and folders (see Figure 3-58).

There are two other list-view options to consider. Check “Calculate folder sizes” if you want list views to include the size (in kilobytes) of folders as well as files. (If this option isn’t selected, you simply see a dash for each folder’s size in a Finder window.) Check “Show disk info in header” if you want the amounts of available and used disk space to be displayed at the top of each Finder window. Both options provide useful information in your list-view windows.

**WindowShade**

WindowShade is yet another shareware-program-made-good: Apple appropriated it for inclusion with System 7.5.

It’s a neat one, too, excellent for PowerBooks and other small-screen Macs. WindowShade allows you to collapse any open window into nothing but a title bar, as shown in Figure 3-59.
"Calculate folder sizes" and speed

Q: I read your Dialogue about whether to use the "Calculate folder sizes" option. David seems to think that this option does not, in fact, slow the Finder. But when I double-click my hard disk icon—wow, it takes forever to open into a window when I have "Calculate folder sizes" turned on.

A: This happens under only one circumstance: if, from the View menu in the Finder, you selected "by Size." You see, to display your hard disk contents in a list sorted by size, largest first, the Mac has to calculate the sizes of all the folders in it before it can open the window. That's what causes the delay.

If you were to turn "Calculate folder sizes" off, you wouldn't experience the delay, but all the folders would appear clumped at the bottom of your hard disk window, not sorted by size.

Furthermore, if you choose any other sorting method from the View menu—by Name, for example—you're much less likely to experience a slowdown when using "Calculate folder sizes".

To take this antiloot step, you double-click the title bar of the window. Unfortunately, some programs have their own ideas of what a title-bar double-click means (in Excel and Word, it means "expand this window to fill the monitor"). Therefore, WindowShade allows you to change the number of clicks required to collapse a window. You can even specify that you have to hold down a key (such as Option or Ctrl) while clicking for the collapsing to work.

In any case, you repeat the procedure to restore the window to its earlier size.

The Extensions: One by One

Extensions: they're not just INITs anymore.

Until recently, an extension was a control panel without a panel. In other words, it was a program that ran automatically when you turned on the Mac, loading itself into memory but with no settings for you to change.

But System 7 is expandable, and in more than one way. First, it's designed to accommodate new features that can be plugged in simply by dropping a piece of software (yes, an extension) into the System Folder. QuickTime, the movie technology, falls into this category.

System 7 is expandable in another way—all manner of things now are considered to be extensions, even those that weren't called INITs before. Drivers, for one thing—those essential software tidbits that teach your Mac to communicate with some external appliance, such as a printer or a modem. All these elements, plus pre-System 7.1 printer font files, live in your Extensions folder.

Apple has been going wild with extensions lately. The Installer program dumps a bunch of them into your Extensions folder, but Apple also installs several directly in your System file without your knowledge. As Apple comes up with new, improved System 7 features, these features will be available for you to drop into your System Folder without upgrading your System software version.
Extensions must, of course, be in your Extensions folder to operate. Extensions are notable — and confusing to beginners — because they exist purely for the benefit and reference of the computer, not you. That is, if you double-click an extension, you just get an error message; the extension has no controls that you, the user, are meant to play with. Just put extensions in the Extensions folder and forget them.

Abaton Interfax, Apple Modem 2400, Farallon Remote...

An increasing number of today’s telecommunications programs — America Online, Apple Remote Access, FirstClass, and so on — rely on something called Apple’s Communications Toolbox (CT). One of the convenient features of CT-aware programs is that you can select your modem from a pop-up list instead of having to enter its very technical parameters (in a Setup dialog box, for example).

Unfortunately, every single modem in that extensive list is represented by an icon in your Extensions folder. Fortunately, there’s absolutely nothing wrong with throwing away all these modem-specific documents except the one that you own. (Other examples of these CT modem documents: anything beginning with the words Zoom, Prometheus, Hayes, Global Village, Practical Peripherals, and so on.)

Apple CD-ROM, Foreign File Access, High Sierra Access, ISO 9660

All these extensions are part of Apple’s sprawling CD-ROM software suite. You need these files if you have a CD-ROM player (see Chapter 28).

Dialogue

Calculate folder sizes

JS: I want to interrupt the usual flow of text here to point out one great thing about the “Calculate folder sizes” option in the Views control panel: you can turn it off.

DP: Turn it off? Why would you want to do that? When it’s off, all you see is dashes.

JS: Dashes?

DP: When you’re in a list view and you look at the Size column in a Finder window, you’ll see the size, in K, of every file. But for folders, all you see is dashes where the size ought to be. How annoying! Wouldn’t you rather see how much disk space each folder is taking up? You’ve got to leave “Calculate folder sizes” on.

JS: Wait a minute, wait a minute. Haven’t you ever read any columns in Mac magazines?

DP: I write such a column.

JS: So far, you’re the only one who hasn’t written about the frustrations of “Calculate folder sizes!” All the other columnists have pointed out that “Calculate folder sizes” slows your Mac way down.

DP: Don’t you just love when the Mac industry wags come up with some old wives’ tale that’s completely unsubstantiated, but gets reprinted over and over in the magazines just ‘cause it sounds plausible?
Apple Guide, Shortcuts

Balloon Help, introduced in System 7, was supposed to change the world and put book authors like us out of business. Yet few people use Balloon Help. It’s slow; it doesn’t work in many programs; and perhaps above all, it doesn’t show you what to do next if you’re trying to accomplish something specific.

Enter Apple Guide, one of the major features introduced in System 7.5. When you choose this command from the Help (question-mark) menu, you get on-screen index cards that walk you through specific tasks, one step at a time. See Chapter 5 for details; for now, note that these two extensions are responsible for providing the Apple Guide and Finder Shortcuts features, respectively, in the Help menu.

AppleScript...

Necessary stuff for AppleScript, Apple’s macro language (see Chapter 22). Ditto for Finder Scripting Extension, Scripting Additions, and so on.

AppleShare, File Sharing Extension...

The AppleShare extension teaches your Mac how to talk to other Macs in a network. File Sharing allows you to open a file on one Mac while you’re sitting at another. Other extensions in this category: Network extension, Network control panel, and Sharing Setup. Details in Chapter 31.

A/ROSE

Although the name may smell as sweet, A/ROSE by its other name is Apple Real-time Operating System Extension. This extension gets installed only if, when you use the Installer, you choose TokenTalk or EtherTalk. You should select only one of those if you do, in fact, have a TokenTalk card (Apple’s Token Ring card, for example) or EtherTalk circuitry installed. See Chapter 30 for more on NuBus cards, and see Chapter 31 for details on Ethernet networking.
Extensions You Never See

There's an extension nobody knows. If you've got System 7 or 7.0.1, you probably have it but don't know it. It's called Tuna Helper, and it lurks inside your System file.

This is one aspect of the System 7 Tune-Up 1.1.1 that few Mac users know about. The Tune-Up installs this extension, virus-like, without your knowledge, into the System file. It's a nice extension — it protects your Mac from the disappearing-folders bug you'll read about later in this chapter. But after it's been installed, you can never take it out again, even if you throw the System 7 Tuner out of your System folder.

You can see Tuna Helper if you really want to. Use ResEdit, included with this book, and open your System file (see Chapter 21). There it is.

These specialized high-speed networking cards are fast, in part because they are computers unto themselves. They even have their own Motorola 68000 chip and their own RAM. Because every good computer needs an operating system (such as the Mac’s System Folder), A/ROSE actually is the operating system for these computers-on-a-card.

Audio CD Access, Apple Photo Access

One of the beauties of Apple’s CD-ROM players is that they double as audio CD players — and they triple as Kodak PhotoCD players (see Chapter 28 for details). You need these two mild-mannered extensions, however, if you want to be able to see all those pretty pictures or hear that pretty music.

AudioVision Extension

This one's not too tough: it's required for your Mac to work with the AudioVision color monitor (the one with built-in speakers).

Assistant Toolbox

This extension is only for PowerBooks — and it comes only with recent models.

As you'll discover in Chapter 12, a RAM disk remains safely on your Desktop, even if you restart, even if you have a system crash; the only time you'll vaporize its contents is by shutting it down. Enter Assistant Toolbox, whose sole purpose in life is to copy your RAM disk contents back to the hard drive when you shut down (and to re-establish the RAM disk, with contents, the next time you start up).

This extension is part of the PowerBook File Assistant file-syncing program, provided with recent PowerBooks and also available for purchase separately.

Caps Lock

This extension comes only with 100-series PowerBooks. (If you have any other Mac, throw this out.)
Chapter 3: Control Panels, Extensions, and DAs

The traditional typewriter's Caps Lock key doesn't merely lock you into ALL-CAPITALS typing; the key itself locks in a depressed position until you press it a second time to release it. Most standard Apple keyboards have locking Caps Lock keys.

But PowerBook keyboards' Caps Lock keys don't stay down. And on the PowerBook 100-180c, there's not even a light to signal you that you're about to start typing in caps. For this reason, Apple created the Caps Lock extension. When your Caps Lock key is engaged, this extension draws a fat, hollow arrow symbol at the upper-right end of your menu bar.

We think that Apple could have dreamed up a better solution.

Clipping Extension

This little guy lets you drag a selected picture or paragraph out of a program and onto your desktop, where it turns into a Clipping file (using System 7.5's Drag and Drop). See Chapter 5.

ColorSync

This extension is the actual guts of ColorSync, Apple's color-matching system (see "ColorSync System Profile" earlier in this chapter).

EM Extension

This extension is a component of Extensions Manager (see "Extensions Manager" earlier in this chapter). As a control panel, Extensions Manager actually loads after the very extensions it's supposed to manage. Therefore, you also have this extension, which loads before all other extensions and gives Extension Manager (the control panel) the chance to act on everything that loads before it.

Fax Extension, GeoPort Telecom...

All this stuff allows your AV Mac or Power Mac to use its internal circuitry to imitate a fax/modem, requiring you to purchase only a $100 GeoPort Telecom Adapter. (Also included in this bundle are the Shared Library Manager, Fax Sender, GeoPort Extension, and Express Modem control panel, described earlier.)

Find File Extension

This extension simply launches System 7.5's Find File program when you choose Find File (or press &-F). If it weren't for this little guy, you'd get the old Find box instead.

PlainTalk Speech Recognition, TTS Male Voice...

You need all of this junk — and more — in your Extensions folder if you want your AV or Power Mac to respond to your spoken commands (or to read on-screen text back to you). Other stuff in this category: TTS Female Voice, TTS Male Voice Compressed, SR North American English, SR Monitor, System Speech Rules, PlainTalk Text-To-Speech, and so on. See Chapter 13 for details on this technology.
PrintMonitor

The only full-fledged application in your Extensions folder. For details on PrintMonitor, see Chapter 25.

Quadra Monitors Extension

A bug fix that prevents the colors on Quadra-attached monitors from being messed up.

QuickDraw GX

The cornerstone of the vast QuickDraw GX empire (see Chapter 25).

QuickTime

Yes, QuickTime is an extension. Like any extension, it doesn’t do anything when you double-click its icon. You may wonder what it gains you, in fact. But then, if you ever try to use a program that can play QuickTime digital movies or to open JPEG-compressed graphics (Word, HyperCard, Premiere, Persuasion, and so on), you’ll find out how important the QuickTime extension is; these programs can’t run without it. Read Chapter 23 for details on this amazing movie technology.

Record Button Extension

Man, did we ever have to dig around to find out what this was (in response to a reader’s request). Turns out that it comes with the Apple Adjustable Keyboard (the weird-looking one that splits in half). This keyboard has special buttons for controlling the Sound control panel: volume up, volume down, and — you guessed it — Record. The Record Button Extension is what allows the Adjustable Keyboard to send signals to the Sound control panel.

SCSI Manager 4.3

This extension, part of System 7.5 and later, helps increase the speed of data transfer between high-speed Macs (Quadras and Power Macs) and any SCSI devices attached to them. See Chapter 29 for details.

Sound Manager

As we mentioned earlier, the most apparent signal that you’ve installed Apple’s new sound-management software is the change in your Simple Beep sound. The new beep is sort of liquidy and impersonal.

Any number of installations may have introduced the Sound Manager to your System Folder: one of the hardware System updates, System 7.5, System 7 Pro, and so on. As we discussed earlier (see “Sound control panel Secrets”), you always can remove this extension, particularly if it causes your games and CD-ROM discs to stop working.
StyleWriter, LaserWriter, LQ ImageWriter...

These extensions are printer drivers. Obviously, you need only the one (or ones) that matches your printer (or printers). Without the driver, you can’t print. (If you bought a StyleWriter II, and you don’t have System 7.5, your driver doesn’t get installed by the System 7 Installer. Instead, it’s on a disk that came with the printer.) Throw all the others away.

Printer driver Secrets

That wacky LQ ImageWriter

Here’s an interesting tidbit. Ever wonder why the ImageWriter LQ driver is named backward — LQ ImageWriter? In user-group newsletters, you used to read that it’s because when you open the Chooser, you see only the first few letters of each driver’s name. Only by putting the LQ first would you be able to tell the LQ’s driver apart from the regular ImageWriter.

Unfortunately, it’s not true; you get to see the entire driver name in the Chooser. Now we’re in search of a better theory.

QuickDraw GX tyranny

When you install QuickDraw GX (see Chapter 25), you may notice a curious change to the icons in your Chooser: they all have the letters GX added to their names. Yes, it’s true: the QuickDraw GX extension hides the icons of all your normal printer drivers.

If you want your original drivers to return to the Chooser — for example, if your laser printer or software doesn’t work with the GX drivers — the fix is simple. Just restart your Mac with the QuickDraw GX extension turned off. (Turn it off by using Extensions Manager, included with System 7.5 or this book.) Your normal icons return, and it will be the GX drivers’ turn to vanish.

Tuner

When Apple unleashed System 7 upon the world, there were great cries of joy from power users. From ordinary folks, however, there was considerable consternation: System 7 was a memory hog, produced frequent out-of-memory errors, and seemed to slow everything. Some people reported that printing took four times longer than it had under System 6.

To improve the situation, Apple released a disk called System Tune-Up. This disk contains a new Chooser and new drivers for the LaserWriter and the original StyleWriter, which gives the Mac faster, more reliable printing power.
The Tune-Up disk also provides an extension called System 7 Tuner. When installed in your System Folder, this extension patches System 7 (supersedes specific portions of the code) to provide smarter memory management and, therefore, fewer out-of-memory messages. (What a lovely thought — to be able to patch one’s work after it’s been released to the public. Can you imagine our sending you replacement sheets to paste over specific pages of this book?)

There’s a famous story involving the Tune-Up extension (see the True Fact sidebar). The punch line, however, is important: if you use System 7.0 or 7.0.1 (or, for Performas, 7.0.1p), you definitely need Tune-Up 1.1.1. Any version of Tune-Up with fewer decimal places or fewer ls needs replacing, urgently. You get Tune-Up from any Apple dealer or an on-line service. You don’t need the Tune-Up if you have System 7.1 or later.

So how do you know whether you have the Tuner installed? Choose About This Macintosh from the Apple menu. If a bullet (•) appears after the System version number, it’s installed. The bullet doesn’t, however, indicate which version of the Tuner you have. If it’s not 1.1.1, it won’t protect you from the vanishing-folders bug. (To find out what version you have, highlight the Tuner’s icon in your System Folder and choose Get Info from the File menu.)

**TRUE FACT**

**Recipe for disaster**

Shortly after System 7 made its debut, frequent visitors to electronic bulletin-boards like America Online began to notice some alarming complaints from Mac users: apparently, people began to see folders disappearing from the screen, sometimes right before their eyes!

It turns out that a fairly whopping bug in System 7 was responsible for this alarming pattern. Fortunately, this bug was corrected by the Tune-Up 1.1.1 system extension. Unfortunately, Tune-Up 1.1.1 arrived on the scene too late for many. It couldn’t restore any vanished folders; it could only prevent the problem from happening in the future.

Here, for history’s (or warning’s) sake, is the recipe for disaster. The following steps will make your files disappear if you use System 7.0 or 7.0.1 and you haven’t installed Tune-Up 1.1.1.

*Don’t try this at home; don’t try this at all.*

- Open your hard-drive window.
- Click the desktop.
- Create a new folder and name it. For now, we’ll call this folder Death Folder.
- Drag the new folder to your hard drive.
- Insert a floppy disk and drag a file from the floppy into the Death Folder.

That’s it: when the copying is finished, all folders whose names fall alphabetically after “Death Folder” will disappear!

You can resurrect them if you know their names by using the Find command. Otherwise, they’re gone for good.

Note that System 7 Tuner versions 1.0 and 1.1 do not solve the disappearing-folder bug; you need 1.1.1 (or System 7.1).
Chapter 4
Everything Else in the System Folder

In this chapter:

- The other crud in your System folder: Enablers, System Updates, and more
- Details on the automatic System folder subfolders
- A few words about the System file
- What’s left behind on your system disks: Apple File Exchange, Disk First Aid, and more
- The Font/DA Mover
- The Installer nobody knows

Of course, a handful of control panels, extensions, and DAs couldn’t completely explain why a System 7.5 System folder consumes up to 20MB of your hard drive. The Installer gives you a lot of other fascinating software, too. Your Mac even comes with some software the Installer doesn’t install; those additional programs get left behind on the original System software disks, but are worth knowing about.
The System Folder Folders

In System 6, the System folder is the repository of all manner of junk: inits; a heaping handful of control panels provided by Apple; a zillion printer fonts; the personal-settings files known as Preferences created by every other program; and an assortment of miscellaneous support files, such as the Clipboard file and the Scrapbook file, that you can’t do anything with. The result is a spectacularly cluttered System folder that takes forever to weed through in your hunt for one particular file.

System 7, fortunately, greatly reduces the clutter. System 7 introduced a set of standard folders within the System folder: one each for Extensions (inits), Control Panels, Preferences, and (in System 7.1 and later) Fonts. Completing the squadron of basic System folder folders are the PrintMonitor Documents, Startup Items, Shutdown Items (System 7.5), and Apple Menu Items folders (see Figure 4-1). Depending on your model and System version, you may also have folders that collect Launcher Items, Speakable Items, and Control Strip Modules.

As you probably know, you’re not condemned to filing every single System folder-bound icon into the appropriate subfolder manually. When you drop a font, sound, control panel, desk accessory, keyboard layout, or extension icon onto the System folder icon, the Mac automatically dumps it into the correct subfolder (and it tells you so, as shown in Figure 4-2). And by the way — we’re sick of reading that this only works if you drop the incoming items onto a closed System folder icon. It makes no difference whatsoever whether the System folder icon is open or closed, just so you drop the stuff on the icon.

In fact, you can even drop a whole group of System folder items—of mixed types — even a folder containing them — onto the System folder. All of the items still get stashed where they belong.

In any of the System folder’s placement proposals, you’re welcome to decline the suggestion shown in Figure 4-2 by clicking Cancel. If you want to place the item somewhere other than the proposed folder, however, you can’t do it by dropping it onto the System folder icon. First, you must open the System folder into a window and then drag the icon into place.

Here, then, folder by folder, are the System folder folders.
Chapter 4: Everything Else in the System Folder

Apple Menu Items folder

Under System 6, clever programmers invented a number of add-on programs, like OnCue and HandOff, designed to let you launch your favorite programs and documents by choosing their names from a menu at the very end of your menu bar.

Without so much as a by-your-leave, System 7's designers helped themselves to the idea. But they went two better. Instead of creating a new launch menu, Apple programmers hit up on the clever idea of using a menu that's been on your screen for years: the Apple menu. The second improvement: you can put *anything* into this new, improved Apple menu — not just with documents and programs, but with folders, disks, the Trash...literally anything in the entire Mac universe that can be represented by an icon.

To change what's listed in the Apple menu, you simply add icons to, or remove them from, the Apple Menu Items folder. After you know about the relationship between this special folder and your Apple menu, you'll discover that the System 7 Apple menu is one of the operating system's most useful and well-designed features. See Chapter 3 for more on Apple Menu Items and desk accessories.

Control Panels folder

In System 6, of course, you have a single control panel window where you click one icon at a time to make settings. In System 7, you can open several control panels at once. They're now individual, double-clickable programs inside this folder.

But System 7 control panels *don't* have to be in the Control Panels folder. You can store one in your Apple menu. You can leave it loose in your System folder. And, naturally, you can place an alias of a control panel anywhere — even out on the desktop.

Some non-Apple control panels have to be in the System folder when the computer starts up. But after that, you can run a control panel just like a double-clickable program, no matter where it is on your disk. (Apple's control panels don't even have to be there on start-up.)

**TRUE FACT**

The folder that wasn't

System 7 was supposed to include one more special System folder sub-folder: the Help folder. The Help folder was designed to be another anti-clutter repository — it was supposed to be the place where all your programs stored their Help files. A Help file contains all the on-screen information that appears when you use a program's Balloon Help feature or any other on-line help mechanism.

But as the release date of System 7 drew near, there was intense debate. Darin Adler, the head of Apple's "Blue Meanies" squad of System 7 bug-killers and project overseers, thought that a Help folder would be superfluous. In the end, the Help folder was nixed.

Of course, the Help folder wasn't the only System 7 feature to get yanked out of the software at the last moment. We can think of at least three other features that were promised but not delivered in the original System 7 software: a rebuild-the-desktop method that didn't wipe out comments you typed into the Get Info boxes of your files; background sound playing (double-click a sound file, then start word processing while the sound plays); and a new printing architecture, known today as QuickDraw GX.

In the absence of a Help folder, most software companies store their programs' Help files in their own proprietary folders. A Claris program, for example, creates a Claris folder inside your System folder, in which it also stores its Prefs file. Aldus, Quark, Microsoft, and other companies use a similar tactic.
At any time, in any of these locations, you can simply double-click a control panel's icon to open it, exactly as though it were a regular application.

**Control Strip Modules folder**

For PowerBooks only. This folder is required for the glorious Control Strip found on PowerBook laptops (beginning with the 500 series). Any “tile” on the Control Strip (see Chapter 3) has a corresponding icon in this folder.

**Extensions folder**

If you read Chapter 3, you know about all the different things — extensions and not — that go in the Extensions folder. An extension also works fine loose in the System folder or even in the Control Panels folder.

**Fonts folder**

This Fonts folder, introduced in System 7.1, is a sweet idea, too long in coming. In all previous versions of the System, you install fonts into the System file itself. That method has a few problems:

- Installing a font is time-consuming.
- You can only install a font if no programs are running.
- Having a lot of fonts leads to a hugely bloated System file — never a healthy situation.
- If your System file somehow gets damaged, all your fonts get nuked.

By keeping all your fonts — not just TrueType fonts, but also screen (suitcase icon) and printer files for PostScript fonts — safely in one folder, you circumvent all of those hassles. (As you’ll learn in Chapter 24, QuickDraw GX makes storing fonts even simpler — but makes understanding them harder.)

The maximum number of font files that can be in the Fonts folder is 128. This doesn’t mean 128 fonts, however — it’s 128 font files (suitcases). Each suitcase can contain as many different fonts as you want. Even so, big-time desktop publishers and font zealots still find a font-management program, such as Suitcase or MasterJuggler, to be a necessary and handy add-on. (Much more on these topics in Chapter 24.)

**TRUE FACT**

**Quote from history**

“A fully loaded System folder can easily weight in at 200K, which doesn’t leave much room for application programs and documents on disk...It is ironic that, for the time being, making the Mac an efficient computing tool means eliminating portions of the system that add convenience and appeal.”

_Macworld magazine, April 1985_

Say... would taking out DAL Preferences help?
A last note on font files: a delightful feature of System 7, if you hadn’t already discovered it, is that you can double-click a screen font file (or a TrueType font file) to see what the font looks like (see Figure 4-3).

Figure 4-3:
Double-click a TrueType font file, or a regular PostScript screen-font file, to see what the font actually looks like. Cute sentence, huh? It uses all the letters, A-Z, but it’s not quite as plausible as “The quick brown fox jumps over the slow lazy dog.” Then again, as the owner of this book, you can change the sentence to say anything you want! See Chapter 21 for instructions.

Launcher Items folder

If you have the Launcher, you need the Launcher Items folder. The Launcher, of course, is the handy one-click icon-launching window. You have it on your Performa, or on any System 7.5 Macintosh.

The Launcher Items folder works exactly like the Apple Menu Items folder described earlier. In this case, any icon (or alias) you place into the folder shows up immediately in the Launcher window (and not the Apple menu). For the full scoop, plus some Launcher Items folder Secrets, see “Launcher” in Chapter 3.

Preferences folder

A Prefs file, or Preferences file, is a storage bin for a program’s settings. Every time you tell PageMaker that you prefer to work in picas instead of inches, or you change the font used for icon names in the Finder, the program in question records your settings in a Prefs file.

In the early days, a program might record such options settings in the body of its own code. But self-modifying programs are considered a programming no-no; today, the biggest drawback to programs that modify themselves is that they trigger anti-virus programs. (Anti-virus programs interpret any changes to an application as the unwelcome evidence of a virus.) Therefore, most well-behaved programs today never modify themselves; your settings changes are recorded in a Prefs file.

The contents of your Preferences folder, therefore, aren’t for your use at all. The Preferences folder exists for the benefit of your programs. There’s virtually nothing you can accomplish by messing with Prefs files, except to read an error message that tells you so.
Part I: System Software Revealed

CASE HISTORY

Last Resort and the Preferences folder

Generally, our statement is true that nothing in the Preferences folder is there for your benefit. It’s definitely not true, however, if you have the miraculous control panel known as Last Resort (from Working Software).

Last Resort lurks in the background and records everything you type, storing it automatically into a text file stamped with today’s date. These text files reside in a Last Resort folder in your Preferences folder. Over time, you accumulate dozens and dozens of little text files, each containing everything you typed on a certain day. (Baseline’s Thunder 7, Oldvai’s SOS, and Now Save, part of the Now Utilities, work similarly.)

So what’s the point? Safety. If you ever had a system crash, but forgot to save — or typed something you liked, then erased it, and later wished you had it back — then Last Resort is there. You just open up the appropriate text file that was created behind the scenes, and there’s everything you ever typed.

Last Resort has a few fascinating aspects worth mentioning. First, it records (in each text file) which program you were in when typing. That’s wonderful when you can’t remember where you typed something. One of your two cheerful authors (who wishes to remain unidentified) regularly types phone numbers as they’re read to him over the phone. Trouble is, he can never remember whether he typed them into his Rolodex program (QuickDex), his calendar program (Now Up-to-Date), or whichever Word document happened to be on-screen at the time. More than once he couldn’t even find the phone number at all when looking for it days later, and wound up having to open the Last Resort file for the appropriate day. When all other ransacking fails, he can count on Last Resort to record the typed phone number, regardless of the document or program that was open at the time.

Along the same lines, Last Resort can be a handy note-taker on the spur of the moment, even when no document or program is running. Suppose that you’re on the phone — and in the Finder — and the person you’re talking to starts spewing forth great ideas. You don’t have time to launch Word and wait while it loads! Instead, you can start typing away, blindly, of course, but typing nonetheless. Last Resort, your invisible word processor, will dutifully log everything you type. You can open it up later with a word processor.

Finally, remember, for better or worse, that Last Resort is something of an electronic wiretap. If people don’t know it’s installed, scary things can happen. We know one poor guy who went away for a week, but gave his fiancée free use of his Mac while he was gone. Shortly after he returned, he was using his Mac and had a System crash. But when he began looking through the Last Resort files for the text he’d lost, he found everything his fiancée had typed while he’d been away — and discovered that she’d been dialing up a BBS and typing graphic sexy messages to men she met there.

Is there such a thing as suing for electronic infidelity?

Print Monitor Documents folder

When you use the Background Printing feature, described in Chapter 25, an interesting thing happens each time you choose Print from a program’s File menu. Instead of sending the printing information to your printer, the Mac sends it to a file on your hard disk. Then, as you continue to work on your Mac, these saved-up print files get fed, little by little, to your printer.

While they’re waiting to be printed, your files’ waiting room is the Print Monitor Documents folder. Under normal circumstances, you’ll never have need to interact with this folder’s contents. But in times of troubleshooting, or when you’re being particularly clever with one of the techniques described in Chapter 25, it’s useful to remember that this is where your printouts-to-be live.
Chapter 4: Everything Else in the System Folder

CASE HISTORY
The laser printer from hell
Judy is the wife of an extremely famous director. (This is a true story.) She fell in love with her first Mac immediately. She played with it for three days. And then she moved to a different state, and didn't have a chance to use the Mac for two weeks.

When she arrived at her new home, she set up the Mac and printer. Then she turned on the Mac — and it immediately started printing the same ten-page document over and over and over again! She panicked and turned off the Mac. She waited patiently for 15 minutes while it “cooled itself off” (as she described it later).

But when she turned the Mac on again, the same thing happened! Pages spewed out of the printer like crazy.

Here's how it happened, and what she could have done about it.

At the end of one day, she tried to print her ten-page document. She chose Print from the File menu. Nothing happened.

She had Background Printing turned on, so instead of printing, she was actually creating a disk-based file in the Print Monitor Documents folder in her System folder. Of course, she didn’t know any of this. She just knew that no printing was going on.

So what did she do? She tried to print the document again. It didn’t work again, so she tried to print it again. Little did she know that she was creating one Print Monitor document after another, all piling up in her Print Monitor Documents folder, waiting to be printed. When no printing had started in those 30 seconds, she gave up and shut down the Mac.

Of course, the next time she started up, good old reliable Print Monitor took up from where it had left off, and sanguinely began to print all of those ten-page documents, one after another.

Judy could have solved this problem by calling up Print Monitor and deleting the items from the list, as described in Chapter 25. But perhaps a simpler method would have been to open the Print Monitor Documents folder and physically trash all the little icons therein.

Shutdown Items folder

System 7.5 posed this fascinating question for the first time: if there’s a Startup Items folder, why isn’t there a Shutdown Items folder?

And now there is. Any icon you put into Shutdown Items gets magically “double-clicked” by the Mac’s ghost when you choose Shut Down from the Special menu (but not from the Apple menu). Whereas the self-launching items in the Startup Items run just after the Mac starts up, anything in Shutdown Items — need we say — runs just before the Mac actually cuts off its own power.

And what possible purpose could that serve? We can think of a couple, offhand: first, you could put a sound file there — maybe Porky Pig saying “Th-th-that’s all, folks!” — so that your Mac can bid you adieu at the end of a hard day’s work. Second, you could put in a backup program’s alias, so that it runs automatically before shutting the computer down for the day.

Speakable Items folder

Here’s a folder exclusive to owners of AV and Power Mac models.

As you’ll find out in Chapter 13, those so-called speech-recognition Macs actually have a pretty limited vocabulary. They understand the names of menu items, so you can say “Computer, empty the trash.” They understand a few canned sentences like “Computer, what time is it?” And they understand what’s in Speakable Items.
Part I: System Software Revealed

Anything you put in this folder (almost always aliases) gets added to the Mac's vocabulary (almost always files and folders). In other words, if you're working on a spreadsheet called "Fourth Quarter" a lot lately, put its alias into Speakable Items; from now on, the Mac will understand you when you command: "Computer, open Fourth Quarter."

The tragic part is that Speakable Items gums up the Mac's memory and speed; the Mac must continually scan all the items inside and worry about whether or not you're speaking them. Therefore, Apple recommends that you put in as few icons as possible, and definitely no more than 30; on a Power Mac, however, we found no slowdown even with twice that number.

Startup Items folder

Anything you put into this folder gets automatically double-clicked when you turn on the Mac. Normally, you might place a program (a word processor, say, or its alias) in the Startup Items folder, so you can start working on it immediately when you turn on the computer. You can also put a particular document (or set of documents) in this folder to ensure that your Mac will be ready for you to start work immediately.

Just remember that whatever icons you put into this folder will behave as though you double-clicked them. You may get unexpected results if you put something you're not supposed to interact with — like a Preferences file — into the Startup Items folder. On the other hand, with a little creativity, you can come up with some useful innovations; for example, you can put an alias of your Monitors control panel into the Startup Items folder. That way, each time you turn on the Mac for the day, you can quickly switch to color or black and white, depending on the job you're about to do.

For details on the Mac's startup process, see Chapter 6.

All About Enablers

An enabler is, we suppose, a relative of the extension. It, too, is installed into your System folder for the benefit of the Mac itself, and has no settings that you can make. An enabler, however, is supposed to be stored loose in your System folder and not in the Extensions folder. And it only works in System 7.1 or later.

Enablers for individual Mac models

In days gone by, Mac users were treated to a new, improved (and newly numbered) System software version about every six months. There was System 6.03, then 6.04, then 6.05, and so on. What necessitated each new version of the System was the introduction of a new model of Macintosh. Each had slightly different circuitry, requiring a slightly modified version of the System.

Unfortunately, keeping up with Apple was no easy feat. With each new version of the System, power users lurched into action, getting their hands on the new System by hook or by crook (which usually meant downloading it from an online service like America Online).
The rest of us slogged along in quiet obsolescence, or got so much anxiety over having somehow been left in the dust that we finally got the new System from an Apple dealer.

So Apple did what they hoped was a clever thing: they left a convenient software outlet in System 7 into which could be plugged a little file that explained a specific Mac's circuitry to the System. As each new model of Mac came out, Apple wouldn't have to rewrite (and rerelease) the entire System folder; instead, Apple could just make available the appropriate plug-in file, now called an enabler.

Sure enough, beginning in 1992, all new Mac models came equipped with System 7.1 and an enabler. The enabler is very, very, very important; without it, those models can't even run. (Before enablers, there were only two absolutely essential files: the System file and Finder.) And each enabler only works with one specific Mac model (or model family — there's only one Power Macintosh enabler, for example). Your enabler comes on its own disk, usually called Install Me First.

Whatever you do, don't lose this disk!

If you have a PowerBook, make a copy of your enabler disk right now and carry it in your Mac's carrying case. If anything ever goes wrong with your System, and you have to re-install using, say, a set of System 7.1 disks borrowed from a friend, you won't be able to start up the Mac at all without the enabler.

**The end of model-specific enablers?**

The next phase in Enabler History began with the introduction of System 7.5.

Millions of Mac fans gasped — the enablers were gone!

It's true: Apple incorporated the computer instructions contained in all those dozens of enablers into System 7.5's System file. If you put any of those existing enablers (040, 001, 065, etc.) into your System 7.5 folder, you'll just be wasting disk space.

That's not to say that enablers won't once again rise up to clutter our System folders when Apple introduces new Mac models. But if your Mac was one of the 90 models introduced before the fall of 1994, you don't need an enabler file with System 7.5.

**32-bit enabler**

Those hardware-specific enablers aren't the only enablers. Apple has released several others and will continue to use enablers as a modular enhancement method.

For years, owners of the Macintosh II, IIX, Iicx, or SE/30 were limited in the total amount of memory their Macs used — the upper limit was 8MB. The 32-Bit Enabler, usable only with System 7.1 or later, solves the problem and makes these Mac models memory-ready — allows them to use more than 8MB (up to 128MB, or more if your Mac can use virtual memory).

After you install this enabler (by dropping it into your System folder), a new pane appears in the Memory control panel, offering you an on/off switch for “32-bit addressing.” You'll read about the technical justification for this awkward term in Chapter 8; all you need to know is that it lets your Mac use the memory you've installed above 8MB.
So why, on those older Mac models, does 32-bit addressing have an Off switch? Because some older programs — games, usually — aren’t compatible with 32-bit addressing and will crash your Mac. Turn off 32-bit addressing when you need to run those older programs.

You can get this enabler, like any enabler, from a user group, a dial-up modem service like America Online, or from an Apple dealer.

Apple’s 32-Bit Enabler for System 7.1 is actually only a descendant of a more famous control panel called Mode32. Mode32 was written and sold by Connectix, a company known for its excellent memory-management programs. It did wonders for the Mac models that weren’t “32-bit clean” — programmerese for “can’t use more than 8 megs of memory.” (The “unclean” models were the II, IIX, IICX, and SE/30.)

Apple’s literature for some of these models specifically said that you could install up to 128MB of RAM. However, when this theoretical claim didn’t prove to be true in practice, and Mac users found out they’d have to shell out money to buy Mode32 if they wanted to use more memory, there was a hue and cry.

Apple did the right thing — bought the rights to Mode32 and gave it away free to whomever wanted it. Since that time, Apple came up with its own solution to the “32-bit dirty” problem: the 32-Bit Enabler. It doesn’t work in System 7.5 — but the latest Mode32 version does.

For more inside dirt on memory, see The Memory Chapter.

**Hardware System Update (HSU)**

There were two versions of the enabler known as HSU — 1.0 and 2.0.1. Each was designed to patch (fix) a few lines of System software code to fine-tune your System and eliminate bugs. The 1.0 version affected the Mac’s clock accuracy, fixed the modem port for high-speed communications, and fixed a bug involving ejecting floppies when shutting down certain models.

HSU 2.0.1 fixed those problems, and more: floppy and hard drive problems with certain models, color and scrolling problems on certain monitors. The hodgepodge of little fixes also updated various control panels, enablers, and utility software (Apple HD SC Setup and Disk First Aid). Most significantly, HSU 2.0.1 introduced the new Sound Manager software, the most apparent effect of which is to replace the Simple Beep sound with a more boring beep (see “Sound Manager” in Chapter 3).

**System Update 3.0**

If you use System 7.1 in any flavor (7.1.2, System 7 Pro, and so on), this most crucial file belongs in your System folder. (This would have been called HSU 3.0, except that its dramatic changes affect both software and hardware — so Apple dropped the word “Hardware.”) SU 3.0 incorporates everything from versions 1.0 and 2.0.1, plus a huge number of other improvements.
Here are just a few of the delicious bugs that die when you install SU 3.0 (each of these only affects certain models): various mysterious crashes; the famous HFS disk (blinking question-mark) bug; creeping-System memory syndrome (where the System seems to use more and more memory all day); the About This Macintosh memory-bar-draws-too-long-and-grows-out-of-the-dialog-box problem.

In addition, SU changes your Mac world in several interesting ways. For example, when you're viewing an Open File or Save File dialog box, you now get to see the actual color icons for your files and folders, instead of generic document and folder icons (see Figure 4-4).

In our experience, SU 3.0 can noticeably speed up your Mac and greatly improve its reliability. Unless you already use System 7.5 or later, we encourage you to grab SU 3.0 (from an online service or user group).

**System 7.5 Update 1.0**

This four-disk set, available for free from online services or user groups, is the best thing that ever happened to System 7.5. It triples the speed of file sharing; fixes hundreds of bugs; lets you drop icons into your Launcher window (or Option-drag them out); lets you shut down your Mac by pressing the power button on the keyboard; and so on. It also means the end of “Welcome to Macintosh” — at startup, you now see the Picasso-esque Mac OS logo.
MACINTOSH SECRET

The most useful bug ever fixed

When we read the technical documents that describe System Update 3.0, one particular item caught our interest. It seems that SU 3.0 fixes a long-standing System 7 bug that, frankly, we're sorry they fixed.

Try it for yourself (in any version of System 7 except 7.5). Get ready to save a new document for the first time, so that you're looking at the Save File dialog box:

Now then. You know, of course, that you can press ⌘-S instead of manually clicking the Save button, right? But did it ever occur to you to try ⌘-O? Yes, a slinky little bug slipped through Apple's hands — the keystroke that usually means Open also triggers the Save box! Now you've got one all-purpose keyboard shortcut for both the Open File and Save File boxes.

Until you install SU 3.0, that is.

The System File Itself

New Mac users almost never even think about the System file. And why would they? The System file's primary duty is to serve the machine, not the user. It's supposed to lurk behind the scenes, working with the machine's ROM chips (see Chapter 6) to manage windows, fonts, and menus.

But as savvy Mac users know, you can indeed interact with the System file. Even in System 6, you can install fonts, desk accessories, sounds, and FKeys (see the Glossary) into your System file. But adding or removing any of these components to your System 6 System file requires a special utility program. The Font/DA Mover program (which came on the white System disks with System 6 Macs) shuttles fonts and desk accessories to and from the System file. Apple never did write any programs called Sound Mover or FKey Mover, but individual shareware authors did.
System 7, of course, revolutionized the way you get these components in and out of your system. The System 7 System file behaves more like a folder than a file: you can drag-and-drop font or sound icons on top of it (or onto the System folder icon), instantly adding to your list of fonts or sounds (see Figure 4-5). (As we've said, starting with System 7.1, fonts live in the Fonts folder. See Chapter 24.) Similarly, you can double-click the System file icon to open it into a window where you can see all the sounds and fonts (depending on the system version) you installed.

![Figure 4-5: In System 7, no Font/DA Mover is necessary to install a screen font; it's drag-and-drop time.](image)

You can add or remove one other component from your System folder: a keyboard layout. For more on keyboard layouts, see Chapters 9 and 21.

**What's Left on Your System Disks**

Even if you install the full System using the Installer onto a hard disk, there's a lot of great System software left over on those white System disks (or that startup CD-ROM) that came with your Mac. Nobody tells you to peruse the contents of your System disks to see what the Installer didn’t copy to your hard drive!

Here's what's there:

**TRUE FACT**

**Birth of the DAM**

The first Macintosh didn't come with the Font/DA Mover program. The original designers provided no way at all for you to add or remove fonts or desk accessories to your computer.

In fact, the Font/DA Mover wasn’t even Apple's idea. It started out as a shareware utility written by Don Brown, who later became a founder of CE Software and wrote such classic Mac software as QuicKeys and DiskTop. Apple finally acknowledged the practicality of Don's DAM (as he called his Desk Accessory Mover) and added its own version to the official suite of System software tools.
Apple File Exchange

Apple's advertising consistently says that your Mac can read disks from IBM-compatible computers. (We'll call them DOS disks hereafter.) It's true, but it's a little more complicated than the ads make it seem.

For years, you couldn't just shove a DOS disk into your Mac and watch its icon show up on the screen. If you tried, you'd get an error message telling you that the disk wasn't formatted correctly. Today, Apple's PC Exchange (included with System 7.5, and also sold separately) makes shove-and-play a reality. But before PC Exchange, the only solution was Apple File Exchange.

In System 7 through 7.1, Apple File Exchange lies on your Tidbits disk (high-density System disks) or the Install 2 disk (800K disks). The key point is to launch Apple File Exchange before inserting a DOS disk. After it's running, you're fine — insert away. The DOS disk's contents show up on the right side of the screen, as shown in Figure 4-6.

Then you can select any file in the list on the left side and copy it onto the DOS disk by clicking the Translate button. Or you can select a file on the right side and copy it to your Mac.

Certain kinds of files, such as plain text files, require no special translation. Standard MIDI music files are another example of files that require no translation.

If you get lucky, you may get to work with a file created by a program for which both Mac and IBM versions exist (such as Microsoft Word or FileMaker Pro). Apple File Exchange can put a Word for Windows (IBM) file onto your hard drive. Then, when you use the Open command in the Macintosh version of Word, the file opens beautifully with no further translation.
change only offers a single file conversion option (DCA to MacWrite). Apple counted on other companies to sell translator modules for Apple File Exchange. In the words of the original press release (now several years old), “more translation opportunities will be provided in the future by third-party software developers.” Guess what? It never happened. Therefore, if you have any more serious conversion needs than text files-to-text files (or DCA to MacWrite), invest in one of the excellent, more fully-featured converter kits, such as MacLink Plus (DataViz Inc.).

Apple File Exchange Secrets

Translating file names

One difference between a Mac and an IBM is the way the two machines name files. A DOS file’s name can only be eight letters long, and it’s followed by a period and a three-letter “extension” that identifies the type of file it is. A text file might be called MAJRMEMO.TXT, for example.

You’re not allowed to have any spaces in a DOS file’s name. So be prepared for Apple File Exchange to summarily discard any spaces when you convert a Mac file to IBM. If it’s called Make My Day on the Mac, it’s called MakMyDay.TXT on the IBM.

Of course, in the Mac world, we’re used to calling a file whatever we want to call it. Therefore, if you don’t shorten a file’s name to one of those hideous eight-letter abbreviated forms when transferring Mac files onto a DOS disk, Apple File Exchange will do it for you.

Stripping the little boxes

Often, when you convert word processing or text files from a DOS disk, you get more than plain English — you get a bunch of alien-looking squares or symbols, as shown in Figure 4-7. These are the normally invisible codes that are responsible for linefeeds used by IBM word processors. (Behind the scenes, an IBM word processor inserts a linefeed character [a cousin of our Return character] at the end of every line. These linefeed characters are usually what shows up on the Mac as little squares.)

If you want to nuke these symbols, you have three choices. First, if you do a lot of nuking, get a shareware program like Add/Strip or McSink, both of which offer a Strip Control Characters command. It does exactly what you’d hope.

Second, you might try using your word processor’s search-and-replace command (in Word, it’s the Replace command). Search for Control-J and replace with nothing. That gets rid of many of the annoying squares.

Finally, Microsoft Word has a highly functional, but little-known, rectangular-selection feature. You can select a vertical strip of text, which is exactly what you’d want to do if the control-character squares fall, as they often do, at the left edge of the text (see Figure 4-7).

The Secret: Press the Option key as you drag. Drag straight down through the thin left-margin column of squares and then press Delete.
Part I: System Software Revealed

Figure 4-7: Use Word to highlight only the offending characters.

Formatting a DOS disk

A Mac disk and a DOS disk, as far as a disk manufacturer is concerned, are physically identical. The only difference between a Mac and a DOS disk is the way it's formatted. Fortunately, Apple File Exchange can format a new blank disk either way. It can even convert one kind of disk to the other.

To format a brand new, never-been-touched disk, insert it while Apple File Exchange is running. You'll be asked how you want to format the disk: as a Mac disk or a DOS disk (see Figure 4-8). If the disk is a double-sided disk, and not high-density, you'll also be offered a choice of capacities: 400K, 800K, and so on. (If you have PC Exchange, skip all this — instead, just shove any blank disk into your drive and choose the format you want from the pop-up menu.)

To convert one kind of disk to another, insert a Mac or DOS disk. Then use the Erase Disk command from the File menu. You see the same set of options as those shown in Figure 4-8.

Figure 4-8:
You can format or erase a disk into your choice of IBM, Mac, or even Apple II formats using Apple File Exchange.
Chapter 4: Everything Else in the System Folder

MACINTOSH SECRET

Those 5½-inch old-style IBM floppy disks

All of this discussion about making your Mac read DOS disks assumes that you’re dealing with normal 3.5-inch, hard-shell disks, the ones used by all Macs and modern IBM compatibles. We’re not talking about those old, obsolete, 5½-inch floppy IBM disks.

But a huge percentage of the world’s data is, in fact, stored on those old, giant, floppy, plastic disks. When the moment comes where you’ve got to get data off of one, you have a couple of choices. First, you can actually buy a disk drive for the Mac that reads those things ($600, Dayna Communications, 801-531-0600). Second, you can find a PC that has drives that can read both kinds of disks and transfer the data from the big disk to the smaller one. (Most cities have a service bureau that can do this for you.)

Recovering disks cheaply

Apple File Exchange’s mission in life is to get usable Mac data off alien, strangely-formatted, non-Mac disks, right? It stands to reason, then, that it should also be useful in scavenging usable Mac data off strangely-formatted or corrupted Mac disks.

Next time your Mac tells you that a floppy that’s always been fine before “is unreadable” or “is not a Macintosh disk” or “needs minor repairs,” try this: eject the disk (don’t click Initialize).

Run Apple File Exchange and reinsert the disk. If Fortune is smiling, you’ll see all of its files listed in the Apple File Exchange window. Transfer them to another disk while you’ve got the chance.

For more on rescuing disks, see Chapter 7.

Reading 720K DOS disks

You know how the Mac formats a double-density (800K) disk as either single-sided (400K) or double-sided (800K)? Well, certain IBM models (PS/2, for example) can do the same with high-density disks — format them either as 1440K or 720K.

Trouble is, if you try to feed a high-density DOS disk that’s been formatted at 720K to Apple File Exchange, you get an error message. Apple File Exchange assumes that any high-density disk has been formatted at its fullest capacity, just like on a Mac.

You can fool Apple File Exchange into accepting the DOS disk, though. Put a piece of tape over the hole in the disk’s upper-right corner. (Don’t put the tape over the hole with a sliding latch. That’s the copy-protection tab; this hole is on the opposite corner.) Now, as far as Apple File Exchange can tell, the disk is an ordinary double-density disk, and it will happily read the 720K format.

Apple HD SC Setup

Here’s another useful utility program that Apple gives you free with your Mac — but, because the Installer never copies it to your hard drive, you may never even know about it.
In any case, this program is used to prepare a brand-new Apple hard drive for use. Another reason most Mac users never encounter this program is that internal Mac hard drives come preinitialized and loaded. And most external hard drives, purchased from non-Apple manufacturers, come with their own hard-drive formatting programs.

Still, Apple HD SC Setup is important. It can unlock several hidden megabytes of space on your hard disk! This technique, and more, is described in Chapter 7.

Historical note: This program was originally created for Apple's first SCSI hard drive, the HD SC 20, nearly a decade ago. The program's name stuck, even years after the original product's demise — and even after Macs started coming with non-SCSI hard disks, such as the IDE drives inside the Quadra 630 line.

Disk First Aid

Like Apple HD SC Setup, Disk First Aid can be extremely important. It's your first resort when a disk — hard or floppy — is acting up. You can think of Disk First Aid as an economy version of, say, Norton Utilities or Central Point MacTools (commercial disk-repair programs).

You don't get many details when you use Disk First Aid; you only have one choice — Repair — and it does what it does automatically. Still, we've seen Disk First Aid actually cure a couple of cranky hard drives (although we've seen it fail to cure far more). We've actually heard of Disk First Aid succeeding in saving a bad floppy disk, even when the expensive commercial disk programs failed. We've also been told that Disk First Aid is good preventive medicine: run the thing on your hard drives every couple of months or so to nip any incipient problems in the bud.

For more information, and a few great Disk First Aid Secrets, see Chapter 7.

The Font/DA Mover

We give you all this talk of System 7 and the ease with which you can install fonts — and then you bump into a section about the Font/DA Mover. You must think we're nuts!

And, to an extent, you're right: the Font/DA Mover is not included with your System software disks. Yet, unfortunately, this relic of more difficult times hasn't been made completely obsolete. Even with System 7, the Font/DA Mover (version 4.1 for System 7) is still useful in two instances:

- As in the days of System 6, it's still possible to install a font (or a desk accessory) directly into the body of a program instead of into the System file or System folder. In other words, you may install a certain font directly into FileMaker. Thereafter, this font is listed in FileMaker's Font menu, but not in the Font menus of any other programs. (See the Font/DA Mover Secrets for instructions.)

- Almost everybody understands how fonts and DAs are installed in System 7 except, apparently, for System 7 itself. Everybody we know has seen, at one time or another, the message shown in Figure 4-9 after double-clicking a font or desk-accessory suitcase.
Figure 4-9:
When you double-click a font or desk-accessory suitcase, System 7 sometimes gets ornery. The forgotten Font/DA Mover frequently gets you out of this one.

Sometimes the Font/DA Mover succeeds in copying the fonts or desk accessories out of the old, corrupted suitcase and into a new, clean one.

If this almost-extinct, much-despised Font/DA Mover isn't included on your System software disks anymore, where do you get it? Unfortunately, we couldn't get permission to include it on the disks with this book. That leaves you two sources: on-line modem services such as America Online, and your local Mac user group. (To find the Mac user group in your area, call Apple's user-group referral hotline at 800-538-9696.)

Font/DA Mover Secrets

Install a font (or a DA) directly into a program
When you double-click the Font/DA Mover icon, you get a window something like the one in Figure 4-10.

Figure 4-10:
The Font/DA Mover's universally loathed interface. In this figure, a font from a font suitcase (left side) is being installed into ClarisWorks (right side).

On the left side, you see whichever fonts are currently in the System file (or a font suitcase you've opened). On the right, there's an Open button that can open a font suitcase on a disk; at that point, the suitcase's contents are listed on the right. Fonts can be copied from one place to another by highlighting their names in the appropriate list and clicking Copy.
However, the System file and suitcase files aren’t the only places fonts (and desk accessories) can be stored. Using this Secret, you can actually install a font or a desk accessory directly into a program, so that it’s available for you to use in that program but no other programs.

The trick is: Close the list showing the System folder contents (click Close). The Close button now says Open. Before you click it, though, hold down the Option key. The Open File dialog box that appears lists every program on your disk. Double-click the one into which you want to install the font or desk accessory. Your screen should look like Figure 4-11.

Highlight the font or desk accessory you want to install into the program you opened and click Copy. If you can click Quit at this point, do it; you’re all done.

Next time you run the program in question, you’ll see the new font in the Font menu or the new desk accessory in the Apple menu.

To remove the font or desk accessory from the program, do the same thing but in reverse. Hold down Option as you click the Font/DA Mover’s Open button. Open the program and select the font or DA, and then click Remove.

**Fonts you’re not allowed to remove**

*System 6 users:* The Mac requires three fonts: Chicago 12 point (used in menus); Geneva 9-point (used in icon names); and Monaco 12-point (used very little, thank heaven). If you use the Font/DA Mover to remove these fonts, you hear a beep and you are told that they’re unremovable.

Don’t let this bother you. Despite its error message, the Mac still goes ahead and removes all the other fonts you selected for removal. (You don’t have to reselect anything just to omit the three system fonts from your selection.)

*System 7 users:* The Font/DA Mover won’t let you remove any fonts from the active System folder! If you try, you get the curiously out-of-date message shown in Figure 4-11.
Apple Classic Fonts

We can't exactly write volumes about the Apple Classic Fonts. However, we thought we'd call them to your attention since you get them free with System 7.1 But they're not installed by the Installer. You have to go get them from your Fonts disk yourself.

These fonts are the original 1984 bitmapped screen fonts, as shown in Figure 4-12. They're not TrueType or PostScript fonts. We note this because it means they won't print smoothly on a laser printer (or any printer), particularly if you print an odd-numbered point size.

You install them as you'd install any font: drag the suitcase file on top of the System folder. (See Chapter 24 for more on fonts.)

LaserWriter Utility

LaserWriter Utility (LU) is a collection of miscellaneous PostScript laser printer management features, all stuck together into a single program. We've resisted the temptation to go into delicious detail here. Instead, you'll find our potent LaserWriter Utility Secrets in Chapter 25, where they rightfully belong. For now, we'll just point out that LU is the key to making your laser printer quit spewing the wasteful startup page every time you switch it on.

TRUE FACT

Apple's NEW!! classic fonts

We saw a rash of Mac books that highlighted the new features in System 7.1. Several of them pointed out with great cheers that Apple has once again included the Apple Classic Fonts with every Mac — the original seven bitmapped fonts. The attitude was: Welcome back, old, charming, long-lost fonts!

To be brutally frank, we laughed our heads off. The only thing new that Apple did with these fonts was to stick them in a folder called Apple Classic Fonts. They've always been included with every Mac — in every version of System 6 and System 7.

What a difference a folder makes, eh?
The Installer

The Installer is the program that gives birth to a System folder. It loads your Mac with all the system software we described in the previous chapters. The Installer figures out which pieces of software are required to operate your particular Macintosh model and places each required file where it belongs in the System Folder.

If you're like most people, you bought your Mac with the system software already installed. Therefore, you may not have had to mess with the Installer. But everybody encounters the Installer at some point. You use it in one of the following ways:

- To install system software on an additional hard drive
- To create a floppy disk that can be used as a startup disk
- To replace your current system software with a newer version
- To create a leaner System folder to conserve dwindling hard drive space and memory

As a matter of fact, we think you should run the Installer every three months or so as a disk-health measure, replacing your older (and possibly corrupted) System file with a fresh, clean, untarnished version.

Many software companies now use versions of Apple's Installer to install regular (non-System) software onto your disk: Microsoft, Claris, and so on. Installing a program by dragging it from the original master floppy onto your hard disk is a thing of the past.

You'll find the Installer on a white floppy disk included with the package of system disks that came with your Mac. It's on the disk called Install or Install Me First. If your Mac came with a CD-ROM startup disc instead, by all means use it.

Until recently, the same Installer disks provided with every Mac had all the system software needed to run any Mac. Nowadays, however, specific Mac models come with specific enablers (model-specific extensions). See "Enablers" earlier in this chapter for details. If an Install Me First disk came with your Mac, guard it with your life; if anything happens to it, you can never reinstall your system software.

How to use the Installer

In the olden days, you could install the system just by dragging the files you need from the floppy disks onto your hard drive. But using the Installer is better and safer for the following reasons:

- The Mac looks for the various pieces of system software in specific locations within the System Folder; the Installer ensures that everything will wind up where it belongs (control panels in the Control Panels folder, and so on).
Not every Mac model requires every piece of system software. The Installer copies only the files needed for your machine so you don’t clutter up your hard drive with extensions and control panels you’ll never use. When you choose the Mac Classic installation option, for example, the Installer automatically excludes the Color and Monitors control panels from the System Folder. (They aren’t needed on a black-and-white Classic.)

If you’re upgrading from one System version to another, the Installer intelligently builds a new System folder around your old one, preserving whichever fonts, control panels, sounds, and extensions you added.

The Installer eliminates the need to drag and copy dozens of files. It prompts you to insert the system disks one at a time and takes care of the copying all by itself.

With the Installer, you can customize an installation to create a system perfectly suited to your needs. If you don’t have a laser printer, for example, you can certainly live without the LaserWriter printer driver taking up 219K of your hard disk. The Installer lets you choose which optional items get placed into your System Folder.

The software to be installed has often been compressed to save disk space. The Installer automatically decompresses whatever you’re installing, sometimes even rejoining pieces that had to be split apart. You can’t do that manually.

To perform an installation, insert the Install 1 disk and find the Installer icon. Double-click it to launch the program (see Figure 4-13).

After a moment, you see the Installer’s title screen; click OK. Then you have to specify onto which disk you want to install a System folder; click Switch Disk until the desired disk is named in the middle left side of the dialog box. (If you want to install system software onto a floppy disk and you have only one floppy drive, click Switch Disk to select the Install 1 disk itself and then click Eject Disk to remove it. You can then pop in a new floppy disk and continue. Remember, though, you have to use a high-density 1.44MB floppy disk; even the smallest System 7 software configuration can’t fit on an 800K disk.)

Now you’re faced with a decision (see Figure 4-14): you can perform the Easy Install or choose Customize to configure your own installation.

In fact, if you’re using the newer installer (with System 7.5, for example), here’s a terrific undocumented feature. Press ⌘-Shift-K at this main screen. You’ll be asked whether you want simply to update your existing System folder (a normal install) or to install a completely new one (a “clean install”), archiving your old System folder. (For more on the importance of a clean install, see page 160.)
Clicking the Install button (or simply hitting Return) starts the Easy Install. Our advice: *Don't do it.*

The Easy Install copies onto your hard drive all the control panels, a full selection of fonts, the entire arsenal of printer drivers (even if you only own one printer), and the software needed to connect your Mac to a network. A System Folder created with the Easy Install command fills between four and a jaw-dropping 20 megabytes of your hard drive, depending on which system version (and how many features) you're installing.

Your cheerful authors recommend, therefore, that you always opt for the Custom installation. You're now allowed to choose only the items that do you any good (see Figure 4-15). Regardless of whether you have the old Installer or the new one, you can probably save plenty of installation time and clutter on your disk by selecting only what you need.

**Figure 4-14:**
Click Install to begin Apple's Easy Install. If you wish to install only certain items, choose Custom Install from the upper-left pop-up menu — or, if you have the older-style Installer, click the Customize button instead.

**Figure 4-15:**
The old Installer's Customize window is shown at top. In this window, press the Shift key to select only the items you want from the scrolling list. At bottom: the newer Installer, which comes with (for example) System 7.5. It's superior in several ways: you can resize the window; you can switch back to the Finder without quitting (to make more room on your hard drive, for example); you can click the little i button to get a description of something; you have much more control over what gets installed, even down to the individual control panel, because of the Finder-style triangle buttons; and the checkboxes make it clear exactly what will get installed.
The scrollable field within the Customize window displays the full range of system software modules. In the System 7 and 7.1 Installer, there are five categories of software:

- A standard set of system software that runs almost any Mac model
- Printer drivers for specific Apple printers
- Networking and file sharing software
- The standard system software for your specific Mac model
- A Minimal Software configuration

Click any option to display a brief description of the configuration and see its total size. Select the option you want and then click the Install button to begin the installation. Usually, however, you want to press the \texttt{Shift} key as you select items in this list. That's the only way to select more than one item for installation.

The newer Installer's options, on the other hand, are self-explanatory — you don't have to hold down any keys to select multiple items.

**Software for Any Macintosh**

Our advice: don't use this option. It copies dozens of unnecessary files onto your disk, taking up time, disk space, and your psychic energy. Here are some typical examples:

Regardless of which model you have, this option installs Brightness, which only works on a Classic; Monitors, which is only useful on color Macs; Portable, which is meaningless on a desktop Mac; and so on.

If we really rack our brains, we can think of exactly one instance where this option is useful: if you're installing onto a portable hard drive that you plan to use as a startup disk with a whole bunch of different Mac models.

**The minimal system**

The minimal software configurations are truly minimal. For example, the System 7.1 minimal System folders range from 974K for a Mac Classic-only installation to 1300K (for a tiny system that can run any Mac).

Squeezed into the minimal configuration is a bare-bones system — as lean as you can get and still be able to run your Macintosh. You get no control panels, so you won't be able to change the desktop pattern or alter views in the Finder. There are no printer drivers, so you won't be able to print. There's nothing under the Apple Menu except the About this Macintosh command. And you're left with only the Mac's three built-in system fonts: Geneva, Monaco, and Chicago. You don't even get a colored Apple-menu logo! This stripped-down system, however, is ideal for PowerBook users who want to start up from a RAM disk (as described in Chapter 12), in exchange for a huge gain in battery life.
Part I: System Software Revealed

Installer Secrets

The golden troubleshooting rule: A clean install

Here's one of the most important Secrets in this whole book: there's a difference between installing System software and performing a clean install.

When you run the Installer under normal circumstances, it actually updates whichever System you already have on your disk. This is a great feature; suppose that you're using System 6, and you customize it to the hilt with desk accessories, control panels, and so on. When you upgrade to System 7, the Installer thoughtfully preserves all of your customizations: fonts, sounds, DAs, extensions, and so on. (Even if you reinstall the same version of the System, this same process takes place.)

A potential problem with this technique lurks, however. If there's some dormant corruption or problem with the existing System file, it's still there when the file is upgraded to the new version of the System. (That's why you sometimes hear of people who have reinstalled the System for the purpose of eliminating some mysterious crash they've been having — and it doesn't work. They're just building one System file onto an existing bad one.)

To get around this, you can force the Installer to place a completely new System folder onto your disk. It won't just update the existing System; it creates a completely clean, untarnished, factory-fresh one. This process is called "doing a clean reinstall". (System 7.5's Installer can do this automatically; see page 157.)

Here's how it works. Open your existing System folder. Drag the System file into any other folder — put it in the Preferences folder, for example. Rename the System folder. (Call it "Old System folder," or something.)

Then run the Installer. It creates a completely new System folder because it can't find an old one to update. (A System folder without a System file isn't a System folder at all!) When it's finished, drag all of your custom fonts, customized Apple menu items, extensions, and so on out of the old folder and onto the new folder's icon. Don't forget the Preferences folder, whose settings may represent hours of time on your part! Finally, you can trash the old System folder.

A clean reinstall of System software is almost guaranteed to improve the performance and reliability of your Mac.

The Un-Installer

You can use the Installer to remove printing and networking software from your current system if you no longer need it. To do this in the pre-System 7.5 Installer, first click the Customize button to open the Customize window. Then hold down the Option key; the Install button turns into a Remove button.

With the Option key still depressed, scroll through the configuration options. Items that can't be removed are dimmed. Select what you'd like to remove from among the undimmed items and click on the Remove button. The selected items will be deleted from your System.

In the newer Installer, simply choose Custom Remove from the upper-left pop-up menu.
The floppy-free, hassle-free install

As Apple’s system software grows ever more humongous, it will arrive into your life aboard ever larger stacks of floppy disks. Until everybody has a CD-ROM drive, and can thus install new system software conveniently from a single disc, installing new system software will become an ever more painful process.

Here’s a way to eliminate the hassle. All you need is a disk that’s big enough to hold all of those installation floppies’ contents — a SyQuest cartridge, for example.

Copy all of the floppies into a single folder called, say, System Installer. (Each floppy, of course, becomes a folder when it’s dragged to your SyQuest.) Open the first installation disk and drag the Installer icon itself into the System Installer disk, floating loose among the floppy-disk folders. The setup should look something like Figure 4-16.

![Figure 4-16](image)

Figure 4-16: How to end your floppy-shuffling days forever — and cut your System-installing time by three-quarters.

Now, when you double-click the Installer, it works beautifully, but won’t request that you insert any floppies. As an added bonus, you can even install system software over a network with this method.

Roll credits (old Installer)

When you’re faced with the usual Easy Install screen (the one containing the Customize button), press ⌘-Option. Notice that the Help button changes to say About.

If you click the About button, you’ll be treated to several consecutive screens of lighthearted credits by the programmers (and a button that changes to say More About). Yes, it’s the Apple Installer — as it says, “The hottest installation technology anywhere!”

Switching Between System Versions

Whenever you switch major System versions — from 6 to 7, say, or from 7 to 7.5 — compatibility is an issue. Older programs, especially games, ATM, fax/modem software, Suitcase, and After Dark, may not run until you get upgraded versions.
The secret message in the System file

Nobody doubts that Apple's renowned system-software programmers have a sense of humor. But here's how you can prove it to yourself.

Launch Microsoft Word. While pressing the Shift key, choose Open from the File menu. Navigate to your System folder and open the System file itself.

If you're using System 6, there's a copyright notice and only one other intelligible sentence: "Help! Help! We're being held prisoner in a system software factory!"

The joke was good enough to live on. If you open the System file for System 7.0 through 7.5 in this manner, the sentence says, "Help! Help! We're still being held prisoner in a system software factory!"

And you get the names of the 13 Blue Meanies — the guys who formed Apple's System 7 bug-shooting and quality-control SWAT team.

Interestingly, if you try this trick in System 7.5, you can scroll down into the document for an extremely interesting set of additional credits. (We'd give almost anything to know precisely what services were provided by Domestic Partner Amy, the Underpaid Process Dude, or The Flake.)

You can eat your cake and have it, too. You can install both Systems, and switch between them as needed. Here are several methods.

Two different disks

The easiest way to set up a two-System environment is to install one system on each of two drives (your hard drive and a SyQuest cartridge, for example). To switch from one to another, do this:

- Open the Startup Disk control panel.
- Click the icon for the disk that contains the System you want to switch to.
- Restart the Mac.

Two different disks (occasional method)

Suppose you almost always use System 7.5, but occasionally want to revert to System 7.1 (or vice-versa). If you have two hard disks, try this. Install System 7.5 on the hard drive built into your Mac. Install System 7.1 on the external drive.

On the day you want to start up with System 7.1, switch on the computer. Press the ⌘, Option, Shift, and Delete keys continuously. The Mac will completely ignore the internal hard drive, System 7.5 and all. In fact, the drive's icon won't even show up on the desktop. Instead, the Mac will boot from the first System folder it finds. In this case, it'll be the System 7.1 on the external drive.

That much we've heard before. Here's our added little spin on this Secret: you don't have to go without your internal hard drive all day after using this trick. After your Mac has successfully started up from the external drive, launch SCSI Probe, a control panel we included with this book. Click its Mount button. Presto! Your internal drive pops right back onto the screen, so that you an access its contents.
One disk

Conventional wisdom indicates that you should never put two system folders onto a single hard disk, or you're certain to get crashes. Here's one exception to this rule, however, and it's just the thing if you have neither two drives nor two partitions: it's system switcher, a shareware program.

System Switcher lets you install both systems on the same hard drive, and then it controls which one is the ruling party at any particular time.

One hard drive, one floppy

For the sake of thoroughness, we'll also include this concept. If you usually run system 7, but you want to use system 6 temporarily, install system 6 onto a high-density floppy disk. See to it that the system 6 floppy is already in the disk drive before you turn on your Mac.

When the power comes on, the Mac will grab the system folder on the floppy disk. The only drawback to this method is that running a Mac whose system folder is on a floppy disk is slow. But you can't beat this method for simplicity and convenience.

System-switching Secrets

System-disk switching on the fly

If you do much switching between startup disks — one with system 6 and one with system 7, for example — then the routine of opening the control panels folder, double-clicking startup disk, closing startup disk, and restarting the Mac gets tired fast.

Consider investing in Now Utilities (a discount coupon is included with this book). Its startup manager component offers a quick and convenient way to switch startup disks on the fly. That is, you can choose which disk boots at startup time. Just hold down the space bar. When the startup manager window appears, choose a disk from the pop-up menu in the lower-right. Startup manager automatically and instantly restarts the Mac with the new startup disk you specified.

System 6 to 7: stop that damned desktop-rebuilding

Every time you use system 7 on a particular disk after having used system 6, you have to sit and wait while the Mac rebuilds the desktop file (see chapter 6 for details). If you're doing a lot of switching back and forth, this gets annoying in a hurry.

Our first secret, therefore, is that you can merrily click stop in the rebuilding the desktop... dialog box that appears on the screen. You don't hurt a thing by doing this, and you save yourself a lot of time. (A file or two may appear with blank icons, but they'll return the next time you rebuild.)

If you have other disks, they, too, will go into rebuild-desktop mode by themselves. Here, too, you can click stop without compunction.

The only problem with this method is that the next time you turn on the Mac, it will again attempt to rebuild the desktop. Of course, you can keep clicking stop forever, but the Mac will also keep trying to rebuild forever, until you finally let it rebuild to completion.
Stopping the desktop-rebuilding forever

If you do much System 6/System 7 switching, you'll especially like this trick, which forever eliminates the Mac's attempt to rebuild the desktop every time you return to System 7 from System 6.

It involves a piece of software called the Desktop Manager. It's an extension you drop into your System 6 System folder. It works a lot like the invisible desktop database of System 7, in fact.

And the glorious result is that you don't have to sit through that boring desktop-rebuilding process every time you return to System 7.

Desktop Manager may be tricky to find, since it's officially a part of Apple's old AppleShare networking kit (version 2.01). But you can generally find it in the disk library of a Macintosh user group.

Handling Trash and Desktop folders

When you're in System 6, any disk you used under System 7 shows up with two surprising folders: Trash and Desktop. (If you've been using your Mac on a network, there's even a third unexpected folder, called Network Trash.)

Dialogue

Compatibility Checker

JS: David, we should describe the Compatibility Checker.
DP: No, we shouldn't.
JS: But it's free from Apple. We should at least mention it.
DP: No, we shouldn't.

JS: What is your problem? The Compatibility Checker is a clever and helpful HyperCard stack that comes with your System 7 Upgrade Kit. It actually goes through the stuff on your hard drive like some kind of personal assistant, and automatically reports back to you on what stuff isn't compatible with System 7. It even gives the phone numbers of the software companies so that you can call them and find out whether or not there's a System 7-savvy upgrade available.

DP: Did you run it?
JS: What?
DP: Have you actually tried it?
JS: Well, I... No, I mean — well, I didn't have to. My Mac came with System 7 already installed. So for me, it wasn't a matter of choosing whether or not to upgrade from System 6.

DP: Well, it's terrible. The Compatibility Checker winds up reporting that nearly everything on your hard drive is incompatible with System 7!
JS: Really?!
DP: It's because any time there's a product or program whose status Apple didn't know for sure, the Checker reports that it needs looking into. And it suggests that you contact the manufacturer. I actually know people who didn't upgrade to System 7 because the Compatibility Checker scared them so much, listing almost every piece of software they owned as being a trouble spot.

JS: So what are you supposed to do? Throw it away?

DP: I would.

JS: Oh, great. Now you're telling people to throw away perfectly good software.

DP: Besides, by this time, it's been two years since System 7 came out. It's not as though software companies haven't had time to make their stuff compatible. I think it's fair to say that 99% of the programs being sold today are System 7-compatible.

JS: Being sold, sure. But what about all the great software people already have? That they've already paid for? What about all the great old games that aren't compatible with System 7?

DP: Well, for their benefit, I guess we'd better write a section on switching back and forth between two System versions, eh?

JS: Darned right.

The Trash folder is System 6’s way of representing the System 7 Trash can — the one that never empties until you choose the Empty Trash command. Anything that was in System 7’s Trash when you turned off the Mac appears, under System 6, in this folder.

The Desktop folder holds any icons that, under System 7, were sitting out on the desktop outside of any window.

If you'd rather not see these folders at all in System 6, make them invisible. Both System 6 and System 7 will work perfectly — the folders simply won't show up when you're using System 6. (To make a folder invisible, use DiskTop, included on the SECRETS disks. Select the folder, choose Get Info from the DiskTop menu, select Invisible, and then click Change.)

(Of course, if you make the Desktop folder invisible, then you won't have System 6 Finder access to whichever icons you left out on the desktop in System 7. You can open these files from within your programs, however, using their Open commands. One more thing: aliases don't work if their originals are in an invisible folder.)

**Moving to System 7 for the first time**

A hard-disk driver is an invisible set of software that tells your Mac how to control your particular brand and model of hard drive. It's among the most important software on your Mac.

A driver that worked fine under System 6 probably won't work fine under System 7, however. This is one of the most under publicized aspects of System 7: you must update the hard-disk driver!

Updating the driver, fortunately, doesn't mean you have to erase the entire disk. Just run the Apple HD SC Setup program provided with your System 7 system disks.
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(Or, if you have a commercial hard-disk formatting program, such as Drive7 or Hard Disk ToolKit, use it instead.) But do it. If you don't, you'll get all kinds of erratic and unpleasant system crashes and hangs once you're up and running in System 7.

As a matter of fact, as you upgrade from System 6 to System 7, you should also check out your hard drive using Disk First Aid (again, on your System disks) or a commercial hard-drive doctor program like MacTools or Norton Utilities. This step takes care of any lurking corruptions or problems that get magnified under System 7.

One final thing: for best results, do a clean install of System 7, as described above in the Installer Secrets. And when that's done, to be extra safe, don't just throw all your extensions and custom control panels into the new System folder. Add a few at a time, restarting the Mac after each batch; this helps you track down any System 7-hostile extensions you may have. (If one of them gives you a system crash, you'll have a better idea of which one it was.)

Great Invisible Files of System 7

The Mac, in its efforts to be user-friendly, hides all kinds of technical goings-on from you. If you use a program like DiskTop or ResEdit (on your SECRETS disks), however, you can peek at all the files the Mac chooses to make invisible.

- **Desktop DB:** The Desktop BNDL file. It's where the Mac stores the *bundles* — the relationship between a certain program or document and its icon.

- **Desktop DF:** Stands for Desktop Files. This is the database that records what files you've got and what the icons look like.

- **Move&Rename:** You'll only see this mysterious invisible folder if your Mac is networked (connected to other Macs). It's used by System 7's File Sharing feature when somebody at a remote Mac is trying to move or rename a file on your disk.

- **Icon:** If you change the icon of a disk, as described above, the Mac has to store your pasted-in icon graphic somewhere. (When you paste a new icon into a file, the graphic is stored in the Desktop file. But if you replace the icon of a disk, the Mac creates the Icon file.) If you trash this invisible file, your disk's icon will be in an iconic no-man's land, having neither its original nor its replacement icon...so it's best to leave this, and all invisible icons, alone.
In this chapter:

- Every system version Apple ever released
- The differences between System 7.1 and 7.0.1
- The differences between 7.1.1, 7.1.2, 7.1.3, and so on
- The Performa “P” series
- The SECRETS timeline
- Guide to AppleSpeak

In a little more than a decade, Apple has served up no less than 25 different versions of the Mac operating system. We will attempt in this chapter to guide you on a never-before-attempted journey: We will describe virtually all these permutations of the Mac’s system software, from the System (short-lived) 1.0 to the dramatic System 7.5 — and beyond.
The System Software Museum

Why create a museum of the Mac’s system software? For one thing, exploring the nitty-gritty of system compatibility may prove very valuable to you Mac troubleshooter types; it can be pretty handy to know, for example, that in a pinch you can run an LC II with System 6.0.8, but not 6.0.7. Furthermore, the rash of System 7 varieties has boggled even us. Quick, without looking, what’s the difference between Versions 7.1.1, 7.1.2, 7.1.3, and 7.5? And which one is the same as System 7 Pro?

On a more philosophical level, this retrospective provides a stunning overview of just how far the Mac has come since its introduction. As we dug up this information, we were continually surprised to learn how many of the basic Mac interface features that we take for granted weren’t around when we bought our first Macs.

For example: Did you know that in the original Finder, you couldn’t drag a disk into the trash to eject it? That folders were nonexistent in Open and Save dialog boxes? That the original Calculator buttons were in a completely different order? How quickly we forget.

Join us now as we stroll down the corridors of the System Software Museum. Watch as the Mac operating system evolves before your very eyes.

System 1.0

The original Mac operating system was tiny by today’s standards — a total of about 216K, including the Finder (46K) and a solitary printer driver, the ImageWriter file. (Note the lowercase w. The ImageWriter designation came along later.) Desk accessories, such as the Alarm Clock and Calculator, were installed in the System file, which was a whopping 142K, with fonts accounting for about 86K.

If you opened the System folder on an original Mac 128K, you saw only six files — all with identical Finder-like Mac icons (see Figure 5-1).

Figure 5-1:
The entire contents of the System folder — all 216K of it — as it appeared in 1984.
The original system also included a separate tutorial disk, called Mousing Around, to help new users get acquainted with using the mouse. Remember, the whole concept of a mouse as a pointing device was new to the general public in 1984. Mousing Around (the forerunner of Macintosh Basics) let you play connect the dots and plunk out tunes on a tiny on-screen keyboard to hone your mousing skills (see Figure 5-2). We have one dark secret to tell you about Mousing Around, though — it was incompatible with the Finder! Apple actually had to ship a different version of the System and Finder on the Mousing Around disk. If you tried to use your Mac using that copy of the System, your Mac crashed!

**CONNECT THE DOTS**

Try moving the mouse yourself. The pointer can move all over the screen. It will never disappear. Run the pointer over each number to connect the dots.

```
  1   2   3
  4   5   6
  7   8   9
```

**Figure 5-2:** Hey, remember this? Mousing Around was mouse training at its most basic — and it came with all the early Macs.

**System 1.1**

It took less than four months for Apple to release its first system upgrade for the Mac. System/Finder 1.1 was introduced on May 5, 1984, the same week Apple announced that it had already sold 70,000 Macs.

The big selling point of 1.1 was disk-copying speed. Apple increased the size of the Finder’s memory buffer, significantly reducing the number of swaps it took to copy a disk on Macs with a single floppy drive. Improved system code also reduced the length of the system startup by about 20 percent and sped up returning to the Finder after quitting an application.
Finder 1.1 also included, for the first time, a Set Startup command in the Special menu, so you could designate a specific application to launch automatically when starting the Mac.

Still, there were no Shut Down or New Folder commands; there was always an empty folder on each disk, no matter how many times you tried to delete it. If you renamed the empty folder (to use it for something), another empty folder appeared instantly.

**System 2.0**

Nearly a year went by without the release of a new system. Then, in April 1985, Apple engineers unveiled System 2.0. Evidently, they had done most of their tinkering in the Finder; its version number jumped from 1.1 to 4.1. (And for the next three years, these two primary components of the operating system — the System and Finder — continued to have different version numbers).

At any rate, Finder 4.1 was not only faster, it was packed with new features. Some commands, such as Put Back and Close All, were removed. For the first time, list views displayed tiny icons next to file names. A new desk accessory, Choose Printer, was introduced — the forerunner of the Chooser. The Empty Folder command was replaced with the New Folder command. Another new command, Print Catalog, appeared in the File menu; it let you print a listing of a disk's or folder's contents. The Special menu sported two new commands: Shut Down and Use MiniFinder.

The MiniFinder was an embryonic version of what would someday be At Ease. Here's how it worked: You selected the icons of the applications you wanted and then chose the Use MiniFinder command. A dialog box appeared, asking if you wanted to install the selected applications in the MiniFinder. After that, whenever you quit an application, the MiniFinder dialog box would open, showing the icons of all the programs you had installed. You then could launch an application by double-clicking its icon.

Surprisingly, it wasn't until Finder 4.1 that dragging a disk icon into the Trash resulted in ejecting the disk and removing its icon from the desktop. In Versions 1.0 and 1.1, you had no choice but to use the Eject Disk command — and only then could you drag the icon to the Trash to remove it from the desktop.
All these changes made for a much more sophisticated and polished operating system. But, of course, even these enhancements weren’t enough for some people. Mac gurus were already searching for ways to optimize Mac performance. In early 1986, one Mac magazine suggested rebuilding the desktop. Doing so, an article pointed out, would trim “15K worth of System-slowing stuff” from your Mac. Interestingly, rebuilding the desktop didn’t just erase Get Info comments back then: it removed all your folders, leaving all your icons naked and shivering on the desktop.

**System 3.0**

The Mac Plus appeared in January 1986, equipped with a hot new Mac operating system — System 3.0 and Finder 5.0.

This upgrade brought some of the biggest changes in the Macintosh operating system to date. It featured a faster and more efficient Finder. It introduced the RAM cache—a small portion of superfast memory that speeds up Mac performance by storing frequently used instructions during a work session (today called Disk Cache). This was also the first version of the system that came with the Installer.

**Evolution of the folder**

Many elements of the Mac operating system have remained constant as newer versions of the system have been developed, but most have gone through at least a few little refinements. Folder icons are a good example. Sure, there were folder icons in System 1.0 — but the original folders were different: they had four widely rounded corners and tabs that were one pixel shorter than today’s folders; the current design (below, right) features three sharp, pointy corners and a slightly rounded upper-right corner (look closely — a one-pixel chunk is missing, creating a slightly softer edge). The Trash also received a tiny cosmetic change. In the older versions of the system software, the lines indicating the ribbing on the body of the can were drawn with edges leading off to the right. In Finder 5.0, the Trash can design was inexplicably flipped around, with the lines trailing off to the left, and it’s stayed that way ever since (as you can see if you view the Trash in black-and-white). Now, that’s progress.
The most significant change was, without question, the mainstream introduction of the Hierarchical File System (HFS), replacing the old Macintosh File System (MFS). The old MFS system, you may recall, was non-hierarchical. In other words, you couldn't nest one folder within another. Oh, you could put files into a folder, but as far as the Mac's brain was concerned, all the files were on one level — the only level. When you used an Open or Save dialog box, the folders disappeared and all your files appeared in one gigantic list.

**System 3.1**

You don't hear much about this version. It was released just one month after System 3.0 and was paired with an upgraded Finder — Version 5.2. Evidently, it had serious bugs; this is one system that Mac gurus of the day urged users to avoid.

**System 3.2**

Apple released System 3.2 in June 1986 (along with Finder 5.3) to fix about 30 bugs. Among other things, this release featured a redesigned Calculator. The old Calculator, frankly, drove a lot of people crazy; its buttons didn't match the layout of the numeric keypad — the division, multiplication, and equal buttons along the top row were in the wrong order (see Figure 5-3). The new Calculator had (and still has) a layout that exactly matches the numeric keypad on Apple keyboards.

![Figure 5-3: The layout of the old Calculator (left) didn't match the numeric keypad. The current layout (right) was introduced with System 3.2.](image)

This update also fixed problems with the Chooser. It patched up a problem that was causing italicized fonts to get mysteriously chopped off when printed, and it also fixed bugs involving lost files and system crashes.
Chapter 5: The System Software Museum

**SECRETS**

**Time Line Continued**

8/93
The Apple Newton is introduced.

3/94
The Power Mac makes its appearance.

7/94
Tonya Harding is stripped of her U.S. figure skating championship.

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**System 3.3**

This incarnation of the system was paired with Finder 5.4. It debuted in January 1987. It was a slight upgrade from 3.2. It was designed to accommodate networked Macs that used AppleShare.

**System 4.0**

In March 1987, Apple released System 4.0. This time, the Finder didn't get upgraded; the current version (5.4) remained. Apple recommended this system for all Macs with at least 512K of RAM. In other words, this was the first system that could not be run with the original Mac 128K. Mainly, System 4.0 fixed bugs that were still floating around in Versions 3.2 and 3.3.

Cosmetic changes took place, too. Mac Pluses and ImageWriter II's rolling off the assembly line were no longer beige; they were clothed in Apple's official new color: platinum.

**System 4.1**

This upgrade was released in April 1987 along with Finder 5.5. The new system came with AppleShare 1.1, which was required for networking the Mac II. Apple recommended this version of the system for the Mac Plus and higher. Among other things, System 4.1 improved performance of large capacity hard drives — meaning, of course, any drive over 32 MB!

**System 4.2**

This update was released in October 1988. It became available to current Macintosh users as part of the Apple System Software Update 5.0, which included System 4.2 and Finder 6.0. This update introduced the first version of MultiFinder — the pre-System 7 answer to multitasking. MultiFinder allows you to run two or more applications simultaneously and switch between them by clicking on an application icon in the menu bar.

**System 6.0.2**

The System 6 era began in August 1989 with the release of System 6.0.2. (This also began the era of three-digit system numbers; a change in the third digit, after the second decimal point, indicates an even more minor upgrade than
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a change in the second digit.) Savvy Mac fans noticed a single visual change that immediately signaled the presence of System 6: a single black pixel. This extra screen dot appeared at the left edge of any Finder window, where the double line beneath the disk information joined the left wall of the window. (And by the way: what happened to System 6.0 and 6.0.1? The former was so buggy it was immediately replaced — and the latter was so buggy it was never even released.)

By this point the system disks had grown into a four-disk set. Small upgrades and enhancements followed over the next two years, many of which simply accommodated the needs of specific new Mac models and printers.

**System 6.0.3, 6.0.4, 6.0.5, 6.0.7**

System 6.0.3 made its debut with the SE/30. Apple recommended 6.0.3 for all recent models. System 6.0.4 is the oldest version of System 6 that can run on an IIfi. For an IIfx, you need at least System 6.0.5, while 6.0.7 is required to run a Classic, IIsi, and the LC under System 6. (The LC II, however, requires at least 6.0.8, while the LC III requires System 7.0.)

**System 6.0.8**

This was the last version of System 6, released just months before System 7 was unveiled. According to Apple, this is the only version of System 6 software that can run on an LC II. It supports Macs as early as the Mac Plus. In essence, this system was 6.0.7 with improved printer drivers.

As the sun set on System 6, the Mac's System and Finder, weighing in at about 610K, had more than tripled in size since the days of System 1.0.

**System 7.0**

This was Apple's quantum leap forward. Much hyped and heavily criticized, System 7 was rolled out in May 1991.

Upgrading to System 7, for many, was something of a pain. You had to have a hard drive. You had to have 2MB of memory or more. The System 7 upgrade kit itself cost money. And upgrading all your existing programs to versions that ran under System 7 cost a lot of money.

But System 7 made life a lot easier. A lot of bugs had been fixed, a lot of poor interface elements had been improved, and a lot of thought went into making System 7 as effortless and elegant as possible. Here are 50 of the most important improvements:

1. **32-bit addressing**: This feature allows your Mac to access more than 8MB of RAM.
2. **Aliases**: These are stand-in icons for actual icons.
3. **Apple menu**: With System 7, this menu can contain anything you want, including applications, folders, documents, and so on.
4. **Application menu**: Your direct-select method of jumping from one open program to another.
5. **Automatic heap adjustment**: When you have so many extensions that the system needs more memory, System 7 adjusts its own memory allotment automatically.
6. **Automatic window scrolling**: When you drag an icon to the edge of a Finder window,
the window scrolls in the appropriate direction.

7. **Balloon Help**: This isn’t just for beginners: point to something on-screen and read a little message about what it is.

8. **Better copy naming**: When you make a copy of a file in the Finder, the copy now automatically adds the word “copy” to the end of the original’s name instead of sticking “copy of” at the beginning. In list views sorted by name, this feature places the copy right below the original, making it easier to find.

9. **Better written messages**: Alert messages, error messages, and status messages were rewritten to be more user-friendly and informative.

10. **Better-organized System folder**: Separate folders for extensions, control panels, preferences, and fonts make for a less cluttered System folder.

11. **Color icons**: Finder icons have been artistically designed with nonabrasive hues.

12. **Colorized, 3-D windows**: Window components, such as the title bar and zoom box, appear with 3-D shading (except on some PowerBook models). You can even pick the tint of the shading in the Color control panel. You must have a monitor displaying at least 16 colors to see the 3-D effects.

13. **Desk accessories**: They can be placed anywhere — not just under the Apple Menu.

14. **Desktop database**: The Mac’s own secret database of your files has been improved for faster file copying and better icon management.

15. **Desktop**: You can access the Mac’s desktop in Open and Save dialog boxes to select items left on the desktop or to access other drives.

16. **Extensions off**: You can turn off system extensions at startup simply by holding down the Shift key.

17. **Faster printing**: The new LaserWriter driver, StyleWriter driver, and Chooser (which come with the System 7 Tune-Up or are built into System 7.1) make printing faster and more reliable.

18. **File renaming**: A box appears around file names to indicate they are selected for renaming.

19. **File sharing**: Under System 7, your Mac is network-ready. By connecting computers, you can share files over a network without any additional network software.

20. **File-copying intelligence**: When you try to copy a file to a folder already containing a file with the same name, a dialog box warns you, even telling you whether the duplicate file is older or newer than the one you’re copying.

21. **Find command**: It’s fast, flexible, and in the File menu.

22. **Finder shortcuts**: Typing the first letter of a file name selects that file. Pressing the Tab key cycles through files in a window in alphabetical order.

23. **Folder triangles**: In list views, you can click on the triangle next to each folder to reveal or conceal its contents. This means that you can examine the contents of different folders while still in the same window.

24. **Font sampling**: You can double-click a font in the System file (or the Fonts folder, in System 7.1) to see a sample of the font.

25. **Icon grid**: You can snap icons to a staggered or straight grid in icon views.
26. **Icon highlighting:** Icons in the Finder become highlighted as you drag a selection rectangle across them instead of after you release the mouse. It’s easier to see what you’ve highlighted, and it’s easier to select by dragging in a list view.

27. **Icon replacement:** Adding custom icons is a simple cut-and-paste job in the Get Info box.

28. **Informative title bars:** 8-clicking the title of a window brings up a pop-up menu that reveals the hierarchical path from the window to the disk on which its contents are contained.

29. **Labels:** You can organize and prioritize files by attaching text and/or color labels.

30. **List View Sorting:** You can sort files in list views by name, size, date, and so on simply by clicking the appropriate column headings.

31. **Multitasking:** The multitasking features made available through System 6’s optional MultiFinder are built into System 7. You can run as many applications simultaneously as memory allows and return to the Finder without quitting applications.

32. **No more Font/DA Mover:** You can install desk accessories and fonts simply by dragging them onto the System folder.

33. **Open and Save dialogs:** You can type a few letters of a file name to highlight it in Open and Save dialog boxes.

34. **PostScript file creation:** It’s easy to create a downloadable printer file; just select the PostScript file option in the box that appears whenever you choose Print.

35. **Program Linking:** You can share applications over a network without any additional network software.

36. **Publish and Subscribe:** This works like Copy and Paste, but the pasted material is automatically updated to reflect changes you make in the original (see Chapter 16).

37. **Put Away Command (8-Y):** Use this command to put items you dragged onto the desktop back into their folders of origin, to eject floppy disks, and to take items out of the trash and put them back where they came from.

38. **QuickTime:** This system extension allows you to record and play video clips, animation, and sound recordings in a variety of applications (see Chapter 23).

39. **Sound sampling:** Double-click a sound in the System file to hear the sound.

40. **Startup Items Folder:** Stick applications, documents, sounds, movies, or just about anything else in this folder and they’ll launch automatically at startup (see Chapter 6).

41. **Startup Page squelching:** Use LaserWriter Font Utility to turn off the wasteful startup page that your laser printer spits out every time you turn it on (see Chapter 25).

42. **Stationery pads:** This feature opens a new, untitled copy of a document instead of the original so that you can alter the contents and save it under a new name.

43. **Trash:** Items left in the Trash when you shut down will still be there the next time you start up.

44. **Untitled folder:** Under System 6, newly created folders are automatically named Empty Folder. Unless you change the name, they remain “Empty Folders” even after you fill
them with files. The new name is more logical.

45. **Views control panel**: Pick the font and size of text used in Finder windows and decide which information will appear in list views.

46. **Virtual memory**: This memory feature enables most Macs to use available space on a hard drive as additional memory. (Apple's virtual memory feature doesn't work on an SE, Classic, Plus, Portable, or LC.)

47. **Window shortcuts**: You can open and close Finder windows and expand and collapse folders with keyboard commands.

48. **Windows don't become active until mouse button is released**: This allows you to drag an item from an inactive window without activating it. The destination window — where you intend to put the file — remains active.

49. **WorldScript**: Apple's technology for permitting the entire Mac to be customized for another language. (Requires the appropriate "script" and compatible application programs.)

50. **Zoom boxes**: Clicking the Zoom box enlarges a window just enough to show all the items displayed in the window instead of expanding to fill the whole screen.

### System 7.0.1

Users only had a few months to enjoy the fresh, clean, hearty feeling of having an operating system with a big round integer before Apple followed System 7 up with System 7.0.1, adding not one but two irritating decimal points.

The new version was mainly about bug fixes and accommodations for the then-new PowerBook and Quadra families. For example, the old Portable and Brightness control panels (leftover from the Mac Portable) were updated, and the Caps Lock extension made its debut. The Cache Switch control panel, along with internal system file-tweaks, was introduced for the 68040 Macs. And the software governing RAM disks and sound management were touched up for the new machines.

### System 7.1

After the harrowing experience of cranking out System 7.0.1 solely to support a couple of new Mac lines, Apple hit upon the enabler scheme described in Chapter 3 and rolled it out in System 7.1, which was destined to be a solid "reference release" for several years.

System 7.1 was remarkable for another reason, too: it was the first system-software update Apple didn't give away. You had to buy it, much to the fury of user groups and on-line services who'd gotten used to making each new system release available to everyone. Backing down in the face of the protests, Apple eventually offered the System 7.1 upgrade kit to user-group and on-line-service members for under $30. But the writing was on the wall: Apple was jealous of Microsoft, system-software superstore to the world.

Many wondered if the upgrade was even worth it. System 7.1 incorporated a huge number of changes, but the vast majority were deep-seated, core-level rewrites that added no usefulness to standard American Mac users. For example, System 7.1 *enabled* (but didn't provide) foreign-language translations, using a technology called WorldScript. Along with that change came new control panels for "internationalizing" your Mac: Numbers, Date & Time, and so on.
Except for the QuickTime extension (see Chapter 23), the sole practical new feature of 7.1 was the Fonts folder. For the first time, all your fonts could be stored sensibly in one Fonts folder in the System folder — instead of being buried in the System file or, in the case of printer-font files, scattered to the winds of your System folder.

**System 7 Pro (System 7.1.1)**

System 7 Pro formalized Apple’s practice of throwing in existing software programs into the System 7 box and calling it a new operating system. This October 1993 release, aimed at networked offices, was nothing more than System 7.1 with the addition of the utterly incomprehensible and prematurely hatched PowerTalk (see Chapter 31). It also included AppleScript and QuickTime (see Chapters 22 and 23, respectively).

Overall, the $150 System 7 Pro was the least exciting upgrade, as far as the individual Mac user was concerned, in memory.

**System 7.1.2**

This minor upgrade accompanied the first-generation Power Macintosh models. Despite what you might expect, it has not been substantially rewritten in “native” code to add a speed boost. In fact, only about 10 or 15 percent of the system is native — according to Apple, the parts that are used most frequently.

The physical signs of change are primarily in the new Memory control panel — that weird Modern Memory Manager setting — and its effects. For example, turning on virtual memory now lets you lower your programs’ Get Info memory sizes, as you’ll see in Chapter 8.

Otherwise, 7.1.2 includes only subtle internal tweaks and remains, for all practical purposes, another spin on System 7.1.

**System 7.1.3**

This system debuted with the “Blackbird” PowerBook 500 series and merited the new number only in that it included some improved software — notably the Control Strip (see Chapter 3).

Here’s a little-known fact, however: a PowerBook 500 actually comes with the equivalent of System 7 Pro you see, it’s bundled with PowerTalk, QuickTime, and all of Apple’s usual goodies. We shudder to wonder if, having purchased a PowerBook 540c, anybody then went out and purchased System 7 Pro to use on it.

**System 7.5**

There wasn’t much surprise about the contents of System 7.5 by the time Apple released it in late 1994. The new “reference release” includes dozens of truly useful new features, but most had been available in other forms before being incorporated into System 7.5. In fact, the only truly new significant software from Apple was QuickDraw GX, the new font and printing software (see Chapters 24 and 25).
Chapter 5: The System Software Museum

The most surprising of these "other forms" was shareware. Apple licensed a handful of popular shareware programs and adopted them as official system software. This must have come as a pleasant and remunerative surprise to their authors — the one-man operations who wrote MenuChoice, WindowShade, SuperClock, and Extensions Manager, for example. (If you're not yet ready to sacrifice the huge swath of hard drive space and memory required to upgrade to 7.5, you can still enjoy those shareware enhancements with previous system software. And we've included them with this book.)

Apple also tossed in some utility programs that it had previously sold separately: PowerTalk network software (see Chapter 31), formerly available only with System 7 Pro; PC Exchange, the IBM disk-reading software (see Chapter 3); and Macintosh Easy Open, which suggests applications capable of opening an orphaned document (Chapter 3). For PowerBooks, System 7.5 makes available the Control Strip (which had originally been included only with the 500 series) to all PowerBook models. System 7.5 includes enhanced desk accessories, too: a new Note Pad, Scrapbook, Puzzle, and Find File command, for example.

The new General Controls panel offers several features that had debuted on the Performa line: a Documents folder that automatically collects new documents; System folder contents protection; self-hiding Finder windows; and the Launcher one-click icon-launching pad. See Chapter 14 for details for these Performa features, and see Chapter 3 for Launcher tricks and tips. Meanwhile, the desktop pattern-editing features of the old General Controls panel have been relegated to a stand-alone program called Desktop Patterns. Unfortunately, the typical Mac user can't edit these patterns — but you can. Use ResEdit, included with this book, to open the Desktop Patterns application. Another example: 7.5's Disk Cache (see Chapter 8) has been rewritten to eliminate all the silly rules about maximum and optimum settings. In System 7.5, the higher you set the Disk Cache, the more speed your Mac will gain.

All of the new features mentioned so far take the form of extensions and control panels, which you can install or remove as you wish. Not every change is represented by a modular plug-in, however; Apple also made some actual, substantive changes to the body of the system itself. For example, Apple incorporated into System 7.5 the bug fixes and updates of System Update 3.0 (see Chapter 4). It also added the purple window-highlighting you see when, in dragging an icon from one window to another, your cursor moves inside the destination window (a nice touch introduced with System 7.1.3 with the PowerBook 500 series).

**MACINTOSH SECRET**

**Apple's best secret About Box yet**

In System 7.5, open the Note Pad or SimpleText. Type secret about box. Select the phrase. Drag it onto the desktop, creating a Macintosh Drag-and-Drop Clipping file.

Something remarkable happens: the Note Pad disappears, and is replaced by a game of Pong!

Move the mouse to control your paddle; try to make the bouncing ball break through all the "bricks" containing System 7.5's authors' names.

Click the mouse to return to your life already in progress.
Other than GX and Apple Guide (see Figure 5-4), the only brand-new software feature added to System 7.5 was Macintosh Drag & Drop, a fantastically useful new core Macintosh feature. Under this scheme, you can drag selected chunks of text or graphics among Macintosh windows, even if they belong to different programs, without copying and pasting (or even disturbing the Clipboard contents). For example, you can drag a “page” of the Scrapbook directly onto the desktop, where it becomes a PICT file called a Clipping. Or you can highlight some text in the Note Pad and then drag it directly into SimpleText. Of course, Drag & Drop doesn’t work with any pre-existing applications; at first, only Apple’s own programs (Note Pad, Scrapbook, SimpleText, Jigsaw Puzzle, Finder) support Drag & Drop. Here’s hoping that other software companies will see the light, update their programs, and work toward that great day when you can drag material out of WordPerfect and into a Persuasion outline, out of Illustrator into a Photoshop document, and so on.

Figure 5-4: Apple Guide is like an intelligent manual. First, you choose Macintosh Guide from the new, enhanced ? menu. You choose from a list of “How do I...?” questions. Next, you read the step-by-step instructions in the help window that appears. The bright red, fat magic-markerish, ghost-drawn pen (called the Coach) draws your eye to the interface element being described.

System 7.5, overall, doesn’t change much of the behind-the-scenes operating system at all; it’s System 7.1 with fine-tuning. (Faster file copying and trash emptying, by the way, are among the subtle tweaks.) But the enhancements Apple did choose to include show a great deal of thought, and they’re beautifully done. As a result of this conservative approach, you don’t have much software-upgrading to do; anything that worked with 7.1 should work well with 7.5, eliminating worries of another compatibility nightmare (à la System 7’s introduction).

System 7.5, in fact, can be disappointing to only two groups of people: Power Mac owners, who hoped that Apple would rewrite the operating system to incorporate more “PowerPC-native” code (see Chapter 11); that crucial speed enhancement, Apple hinted, would have to wait until the next major system enhancement. You’re also likely to be dismayed if you’re running short of disk space or memory; System 7.5, particularly QuickDraw GX, consumes substantially more of your RAM and hard drive than any system before it.

System 8 (Copland, Gershwin)

System 8 is already on its way. Code-named Copland, this version of the Mac’s system software, to be released in 1995, will take System 7.5’s Apple Guide concept further, providing even more active assistance. Apple expects the Copland system to provide better multitasking, too, so your Mac will be able to perform several functions simultaneously —
initializing a floppy disk while you’re word processing is a commonly cited example — without running into memory problems.

Apple is already developing System 8’s successor, a dramatically different system code named Gershwin. In addition to improved performance, the Gershwin will offer true preemptive multitasking — if one program crashes, the rest of your running programs don’t come down with it. The Gershwin system also will feature intelligent assistance. In other words, the system will be set up to automatically monitor your working style and then suggest techniques you may want to adopt to make yourself more productive. Gershwin code will be constructed in a manner that will make it easier to run Gershwin-based applications on other hardware platforms.

Perhaps most significantly, Copland and Gershwin will be written with increasing percentages of “native” code, meaning ever faster speeds on Power Macs.

The Performa System-Software Annex

As we describe in Chapter 14, the Performa line of Macs differs from their mainstream counterparts primarily in their system software. Also, there’s not nearly as much black magic to these special “P” system versions as most people think — the “P” versions run on mainstream Macs, just as non-P versions run on Performas.

**System 7.0.1P**

This system debuted on the Performa 200 and 400. Its primary change was the inclusion of the Launcher control panel, which added the Performa’s three key differences from mainstream Macs: (a) a floating push-button application launcher, (b) a Documents folder that automatically collects any new document created, and (c) a desktop that hides itself whenever another program was launched, preventing accidental stray clicks on the backdrop from sending novice users hurtling back to the Finder.

Some of the smaller changes:

- The About This Macintosh command was changed to say About This Computer, and the resulting window no longer identifies the specific model.
- On color Performas, the default screen setting is 256 colors, not black-and-white.
- The modified General Controls panel no longer permits desktop-pattern editing; instead, it has a pop-up menu containing some ready-made 16-pixel-square patterns.

And, while these don’t really qualify as changes to the System software, each Performa was bundled with Apple Backup (a simple backup program) and At Ease (see Chapter 14).

**System 7.1P**

This tweak to the Performa system debuted with the Performa 600. Its changes are the same as those described under System 7.1, except that the PC Exchange extension was substituted for the aging Apple File Exchange.
**System 7.1P1**

This minor tweak to the reigning Performa system was purely a bug-fix and polish update. A bug was fixed in the Memory control panel, in which the RAM disk could be made too large; new CD-ROM and StyleWriter II drivers were included; and At Ease icons came preconfigured for the Performa's bundled software.

Oh, and lest we forget: Apple moved the Mouse Basics icon to the far left side of the screen.

**System 7.1P2**

We fondly refer to this Performa operating system as The Seahorse Release. It contains absolutely nothing new except for two bug fixes: The Monitors control panel no longer reset to 256 colors every time you turn the computer on. More importantly, the famous Mouse Practice freeze, which occurred when you clicked the seahorse, was fixed (by reducing the application memory by half).

**System 7.1P3**

This release, dating to November 1993, made a more substantial change to the Performa operating system and was influential enough to shape the future of Apple's mainstream system versions.

It split the old Launcher control panel into two much more logical components: the new Launcher control panel (see Chapter 14), which was now solely a launching window; and the Performa control panel, which took over all the other responsibilities of the old Launcher (Finder-hiding, Documents folder). The Performa control panel added new features, too: it could prevent items loose in the System folder from being moved, for example (see Chapter 3 for details). Also included in this release was the ShutDown DA, which finally resolved the age-old novice question, “Why do I have to switch back to the Finder just to turn off my machine?"

When the Performa control panel and the ShutDown DA surfaced in System 7.5 (now called General Controls — see Chapter 3), Apple tipped its hand. In adopting virtually all of the unique features of the Performa for use with mainstream Macs, the company indicated that there was no longer any good reason to have a two-track system-software policy. The smart money says that the separate “P” line of System folders (but not the Performas!) will gradually be retired, having nothing unique to offer.

**System 7.1P4, P5, P6**

These successive versions of the Performa system were created to accommodate more specific hardware models, such as the Performa 560 and 575 series. They added no new features.
Conversational AppleSpeak

The Mac started out easy — there was a System file, a Finder, and a tiny handful of other files you had to know about to create and print documents. That was it. No HyperCard. No QuickTime. No PowerTalk.

But as the Mac has grown more complex, so has Apple’s terminology. In fact, Apple has pumped out so many system components and given them so many similar-sounding compound names (AppleLine, AppleLink, AppleMail, AppleNet, and so on) that the terms have practically become a language unto themselves. We call it AppleSpeak. It can be as impenetrable as Swahili.

For example, if you consult Apple’s official list of trademarks and service marks — an eight-page catalogue of over 300 items — you’ll find listings for HyperCard and HyperTalk, as well as HyperAgent, HyperBrowser, HyperClient, HyperKiosk, HyperKnowledge, HyperLearning, HyperMover, HyperReader, HyperScan, HyperTelevision, and HyperTV. Even Apple’s own public-relations staffers couldn’t tell us what half this stuff was.

Then there’s the Quickseries: we all know about QuickTime, but did you know Apple also markets QuickClips (a CD-ROM with multimedia content), QuickRing (a data-transfer system), QuickStart (VAR program), QuickTake (digital camera), and QuickFile (an application, but we don’t know what it does)?

Like it or not, you have to master at least some AppleSpeak to know what’s going on in the Mac community. So here’s a quick guide to the AppleSpeak jargon you’re most likely to encounter if you drop into an Apple dealership or pick up a copy of Macworld.

| **ApplePrice** | For years, computer-product list prices were a joke. Nobody ever paid retail price. In an attempt to make more sense out of the pricing system, and to compete with PC clones, Apple created this new pricing system for all of its products, which better reflects actual street prices. |
| **AppleScript** | Apple’s scripting language; lets you write scripts to automate various Mac functions. Comes with System 7 Pro and System 7.5 (see Chapter 22). |
| **AppleSearch** | A text archiving and retrieval program that automatically extracts text from documents on a network, pours the information into a central database, and then allows network users to retrieve specific documents. |
| **AppleShare** | A system-software extension that allows you to access other Macs across a network. (See Chapter 31.) |
| **AppleTalk** | The networking language used by Macs to communicate with other devices on a network. AppleTalk is built into every Mac. |
| **EtherTalk** | Another networking language that can be used by Macs to transfer data between devices. Macs using EtherTalk have to be equipped with Ethernet hardware. (See Chapter 31.) |
| **GrayShare** | The networking/grayscale technology used with Apple’s QuickDraw-based printers, such as the StyleWriter II. The “gray” part of GrayShare refers to the printer driver’s ability to print grayscale halftones on a non-PostScript printer. The “share” refers to the fact that GrayShare-driven printers can be shared over a network. (There’s also such a thing as ColorShare include with the Apple Color Printer.) |
| **HyperCard** | A software construction kit; lets you use a basic programming language, HyperTalk, to build your own programs. (See Chapter 23.) |
**HyperTalk** — The programming language used within HyperCard (see preceding entry).

**KanjiTalk** — The Japanese operating system for the Mac.

**LocalTalk** — The hardware — wires, connectors, cables, and so on — used to connect Macs together in a network. AppleTalk is the name of the protocol the Mac uses for networking, AppleShare is the actual extension that enables AppleTalk to operate, and LocalTalk describes the stuff you actually plug in to make it happen.

**MacroMaker** — A basic (and now out-of-date) macro program Apple included with most versions of System 6.

**Moof** — The official, Apple-owned sound emitted by the Dogcow (yes, another Apple trademark), the holstein-like canine that appears in the Page Setup Options dialog box.

**OneScanner** — Yes, this is OneWord, NotTwo, and it refers to Apple's own brand of flatbed scanners for the Mac. Ironically, there are two OneScanners: a grayscale model and a color model.

**OpenDoc** — Software that lets you access the features of one program — say, a spreadsheet — from within another program. OpenDoc enables you to combine the components of several different programs into a single document without having to individually launch and quit each of the programs. A long-term goal of Apple's system-software spinoff company, Taligent.

**PlainTalk** — The speech-recognition technology built into the AV Macs that lets you issue commands by speaking into a microphone.

**PowerLatch** — The docking mechanisms that connect PowerBook Duos to MiniDocks and Duo Docks.

**PowerPC 601, 603, 604, 620** — The specific chips, designed by Motorola, Apple, and IBM, that serve as the main processors in the Power Macintosh series. In general, the higher the number, the faster the chip — except for the 603, which is smaller, less power-consuming, but on par with the 601's speed.

**PowerShare** — The application that allows PowerTalk to operate from a central server (see the next entry).

**PowerTalk** — A set of system software modules, included with some Macs and system versions, that attempts to integrate networking, e-mail, and telecommunications into a single interface. (See Chapter 31.)

**QuickDraw** — The behind-the-scenes core programs the Mac uses internally to draw graphics on your computer screen.

**QuickDraw GX** — Apple's upgrade to QuickDraw. While traditional QuickDraw is geared toward representing images at a relatively crude screen resolution of about 72 dots-per-inch, QuickDraw GX supports high-resolution output to printers. It also makes it easier to select a Mac printer when sending a print job and it handles printing faster than QuickDraw. (See Chapter 25.)

**QuickTake** — Apple's low-cost digital camera.

**QuickTime** — A system extension that enables you to play, edit, and compress movies and sounds on the Mac.

**ResEdit** — Apple's resource-editing utility program. You can use ResEdit (which comes with this book) to customize programs by editing the menus, dialog boxes, sounds, pictures, and icons found within applications.

**TokenTalk** — A networking language for high-traffic networks that can be used by Macs to transfer data between devices. Macs using TokenTalk (which is installed as a system extension) have to be equipped with Token Ring hardware.

**WorldScript** — A feature included in System 7.1 and later that allows you to convert your Mac to a foreign language by installing a foreign language keyboard script into the System file.

**Zeal** — In Apple parlance, this is not a fervor or passion for something, but merely the name of a TrueType font.

**Zhong-WenTalk** — The Chinese operating system for the Mac. (You probably won't encounter this bit of AppleSpeak too often, but it's kind of neat to know, isn't it?)
Chapter 6

On, Off, and Everything In Between

In this chapter:

- What happens when you press the power button
- The startup sequence: the ROMs, the System file, loading extensions
- The complete list of startup keystrokes and what they do
- What happens when you shut down
- The inside story on the Reset and Interrupt switches
- Sleep mode (for PowerBooks only)
Power On

Apple has created hundreds of design elements that are consistent from one Mac model to the next. But the method of turning them on isn’t one of them. To turn on a Mac, look for the rocker switch in the back of the one-piece Macs and LCs; the keyboard power key on the Mac II series; and the round nubby button on the front panel of the Quadra 610-style models.

The ADB Bus

The term bus, as it applies to the Mac, makes much more sense if you imagine the stream of electricity that courses through the computer’s veins. It streams along specific pathways — wires and circuits — very much like, well, a bus route in a very congested city. Along the way, this stream of electricity makes regularly scheduled stops, checking to see if there’s any new information to pick up (see Figure 6-1).

![Figure 6-1: A bus map for your computer, showing all regularly-scheduled stops to pick up and discharge messages: the keyboard jack (have you typed anything?), the mouse plug (are you clicking?), and, eventually, the Grand Central Station of the Mac - the Motorola central processor chip (CPU) that serves as your computer’s actual brain.

The term Apple Desktop Bus, or, redundantly, the ADB bus, is the official name for one particular loop of the bus route: the one that includes the keyboard and mouse. As you probably know, some Macs have two ADB jacks in the back, one each for the keyboard and the mouse. (You can plug either into either jack.) But many models include only one ADB jack, requiring you to plug the mouse into the keyboard, which in turn is plugged into the Mac.
Powering-up Secrets

How to turn on the Mac when there's no keyboard

If your Mac is like most non-LC-style models, you turn on your computer by pressing the power-on key of your keyboard. There may be times, however, when you have no keyboard or when the keyboard is not working.

You can also turn on the Mac using the small, round, slotted button in back of the computer. It's about the size of a pea, usually in the lower-left corner of the back panel as you look at it. (On some models, such as the tower-style Quadras and Power Macs, it's at the top left. Here's some trivia for you: In all of Mac history, only one model has no back-panel power switch or button. Can you name it? Here's a hint: it's the Quadra 840AV.) Just give this button a push to turn on the computer. (In a pinch, such as when the system has crashed, you turn the Mac off this way, too.)

A Mac you can't turn off

Sometimes you wish your Mac would stay on all the time. If you use a particular Mac as a network server (a central holding tank for files shared by all Macs on a network), for example, you may want to make sure it's never off — if it's off, nobody in the office can get to its contents.

Yet in real life, fuses blow, blackouts occur, and janitors unplug power strips in order to vacuum.

Look at the back panel of your Mac. Do you have a pea-sized, slotted On button (see the previous Secret)? If so, use a screwdriver to turn that button a quarter turn, so that the slot is straight up and down, and the entire round switch is flush with the back of the computer. It's now in permanent On position. If the power goes out for any reason, the Mac restarts itself automatically.

A Mac you can't turn on

First-time users are bound to be surprised when they first attempt to turn on the Color Classic. Pressing the power key on the keyboard does nothing unless the rocker switch in the back is on. But turning the rocker switch in the back doesn't turn the computer on, either — unless you then press the keyboard power key.

Fortunately, after you have the computer home, you can leave the rocker switch in the On position permanently. Thereafter, you can use the keyboard power key exclusively for turning on and off the Mac.
The Startup Sequence

All right, juice is flowing. You hear the startup chime (see Figure 6-2).

Figure 6-2:
Note to the editors of the *Macintosh Bible*: the Mac II startup sound is not a "C chord with suspended fourth" (there's no G in the chord). Nor is it a "second-inversion F chord" (there's no A). It's simply an open fifth: F and C.

On the one-piece Macs, it's a single ding (a ninth above middle C). On the Quadras and PowerBooks, you hear a second-inversion C chord played by a synthesizer. The AV Macs dare to be different: they play a straight-ahead, root-position G triad (see Figure 6-3). In fact, Apple's startup harmonies — from the single note of the Mac Plus to the three-note chords of the Quadras — are growing ever more complex; the Power Macintosh startup chord is a complex five-note E V11 harmonic, strummed on a ringing jazz guitar.

Figure 6-3:
The Quadras and PowerBooks play the breathy C-chord startup sound; the AV Macs sound a majestic G chord. (Interestingly, these three startup chords, played in sequence, form the harmonies for "La Bamba."

In any case, you may have wondered: What the heck takes so long for the computer to come to life?

The answer is that the Mac is busily running programs without your even knowing about it! These programs are 100 percent normal Mac software, but they're not sold in any store, and they don't come on any disks. They come "hardwired" into the permanent silicon memory of your Mac — the ROM chips.

ROM: the hidden software

ROM stands for *read-only memory*; the implication is that you, O user, may not store (write) anything in this kind of memory. It's *read-only*.

Every Mac has ROM chips. Indeed, the ROM chips are what makes a Mac a Mac. Some of the programs stored on the ROM chips are QuickDraw, the software that draws lines and colors on your screen; the Window Manager, responsible for drawing and manipulating the familiar Macintosh windows; and the Menu Manager, which creates the menus at the top of your screen.

Because these programs are built into the Mac, people who write Mac programs are spared the time and headache of writing lines of menu-handling code, or window-handling code, and so on. They just write references ("calls") to the Mac's ROM, which takes it from there. No wonder most Mac programs work alike — they all rely on the same chunks of interface code.


Why the Mac needs a System file

As you probably know, a Mac can't operate without a System folder. If the Mac operating system is stored in ROM, why do you need a System folder?

The System file and the ROM work together to create an operating system. The System either adds to or replaces parts of the ROM. Apple, for example, improves or enhances its operating-system software at least every year (they're up to version 7-point-something now). You can imagine what a mess you'd have if Apple had to replace your Mac's ROM chips every year! As it is, the company just sends out a new System folder on disks, which contains programming that supersedes or adds onto what's in ROM. Or, in the case of System 7, Apple doesn't even do that; it simply sends out an enabler or another add-on System extension that you drop into your System folder to update it.

The second reason for a System file: as in any software, the code in the ROM chips is sometimes buggy. What do programmers do when their code has been permanently etched into silicon and they discover a mistake? Simple: write a fix for the bug in the System file (the part that comes on a disk), which "patches" (repairs) the problem in ROM.

The startup continues

Back to our story-in-progress. The electricity sparks the ROM chips' programs into life. These startup programs are instructed, first of all, to check out the machine. The computer sends electronic feelers into its own circuitry, making sure everything is as it should be. The Mac inspects the keyboard jack, the SCSI port, and so on, restoring them to their "ready-for-action" settings.

One familiar example is the memory (RAM) checkup: the ROM programs test the quality and sturdiness of your RAM chips every single time you turn on the computer. If even one pin of a memory chip (each one has dozens of pins) isn't solidly seated in its slot, the ROM program reports the bad news to you. Instead of playing the usual chime, it plays four single arpeggiated notes. If it's a Quadra or Centris, you hear the first strain of the Twilight Zone theme; the Power Macintosh trouble sound is a car-crash recording. (See Chapter 32 for troubleshooting tips.)

TRUE FACT

How big is your ROM?

The Mac's ROM chips are growing.

As each successive Mac model becomes more complicated, more and more of the computer's Notes to Itself must be crammed onto its chips. The original Macintosh, for example, fit all of its self-data into 64K of silicon. When the faster Mac Plus came along, the ROM chips grew to 128K. Color-processing instructions bloated the Mac II's ROMs to 256K; the complex 68030 CPU chip used in the Iici and most of the II series required 512K ROMs.

Today, the awesome power of the Power Macintosh calls for four megabytes of ROM instructions — that's 16 times more ROM than the first Mac had RAM!
That's why the more memory your Mac has, the longer it takes to start up — because there are more RAM chips to inspect. You particularly notice the longer delay just after you install more memory.

The ROM chips' diagnostic report can show up in several forms, both audio (as we noted) and visual. If something is drastically wrong inside, you may see the "sick Mac" icon on a dark screen. See Chapter 32 for details.

**The search for a good System**

When the hardware checks out as okay, the ROM hands off to your System file — or tries to. It seeks a System folder in the following order:

- On the floppy disk in the main floppy drive
- On the floppy disk in an external drive (if any)
- On the hard disk you selected (if any) using the Startup Disk control panel
- On the internal hard drive (whose SCSI ID number is always 0; see Chapter 29 for a discussion of SCSI ID numbers)
- On an external hard drive with ID number 6
- On an external hard drive with ID number 5, and then 4, and so on

If the Mac doesn't find a disk with a System folder (a *startup disk*), it checks the internal hard drive again, and then waits for you to insert a floppy disk with a System folder on it. (That's when you see the blinking question mark on the screen.) In that event, go find your white system disks. Insert Disk Tools if you want to find out if anything's wrong with your hard disk, or insert the Install disk if you want to reinstall the System folder.

**The first programs to run: enablers**

The Mac is now turned on. It's passed its own checkup, and it's found a working System folder. If it's a System 7.1 (or later) Mac, the first programs to run are the enablers, if there are any. (As described in Chapter 4, an enabler is a special kind of extension that updates or enhances the regular Mac System software.)

All Macs made since 1992, of course, require an enabler when used with System 7.1: Duos, Quadras, and so on. (System 7.5 is another story; see Chapter 4.) If the enabler is missing from your System folder, that's the end of the startup sequence. The Mac displays a strange and nonsensical error message ("This model Macintosh requires a newer version of the System software"), and sits there until you turn it off or the warranty expires.

Get out your original System disks and get busy reinstalling the System software.
More startup software: extensions and control panels

After owning a Mac for awhile, most people begin to tailor its startup sequence to their specific needs. You do this by adding extensions and control panels to your System folder (see Chapter 3). Your Mac runs these programs after the enablers but before it gets to the Finder.

Normal programs run (get loaded into memory) only when summoned with a double-click. Extensions and control panels, on the other hand, load at startup. Then they lurk, doing their preprogrammed magic, in the Mac's memory for as long as the computer is turned on. (That's why, in the days of System 6, extensions were called *inits*, short for initialization programs.) For this reason, they're ideal for — and designed for — customizing the Mac’s overall behavior. America’s favorite add-on control panels include screen savers (After Dark, Sunset, and so on); Adobe Type Manager; Suitcase II for font management; and so on.

Extensions and control panels: where they live

Under System 6, inits and control panels reside in your System folder. If they're put inside any other folder, they don't work. The result is a lot of clutter in an increasingly bloated System folder.

System 7’s special Extensions and Control Panels folders greatly simplify System-folder management and unclutter that most important folder on your hard drive.

**MACINTOSH SECRET**

The power of Shift

The Shift key plays a critical role in the startup process. If you press and hold Shift before the “Welcome to Macintosh” message appears on the screen, you prevent your extensions and control panels from loading. This, of course, is one of the most important tools in the arsenal of anybody trying to solve a mysterious system-crash problem.

The Shift key also prevents such Apple add-on extensions as the Hardware System Update and the System 7 Tuner from loading. It also prevents Mode32 from loading, and reduces your Disk Cache setting to a bare-bones minimum (see Chapter 8).

The Shift key, however, doesn't prevent all extensions from loading. It certainly doesn't block an enabler that your Mac requires to run, for example. Nor does it turn off any printer drivers that you need to print. Pressing Shift doesn't prevent Apple's 32-Bit enabler from loading either, and doesn't turn off the 32-bit addressing feature, but it does turn off virtual memory.

With all these seemingly contradictory effects of the Shift key, it may seem as though there's no particular rhyme or reason to Apple's decisions on whether or not an extension should be affected. Actually, though, a single, very sound principle governs Apple's programming in every one of these cases: the Shift key turns off all software that isn't required for the Mac to start up and have all its basic functions intact. That's why model-specific enablers are permitted to run, but not the Hardware System Update that isn't actually required for the Mac's operation.

Remember that the Shift key is designed for helping you troubleshoot. It's designed to assist in your process of elimination as you attempt to rule out extraneous software influences on your Mac's behavior.
This new scheme does introduce a couple of technical wrinkles, however. First, System 6 inits and control panels load (get copied into memory at startup time) in alphabetical order. Inits and control panels aren’t loaded by category; the names of the files are the only criteria for loading order. There’s no guesswork as to which startup programs gets loaded first. Init/control panel loading order is no matter of idle curiosity, either. When inits conflict with each other, as they often do, the order in which they load is a key tool in solving the problem. (More about solving extension conflicts in Chapter 32.)

The default System 7 loading order

Here, for the record, is the order in which extensions and control panels are loaded when you turn on the Mac.

- **System file**. Few people realize it, but certain extensions actually go into the System file itself, just like a sound or a keyboard layout. (See Chapter 3 for some examples.) But you can’t put one there. Only certain Apple extensions (invisible to you) are stored there. Real Mac veterans probably remember a couple of shareware exceptions to this rule, like the 1985-era inits-from-hell called JClock and ScreenSaver.

One example of an Apple extension that embeds itself into the System file is Tuna Helper. The System 7 Tuner extension, which you can see, installs Tuna Helper into your System file without your even knowing it. (You can see Tuna Helper if you open up your tuned-up System 7.0 or 7.0.1 file with ResEdit, which we’ve included on the SECRETS disks. See Chapter 21 for details.)

- The contents of the **Extensions folder**, in alphabetical order.

- The contents of the **Control Panels folder**, in alphabetical order. In other words, an extension in the Extensions folder called Zipper actually loads before one in the Control Panels folder called Alpha. It’s okay to put extensions in the Control Panels folder and vice versa, by the way. These folder names are just for convenience; technically, you don’t have to put anything particular in one or the other.

- The contents of the **System folder’s** main level, in alphabetical order. Just as in System 6, it’s fine to put extensions and control panels loose in the System folder. Some older extensions, in fact, won’t run if you put them in the “correct” place (the Extensions folder). A prominent example is older versions of Adobe Type Manager: the extension portion has to be loose in your System folder. If it’s in the Extensions folder, it won’t work.

Your personalized loading order

Armed with this information, you have complete control over the loading order of your extensions and control panels. That’s good, because some extensions, like hard-disk or optical-disk drivers, virus checkers, and extension managers, only work if loaded first.

Here are some examples of things you can do:

- Make one control panel load before all the others by putting its alias into the Extensions folder. (But leave the original in the Control Panels folder so that it will be there when you need to change its settings.)
- Take an extension that’s supposed to load before all the others and put a space in front of its name. Leave it in the Extensions folder. It loads first because it’s first alphabetically and it’s in the first folder the Mac looks at.
- Take an extension that’s supposed to load after all other extensions and control panels. Put a Z at the beginning of its name and then put it loose in the System folder.

**Drivers: sometimes invisible, always vital**

We’ve never heard a decent explanation of a *driver*. Yet you hear the term all the time: hard-disk driver, fax/modem driver, printer driver, scanner driver.

Simply stated, a driver is a little piece of software that teaches the Mac all it needs to know about a piece of peripheral equipment. When you buy a CD-ROM drive, you also get an extension that tells the Mac how to control and communicate with your new drive. When you get a SyQuest cartridge drive, same thing. Virtually every external piece of gear you buy comes with a driver you put into your System folder.

Most critical of all, of course, is your hard-disk driver. (This particular set of software is on its own invisible partition.) It’s important because you use your hard disk more than any Mac add-on — constantly, in fact.

When you upgrade to System 7 and get random error messages and system crashes, your first suspect should be a damaged or out-of-date hard-disk driver. Now you understand why there are a half-dozen commercial hard-disk driver programs on the market. Each is supposed to work with any brand of hard drive and is supposed to be extra-safe.

**Hunting down an extension conflict**

Each extension is a miniprogram. Each, therefore, loads into your Mac’s memory when you start up for the day. Sooner or later, a couple of these extensions will probably fight for the same piece of memory. The result, as Mac veterans well know, is either erratic Mac behavior or a system crash.

If you’re the unlucky victim of an *extension conflict*, as such a mishap is known, there are a couple of things you can do about it. The first thing you should try is holding down the Shift key as the Mac starts up, thus turning off all nonessential extensions or control panels. You wind up with a Mac that’s running a bare-bones System folder, exactly the way Apple intended. (Technically, you don’t have to press the Shift key until you see the smiling Mac icon, and you can release it when you see the “Welcome to Macintosh” screen with the words “Extensions off.”)

The Shift-key trick is well and good, but it leaves you with virtually no extensions running. At that point, you’re no closer to figuring out which two extensions are conflicting. To solve that question, you must embark on an ordeal of trial-and-error well known to Mac veterans.
First, turn off half your extensions and control panels. Then restart and see if the conflict is solved. If it is, then add a few more extensions and control panels back to the System folder and repeat the procedure. If it isn’t solved, you’ve come halfway closer to isolating the two extensions that are quarreling.

This process of conflict-hunting can be made far easier if you own a little piece of software called an extension manager. As a matter of fact, you do have such a program; it’s on one of the disks that come with this book. It’s called Extensions Manager, and it lets you easily choose, at startup time, which extensions and control panels you want to load. The ones you choose to omit are put into a new folder called Extensions (Disabled). Even though this folder is within the System folder, it hides extensions from the Mac, which only looks in the three locations mentioned previously for extensions and control panels to run. (See Chapter 33 for a description of Extensions Manager and instructions.)

Another good idea is Conflict Catcher, for which we’ve provided a discount coupon in the back of the book. This extension manager automates the trial-and-error process of tracking down which of your extensions is causing your problems.

**Icon row**

As each extension and control panel is loaded, its icon usually appears on the bottom of your screen. (We say usually, because many control panels — generally the most polished ones — have a checkbox that lets you eliminate the appearance of the startup icon.) If you have more than one, the icons appear one by one in a horizontal row. If you have many more than one, these icons may (depending on whether there’s a tiny piece of “wrap the icons!” code in any of the extensions) even wrap upward to start a second row above the first — and a third, and a fourth, and so on. (One extension freak boasts that he regularly runs 120 system extensions without crashing. We’d like to see it.)

This is worth mentioning only because it can be a clue when you’re in extension-conflict hell. If you’re suffering from startup-crash blues, and having trouble figuring out which extension is crashing your Mac, watch those icons as they appear. Often one particular icon pops up just before the crash, each time you restart. That icon may represent either the extension that’s causing the crash or the one just after it.

**ANSWER MAN**

**The stutter-start phenomenon**

Q: Something goofy’s going on here. When I turn on my Mac ilcx, it seems to start loading, and then it suddenly dings again and starts a second time. What’s happening?

A: Your Mac ilcx is among the “32-bit dirty” Macs: the II, Ilx, IIcx, and SE/30 models. In order to use more than 8MB of memory, you installed an extension — either Mode32 or Apple’s 32-bit enabler. (All of this is made much clearer in Chapter 8.)

But to bestow 32-bit addressing unto these models, the extension must load into memory and then restart the computer in the Mac’s new, memory-enhanced mode. That’s why your Mac seems to do a double startup when you turn it on.
CASE HISTORY
The New Jersey computer widow

The owner of Atlantic Computer Systems, a wonderful Mac dealer in New Jersey, told us about one Mac widow who took things into her own hands. (A Mac widow, of course, is a woman whose husband spends more time with his computer than with his spouse. We know a Mac widower or two, too.)

Anyway, this particular woman took a low-tech approach to solving a high-tech problem. She grabbed a hammer and smashed in her husband’s Apple 13” color monitor.

No report on whether that New Jersey couple now spends more time together.

Startup keys

Mac lore is filled with tales of little-known stunts your computer performs if you press certain mysterious key combinations while the computer is starting up. Here, together at last, are all the different key combos you can hold down as your Mac starts up, and what they do. We threw in a couple of other miscellaneous startup Secrets while we’re at it.

Startup Secrets

More about the Shift-key-at-startup trick

Here’s the complete story on the Shift-key trick.

Hold down your Shift key, beginning no later than the appearance of the smiling-Macintosh icon. Release it when you see the words “Extensions off.” You’ve just started up the Mac without any extensions or control panels (except for invisible, Apple-installed extensions that live in the System file itself). You also prevented anything in the Startup Items folder from launching and prevented file sharing from turning on.

You also made some changes to the Memory control-panel settings: you set the Disk Cache to 32K and turned off virtual memory and your RAM disk (see Chapter 8 for details on these features). You may find it confusing that, when you actually look at the Memory control panel, all settings seem to be where they normally are. That’s because the Mac treats its special Shift-key settings as temporary (for this work session only), and your regularly-scheduled settings are restored the next time you start up the Mac.

If you wait to press Shift until after your extension icons have finished appearing on the screen — but before the desktop appears — then you merely squelch the Startup Items without turning off your extensions.

Rebuild the invisible Desktop file

We stashed this Secret in other chapters, too, but we wanted our keys-to-hold-down-at-startup section to be complete.
As you read in Chapter 1, there’s an invisible Desktop file on every disk. Over time, the Desktop file may become bloated with icons belonging to files and programs you’ve long since taken off your disk.

To make the Mac “forget” all superfluous icons (and all Get Info comments) from your current Desktop file, press and hold the ⇧ and Option keys when the Mac is starting up. You don’t need to press them until the “Welcome to Macintosh” message appears (or even until after your extensions have all loaded). You can let go of the keys when the Mac asks you specifically if you want to rebuild the Desktop file (see Figure 6-4).

Figure 6-4:
The Mac asks if you’re sure you want to wipe out your old, invisible Desktop file.

![Alert window]
Are you sure you want to rebuild the desktop file on the disk “Hard Disk”? Comments in info windows will be lost.

[Cancel] [OK]

If you click OK, the Mac takes a minute or so to cleanse its Desktop file, resulting in a slimmer, quicker, invisible database (see Figure 6-5). You get a separate message for each disk that’s attached or inserted.

Figure 6-5:
The Mac rebuilds the Desktop file. If you grow impatient, click Stop; no harm done.

Start up to a neat, uncluttered desktop

There’s no end to the secret key combinations that do things when you start up the machine. Press Option, for example, if you want to be greeted by a clean, neat desktop, with no windows or folders open. (Normally, the Mac always reopens whichever windows were open when you last shut down.)

Technically, you only need to press Option at the end of the startup process — from the end of the extension-loading phase to the appearance of the Trash can, for example.

Zap the PRAM

Your Mac has a tiny chunk of memory called parameter RAM or PRAM (pronounced pea-ram). This minuscule smidgen of memory is where the Mac stores settings it’s supposed to retain even when the computer is turned off — like the settings you make using the Control Panels (mouse speed, keyboard settings, monitor color setting, desktop pattern, choice of startup disk, and so on).

In times of trouble, you may need to flush this bit of RAM and start over. To do this with System 7, you use another hidden key combination at startup: ⇧, Option, letter P, and letter R keys. Keep them pressed until you hear a second startup chime.

Then use your control panels to reset your settings.
Bypass internal drive
We mentioned this one before, too, but let’s get all the startup-key Secrets in one place. If, just after you turn on the Mac, you hold down ⌘, Option, Shift, and the Delete key, your Mac completely ignores its internal hard drive (if any). This is a good way to force your Mac to use a different startup disk, such as an external hard drive that you loaded with a different System version. (This is also a good way to sprain your hand.)

Use the TV for a monitor
Hold down ⌘-Option-T-V during startup to make an AV-style Mac use an attached TV as a monitor. (See Chapter 13 for details.)

Eject a floppy
Suppose that you accidentally left a floppy disk (with a System on it) in your disk drive, but you definitely don’t want to boot from it. Are you condemned to wait the 20 minutes for the startup sequence to finish so that you can eject the disk and restart from your hard drive?

Nope. As soon as you realize your mistake (or sooner, since this has to happen before the floppy’s System displays the smiling Mac), press and hold down the mouse button. The floppy ejects itself, and the startup process begins with the hard drive’s System folder.

(This works on System 6, too.)

Startup screens
You can display a picture of your choice when the Mac starts up in place of the usual “Welcome to Macintosh” screen. See Chapter 21 for instructions on creating your own.

Startup movies
If you have the QuickTime extension installed (see Chapter 23 for more on QuickTime), there’s a special treat in store. You can designate a particular QuickTime movie to play in the middle of your screen when you start up the Mac!

To do this, rename the movie Startup Movie. Put it loose in your System folder. Then restart the Mac and watch (and listen to) the fun!

You can even combine a movie with a still picture, creating a theatrical “stage” for your movie. Create a startup screen, as described in the previous Secret. Create it, though, so that it has a nice central hole in which your movie can play (see Figure 6-6). When you restart, the still picture appears first, and then the movie plays in the center of it!

Handily, the startup movie always stops on its last frame, where it stays until the Mac is finished starting up.
Figure 6-6: Create a startup screen/frame (left). When the startup movie plays, it neatly fills the hollow part of the frame, if you've set it up right (right).

**Startup at a specified time**

Your Mac gets along perfectly well without you — or at least it can turn itself on without you. All you have to do is buy a PowerKey (Sophisticated Circuits, 206-485-7979). It's a surge-protected power strip that turns on all your Mac gear with a touch on the keyboard power key (even compact and LC Macs). It comes with a little software doodad that lets you schedule the Mac's turning itself on and off unattended.

Your PowerBook can do this, too, and you don't even have to buy anything. It's an option in the PowerBook control panel (with System 7.1 and later) that lets you make the computer wake itself up at a specified time. Check it out.

**Beyond the Startup Sequence**

Now you know why starting up the Mac takes so long — between checking the hardware and loading the software, some Macs take a couple of minutes to get ready for action.

The Mac's next step is to run the Finder. Your Finder menu bar (File, Edit, View, Label, Special) appears.

Then the computer consults an important, though invisible, file on each disk: the Desktop file. As described in Chapter 1, the Desktop file stores all kinds of information about your disks, folders, files, and their icons. When the Mac knows (from the Desktop file) which icons you have and where they should appear, they start popping onto the screen. Then the Mac looks for disks (such as your hard drive) whose icons it draws in the upper-right corner of your screen.

If you're running System 7, there's a folder inside your System folder called Startup Items. Just after the desktop appears, the Mac opens anything you put into this folder, as described in Chapter 4.

The Mac launches the items in the Startup Items folder in this order: applications, documents, and then aliases. Among each category, it launches items alphabetically. You can use this fact to your advantage; by renaming the items in this folder, you control which programs load first for the day. As you'll find out in Chapter 8, controlling the loading order of multiple programs is one weapon you have against memory fragmentation.
Here's a nice trick for the Startup Items folder: make an alias of it. Put the alias at the lower-left corner of your screen. At the end of each workday, drag an alias of the document you're working on into the Startup Items folder alias. Next morning, you'll turn on your Mac and be immersed in exactly the same documents, ready to go.

**Shut Down**

As you know, Apple strenuously suggests that you never turn your Mac off by cutting off power using the power switch. Instead, you're always supposed to use the Shut Down command in the Finder (or, on some Macs, the Apple menu).

The rationale is that the Mac needs to do some sort of “housekeeping” before turning off the machine. The examples usually cited include:

- Updating your invisible Desktop file with your current icon and window positions
- Offering you the chance to save your work in any documents still open
- Correctly quitting any open programs
- Ejecting any floppy disks

We can think of plenty of times when you can't get to the Shut Down command, however. Imagine a system crash or a freeze, for example. In those instances, you have no choice but to cut power to the computer.

We suggest you use the Shut Down command as recommended by Apple. We do not, however, endorse the wide-eyed, paranoiac approach of many books and magazines. Use Shut Down when you can, but don't waste a milliliter of adrenaline if you do have to shut the Mac off abruptly.

**The cycle of last chances**

The Mac has a specific series of steps it follows when it thinks you're trying to turn off the machine. Generally, it's cued into action by your choosing the Shut Down command. On a Color Classic, pressing the power key on the keyboard starts the process; on a PowerBook Duo inserted into a Duo Dock, pressing the Eject button on the dock also does the trick.

If any programs are open, the Mac quits them automatically, first offering you the chance to save your work in any unsaved documents. If you're connected to a network and other Macs are sharing some of your files, you're warned that you're about to slam the door in their faces (see Figure 6-7).
Shut Down Secrets

Shut down without going to the Finder

When Apple designed some models (like the Color Classic) to shut down by pressing the power key on the keyboard, it hit upon a good idea. It was based on an even better idea: the realization that it makes no particular sense for you to go to the Finder and choose a specific command just to turn off your computer.

That leaves owners of all other Mac models stranded with the doesn't-make-sense system, right?

Nope. It turns out that if you use QuicKeys, you can shut down safely without returning to the Finder. In fact, you can turn off your Mac by pressing a key on your keyboard — exactly as Color Classic owners can. If you own QuicKeys, define a Shut Down extension macro (one of the Specials).

From now on, you can begin the safe shut-down procedure by pressing the key combination you specified. The Mac still asks you to save any unsaved documents, quits all open programs, and shuts down in the usual way.

Automatic shutdown at midnight

Suppose you're downloading some huge file from America Online. Your Mac tells you that it's going to keep downloading until, say, 3 a.m. You want to go to bed, but you don't want to leave your system on all night.

If you have an Energy Star-compliant Mac model (Quadra 605, Power Mac 7100 or 8100, and so on), use the control panel called CPU Energy Saver or Auto On/Off (see Chapter 3 for details). Either can turn off your Mac automatically — at a certain time, or after a specified amount of idle time (downloading doesn't count as "idle").

( Energy Star is a program administered by the Environmental Protection Agency. It's designed to encourage computer makers to design equipment to use less electricity — mainly by shutting down when nobody's using it.)

If you'd prefer your entire system to shut down — printers, CD-ROM drives, everything — then you need a PowerKey from Sophisticated Circuits. Its four grounded outlets all cut off at the same time whenever the Mac shuts down.

And what if your Mac isn't Energy Star-compliant? Then you can use a program like QuicKeys. Create a Shut Down QuickKey, as described in a previous Secret. But before you click any OK buttons, click the Timer Options button (see Figure 6-8). Using the lower controls, type in the time you want the Mac to shut down.
Figure 6-8:
Use the Timer Options dialog box to make your Mac turn itself off in the middle of the night.

Click OK, then OK. Do not give this QuickKey a keystroke to trigger it! If you do, and then you press that keystroke, the Mac will shut down instantly, instead of waiting until its appointed moment.

System 7.5 (and Performas): Shut Down DA
If your Mac runs System 7.5, or if you own a recent-vintage Performa, your Apple menu contains a fascinating new command called •Shut Down. This is a tiny application that is soaked away in your Apple Menu Items folder. When you choose it, the Mac behaves exactly as though you'd used the Special menu's Shut Down command. The advantage, of course, is that the Apple menu is accessible even from within an application, saving you the switch to the Finder.

Come April Fool's Day, however, the •Shut Down mini-program can be truly sinister. Suppose, on some unsuspecting Mac user's machine, you were to move it into the Startup Items folder. Guess what? Until your victim gets wise, the Mac will always shut down the instant it starts up! (Pressing the Shift key during startup will get him or her out of the predicament.)

The Reset Switch
What it's called is the Reset switch. But what it does is restart the Mac. Every Mac model has a pair of these funny little switches. One of them, the Interrupt switch, is fairly useless unless you're a programmer. But its twin, Reset, is wonderfully useful.

Where is it?
Before we tell you how handy they are, we'll help you figure out where your switches are. On any SE, Mac II, IIvx, or IIX, you get a connected pair of flat, one-inch-square, plastic buttons that you install by snapping onto the outside of the Mac's case. You're directed to place this piece near the bottom of the Mac, on the side, by slipping its prongs into the ridged grillwork. The switch pair arrives loose in the box with your Mac, so you aren't completely to blame if you've lost the switch forever. Still, if that's your situation, we recommend plying your Apple dealer for a replacement.
On other Mac II-series machines (Ilcx, Ilci, Ilvx), the two switches again come on a loose piece of plastic. Instead of installing them on the outside of the Mac, you install them on the inside. You have to take off the lid of the computer. Then you carefully snap the cylindrical piece into place so that the thin horizontal buttons protrude through the corresponding holes in the left front panel of the case. Use the diagram in the manual to guide you.

More recent desktop Macs have special buttons for the Interrupt and Reset functions; there's nothing to install. They're located on the front of the 7100, 8100, most Quadras and the Centris (Quadra) 650 — and on the back of the Centris (Quadra) 610 and 6100 (on the right as you look at the back).

If you have a PowerBook 140 through 180, your Interrupt and Reset switches aren't on a separate piece. Open the back panel, and you'll see two tiny holes on the right as you look at the back. You're supposed to "push the button" by inserting a straightened paper clip into one of these holes.

**TRUE FACT**

**The Interrupt switch**

We don't use the Interrupt switch (the half of the programmer-switch pair marked by the dot). But we're told that it can occasionally get you out of a system crash.

When the system crashes, press the Interrupt switch. A special empty dialog box appears on the screen, containing nothing but a > symbol. Here are the various things you can type at this point, and what they're supposed to do.

- **G FINDER** (the press Return) is supposed to get you back to the Finder safely.
- **SM09A4F4** (then press Return) **PCFA700** (Return, again) **G** (Return, again) is another Return-to-Finder sequence. Those are zeros, by the way, not letter O's.
- **SM A78 3F3C 0002 A895** (press Return, then) **G A78** (and another Return) shuts your Mac down.

Honestly, we've found that these codes rarely work. On the other hand, when the system crashes and we've got important unsaved work on the screen, we'd jump up and down and say "gigabyte" ten times backward if we thought it would help.
DP: Talk about old wives’ tales!
JS: It’s not! Look, do the math. I called up the electric company —
DP: You called up your electric company!?

JS: Hey, I happen to care about the environment. Anyway, you look at your electric bill to see what a kilowatt-hour of juice costs. Mine says 13 cents. Then you figure out how much power your Mac uses — to do that, you multiply Amps by Volts. So a 110v is 6 amps, 110 volts; monitor is 1.6 amps. That’s 836 watts an hour. You’re paying about 11 cents an hour to leave your Mac on.
DP: Yeah, yeah, so what’s the bottom line?
JS: In a year, that’s $974 down the sewer. Whereas, if I turned the thing off at night (and I work eight-hour days), I only pay $324 a year.

DP: But the wall of electrons...
JS: Furthermore, do you realize that the production of electricity in this country is responsible for 35 percent of the carbon dioxide in the atmosphere? Listen, Mr. New Yorker — it’s your city that’s going to be underwater in 150 years.

DP: Under—
JS: From global warming.
DP: New York is...?
JS: Common knowledge.
DP: I stand enlightened.

Virtually all other Macs have hidden Reset and Interrupt switches. Or, to be perfectly accurate, they don’t have switches at all. Instead, you’re supposed to press &-Control, and the power button all at the same time. (That’s to restart. For the Interrupt function, it’s &-power button.)

Please note that if your model has an actual button, switch, or hole to push, you need to be able to tell the two switches apart. The Interrupt switch is usually marked by a circle. The Reset switch — the one we want you to notice — has a left-pointing triangle. It matches the left-pointing triangle on the power key on your keyboard. Both have to do with starting the computer, get it?

Please note also that even if your Mac does have physical Restart and Interrupt switches or buttons, those magic Apple keystrokes — such as &-Control-Power button — may also work. Try it on yours and see!

What is it?
The Reset switch is a great feature for two important reasons:

- When your Mac has hung or crashed, you can’t do anything except restart it. Restarting by pressing the Reset switch is much better for the circuitry than turning the power off and then on again; every time you power up your Mac, a tidal wave of surging electricity smashes through its circuits. Using the Reset switch prompts your Mac to go through its startup routine, without forcing it to power up from a cold state all over again. It also takes less time.

- If you’re using the built-in RAM disk feature, as described in the Memory Chapter, restarting the Mac using the Reset switch preserves the contents of the RAM disk. Don’t ask us how that happens; it’s something to do with the fact that restarting the Mac doesn’t interrupt the power current. In any case, the point is that turning the computer off and then on again does wipe out everything on the RAM disk.

We really want to impress upon you the convenience and simplicity of the Reset switch. If you’re not using it whenever you have a system bomb or your cursor freezes on the screen, you’re missing a great thing.
Sleep Modes

Apple, we think, enjoys defining new variations of On and Off. There’s the Sleep mode on PowerBooks, for example (see Chapter 12). Then there’s the Color Classic, the LC 520, and so on, which do something alarming but useful. After a certain amount of time has passed since you last used your mouse or keyboard, the monitor turns itself off. (You determine how much time should elapse by using the Monitors control panel; the longest time is one hour.) The computer itself stays on, and everything you were working on is perfectly safe. But the screen goes black. Your only indication that the Mac is not, in fact, off is the power light that glows on the front of the machine.

The point of this feature is to conserve electricity, which it does, to the tune of 50 percent. The Energy Star strikes again.

Monitor “wake up”

To “wake up” one of these Macs, click the mouse. The monitor can take up to a minute to warm up again. During this time, the screen remains dark. To let you know that the Mac has noticed your mouse-click, it emits a little low boop sound, every second or so, from the speaker.

We can think of no way to prevent your monitor from shutting off after (at most) an hour. On the other hand, we can’t really think of why you would need it to stay on longer. If you’ve dialed up some service like America Online and you’re downloading some huge and time-consuming file, the file transfer will still proceed merrily for hours even if the screen goes off.

MACINTOSH SECRET

Our favorite acronym

"Most applications crash — if not, the operating system hangs."

You may shudder at the cold, stark reality of this statement — but this is more than a Mac truism; some people believe it’s how the Macintosh got its name. Just put together the first letters from each of the words in the sentence and you’ll see what we mean. This fanciful bit of etymology was suggested by one of our readers who, at the age of 13, has evidently already experienced his share of system bombs, crashes and hangs.
The moment you shut down your Mac, everything in its memory vanishes into oblivion. Every application you launched, every document you created, every file you modified during a work session — they all simply evaporate into nonexistence as soon as you turn off the juice. This happens because memory chips hold data only when electricity is running through them.

That's why you need disks. Floppy disks, hard disks, and other storage media provide a stable format in which you can permanently record the data you manipulate in your Mac's memory.
Disk Basics

The Mac "writes" data to a disk, whether hard or floppy, by sending out a stream of positive and negative electrical signals that correspond to the series of bits (1's and 0's) that make up the data currently in the computer's memory. Based on those signals, an electromagnet in the disk drive's read/write head (a moving arm, like the needle of a record player) creates a pattern of tiny magnetic bands along the surface of the disk as it spins (see Figure 7-1). Because the disk is coated with metallic particles that are extremely sensitive to magnetic charges, the patterns created by the drive remain intact indefinitely. The area taken up by each magnetic charge is so microscopically tiny that a single high-density floppy disk can store more than 11.5 million bits of data.

Data is read back into the Mac through a reverse process in which the read/write head reacts to the magnetic fields on the disk. Then it transfers the positive and negative signals back to the Mac's memory.

With millions of bits of data scattered over the surface of a disk, how does the Mac find a particular string of recorded data?

Sectors, tracks, and blocks

Simply put, it follows a map. The surface of each disk is mapped out into a series of concentric circles called tracks. Each track is, in turn, partitioned off into smaller segments called sectors. The Mac relies on these dividers as guideposts. It keeps track of which bits of data get stuffed into which sectors (or groups of sectors, called blocks), so that it can find them again when needed.
When you pop a new, completely blank floppy disk into your Mac, the Mac has to initialize the floppy disk before using it (see Figure 7-2). Here's the reason: A blank disk fresh out of the box hasn't been mapped out with tracks, sectors, and blocks. During initialization, the Mac inserts those reference points, creating the map it will later use to navigate around the disk, storing and retrieving specific pieces of data.

Figure 7-2:
You can't use a floppy disk until it's been initialized with the guideposts the Mac needs to find its way around.

Two things you don't want to think about — but should

We don't mean to be depressing, but before we get into the nitty-gritty of the disk discussion, we feel morally obligated to mention a couple of unpleasant realities up front.

First, disks and disk drives are among your Mac's few mechanical components. They have motors, gears, levers — parts that actually move, parts that can be scratched, get sticky, rattle loose, or require lubrication. Disks and disk drives are much more vulnerable to problems than most other parts of your computer system.

At the same time, disks are among the most important devices you use each day, because they are the repositories of virtually all the work you do on your Mac. For this reason, we suggest that you take especially good care of disks and disk drives. They should be handled with care, maintained using the techniques we'll give you, and not taken for granted.

Which brings us to Depressing Reality No. 2: the day will come when your hard drive grinds to a halt. It will die. This is not a remote possibility; it is your unchangeable destiny. When you lift a brand new hard drive out of its foam packing crate for the first time and proudly place it on your desk, you may not want to think about this, but the manufacturer already has labeled that drive with an MTBF — a Mean Time Between Failures rating. This rating represents the number of hours the manufacturer estimates the drive will operate before it fails due to one problem or another. Some drives have an MTBF of just a few years. Others are rated to last a dozen or more years.

But they all are expected to fail at some point. When this happens — and it will if you use your Mac long enough — you will probably panic. You will want to tear your hair out in frustration. So plan ahead. Always make backups of irreplaceable work and heed this chapter's tips on keeping your hard drive in good working order.

One at a time, we'll confront the technoid terms you hear flogged about in Mac user-group meetings: initializing and formatting, interleave, defragmenting, optimizing, and partitioning. Impressively, you can do a number of these stunts to your hard drive without spending a penny. You can use Apple HD SC Setup, a vastly underpublicized hard-drive utility program. We'll show you how.
Part II: Secrets of the Machine

TRUE FACT

What a difference a decade makes

The whole notion of computing takes a quantum leap when you discover that information can be stored in one place rather than scattered over hundreds of little disks. Average users can store all their programs as well as a year's worth of files on a 10MB hard disk — and theoretically never have to look at a floppy again. We thought you might enjoy this fanciful, forward-looking editorial. It was in the very first issue of Macworld in 1985.

Three pages earlier, there's an ad for exactly such a device: a 10MB hard drive. List price: $1495.

What's a Volume?

In the olden days, a disk was a disk. Then there were cartridges. Then there were CD-ROM discs and tape cassettes. The world needed a generic term to cover any kind of individual storage unit/disk/disc/cartridge/cassette. You know, something that shows up on your desktop with its own name and icon.

The term they came up with is volume.

Hard Disks

If you were to crack open any hard drive larger than about 20MB (don't do it — we're just being hypothetical), you find not one disk, but a series of metal or glass platters. Each is coated with a magnetically sensitive material. These disks spins at 3,600 rotations or more per minute, passing within 10 millionths of an inch of the read/write heads that transfer data to and from the disks.

A hard drive's performance, however, is dependent on more than sheer rotations-per-minute. Here are some of the other factors that play into how well a hard drive does its job.

The device driver

Nestled away in its own little corner of your hard drive is a little piece of software called its driver — yet another program that works behind the scenes managing the operation of your Mac without you even knowing it's there. Every time you store data on your drive or retrieve data from it, the driver software is called upon to manage the operation. (The drivers also file that stores the icon used by your drive when it appears on the desktop.)

Most new Mac hard drives come preformatted with driver software already included on the drive. Even though you never really see driver software, you need to think about it if you're interested in coaxing the best possible performance out of your hard drive. Some new non-Apple drivers are faster than others. Some drivers are configured for use with specific drives and Mac models. To get the fastest and most reliable performance, you need an up-to-date driver that is fully compatible with your drive.
For example, if you start getting annoying system crashes when you first install System 7, it's time to update the drivers. Likewise, if you get system crashes after you've installed some new RAM chips, requiring you to turn on 32-bit addressing (see Chapter 8), it's again time to update those drivers.

If you have an Apple hard drive, you can update the driver using the Apple HD SC Setup program (see Figure 7-3). (Apple HD SC Setup is on your system software's Disk Tools disk.)

**How to update your hard-drive driver**

Launch Apple HD SC Setup. Then click Update to install a new version of the driver. (This assumes, of course, that you have new system software and a *newer* version of the driver that came with your drive; reinstalling the current version of the Apple driver doesn't update it.) Apple HD SC Setup also can be used to *initialize*, or test an Apple drive.

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**Figure 7-3:**
You can initialize, update, and test an Apple hard drive using Apple HD SC Setup, included with your system software.

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**ANSWER MAN**

Q. This chapter already has me totally confused.
A. Sorry to hear it. Can you be more specific?
Q. What's the difference between "initializing" a disk and "formatting" it?
A. When you *initialize* a disk, you don't actually erase data; you erase the directory that tells the Mac where to find the data. Without this directory, the Mac considers the drive empty and begins refilling it, overwriting previous data with any new information copied to disk. Initialization also installs new partitions and driver software.

When you *format* a disk, the actual data stored on the drive is erased, not just the directory. After all the data has been cleared and the directory has been erased, then new partitions and drivers are installed, as with initialization.

This is all the more confusing because Apple itself uses the term *initialize* incorrectly, as shown in Figure 7-3. They really mean *format*. 
However, Apple HD SC Setup generally doesn’t work unless your hard drive is an Apple drive. On non-Apple drives, you need a third-party driver updater. Some examples are Drive 7 (Casa Blanca Works) or Silverlining (LaCie). By the way, these updaters also can be used to replace the Apple driver on your original drive with newer, faster, driver software.

Whether you use Apple’s updater or another product, keep in mind that updating doesn’t reformat, initialize, or erase a disk. When you update a driver, your data stays intact. Only the software that controls the drive’s operation is changed.

**Interleave**

Data used to come pouring into and out of a hard drive extremely fast — too fast, in fact, for older Mac models to handle. To slow the data transfer rate to a speed Macs such as the Classic and SE can manage, you must configure older hard drives to intentionally skip sectors on a disk with each revolution, thus regulating the flow of data. This sector-skipping scheme is known as the interleave ratio (see Figure 7-4).

**Figure 7-4:** Here are two different disks with different interleave ratios. The upper disk is from a fast Mac; its data is arranged in consecutive sectors. The lower disk is from a Mac Classic, whose electronics are too slow to accept data coming at hard-disk speed. Therefore, the data required by the Mac is stored on the disk in alternate sectors.

Older Macs, such as the Mac Plus, used to require an interleave ratio of 3:1. On each revolution of the disk, the read/write head looks only at every third sector. The disk must spin three full times before an entire track is read. Classic, SE, and PowerBook 100 models required an interleave ratio of 2:1; their drives read every other sector with each revolution. Most other Macs, from the SE/30 on, have port speeds fast enough to operate on a 1:1 ratio, using each consecutive sector available on a disk without skipping any.

Actually, most of this is irrelevant today. All modern hard drives are set to 1:1 interleaves, and use caches to compensate for slower Mac’s automated transfer ratios.
The **SECRETS** Hard-Drive Maintenance Schedule

Your hard drive is filled with lots of hidden goings-on and invisible files. Every time you save, copy, or delete a file, all kinds of stressful activities take place. More than just one file is affected; the hard drive must update its internal table of contents (the invisible Desktop DF file), log any new icons or icon positions (the invisible Desktop DB file), and keep track of how the file is fragmented (in the invisible extents file).

We mentioned backups, formatting, and rebuilding the desktop. But when do you do all this stuff?

Here, for the careful Mac user, is our recommended schedule for hard-drive maintenance. Xerox, clip, and save it.

**When you get the drive**

Format it using whatever drive-formatting program came with the drive. (If it's an Apple drive, it's already been formatted with the Apple HD SC Setup program.)

Set up partitions, if you want them. (See “Partitions,” later in this chapter.)

**When you change System software versions**

Before installing the new System, run Disk First Aid (on your System disks) to make sure the disk's software structures are healthy.

**Every day**

Back up whatever files you worked on during the day. If it's important work, make two backups, and back up more than once a day.

**Once a month**

Rebuild the desktop (press Shift-Option as the Mac is starting up).

**Every two months**

Reinstall a fresh copy of the System software. Do a “clean install,” as described in Chapter 4. (This eliminates any corruption that may have crept into your System file during day-to-day use.)

**Every six months**

Defragment your drive if it's more than 80 percent full.

**Every two years**

Back up your entire drive and reformat it. Among other things, reformatting locks out bad sectors on your disk, so you won't try writing data to portions of the disk that have developed tiny flaws and may not be reliable. Beyond that, we just like the feeling of wiping out any lurking problems that may have wiggled into existence.
Hard drive Secrets

All the terminology that's fit to print

Both disk storage and RAM are measured in the same units, spelling confusion for anyone who's already having trouble telling disk storage and memory apart.

A bit is the smallest piece of information. It's one single binary signal — on or off — for the computer's billions of electronic switches. (Bit is a contraction of binary digit, actually, but nobody writes it "b'it." )

On a disk, these two possible conditions correspond to the two possible charges a particle on the disk surface may have: positive or negative.

Eight bits make a byte. (Everything in the computer world is a power of two, and things seem to increase in multiples of eight.) A byte is enough information for the computer to specify one character — a W, for example, or a comma. (If an alphabet, as in Asian and Middle Eastern languages, has too many symbols to be specified by a single byte, then two bytes are required to specify one letter. That's where the term double-byte language system comes from. System 7.1 is the first Mac system software that can handle double-byte language systems.)

Take 1024 bytes — that's the closest a power-of-two machine can come to 1000 — and you have a kilobyte, or K. Take 1024 of those and you have a megabyte or MB.

And 1024 of those is a gigabyte or GB.

And 1024 of those is a terabyte.

And 1024 of those is one huge hard drive.

Finding a disk's SCSI ID

Every hard drive must have its own personal ID number on your SCSI chain (see Chapter 29 for details on SCSI). If two hard drives have the same ID number, you're asking for crashes and oddball behavior.

But it's no picnic figuring out what a disk's SCSI number is. Sometimes the SCSI number is set by the positions of tiny DIP switches underneath the unit. Sometimes there is no indication.

We discovered, however, that you can find any disk's SCSI address much more easily: simply select its icon and choose Get Info from the File menu (see Figure 7-5).

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**Figure 7-5:**
The Get Info box for a hard drive gives a wealth of secret information, including its SCSI address.
Of course, there's an even easier way to find a disk's SCSI ID number: Just use SCSI Probe, which is included on the disks that come with this book.

**Changing the interleave ratio**

You can change an Apple drive's interleave ratio using the Apple HD SC Setup utility. (It comes on the Disk Tools disk with your Macintosh.) After you launch the program, press $&-l to display the interleave options.

Obviously, this isn't something you do very often. Changing the interleave involves completely reformatting the disk, which erases all your data. And, as we mentioned, only really old drives need their interleave adjusted — and only for old Macs.

**Who makes your drive?**

The company who sold you your drive didn't make it.

In fact, very few companies actually make the hard-drive mechanism: Quantum, Seagate, IBM, and a couple of others. The 100 companies who sell hard drives to you, the customer, buy up these mechanisms. They install the drive into a plastic or metal housing, paint their brand name on the front, throw in a manual and some formatting software, and mark up the price.

The result is, therefore, that 100 different companies may compete, but they're actually marketing identical equipment. (The term for that handful of companies who make the internal guts of the drive is OEM, for Original Equipment Manufacturer.)

**Making pain-free backups**

Because every hard drive is destined to fail one day, your only hedge against disaster is backing up your work. If you're a corporate- or office-type person, we're sure you've heard the usual advice: keep multiple sets of backup files, made on different days of the week. Keep a copy of the most important files in a different building.

If you're an individual, you may not need to be quite as paranoid. Backing up every day, however, is still a quick dose of insurance. Here are three ways to go about it.

First, you can simply gather up the documents you worked on each day. (Use the Finder's Find command, click More Choices, and search on the modification date. Or, more efficiently, use DiskTop, included on the disks with this book.) Then copy them to a different disk. A SyQuest or second hard drive is convenient, of course. Copying onto floppies each day isn't too bad if you're only copying one day's work each time.

Second, you can do what we do: keep a Backup Folder on your desktop. In it, put all the files that change daily: your calendar file, for example, and rolodex database, and the documents you work on each day. (If dragging all your documents out of their appropriate project folders makes you nervous, make aliases of the documents in the Backup Folder and put the aliases in the project folders.) Then, at the end of each day, drag the entire folder to a backup disk.
Back up by dragging folders in the Finder is easier and faster if you use CopyDoubler, part of Symantec's DiskDoubler Pro package. It automatically copies designated folders (to a designated backup disk) when you shut down the Mac. And its Smart Replace feature copies only the files that have actually changed since your last backup, making the process as quick as possible.

The final strategy, for serious backer-uppers, is to buy a backup program that automates the backup process. FastBack, Retrospect, and DiskFit are some popular ones. They automatically hunt down the files that have been changed since the last backup, instruct you to put in floppies, and do the copying for you.

**File fragmentation**

When you copy files to an empty hard drive, the data is written to contiguous (adjacent) sectors on each disk; think of playing cards being laid end to end. This makes it easy for the Mac to retrieve the information later, since every piece of data is grouped with the data that's supposed to come next. That's why a brand-new drive is the fastest drive.

But things don't usually stay that way. Over time, drive space gets used up. Small files get deleted, leaving little pockets of available space here and there. File fragmentation occurs when, after extended use, the only storage space available on your disk is in various unconnected sectors, scattered in various locations. At that point, saved files are stored in pieces, wherever empty sectors are available. The Mac can still access such fragmented files. However, reading fragmented files takes a little bit longer because the read/write heads must physically move farther to find all the pieces necessary to retrieve the file.

You can regain the tiny bit of speed lost through file fragmentation by defragmenting your hard drive. Defragmenting also increases the chance that you'll be able to recover files successfully after a crash using a repair utility; your files will be in solid chunks and not scattered across the drive in tiny segments.

To defragment a hard drive, you can either buy a disk-defragmenting program or simply reinitialize your disk. Both methods are outlined in the Secrets that follow.

Keep in mind, though, that a hard drive has to be almost entirely full — and probably suffer several years' worth of fragmentation — before any of this really makes a difference. There are plenty of users who never defragment their hard drives and don't notice any appreciable speed loss.

You'll also sometimes hear the term optimizing a drive. A disk optimizer not only defragments the files on the drive — it even tries to figure out where to put them, in their reassembled conditions, so that defragmenting is less likely to occur again. The optimizer may put your applications, which aren't very likely to be modified, at the outside edges of the drive surface, for example.
Defragmenting Secrets

Defragmenting the labor-intensive way
You don't need a special hard-drive utility program to defragment files and optimize your drive. You can accomplish the same thing by erasing your drive and starting over. Granted, this isn't the easiest way to defragment the files on a disk, but it gets the job done. To do this you must (a) back up everything on your drive — either to a stack of floppies or some other drive; (b) reinitialize the drive by using either the Erase Disk command in the Finder or the Apple HD SC Setup's Initialize command; and (c) copy all your files back to the reinitialized disk. The files will be written to contiguous sectors of the now-empty disk, on which almost every sector is available.

Defragmenting made easy
You save yourself a lot of the hassle involved with the previous suggestion by using a hard disk optimizer program; some examples are Speed Disk, included with this book (part of Symantec's Norton Utilities), Mac Tools Deluxe (Central Point Software), and DiskExpress (AlSoft).

Optimizer programs defragment files without requiring you to reinitialize the disk. How? They read large chunks of files into RAM, erase the section of the disk where they lay, and then rewrite the data in a new location on the disk. An optimizer tries to store the data in contiguous blocks, beginning with the first blocks available on the disk.

Partitions
Some volumes — hard drives and removable cartridge drives, for example — can be partitioned into smaller minivolumes with the help of a disk utility program. To illustrate this point: An 80MB hard drive can be partitioned into two distinct volumes, one of 60MB and another of 20. On the Mac's desktop, that one hard drive will appear as two volumes, each with its own name and icon. In essence, partitioning fools the Mac into thinking you have two (or more) drives connected instead of one.

We can think of several reasons why you may want to partition a drive in this way:

- If you share your Macintosh with other people, you can partition your hard drive into a number of smaller volumes, one for each person. The volumes can be individually password-protected so that users have access only to their own data.
- You can create a partition exclusively for your applications and keep it locked to prevent accidental modification or deletion of programs.
- You can partition off a section of your hard drive and use the partition as a vault for old files. Later, if you need to search for an archived file, you won't have to waste time searching your whole hard drive for the document in question. You can restrict the search solely to the archive partition. Of course, the smaller the volume, the faster the search.
- It can confuse your Mac to have two versions of the same application on a disk. By partitioning, you can create a separate volume containing an older version of a program that you need to read some older files.
- Keeping two different System folders on a single volume can cause confusion and
problems. You may find it handy to have both System 6 and 7 available for your work. With partitioning, you can create two volumes on a single drive, one with a System 6 folder and another with a System 7 folder.

How to partition a hard drive

Changing partition sizes or adding new partitions almost always means reinitializing a disk — that is, erasing all your files. So, if you want to partition a drive you're already using, copy all your data to another drive, set up the partitions, and then copy everything back again.

To perform the actual partitioning, you'll need a utility program like Hard Disk Toolkit (FWB), Drive 7 (Casa Blanca), or SilverLining (LaCie). In addition to letting you create multiple partitions on a disk, these programs also allow you to assign each volume its own custom icon and password protection.

But wait, you cry — didn't my Mac come with a free utility called Apple HD SC Setup? Can't I use that to partition my hard drive?

The disappointing news is: No. Sure, Apple HD SC Setup can partition an Apple hard drive into multiple volumes, but it can't create more than one Macintosh partition. In other words, you can subdivide a disk with partitions dedicated to a variety of non-Mac systems: DOS, Unix, Apple II — but the program absolutely does not allow you to set up more than a single Mac partition (see Figure 7-6). For that, you need third-party software.

Figure 7-6: Bizarre-but-true: Apple's system software lets you partition your hard disk into as many volumes as you want — but only one of the partitions can be used by a Macintosh!
Two types of partitions exist on the Mac. The Mac always thinks of *SCSI partitions* — the kind you create with the Apple HD SC Setup — as distinct disks. You can’t resize these partitions without reinitializing the disk.

Some hard-drive formatting software, however, creates “soft” partitions. These *can* be resized without affecting the data on them, providing the resizing still leaves enough room for all the data. You’ll know if your partitions are soft ones, because soft-partitioning schemes require a special system extension that comes with the formatting software. That’s the only downside, actually — that if you ever use the disk with a computer that’s not running the special extension, you won’t be able to access your partitions.

**The truth about partitioning and speed**

Lots of people will tell you that partitioning is a sure way to speed up your Mac. Frankly, this is only a half-truth. Partitioning *can* speed up your work, but it depends entirely on *how* you use the partitions.

In theory, partitioning a big hard drive into three smaller volumes should produce a noticeable speed gain. The Mac ought to be able to retrieve information about your files and their icons faster because the Finder’s Desktop file for each individual volume is smaller.

However, if you access a number of different volumes as you work, partitioning can slow you down. Suppose that you have QuarkXPress on one volume, but the open document is on another. The hard drive’s read/write heads will have to keep jumping to different parts of the actual disk surface, fetching pieces of information first from one partition and then from another. The more a hard drive has to play seek-and-ye-shall-find, the slower it seems.

The key to partitioning is to avoid making your hard drive’s heads jump back and forth frequently between the various “logical” volumes (partitions) you create on a drive. Try to organize your work so that almost everything you need during a work session is within the same partition.
Your hard drive’s secret partitions

Even if you don’t partition your hard drive into multiple volumes, the one Macintosh volume you do have can never equal the total storage capacity of the drive. That’s because drive formatters create secret partitions on your drive without you knowing it. These partitions don’t show up on your desktop, but they are critical to the operation of the drive.

One of the secret partitions contains a partition map, a directory of all the storage spaces on the disk. This map tells your Mac which blocks are empty and which are occupied by data. It also catalogs the location of each piece of data stored on the drive so that the Mac knows where it can find the particular chunk it needs. Another secret partition (see Figure 7-7) is occupied by the hard-disk driver itself (the software that controls all the Mac-to-drive communications).

Reformatting

Reformatting your hard drive erases every last kilobyte on it. This means you have to back up all your data before reformatting and then copy everything back to the disk when you’re done. With so much hassle involved, why even consider doing it?

Here’s one important reason: Over a period of time, a hard drive inevitably develops a few bad sectors — sections of the disk surface that are no longer reliable for storing data. A portion of a disk may get slightly damaged through contact with a read/write head or may be marred by a microscopic speck of dirt. Reformatting software is smart enough to watch for these bad spots and, in its private map of the hard-disk surface, denote these bad sectors as “off limits” — they can no longer be accessed by the drive. After bad sectors have been mapped out of a disk, data no longer will be stored in any of the potential danger spots.
Chapter 7: The Disk Chapter

**TRUE FACT**

**How big is too big?**

In 1984, the largest single volume you could mount on a Macintosh was 400K — the total capacity of a solitary floppy disk. Today, it's not uncommon to see Macs equipped with hard drives of several hundred megabytes or even a gigabyte (1,024 megabytes). Is there any limit to how large a single Mac volume can be?

Yes. Until System 7.5, the Mac organized data using a 32-bit (32-digit) number to identify each byte on a volume. This allows the Mac to specify a total of 2,147,483,648 different bytes, which is equal to two gigabytes. That's as much as the Mac's filing system could keep track of — and as large as a single volume could be.

Time and technology march on, however. System 7.5, in recognition of the increasing number of jumbo-disks on the market, uses a new scheme that ups the maximum-size limit to four gigabytes.

By the way, if your driver software does map out a few bad blocks, thereby reducing the amount of space you have available for data, don’t feel too cheated. Most manufacturers intentionally make drives with a disk capacity slightly larger than advertised, so that bad blocks can be mapped out without depriving you of the advertised storage space.

There's no particular reason to reformat your drive, except as a last resort, when your drive is acting up and you've tried everything else in our Troubleshooting Chapter.

**Floppy Disks**

The original Mac's disk drive could only read 400K disks. Eventually, Apple adopted a drive that could read both 400K and 800K disks, maintaining that critical backward-compatibility. All Macs made today have a *FDHD SuperDrive*, a fancy way of saying that they can read 1440K high-density disks (and 800K disks and 400K disks). We imagine that FDHD stands for Floppy Disk, High-Density. We suppose they call it a SuperDrive because — with the proper translation software installed on your Mac — the disk drive can read same-size disks from IBM computers and clones.

As you probably noticed, no disk ever holds the amount of information it says it does. A 400K floppy may only hold 388K of your data, for example. The rest of the space is filled with invisible files, such as the disk driver and directory map (on hard drives) and the Desktop file we discuss in Chapter 1 (both hard and floppy disks).

**How they work**

Floppy disks operate on the same magnetic storage principle as hard disks. But the disk inside a floppy is made of an extremely thin (and, therefore, floppy) sheet of Mylar instead of glass or plastic. Floppies don’t spin as fast as hard disks, and consequently provide slower access to data.
Part II: Secrets of the Machine

MACINTOSH SECRET

The greatest hard-drive Secret ever told

If you're completely cramped for space on your only hard drive, you'll love this Secret because it unlocks several megabytes of storage space you never knew you had.

This procedure, however, involves erasing your entire drive so that, once again, you must back up every file and then copy them all back to the hard drive when you're done. It's a pain, but in this case, it really may be worth the trouble. And, while this trick is outstanding for PowerBooks, don't use it on a PowerBook with a 120 MB hard drive, which is more susceptible to an obscure HFS disk bug that occasionally crops up on these drives.

Here's the Secret: An Apple factory-formatted hard drive contains several megabytes of unallocated free space. It's space that is completely wasted; it's not used by the driver software and can't be accessed to store files. On one 80MB drive we looked at, only 78.1MB were partitioned for storage. Another 5.7 MB were unallocated and inaccessible. (Yes, we know this adds up to 83.8MB; the 80MB designation is an approximation. Most drive manufacturers throw in a little extra storage space to compensate for bad blocks that may develop on the drive through normal use.)

You can use HD SC Setup to repartition the drive and unlock the extra space. Launch the program, click Partition, and then click Custom. This opens a window displaying all the partitions on the drive. The gray area near the bottom of the partitioning window represents the unallocated space on the drive. In the figure below, you can see that there's plenty of unused free space — 5.7MB's worth — on this 80MB hard drive.

Click anywhere on the main storage partition (the one called PogueBook in the figure above) to select it, and then click Remove to delete it.

Then drag in the gray area to create a brand new partition bigger than the original — one that makes use of all, or almost all, of the extra space available. When you're done, click Done.
Floppies are also a lot less reliable than rigid disks. They go bad all the time. If you need to transport an important file to, say, an important presentation, copy the same file to a couple of different floppies and take them all. Your cheerful authors swear by this one.

The obligatory “floppies-are-fragile” discussion?

This would be the appropriate paragraph in which to expound on the fragility of floppies. Every manual and Mac book does, after all. We’re supposed to say that dropping a floppy is bad for it, and that you have to watch out for deadly invisible magnetism, like that emitted from telephones. We’re supposed to raise the dire spectre of disk failure if you slide open the metal shutter on a floppy disk.

Truth is, we’ve never seen a floppy disk die from any of these harsh treatments. David drops his floppies nearly once a week. And Joe snaps the shutter open and closed sometimes while he’s on the phone. Both of us regularly carry floppies through airport metal detectors. None of these floppies has ever become unreadable as a result.

We’re not suggesting that floppies don’t go bad. We’re just pointing out that to suppose that we, as mere mortals, have some control over the destiny of our floppies is utter arrogance. In truth, floppies go bad when they’re ready to go bad. Some microscopic piece of pollen lands on the disk surface, heat warps the Mylar, a cosmic ray shoots completely through the disk in a fraction of a nanosecond, and it’s gone. It’s the little, invisible things that kill a disk—not the grosser effects of human handling.

On the other hand, we don’t actually encourage touching the brown shiny disc inside the floppy’s shutter, which computer techno-dweebs (definitely not us) refer to as “the cookie.”

Floppy Disk Secrets

Locking a floppy

Locking a floppy disk prevents you or anyone else from accidentally (or intentionally) modifying or trashing the files stored on it. When a floppy is locked, you can still read its contents. You can open folders, rearrange icons, launch applications, open documents and even copy files from the locked disk to another drive—but when you eject the disk, all will be as it was before you started. A locked floppy disk can’t be renamed, either.

To lock a floppy, turn it over, so that the disk’s circular hub is facing you. In the upper-left corner of this disk you see a little black tab; push it upward, opening a tiny rectangular window, as shown in Figure 7-8. That’s it; the disk is locked.
**ANSWER MAN**

**The Unnamable Disk**

*Q: Holy cow, I can’t rename my hard drive!*

*A: Two possibilities: Either it’s locked (yes, you can lock a disk icon in its Get Info window), or you’ve got File Sharing turned on, and you’re sharing something on that disk. You’re not allowed to rename a disk that’s being used by the network.*

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**Figure 7-8:** Lock a floppy by sliding the little black plastic tab up to open the tiny rectangular window at the corner of the disk. Don’t confuse this window with the other rectangular hole — on the right side — which simply identifies the floppy as a high-density disk.

This is the same principle as that plastic tab on the top edge of audio cassettes, which audio fans for years have learned to break off in order to prevent the cassette from being rerecorded. The nice thing about floppies, though, is that you don’t need a piece of Scotch tape to paste over the hole to unlock it, as you do with a cassette.

It’s smart to lock floppies that contain important backups of files. The contents of a locked disk can’t be trashed, changed, or infected by a virus.

**Ejecting a disk**

The most obvious, though not the easiest, way to eject a disk from a floppy drive is to select its icon and then choose Eject Disk from the Special menu in the Finder.

We strongly discourage using this approach for two reasons: (1) Pulling down a menu is too much trouble, and (2) the Eject Disk command leaves a ghosted image of the disk on your Mac’s desktop. Even worse, any of the disk’s open windows remain on the screen even after the disk is gone. If you try to drag the phantom icon into the Trash, you may be asked to **reinsert** the disk you just ejected!

Instead of selecting Eject Disk from the menu, you can press `⌘`-E. But even this method still leaves the ghosted disk icon on the screen. It’s better to avoid these problems by using one of the following alternatives:

- Drag the disk icon straight into the Trash. The disk pops out of the drive and its icon disappears.
Under System 7, select the disk icon. Use the File menu’s Put Away command, or better yet, the ⌘-Y keyboard shortcut. This accomplishes the same thing as dragging the disk to the Trash. The disk ejects and the icon disappears.

Eliminating ghosted icons and windows

If you do eject a disk using the Eject Disk command or ⌘-E, how do you get rid of that annoying ghosted icon? Just drag the disk icon to the Trash. You see a message asking you to reinsert the disk. Don’t do it. Instead, press ⌘-period. This dialog box goes away. The icon vanishes from the desktop and so do any of its windows that are open on the desktop.

“Putting Away” disks under System 6

System 6 lacks a Put Away command. However, a little-known System 6 keyboard shortcut achieves exactly the same result — ejecting a floppy disk and zapping its icon from the desktop. Just press ⌘-Option-E and let your finger linger longer on the Option key.

Ejecting shortcuts

Apple has built in three other keyboard shortcuts that let you eject a disk regardless of whether or not it has been selected.

- ⌘-Shift-L ejects a floppy disk from an internal drive. (The floppy drive connected to a PowerBook 100 or a Duo counts as the internal drive, oddly enough.)

MACINTOSH SECRET

Floppy lies

You’ve probably heard it a thousand times and read it in a dozen Macintosh publications: Absolutely never, under any circumstances, put floppy disks near a telephone, or any other item that generates a magnetic field because this can obliterate your data.

To this we respectfully respond: Baloney.

We took several of our floppy disks — some containing chapters of this book, as a matter of fact — and put them directly on a ringing telephone. We stuck the disks under the phone, next to the phone, between the handset and the phone unit. We waved the handset to and fro, millimeters away from the disk. We rubbed a disk against the phone. We tried a few different telephones. No matter what we attempted, it didn’t result in the destruction of a single file or even a bit of data.

So, then, how magnetically-sensitive are floppy disks? Our curiosity aroused, we kept experimenting. We waved a few kitchen magnets across the surface of a disk. We fastened a floppy disk to David’s refrigerator using a magnet — all day! Still, no problems.

Our conclusion: Yes, a strong enough magnetic field probably can mess up the information on a floppy disk. But we’re not talking about refrigerator magnets here; more like the kind they stick on the end of a 75-foot crane to pick up scrap automobiles, or those bulk tape erasers they use to erase audio and video tapes, or the anti-shoplifting, desensitizing machines used in stores to demagnetize merchandise so you can walk out of the store without tripping an alarm.

Our tech editor insists that he’s seen floppies go bad that were left on the front left corner of an ImageWriter I, where a magnet lurks. All we know is that we couldn’t make it happen, no matter what we tried.
- **Control-Shift-2** ejects a floppy disk from an external drive (or the second drive if your Mac has two built-in floppy drives).
- **Control-Shift-0** ejects a floppy disk from a third drive if you have one connected.

While these commands save you the trouble of selecting a disk icon before ejecting, they also leave ghosted icons on the screen. It's still best to select the disk you want and use **Control-Y**.

**Resorting to the paper clip**

No discussion of floppy disk ejection would be complete without at least mentioning the paper-clip trick. If a floppy disk simply refuses to be ejected after you tried all of the aforementioned eject commands, you can force it out manually. Poke a straightened paper clip, slowly and firmly, into the tiny hole on the front of the drive (see Figure 7-9) until the disk pops out.

**Figure 7-9:**
A time-honored solution to jammed disks: poke a straightened paper clip into the tiny hole beside the disk drive slot until the disk is forced out.

If the disk is physically jammed inside the drive, the reason may be that the shutter is bent or that the sticky disk label has come unglued and has grabbed onto something inside the drive. In both cases, forcing the disk may damage the drive unless you first free the obstruction. Try sliding an index card in on top of the caught label or shutter.

**Getting out of an “insert disk” loop**

If you inadvertently double-click the icon of a disk that’s already been ejected, the Mac asks you to reinsert the disk. You don’t have to obey. Just press **Control-period**. A dialog box like the one in Figure 7-10 appears, telling you the disk cannot be found.

**Figure 7-10:**
The Mac’s self-evident statement.

Click OK or press Return. Usually, the Mac makes one last attempt to open the disk and asks you to insert it. Press **Control-period** again. This time, you see a slightly different message, telling you that the disk can’t be used (see Figure 7-11). The Mac is giving up. Dismiss the message and the loop stops.
Distinguishing double-density disks from high-density disks
You don't have to insert a floppy disk into a drive to determine whether it's an 800K disk or a high-density 1.44MB disk. The disk has a few visual indicators that let you know immediately. One indicator is the extra rectangular hole bored through the upper corner of every high-density disk (see Figure 7-12). The other clue, of course, is the little HD logo printed on the front of high-density disks.

Rebuilding the desktop on a floppy
In Chapter 6, we discuss the value of periodically rebuilding your hard drive’s invisible Desktop file. This purges the file of superfluous information, prevents the Finder from getting sluggish, and makes more space available on the disk. You can rebuild the desktop of a floppy disk, too, but there's a Secret to it. See the Desktop file Secret called "De-bloat a floppy disk" in Chapter 1.

Finding the Secret floppy message
Here's a Secret we guarantee you'll never stumble across by accident — it's too weird. Insert a floppy disk and rename it either KMEG JJ KS or Hello world JS N A DTP.

Now eject the disk using ⌘-E. This leaves the ghosted disk icon on the desktop. Double-click on the icon and — surprise — the resulting "please insert the disk" dialog box displays the line: "HFS for 7.0 by dnf and ksct."

As you undoubtedly guessed, dnf is David N. Feldman and ksct is Kenny S. C. Tung. David and Kenny are the Apple programmers who developed extensions to the Mac’s Hierarchical File System for System 7, and this is their moment in the limelight.
**Erasing two disks at the same time**

That's right, you can erase two disks simultaneously. You may use this trick if your Mac has two floppy drives, or a floppy drive and a SyQuest cartridge, for example. Shift-click to select both disk icons and then choose the Erase Disk command. Both disks get erased simultaneously. (You don't actually save much time, but you do avoid having to step through all the confirmation and renaming dialog boxes.)

**Automatic disk erasing**

Here's another little-known shortcut for erasing floppy disks: If you hold down Option-Tab while inserting a disk into the floppy drive, the dialog box asking if you'd like to erase the disk pops up as soon as the disk mounts, saving you the trouble of choosing the Erase Disk command from the Special menu.

**Turning MFS disks into HFS disks**

If you have any old 400K disks that you used with a pre-1987 Mac, chances are they’re formatted with the antiquated Macintosh Filing System (MFS). This was the Mac’s original scheme for organizing files. MFS was a completely nonhierarchical system, with all files residing at disk level at all times. You could stick a file into a folder, but folders were a fiction for humans’ benefit. As far as the Mac was concerned, every file was on the same level. You discovered that when you used a program’s Open command. In the standard file-list box that appeared, all files showed up in a continuous list, as though there were no folders at all.

In 1987, Apple introduced the Hierarchical File System, or HFS, with its hierarchical system of nesting folders. It was a major boon to file organization.

Not surprisingly, MFS disks don’t function quite right under HFS. You can’t create new folders on an MFS disk, for example. In System 7, anything you put into the Trash can disappears immediately without waiting for the Empty Trash command.

You can, however, reinitialize the MFS disk as an up-to-date HFS disk using a secret command built into System 7.

To make the conversion, insert the MFS disk and choose Erase Disk from the Special menu. This displays the dialog box shown in Figure 7-13. Hold down the Option key and click the One-Sided button. Don’t release the Option key until the disk is fully initialized.

This process erases any files on the disk. When you’re done, you have what sounds like a contradiction in terms: a fully functional 400K HFS disk.

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**Figure 7-13:**

Hold down the Option key while clicking One-Sided to convert an old disk to the Hierarchical File System.
Renaming the unnameable floppy

Insert an old 400K MFS disk into a floppy drive under System 7 and you encounter a disk that cannot be renamed. The disk's icon appears on the desktop, and you won't have any trouble opening the disk or reading files from it. But if you click the disk's name, nothing happens. Only if you reformat the disk as an HFS disk, as described in the previous Secret, can you rename the disk.

Unless you own a utility called DiskTop, that is, which is included on the disks with this book (see Chapter 33). Using DiskTop, a desk accessory-based version of Finder, you can rename any disk, whether MFS or HFS (Figure 7-14). This is the only way to rename a 400K disk without erasing it.

Turning 400K disks into 800K double-sided disks

Here's another straightforward conversion trick: all 400K disks are capable of holding 800K of data. You can double the capacity of a 400K disk simply by reinitializing it as a two-sided disk using the Erase Disk command.

For years, gurus have pointed out that only one side of a 400K disk is tested for defects during manufacturing. They say, technically speaking, that the safety of the second side is therefore questionable.

Using System 7, however, any bad spots on the disk are set aside. For this reason, System 7-reformatted disks are much less susceptible to the potential flakiness that sometimes resulted from this 400/800K formatting.
Turning 800K disks into high-density disks...or not

Along the same lines as the previous Secret, it’s theoretically possible to create a disk that the Mac treats as a high-density disk by punching a hole in the upper-left corner of an 800K disk. We’ve even seen special hole punches for sale.

However, going from 800K to high-density disks is a far riskier proposition than going from 400K to 800K. The shiny disk material inside a high-density disk has a different magnetic coating. The data is also written with a weaker magnetic field into a smaller area on a thinner surface.

Turning high-density disks into 800K disks

You get into trouble if you get greedy and try to create high-density disks from 800K disks. Now we’ll tell you that being un-greedy doesn’t help, either.

You’d think that it would be no problem to go the other way — to format high-density disks as double-sided by inserting them into an older 800K disk drive. (We can imagine doing this in a pinch, for example, when you have nothing but high-density disks on hand.)

We have two problems with this approach. First, if you try to insert this 800K/high-density disk into a SuperDrive, you are told it’s “improperly formatted.” Click Eject and then put a piece of tape over the hole across from the sliding tab (see Figure 7-12). This is a temporary but effective way to get the SuperDrive to recognize the contents of the disk. (It’s also the only way to reformat a high-density disk to its high-density status after it’s been formatted to 800K on a non-SuperDrive Mac.)

The second problem is that the differences between the two systems may get you in trouble. The stronger magnetic fields of an 800K disk drive may cause errors with the thinner high-density media.

It appears, then, that the best strategy is to attempt to use high-density disks exclusively in the appropriate drives.

Reading and formatting MS-DOS disks

The SuperDrive is famous for being able to read and write both Mac and IBM floppy disks. You’d never know it, though, since as soon as you put in a DOS disk, the Mac shows the message in Figure 7-15.

Actually, it can read these disks, but only with additional software. The best bet is Apple’s PC Exchange, which comes with System 7.5 as well as most recent Mac models. When you format a floppy disk when PC Exchange is installed, you’re offered a choice of Mac, Apple II, or DOS formats. And if you insert a DOS or Apple II disk, its icon shows up on the desktop like any other disk’s.
If PC Exchange isn't on your Mac, and you don't feel like buying it, you can always use Apple File Exchange, which you already own (see Chapter 4). It performs the same functions — just less conveniently. (It's on the Tidbits disk that came with your Mac.) Apple File Exchange also lets you format a blank disk or an existing Mac disk, such as a DOS disk. See Chapter 4 for details.

**Fixing good disks gone bad**

It happens to everybody sooner or later: you insert a floppy disk, and you get the "This disk is unreadable" message.

Three times in ten, the floppy works if you (1) try inserting it again; (2) try inserting it into another Mac; (3) remove the disk, manually turn the silver hub with your fingernail, shake the disk around a little, and put it back in. Restart the Mac, thus clearing the floppy drive port — the Mac equivalent of blowing your nose. (Item 2 has a very high success rate with PowerBook disk drives, which are somewhat more finicky than regular drives.)

**Fixing good disks that have really gone bad**

If you tried the steps in the previous Secret with no success, and you're sure the disk has really gone bad, all hope is not lost.

There are ways to recover files from a damaged disk. Most often, in fact, your files have not been damaged; the problems lies with the disk's catalog of your files. In other words, your precious files are still intact, but the Mac's instructions for finding them have gotten mangled.

Your Mac comes with a repair program called Disk First Aid. It's on the Disk Tools disk that came with your Mac. When you click Start, Disk First Aid scans a selected disk, checking for problems it can fix and then offering to make the repairs. If necessary, it rebuilds the disk's catalog file, which may be all that's needed to make your files readable again.

**Watching Disk First Aid in action**

Disk First Aid does most of its work behind the scenes, simply reporting to you when the job is done. If you press ⌘-S when the Start/Stop dialog box first appears, you get a glimpse into what the program is doing while scavenging around your sickly disk. A second window opens, listing each test and repair procedure as it is being accomplished.

**Recovering files from damaged floppies**

If you insert a floppy disk and get a message that says the disk is unreadable, you still may be able to recover the files on it by doing the following: leave the disk in the floppy drive and open the application in which the files were created. Use the Open command from within the application to open the file, and then resave the file to a new disk.
If the problem with the disk appears to be that the protective metal shutter is jammed, bent or broken, try this radical-but-effective trick: Carefully pull the entire shutter off the disk; it can be broken off quite easily. Be careful not to touch the Mylar disk material. Immediately insert the bare disk into the drive. Your Mac will have no trouble reading the disk, despite the missing shutter.

Obviously, this technique ruins the floppy disk, but it might enable you to access files from a broken disk that otherwise could not be inserted into a drive.

**Cleaning your floppy drive with a vacuum**

A dirty floppy drive can be dangerous; a few specks of dirt on a disk surface can send it crashing. It’s a good idea to keep the drive as dust-free as possible. They do sell special cleaning disks, but we’ve actually heard of these scratching disk heads. Instead, try using your old vacuum cleaner to clean out dust that may build up in the drive slot. You may feel odd standing in front of your computer with the hose of a Hoover in your hand, but your efforts could pay off in the end with fewer disk-reading problems. (Needless to say, be careful. Leave the Mac off, but plugged in, so that it’s grounded.)

**Using a 1.4MB drive with a Plus or SE**

In theory, you can’t use high-density disks with a Mac Plus or original SE because they have only 800K disk drives.

You can, however, purchase an external high-density drive for these (and other) Mac models. PL! sells on external high-density drive for the Mac.

## Other Kinds of Disks

Hard drives and floppy drives are by far the most frequently used storage devices. But there are plenty of other storage options available, some of which offer unique advantages over traditional hard drives. Here are some of the most popular emerging technologies in the data storage department:

- **Bernoulli and SyQuest removable drives**: Removables act like super-reliable floppy disks. As with floppies and hard drives, data is recorded on spinning magnetic disks, but each of these disks can hold anywhere from 20 to 270 megabytes of data and is sealed into a cartridge that can be ejected from the drive. (The older 5.25 inch SyQuest cartridges are usually formatted to hold either 44, 88 or 200 megabytes each, while the newer 3.5 inch versions can handle up to 270 megabytes each.)

  With removables, you don’t have to start shopping for another drive every time you need additional storage space; you just buy another cartridge (they run about $60 to $160 each, depending on type and capacity) and pop it into the drive. For a relatively low price, you get virtually unlimited storage. The speed of these systems is about the same as a hard drive’s.

  Bernoulli mechanisms and SyQuest drives aren’t compatible with each other. Bernoullis cost slightly more than SyQuests, but are generally considered more rugged and possibly more reliable.
Chapter 7: The Disk Chapter

- **CD-ROM:** Yes, they're disks, too. But instead of using magnetic particles, CD discs are optical disks. CD-ROM disks are read and written using laser beams. They're very slow — ten times slower than hard drives. Look for more details on CD-ROM in Chapter 26.

- **Magneto-optical drives:** Rewritable optical disks (another kind of optical disk) come in cartridge form. The smaller cartridges, which resemble standard-size floppy disks, can hold up to 256 megabytes. The larger, 5.25" square cartridges can contain a full gigabyte of data.

  In a magneto-optical system, a finely-focused laser heats material on a double-sided spinning disk. A magnetic head on the opposite side of the disk simultaneously alters the heated material's magnetic orientation. When the material cools, the magnetic pattern is locked into place. A lower-powered laser is used to read back the magnetic spots when data is retrieved.

  Magneto-optimicals are essentially a fringe technology at this point; only a tiny percentage of Mac owners use them. One reason is that they're still expensive. Another reason is that they're slower than hard drives or removables. Furthermore, you may have trouble exchanging Magneto-optical disks among different drives.

- **Tape drives:** These are designed primarily as backup devices because they don't provide random access. In order to find a specific block of data, you have to fast forward or rewind through tape, which takes time. All that winding and rewinding takes its toll on the tape's life expectancy, too; some tapes are likely to stretch and wear out if accessed more than a few dozen times. Some tape drives record data on the same 8mm tape cassettes used in video recorders. Others write the data to DAT — digital audio tape. Overall, tape drives offer the least expensive form of mass storage. A tape cassette capable of holding 600 megabytes of data costs under $30.

- **Worm drives:** Forget it. These you-can-only-record-on-it-once CDs are already technological dinosaurs. We've never even seen one. We guess accountants use them. (Stands for Write Once, Read Many.)

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**SyQuest Secrets**

*What's that racket?*

The racket a cartridge makes when you first insert a SyQuest cartridge is the sound of the platter's acceleration to 4200 rpm, where centrifugal force flings any microscopic dust off its surface.

*Why can't I eject my cartridge?*

There's a famous bug involving removable cartridges and System 7 file sharing. You can't remove a removable if it was in the drive when file sharing started up.

Here's a couple of solutions. First, you can wait to insert the cartridge until after file sharing has started up. Second, you can turn file sharing off while you eject the disk.

Third, you can use the shareware program called File Sharing Improvement Doohickeys, which quickly turns File Sharing off and on again when you eject a cartridge.
ANSWER MAN

Q. I've heard rumors that Bernoulli removable drives are actually named after Daniel Bernoulli, the 18th century Swiss mathematician who studied fluid dynamics and discovered the aerodynamic principle of lift. What the heck does lift have to do with my removable drive?

A. Believe it or not, the operation of a Bernoulli drive is dependent on precisely the same principle that enables a 747 to fly. The magnetic disk inside the Bernoulli drive is made of an extremely flexible material, so flexible that when it's stationary, it just droops down like a wet pancake safely away from the read/write heads.

When the drive is powered up, the disk starts spinning and the motion draws in air across the top of the disk. The rushing air creates a low-pressure pocket above the disk. Because the air pressure is minutely higher below the disk, the flexible disk is lifted up to the read/write heads — the same way an airplane wing is lifted up in flight. The Bernoulli effect lifts the disk to within 10 millionths of an inch of the head, where it rides on a stabilized cushion of air.

Now you can see what makes Bernoulli drives particularly safe. When the drive accidentally falls off your desk or there's a power failure, the flow of air is interrupted, the disk loses its lift, and the platter immediately drops away from the head, preventing a head crash.

Should I worry about data integrity?

In the late '80s, people whispered questions about the integrity of SyQuest systems. They said that these cartridges were more likely to go bad than any other kind of disk.

A couple of developments have improved the picture. First, SyQuest drive mechanisms have been improved.

Second, we read somewhere that the trick to keeping SyQuest cartridges secure is to keep them in their plastic cases whenever they're not in the drive. We're convinced that this is the answer. Between us, your cheerful authors own about 15 cartridges, and not one of them has ever had a problem.

My cartridge doesn't show up!

On certain Macs, with certain SCSI-chain setups, on certain days of the week, you may insert a SyQuest cartridge (after the Mac is already on) and discover that its icon doesn't appear on the desktop.

The solution is simple. Install SCSI Probe, included with this book. Then, if you're nipped by this won't-mount problem, just press space. SCSI Probe will wake up and forcibly bring your SyQuest onto the desktop. (You can change this keystoke in the SCSI Probe control panel.)
In this chapter:

- The Save, Save As, and Revert commands
- What memory is and where it goes
- 32-bit addressing and all that
- Allotting memory to programs
- How to use the Disk Cache
- How to use a RAM disk
- How to use virtual memory

When you double-click a document or a program icon, your disk spins furiously at 3600 rotations per minute. Like a record player, the Mac reads the information contained in your file off the disk. The Mac doesn’t send this data to a speaker, however — it copies the information into memory. (By the way, we don’t belong to the “disks are memory” school. Disks are disks. Memory is memory. There’s no such thing, in our belief system, as “disk memory.”)

By the time your memo appears on the screen, for example, you have two copies of it. One copy is on the disk and another is in memory (RAM) on the screen before you. If you keep this distinction in mind, much of Macintosh computing becomes clearer.

If you’ve ever held memory chips (about the size of a stick of Juicy Fruit) in your hand, you know that RAM looks pretty unimpressive. RAM stands for random-access memory; *random-access* implies that the computer can jump directly into any part of it to fetch a piece of information. Contrast this random-access device with, say, a tape recorder, which is a *sequential-access* device; you can only get to a certain song on a cassette by waiting while it fast-forwards or rewinds to the appropriate spot.
Despite its humble appearance, memory is about 1,000 times faster than a disk when it comes to sending information to the Mac's brain. This critical fact accounts for almost everything you're about to read, because programmers deliberately use memory whenever speed is an issue. When you're editing your memo, of course, you don't want to have to pause for ten seconds each time you scroll to a new paragraph, which is what would happen if your memo wasn't in memory. As owners of the Classic can tell you, the Mac can be slow enough as it is.

Suppose you make some changes to a memo, updating it to reflect your new thoughts. The memo in memory is now different from the one on your disk. At this delicate stage, you have three choices. You can make the disk copy match the one on the screen (in RAM). You can make the RAM copy match the one on the disk. Or you can create a second disk copy that matches the version in RAM, so that there's an old and a new disk copy.

Why bother with the disk copy at all? Because when you turn off your computer, the entire contents of its memory disappear; the Mac's memory chips only maintain information while electric current is running through them. So why not leave your Mac running all the time and never save anything onto the disk? Two reasons: first, because your Mac's memory doesn't hold nearly as much as your hard disk; and second, because system crashes may make you turn off your Mac, whether you like it or not. As frequently as possible, then, you should transfer the contents of memory back onto the disk. (Of course, anything stored on the disk is preserved even when you turn off the Mac.)

Save, Save As, Revert...

Save and Revert

When you choose Save from a program's File menu, the Mac stores your memory-based document on the disk.

The Revert command, available in the File menu of most programs, does just the opposite of Save. Instead of bringing the disk copy up to date so that it matches the document in memory, it does the reverse — restores the memory copy so that it matches the older disk copy. In other words, the document reverts to the condition it was in the last time it was saved.

This, of course, is precisely what you want to do if you make a mess of a file (when a search-and-replace operation has gone awry, for example). The Revert command is the ultimate Undo.

Some programs, such as Microsoft Word, don't offer a Revert command. You can accomplish the same effect manually, although with more steps: close the file without saving changes, then re-open it.

If your program has neither a Revert nor a Save command, like FileMaker, there is no way to restore the file after you've worked on it for awhile. If you use FileMaker, your only protection is to make a duplicate disk copy before each use of the database. If something goes wrong, you can use the copy.
Save As

The third interaction between the RAM-based and disk-based copies of a document is the Save As command.

In a way, Save As is a cross between Save and Revert; it lets you eat your cake and have it too. You save the changes you've made — they become part of the new document — and you also close the older one without saving changes. Then you have two different versions on disk, an old and a new one.

When working under unstable conditions — that is, when either your boss or the software is a little flaky — you may want to create an electronic paper trail of your progress on a certain document. Use the Save As command frequently to create documents called Memo 1, Memo 2, Memo 3, and so on. If an indecisive boss (or a buggy, file-corrupting program) decides that the current version is no good, you can go back to any of the saved versions.

A visual tour of the Save box

![Diagram of the Save box](image)

Figure 8-1: The Save As box deconstructed.

Particularly in System 7, the simple Save File dialog box — the list box that appears when you choose Save As (or Save for the first time) — is loaded with hidden features. Here's our summary (see Figure 8-1).

We're going to assume that you already know what Save and Cancel do.

A This list shows the contents of the disk or folder identified by item D. You use this list to navigate and to choose which folder you want to store this file in.

Ever wonder why everything's gray? Because gray is the universal Mac signal “not available.” When you're saving a new file, the only icons that are available are containers — disks and folders, in other words. You can't very well store a document inside another document.
B Item B represents a concept, not an interface element: there are two different places where you can do typing. You can type a title (C) or you can type to choose a folder (A). We'll discuss this feature in more detail in a moment; note here simply that pressing the Tab key jumps you from area A to area C.

C In this text box, you type the name of the file you're creating: up to 31 letters, no colons.

D This pop-up menu shows the name of the disk or folder whose contents you're browsing through. If you want to burrow deeper into folders-within-folders, you double-click a folder name in the list (A). To back out from the contents of a folder, however, you have to use this pop-up menu. It lists, in upside-down order, the nested folders you traveled to reach the location you're viewing now. That is, the disk is always second-to-last in the pop-up menu, and the Desktop is always at the bottom.

E This indicator identifies the disk whose contents you're browsing.

F This button is only available when you're viewing an ejectable disk or its contents. Use this button when you want to save your document onto some disk that isn't currently in the drive.

G The Desktop button takes you directly to your bird's-eye view of the disks accessible by your Mac. It shows each as an icon, including your hard drive, any floppies or cartridges, and any networked drives that you've mounted.

In Desktop view, you also see any folders or files whose icons you've dragged out of a window onto the desktop. Interestingly, you also see a dimmed icon of the Trash. (We've always wondered why it's always dimmed. We've written documents now and then that we wouldn't have minded saving directly into the Trash can.)

H This button's presence is up to the programmer of each particular piece of software. It's available, for example, when you try to save something from Word, Now Up-to-Date, and QuickDex, but not from ClarisWorks or FileMaker.

Anyway, it's handy. Needless to say, it lets you create (and name) a new folder, in case you're trying to save a document for which no existing folder is quite right.

I More and more programs put a whole bunch of specialized controls down here at the bottom of the dialog box. Usually there's a pop-up menu, as shown in this illustration, that lets you specify what kind of document you want to save: a text file, a Word file, and so on. That's good, because saving your work as another file type is one of Save As's most important uses.

Save File and Open File dialog box

Secrets

Two different places you can type

When you're staring at the Save As dialog box (see Figure 8-1) or the very similar Open File dialog box, Apple has designated two different areas where your typing has some effect.

First, look at area A in the previous figure. When this area is ready for typing, it has a thick black border, as shown in Figure 8-2.
Figure 8-2:
The thick outline tells you that your typing will start selecting file, folder, and disk names.

We’ll cover exactly what you’re supposed to type when the list-outline is with you in the next Secret.

You can also type in the blank box where you’re supposed to name the file that you’re saving. As we mentioned above, you can jump from one typing area (the file name) to the other (the list of files) in either of two ways — you can click with the mouse or you can press Tab.

**What you can type in the list area**

When the thick outline tells you that you are in list-typing mode, as shown in Figure 8-2, you can select items in the list without having to use the mouse. Here’s the ultimate list of keystrokes that moves you around. Note, in all these cases, that typing only highlights selectable items. In the Save File box, you can’t ever highlight one of the dimmed file names — only folder or disk names.

- **Space** Press the Space bar to highlight the first item in the list.
- **P** This letter key, or any letter key, highlights the item in the list whose name begins with the letter closest to this one. If you have several beginning with the same letter, you can type several letters quickly — PA, for example — to close in on the one you want.
- **Z** Type Z to highlight the file whose name starts with the letter closest to Z (not necessarily the last file).
- The unshifted tilde key, in the upper-left corner of your keyboard, highlights the last file in the list.
- The arrow keys move the highlighting up and down the list, one item at a time.

**How fast you have to type**

When you’re typing letters to highlight a file’s name, you’re generally told to “type a few letters quickly” to pinpoint a specific file. But how fast is quickly? How long do you have to wait between one typing spurt and starting over?

It turns out that you decide what pause constitutes an “I’m going to start over typing” period. The Mac goes by your Key Repeat Rate setting, believe it or not, in your Keyboard control panel. Set this control to a shorter time, and you won’t have to wait as long before starting over when type-selecting a file in the list box.
Other hidden keyboard shortcuts

You should never have to use the mouse at all when you’re opening or saving a file. Here are the alternatives.

\[\text{*\text{D}}\] Makes the list jump to the Desktop level. This is the same as clicking the Desktop button. \[\text{\text{Shift-up}}\] arrow accomplishes the same thing.

\[\text{\text{up}}\] Moves “upward” one level closer to the Desktop. This is how you move outward from an inner folder to the one that contains it.

\[\text{\text{down}}\] Opens the highlighted folder or disk; the same as pressing Return or Enter.

\[\text{\text{right}}\] Changes the list to show you the contents of the next disk. You go in the order that the disks appear on your desktop, from top to bottom. Press \[\text{\text{left}}\] arrow to cycle through the disks in the other direction.

This keyboard shortcut also works in System 6. However, in System 6, there’s a Drive button that serves the same function. In System 7, the keyboard shortcut is the only way to switch from one disk to another. Still, we’re happy to have it; without this keystroke, the only way to switch disks would be to jump to the Desktop level and then double-click the next disk you want to view. That’s a lot of trouble.

\[\text{\text{N}}\] This is the same as clicking the New Folder button, if your program gives you one.

\[\text{\text{O}}\] This is the equivalent for clicking the Open button, when appropriate.

\[\text{\text{S}}\] The same as clicking the Save button.

\[\text{.}\] (That’s \[\text{\text{period}}\].) It’s the same as clicking the Cancel button.

Return (Or Enter.) This key’s effect changes, which causes some confusion for beginners. And for us.

You see, Enter or Return is usually the same as clicking Save. Your file gets saved, and the dialog box goes away. (Or, if we’re talking about the Open File box, then Enter or Return opens the highlighted file, folder, or disk.)

But if you’re in type-to-select-a-file mode (the thick outline is around the list of files) and a folder or disk’s name is highlighted, then Enter or Return opens the highlighted folder.

That often throws us. We hit Enter, thinking we’re saving the file. But some folder was highlighted at the time, unbeknownst to us — and so then the file didn’t get saved, but we’re now inside some arbitrary folder. Puzzled and confused, we hit Enter again. This time we succeed in saving the document, but into the wrong folder! No wonder beginners often complain that they create documents and can never find them again.

Hidden things to click

Actually, there’s really only one hidden thing to click. It’s the disk name, as identified by letter E in Figure 8-1.

But it’s handy: it’s the same as pressing \[\text{\text{up}}\] arrow. Clicking here moves you out of the folder whose contents you’re viewing, and one folder level closer to the desktop.
Double-click an alias, and Option-click

When you're viewing the Open File dialog box shown in Figure 8-4, alias names show up in italics. If you double-click one, the original file (from which the alias was made) opens.

If you Option-double-click it, though, you don't open it. Instead, you're instantly shown the contents of the folder that contains the original item.

Stationery

When System 7 was introduced, one of the most interesting new features was Stationery Pads. Whenever you save a document, you're supposed to find, in the Save File box, a Stationery button, as shown in Figure 8-3.

![Figure 8-3: One of the few programs we found with a Stationery icon and button (lower right).]

What’s supposed to happen is that you prepare a document that contains elements you reuse often. It may be your letterhead, a salutation, or a contract template, where all you have to fill in is the names and numbers. Then, when you save the document using the Save As command, you're supposed to be offered a Stationery option.

A document saved as Stationery doesn't actually open when double-clicked. Instead, a perfect copy of it opens, named Untitled. The original — the master — is left safely on your disk. You can modify the Untitled copy to your heart's content and eventually save it with its own name. You saved yourself the effort of re-creating whatever elements are already in it (your logo, for example).

The thing is, avid readers of Mac magazines and books recognize Figure 8-3 all too well: it's the Save File box belonging to TeachText, the only program Apple provides with each Mac that has a Save command. The Stationery option in TeachText was supposed to be the model for all new System 7-savvy programs. Unfortunately, we can't think of a single program that adopted TeachText's model (showing those two special document icons in the lower-right of the box). That's why no book or magazine, in discussing Stationery, ever shows you anything but TeachText's Save File box.

That's not to say that the Stationery option is never available. Some programs have it but make it look different (often it's listed in a pop-up menu of file formats).
Stationery Secrets

Turning any document into stationery

Even if your program doesn’t have a Stationery option (or icon) in the Save File box, you can actually create stationery out of any document that came from any program.

Go to the Finder and highlight the icon. Choose Get Info from the File menu and select Stationery Pad.

From now on, whenever you double-click this document’s icon, the Mac will instantly create a copy of it. Before the appropriate program even opens, the Mac asks you to name the document’s new copy (see Figure 8-4). If you click OK, your new duplicate file will be stored wherever the Stationery document was. To save it into some other folder, click Save In.

Adding a Stationery option to any program

You know what? We actually prefer the crude, not-really-how-it’s-supposed-to-work scenario described in the previous Secret to the one Apple envisioned. We really like being asked to name the copy and save it before it opens on the screen.

A program that’s “Stationery-savvy” works differently. You double-click a Stationery icon and get an untitled document on the screen. It’s up to you to name and save it. Somehow, naming and saving the file right off the bat seems to make the whole Stationery concept clearer. You understand better what’s happening.

You can’t add Stationery-awareness to a program that doesn’t have it. But you can make a program that does do Stationery “right,” such as Word 5, act as though it doesn’t. In other words, you can make any program’s documents behave as described in the previous Secret. We’ll save the actual instructions, however, for our ResEdit discussion in Chapter 21.

Using stationery as a folder magnet

When you save a file for the first time, the Mac generally saves it into the same folder as the program you’re in. For beginners — and even power users — this means lost files; new documents frequently get stuck deep within some folder (such as the Word folder) instead of on the desktop or in a Documents folder, where they’d be easy to find.
Life is sweeter on the Performa or in System 7.5, where you're offered the chance to have newly created documents saved into, say, a Documents folder. For everyone else, here's an ingenious solution.

For each of your applications, create a blank document, and turn it into a piece of stationery. Call these documents New Word Document, New ClarisWorks Document, or whatever. Put these stationery documents into the desired “magnet” folders (Documents Folder and so on).

From now on, double-click the appropriate stationery document to launch a program instead of double-clicking the program icon itself. Then, when you save your work for the first time, the Mac will propose storing it in — yes indeed — the Documents folder (or whatever folder contains the stationery). As an added bonus, if you had taken the trouble to set up all your margin, font, and preference settings in the blank document, they’ll all be in place for every new document you create this way.

RAM: the Chips

RAM chips come on tiny circuit boards called SIMMs. That acronym comes from single in-line memory modules. And that term comes from the fact that a SIMM is actually two, four, eight, or nine memory chips carefully fastened, in a neat row, to a small epoxy board. (By the way: for user-friendliness sake, we sometimes refer to SIMM circuit boards as RAM chips — it’s just our shorthand.)

If you’ve ever examined a SIMM, you’ll note that the little black memory modules are connected to the board with tiny legs. The board portion is constructed of impossibly thin layers of epoxy resin. In between layers, computers and acid have arranged and etched circuitry. The legs of the memory pods make contacts with this internal circuitry with extreme precision and specific depths.

These minicircuit boards (the SIMMs) can be snapped, with some difficulty, into corresponding receptacles inside every Macintosh model. Various models have various numbers of SIMM slots, usually in multiples of two or four. The LCIII has only one SIMM slot, for example, but most Quadras have eight.

The number of SIMM slots doesn’t necessarily affect how much memory your Mac can have installed, however. The SIMMs themselves come in different capacities, from $\frac{1}{2}$ MB to 32 MB on a single SIMM! Needless to say, the technology required to cram 32 MB of RAM on a three-inch piece of board makes them wildly expensive — at the moment. Like all high-tech products, however, prices of memory chips will forever plummet.

In any case, for the last year or so, the primary currency in memory SIMMs has been the 1 MB chip. And the price has hovered in the $30 to $35 range (except in the months following 1993’s Japanense plant explosion, which created a chip shortage that sent prices skyrocketing for months).

We’ve figured out precisely how much memory your particular Mac model can accept. Rather than bore you by listing it all here, we’ll direct you to Chapter 11, where you can read about your model and ignore the others.
Where your memory goes

We recently heard an Apple engineer discussing the design of the very first Mac. It seems that, in the early 80s, Apple decided to break the bounds of personal computers. Costs be damned, Apple was going to absolutely pack memory into their flagship machine: a whopping 64K!

Of course, even in the time it took the Mac to reach market, 64K began to look paltry; the first Mac contained 128K of RAM.

The Fundamental Law of Software Glut dictates, however, that the amount of memory considered the crudest minimum doubles about once per year; at this writing, a System 7 Mac feels memory-crammed unless it has at least 8MB of memory. The latest Macs can handle 256MB.

Where does it all go? Here’s how the math goes on a typical 8MB Mac IIci. Remember that one megabyte of anything isn’t 1000 kilobytes — it’s 1024 kilobytes. So our 8MB machine has 8192 kilobytes of RAM.

In our tests, a plain System 7 system took up 1264K of RAM right off the top. Set your Disk Cache (we’ll get to this) to the recommended setting for an 8 MB machine, and you’re out another 256K. And heaven forbid if you’re using virtual memory; out goes another chunk.

\[
\begin{align*}
8192 \text{ K (Total Mac memory)} & - 1264 \text{ K (System)} - 256 \text{ K (Disk Cache)} - 380 \text{ K (Virtual memory)} \\
= & 6292 \text{ K}
\end{align*}
\]

If you’re using the IIci’s built-in video feature, subtract another 340K for the video image. If you use a laser printer, another 107K goes to AppleTalk. If you’re on a network and you’ve shared your hard drive, you lose 264K to File Sharing.

\[
\begin{align*}
6292 \text{ K} & - 340 \text{ K (Built-in video)} - 107 \text{ K (AppleTalk)} - 264 \text{ K (File Sharing)} \\
= & 5581 \text{ K}
\end{align*}
\]

After you add a few system extensions and control panels, you rob even more memory. By themselves, After Dark, QuicKeys, and Adobe Type Manager (set to a modest 192K cache size in the control panel), for example, gobble up another 993K. We’re being conservative, too; almost everybody’s got more than three extensions.

\[
\begin{align*}
5581 \text{ K} & - 993 \text{ K (three control panels)} \\
= & 4588 \text{ K}
\end{align*}
\]

Imagine: you’ve lost half your RAM, and you haven’t even started work yet!
Finally, you roll up your sleeves to get some work done. You double-click the Adobe Photoshop icon:

\[
\begin{align*}
4588 \text{ K} \\
- 4096 \text{ K (Photoshop)} \\
\hline
492 \text{ K}
\end{align*}
\]

We're running one program, and there's barely enough RAM left over to launch TeachText, too!

Do you still question our assertion that the minimum requirements for Mac memory double every year?

What to do about the RAM shortage

We can think of three solutions to this apparent problem.

- Don't use System 7, the primary memory hog in the scenario above. On the other hand, fewer and fewer Macs can even run on System 6 anymore. And your system will not only lack System 7's great features, but it will become more and more incompatible with the latest software and equipment.
- Just run one program at a time. It won't kill you, but you won't be getting as much out of your Mac as you can.
- Use virtual memory or RAM Doubler. We'll cover both of these shortly.
- Buy more memory. Memory is relatively cheap nowadays. Upgrading that 8MB machine to 20MB costs about $500.

If you do decide to install more RAM, the following section provides some pointers.

How to buy SIMMs

You can find three sources of memory upgrades today. First, you can take your machine into a computer store. They will provide the memory, install it, and test it. Having a dealer do the job certainly provides peace of mind, but it will probably cost you double what it will cost to do the job yourself. You'll also have to do without your Mac while it's in the shop (depending on how friendly your dealer is).

The second possibility is to install the RAM yourself and buy the RAM by general Mac merchandise mail order, like Mac Connection. We like this option because your purchase, if not your Mac, is well protected. Mac Connection (or another of the major Mac mail-order companies) guarantees everything, frets over your satisfaction, may include a how-to-install video (or at least a good manual), and ships overnight for $3. The drawback is that each chip costs close to 50 percent more ($45 instead of $30 each) than it would if you bought it from a chip company.

The third option entails ordering your SIMMs directly from a chip company (like The Chip Merchant). This, too, is mail order, and it's the cheapest place to get RAM. You pay more for shipping; you may not get instructions; and you may not be able to pay by credit card.
Both of the two mail-order sources we mentioned carry ads each month in the back of each issue of the major Mac magazines (*Macworld*, *MacUser*, *MacWeek*). They all have toll-free numbers for you to call for advice and information.

**Types of SIMMs**

You'll hear a few different terms bandied about in your efforts to buy memory. First, there's speed. Typical speeds are 70, 80, and 90 nanoseconds (ns). Getting a faster speed chip than your Mac needs won't speed up your Mac any, but getting a chip that's too slow for your Mac can cause trouble. See Chapter 11 for model-by-model listings of the memory speeds required in each Mac model. As a general rule, though, the slower Macs use 150 ns chips; the II-series Macs need 120 ns chips; the IIci needs 80 ns; and so on.

How can you tell the speed of a SIMM? Sometimes you can tell by looking at the number painted on it. If the number is MCM514256AJ80, for example, it's a 256K, 80 ns chip.

It's important to understand that certain models use special types of RAM. For example, you can't use RAM chips from your Mac IIci in a Power Mac; nor does PowerBook memory work in, say, an LC III. Again, this information is listed in Chapter 11; the point is to mention your Mac model when ordering memory chips.

**Installing memory SIMMs**

If the thought of installing memory makes you a little queasy, you can have either a dealer or some local guru do it. Do not upgrade a PowerBook yourself. If you have a Plus, SE, or black-and-white Classic, you need an $8 set of special tools to open the case, and you really need an illustrated manual. And to upgrade a Quadra 700 or 800, you have to remove a number of internal components to get at the RAM chips. For these models, once again you may want to go the local-guru route.

For the remaining models, installing RAM isn't difficult. But because every model requires chips in different multiples (two or four, for example), and because every model's slots are in a different place, we won't attempt to walk you through the process. The video or manual provided by some mail-order companies does an excellent job of explaining the task.

When you're finished with the installation, here's a tip: don't bother hooking everything up again. Leave the lid off the Mac (if it's a Mac with a lid), and try turning it on. If all went well, you'll hear the usual startup ding or chime; wait a moment to make sure the Mac has completely finished starting up — even if the monitor isn't connected — and then turn it off manually.

If, on the other hand, you hear the four single notes of a chord, or the Twilight Zone theme, or a car-crash sound, then one of the SIMMs is faulty or, more likely, not seated right. All of its contacts aren't correctly mating with the leads in its slot. Don't freak out; this happens fairly frequently, and it's easy to fix. Remove the SIMMs you just put in and start over.

Finally, when everything starts up okay, turn the Mac off and put it all back together.
32-Bit Addressing and All That

You know it’s not 1984 anymore when a basic Mac control panel has an option called *32-bit addressing*. (We’ve noticed that Apple no longer advertises the Mac as “the computer for the rest of us.”)

### 32-bit addressing

Here’s the basic rule: your Mac can’t use more than 8MB of memory without 32-bit addressing.

(And even using *virtual memory* — we’ll get to it later in this chapter — your utter maximum memory, real and virtual, is 14MB.)

This is very, very important. The 32-bit-addressing problem zaps one of every two people we know who get new memory installed into their Macs. They pay to upgrade their Macs from, say, 8MB to 20MB of memory. When it’s all over, the Mac’s About This Macintosh command does indeed reveal that it has 20MB installed, but the *System* is using 12 of them!

Making the Mac aware of its new memory is easy. Open the Memory control panel and turn on 32-bit addressing (see Figure 8-5). (This option is only available in System 7 or later.) Then restart the Mac.

If your Mac doesn’t have more than 8MB of memory, *don’t* turn 32-bit addressing on. It will gain you absolutely nothing and will probably conflict with some other programs. On the other hand, if you’re using System 7 and your control panel doesn’t even have an on/off switch for 32-bit addressing, then your Mac is *always* in 32-bit addressing mode.
Why it's called 32-bit addressing

If you're interested, here's the derivation of the term. If you're not, skip this section.

Deep down, a computer's primary job is to shuffle around zillions of tiny pieces of information into carefully numbered pigeonholes. Each little data mailbox is numbered, so that the Mac will be able to find the information again later. The programmers call the data location's number its address.

As you can imagine, the computer needs a very long number to express a certain address if there are millions of possible locations. (Especially since the computer counts in base two instead of base ten, like us.) In fact, to put this in an understandable context — it takes a number 24 digits long to be able to pinpoint every memory address in eight megabytes of RAM. Some letter W you've typed, for example, might be stored at RAM address 1001011011010001101010.

But now we're asking the Mac to store information in more than eight megabytes of memory! It's exactly the same problem the phone company had as the U.S. population grew. Simply put, Ma Bell was running out of phone numbers. Pretty soon, seven digits just weren't enough for every citizen to have a different phone number! So area codes were born. Suddenly, every phone number was ten digits long instead of seven.

In the same way, Apple Computer has now given the Mac some extra digits to play with, starting in System 7. Because it has more memory and more places to stick information, the Mac can use 32 digits in its addresses. Hey — it's 32-bit addressing, get it?

With 32-bit addressing on, your Mac can address huge amounts of memory: 128MB of RAM, for example. We say "for example" because 32-bit addressing can actually address up to four gigabytes (4,096MB) of RAM, but there's no Mac yet made with enough slots to hold that many SIMMs! (Even the Quadra 950 can only accommodate 256MB of SIMMs, we're told.)

So for the moment, you'll have to scrape by with 128MB of RAM or so — plus the 1GB of virtual memory, described below, that 32-bit addressing lets you access.

Problems with 32-bit addressing

The Mac circuitry isn't the only thing that traffics in memory addresses. Software, too, involves memory addresses. Suppose you have a program that was written a couple of years ago, when Macs had a maximum address length of 24 bits. Suppose that the programmers didn't leave room for potential expansion. Then, anytime the Mac tries to look for a RAM location whose address is higher than the 24-bit maximum, either a minor or major system error will result.

A program that properly handles 32-bit addressing is called 32-bit clean; otherwise, it's 32-bit dirty.

So how can you tell if a program is 32-bit dirty? There's no easy way. If it crashes when you turn on 32-bit addressing, that's one good sign. Combine that information with the program's age, and you'll have a pretty good idea. You can always call the company that makes it to find out for sure.
When 32 bits is just too much

Q: I understand about 32-bit addressing. But I'm in a real crisis. I have to use DNA Designer Pro, a sophisticated gene-splicing utility. It's not 32-bit clean — it crashes if I turn on 32-bit addressing — and yet it requires 9MB of RAM to run! What shall I do?

A: We're perfectly aware that this is a setup. There can be no such thing as a 32-bit dirty program that requires 9MB of memory. It wouldn't run on any Mac!

But we'll play along and pretend this is a real question. The real answer is to buy Maxima, a program from Connectix. It grants your Mac access to 14MB of RAM, without requiring you to turn on 32-bit addressing. If you have any RAM installed beyond 14MB, Maxima can use it as a RAM disk (see below), so that at least it's not wasted.

Oh, and one more thing. Suppose you start using 32-bit addressing, and you immediately get error messages (something about bus errors). Sure enough, you probably have a piece of software that's incompatible with this feature, and we'll bet it's your hard disk driver (see Chapter 7). Update it using your Disk Tools disk (described in Chapter 7), and you should see an immediate improvement.

Mode32, the 32-Bit Enabler, and dirty Macs

Older programs that weren't written to Apple's guidelines are, today, designated 32-bit dirty. Funny thing is, some machines weren't written to Apple's guidelines, either — the Macintosh II, IIX, IICX, and SE/30 models. Their internal circuitry prevented them from ever using more than 8MB of memory. Go figure.

Connectix, a very memory-savvy company, came up with a way to make these models 32-bit clean. It was a program called Mode32, which they merrily sold to owners of the afflicted Mac models. It was a software patch to the Macs' ROM code that made them 32-bit clean.

Unfortunately, Apple's own specification sheets for these models said that they could access up to 128MB of RAM. But without 32-bit addressing, they topped out at 8MB. Mac users were not happy campers at having to spend their hard-earned dinero to make their Macs do what the ads said they would do.

So Apple did a very cool thing. They essentially bought Mode32 from Connectix and gave it away free to whomever wanted it (see Figure 8-6)!

Figure 8-6:
The control panel from Connectix that grants new memory life to the Mac II, IIX, IICX, or SE/30.

For a couple of years, that's the way it stood. The 32-bit dirty Macs were no longer dirty, and everybody was happy.
Then, in early 1993, Apple introduced its own clone of Mode32. It did exactly the same thing, but (we're guessing) didn't involve paying licensing fees to Connectix. It was called the 32-Bit Enabler. So Mode32 was more or less orphaned. Therefore, you can now use whichever extension (Mode32 or the 32-Bit Enabler) causes your software fewer problems.

**System 6 and 32-bit addressing**

Actually, “System 6 and 32-bit addressing” is an oxymoron. If you use System 6, you can't use more than eight megabytes of RAM because System 6 doesn't offer a 32-bit addressing option.

On the other hand, Connectix does. They sell a program called Optima that grants 32-bit addressing powers to System 6 users. It works.

**32-bit addressing Secrets**

**Turn off Mode32 temporarily**

To turn off 32-bit addressing, open the Memory control panel. Click the Off button and restart the Mac.

If you use Mode32, you can temporarily disable it by pressing the Esc key on your keyboard as the Mac starts up. Your Mac will automatically run in 24-bit mode.

If you look at the Memory control panel, however, you'll still see that 32-bit addressing is turned on, which can confuse you. Don't be alarmed — that's just Mode32's way of ensuring that your Mac goes back to 32-bit mode the next time you restart.

**What to do if your Mac crashes in 32-bit mode**

You probably have either (a) hard-disk drivers that aren't compatible with 32-bit addressing or (b) a system extension that's not compatible.

It's easy to find out which. Restart the Mac, but press the Shift key during startup, so that no extensions run. If everything goes fine, then one of your extensions is the culprit and you need to remove all of them. Add them back to the System folder a few at a time, restarting each time, until you figure out which one was causing the problem.
But if your Mac still keeps crashing, the problem may be your hard-disk driver (see Chapter 7). If updating *that* doesn't solve the problem, consider any NuBus cards installed in your Mac's slot — even some NuBus cards aren't 32-bit clean.

So what if you can't do without the program or the extension that's incompatible? You're not completely out of luck. To keep the older-style, more-compatible, 24-bit addressing but still expand your available memory beyond eight megabytes, you can buy a program called Optima from Connectix. It lets your Mac access up to 14MB of memory.

**RAM: for Programs**

The Mac uses RAM for all kinds of things before you even get the chance to run a single program. But sooner or later, you're going to use your RAM for running applications.

The most important thing we can convey is that you control how much memory appetite a particular program has. If you're working on an especially large Word file, for example, you may want to give it more memory. Or if you're working on a PowerBook with limited RAM, and you're just writing memos, you may want to give Word a smaller memory allotment.

To change the program's memory allotment — its *memory partition* — go to the Finder. (The program can't be running yet.) Highlight its icon and then choose Get Info from the File menu (see Figure 8-7).

Finally, change the number in the lower-right corner of the Get Info box. If you set this number below the program's suggested or minimum size, the Mac will notify you, because you're inviting System crashes.

**The most important thing we can say here**

*Strange but True* When a program you're running gives you an "out of memory" message, it's *not* because your Mac doesn't have enough memory! Even on a Mac with 128MB of RAM, Microsoft Word can tell you that it's out of memory!

**ANSWER MAN**

**The double-blank at startup**

Q: Help! I just installed Mode32 onto my Mac, as you seem to be recommending. I turned on the 32-bit addressing function in the Memory control panel. But when I start up the Mac now, before the smiling Mac appears, the screen seems to "jolt." And for a split second, there's a quick checkerboard pattern mid-screen. Then, suddenly, the smiling Mac appears, and everything's fine.

A: Mode32 does some clever and devious things to make your Mac 32-bit clean. This "double-boot" business is just the way it works. It's normal. Don't sweat it.
Part II: Secrets of the Machine

Figure 8-7: Change a program's memory appetite. In different System versions, the box is labeled differently — it may be called Current Size or Preferred Size — but the idea is the same.

It's because you haven't allotted the program enough of the Mac's memory. Use the method described above to increase the program's memory partition, and those out-of-memory messages will go away.

If, on the other hand, you get the message shown in Figure 8-8 as you're launching a program, then it is your Mac that is short on memory.

Figure 8-8: This message means that your Mac simply doesn't have a large enough block of unused memory to launch the new program you're opening. In System 7.1, it even suggests which currently running program you can quit to free up memory.

(Actually, your Mac is short on contiguous memory, as described below in "See where your memory's going.")

Three different memory sizes per program

In System 7.1 and later, the Get Info box has three different boxes showing memory sizes (see Figure 8-7). The Minimum size is the programmer's opinion of the least RAM the program needs to run at all. It will open, but it will run slowly. (Systems 6, 7.0, and 7.0.1 don't show this number.)

The Suggested size is the amount the programmer thinks the program needs to run comfortably and at full speed. And the Preferred size is the number that you're allowed to change. We like to think of it as actual size.
The interesting aspect of all this is that System 7.1 compares these numbers when it wants to display a message like the one shown in Figure 8-8. If the amount of available memory is below the Minimum memory setting, the program won’t open at all. But if it’s between the Minimum and the programmer’s Suggested size, the Mac knows that the program may just run despite the memory shortage. That’s when it shows the message in Figure 8-8. Now you know where it gets those numbers.

**The Finder’s memory partition**

In Chapter 1, we insisted that the Finder itself is a program. Like any program, the Finder has a specific amount of memory allotted to it. And like any program, the Finder can run out of memory in its partition. (Yes, we know Finder 7 is supposed to be self-adjusting, but we still get out-of-memory messages from it.)

In System 6, changing the Finder’s memory allotment is easy. You use the same Get-Info-while-it's-not-running method described previously. In System 7, however, the Finder’s Get Info box has no memory-size boxes in the lower-right corner.

If you have an older Mac, one that doesn’t require System 7.1 and an enabler, you can beat Systems 6 and 7 at their own games. Restart your Mac from a System 6 startup disk. Then when you Get Info on your System 7 Finder icon, you will indeed see the memory boxes. And you can resize the Finder’s memory allotment. (If your Mac can’t run System 6, then you can’t use this trick. You can use ResEdit, however, to achieve the same result. See “Printing Troubleshooting” in Chapter 25 for details.)

Why, exactly, would you want to change the Finder’s memory size? First, the more windows you have open, or the more icons displayed on the screen, the more RAM the Finder needs. Sometimes it says “There is not enough memory to keep this window open” or “...to open that control panel right now.” That’s a clue that the Finder is gasping for RAM.

Second, you may discover that your PrintMonitor (background printing program, as described in Chapter 25) works better if both it and the Finder have been given more memory.

**See where your memory’s going**

Memory Central is the About This Macintosh (or About the Finder) command in the Apple menu. Choose this command at any time to get some great statistics on how your memory is working (see Figure 8-9).
Needless to say, the About This Macintosh box lists all the programs you're currently running, including the System and Finder. Here's how it breaks down.

A This indicator shows how much memory is installed in your Mac.

If you're using virtual memory, your About This Macintosh box looks a little different (see Figure 8-10). It shows two figures — the Built-In Memory, which is how much actual RAM you have, and the Total Memory. That's how much memory you have including the disk-based virtual memory. (For details on virtual memory, see the remainder of this chapter.)

| Figure 8-10: The display is slightly different if you use virtual memory. |
|-----------------------------|-----------------------------|
| Macintosh IIci              | System Software 7.1          |
| Built-In Memory: 8,192K     | © Apple Computer, Inc. 1983-1992 |
| Total Memory: 11,264K       | Largest Unused Block: 5,676K |
| 11,264K used as RAM on Cabinet |

B Here's where you find out what version of the system software you're using. The * symbol indicates that you've installed the Tuner extension (Systems 7.0 or 7.0.1). A P (as in 7.1P) indicates that you're using the Performa's specialized system software.

C This is a biggie. The Largest Unused Block isn't how much memory you have free in the Mac.

Instead, it's the largest block of unused memory — but there may be several others. If the Largest Unused Block is 1200K, then you may have other free blocks of 1000K and 400K: a total of 2600K free!

Why does the Mac track this statistic? Because whenever you open a program, it can't open unless there's a block of contiguous, unbroken memory (see "A level-headed discussion of memory fragmentation" for details). This gauge is here to help you figure out why your 2500K program won't open, even though your own personal math says there should be a total of 2500K free.

D Ever wonder why this bar of the graph — the one for System Software — is always the longest? Ever wonder how Apple can say you need 2MB of RAM to run System 7, and yet this System Software bar is always shooting off the right side of the graph and measuring something like 3400K?

What you have to realize is that the System Software bar of the graph represents that 1500K that the System actually requires, plus every extension and control panel you've got installed. That includes big chunks of memory required by the Disk Cache, a RAM disk (see Chapter 12), and Adobe Type Manager. It includes buffers set up by QuicKeys. It all gets added together and is finally tallied in this bar of the graph.

E In the previous section, we mentioned that you can set the amount of memory a particular program uses when launched. That's the amount of memory that program grabs; that's also the amount shown by this graph, including the white end portion.

F However, a program may not actually need as much memory as you give it. If we change Excel's memory allotment to 12,000K, it still only really needs the 2048K the programmers designed it to use. The black part of this memory bar indicates how much of a program's memory partition it's actually using.

If you see a huge white portion of this bar, that may serve as a signal that you're wasting your RAM by allotting too much to that program.
Chapter 8: The Memory Chapter

MACINTOSH SECRET

Getting the detailed memory specs
Most people think of Balloon Help as a crutch for beginners. In this instance, however, it can be a sophisticated tool for the power user who's trying to do some memory sleuthing.

As you know, the About This Macintosh shows you how much of your memory is being used by which programs. But only Balloon Help shows you how much each program is using of its allotted total RAM. Just turn on Balloon Help and point to each bar of the graph, as shown here, and you'll see what we mean.

RAM Doubler to the rescue...maybe

RAM Doubler is an incredible idea that's been executed pretty darned well. It's software — an extension sold by Connectix, the memory folks. You drop it into your System folder ('030 or '040 Macs only), and it apparently instantly doubles the amount of memory available.

RAM Doubler uses some clever schemes — part virtual memory, part data compression in memory — to achieve this feat. It slows your Mac down by perhaps five percent. You can't use RAM Doubler with virtual memory or with programs (like Photoshop, VideoShop, or Painter) that themselves use a virtual memory scheme. Most of all, understand that RAM Doubler is for opening more programs, not for giving programs more memory. Each individual program you want to open must fit into your genuine installed RAM.

If you understand all that, then if you're in a RAM jam, this may be one inexpensive way out.

A level-headed discussion of memory fragmentation

Imagine that you're trying to park in Manhattan. Your car is 10 feet long. You come upon a city block where there actually are 10 feet of curb space left for your car, but some guy has parked so that the 10 feet are broken into two pieces. There's five feet of empty curb on either side of his car. Obviously, you can't park unless he moves his car.

The guy we're talking about has fragmented the parking space.

Programs using your RAM are as much like cars on a curb as this analogy will allow. When you launch a program, it seeks empty RAM not being used by programs you've already opened. But if your free RAM has been broken up by the presence of other programs, that new program can't open at all.
So what fragments RAM? Here's the scenario. Your Mac has 5MB of memory, let's say. At noon, you start the Mac. Your memory usage looks like Figure 8-11.

![Figure 8-11: Your memory usage when you start out.](image)

Total Memory: 5 megs

System (1.5) free memory

At 12:05, you open the Calculator. For this example, let's say its memory requirement is half of a megabyte. When you then launch Excel, your Mac's memory map looks like Figure 8-12.

![Figure 8-12: Memory after launching two programs.](image)

Total Memory: 5 megs

System (1.5) Excel (2) (free)

Calculator (.5)

At 12:15, you close the Calculator. Your memory map looks like Figure 8-13.

![Figure 8-13: Memory after quitting the Calculator.](image)

Total Memory: 5 megs

System (1.5) Excel (2) (free)

free (.5)

If you look at this last drawing, you'll see you can't now launch MacPaint (which needs 1.5MB) — there aren't 1.5MB of contiguous memory left! Because of the sequence, you've fragged your RAM.

The only way to defragment your RAM is to quit all your programs, so that only the Finder is running. When you re-launch them, in sequence, they'll use up consecutive chunks of RAM, and they'll all fit.

Actually, there's a good way to prevent memory fragmentation, if you're that much of a careful planner. Launch the programs you'll want to leave open all day first. Launch programs you think you'll be quitting last.

**TRUE FACT**

**RAM cache vs. Disk Cache**

In System 6, the feature we're discussing is called RAM cache. Technically speaking, that's wrong. That's why it's been renamed Disk Cache in System 7.

The cache works by storing up pieces of data it reads from the disk, so they'll be ready for instant recall. In other words, it's caching the disk information. So Disk Cache is, indeed, the more accurate term.
Chapter 8: The Memory

The Disk Cache

Cache, pronounced cash, is French for hide. When a computer caches some information, it tucks it away into a protected, private part of its head, separate from the rest of its memory and circuitry.

The Disk Cache is a feature of both System 6 and 7 that speeds up your Mac. And we can all use that kind of feature.

Setting the Disk Cache

You access this feature by opening the Memory control panel, as shown in Figure 8-14.

Figure 8-14:
The Mac's built-in speed feature eats up a tiny percentage of your RAM, but gives you a nice speed boost.

The Disk Cache attempts to sock away frequently used information from the hard drive into RAM. The Mac thereafter can grab these important data from memory, instead of having to find it on the hard drive — and the overall effect is a jump in your Mac's speed. You can try it yourself: double-click your System folder and see how long it takes to open. When you try this a second time, you should see it really fly open.

The correct Disk Cache size (before System 7.5)

What's the right setting for the Disk Cache? In System 6, you can turn it all the way off. In System 7, the minimum disk cache setting is 32K — not enough that you'll miss it, but enough to give you a little speed boost.

Logic tells us that the higher you set the cache, the faster your Mac will go. Strangely, though, the Mac speed increase drops off as you set the disk cache past a certain point. And if you set it too high, the Mac actually slows down!

So what's the right setting? The basic rule is: set the Disk Cache to 32K for each megabyte of RAM in your machine. For example:

Your machine has: | Try this setting:
--- | ---
2MB | 64K
4MB | 128K
8MB | 256K
20MB | 512K

Did you notice the cockamamie number we gave for the 20MB configuration? That's because of the Disk Cache Anomaly — your Mac's performance actually gets worse if you set the cache much higher than about 256K or 512K.
Regardless of these rules, the cache's effects on your Mac also vary with the size of your hard drive and whether or not you're using virtual memory. Our advice, then, is to use the numbers we're giving you as a starting point. Then experiment, if you have the time. Try a couple of different settings and see if you notice any change in your Mac's speed.

**The correct Disk Cache size (System 7.5)**

If you're using System 7.5 or later, forget everything we told you. Apple reworked the Disk Cache to make much better use of the memory you give it. Under the new scheme, it's very simple: the more RAM you can afford to surrender to the Disk Cache, the faster your Mac will go. They don't say anything about it in the manuals — but it's true, and some simple tests on your part will prove it.

**Disk Cache Secrets**

**A reminder**

No on-screen message tells you this, but you do have to restart the Mac after changing the Disk Cache setting in the Memory control panel for it to take effect.

**How to set the cache in System 6**

If you study our guidelines for setting your Disk Cache, you'll come to this conclusion yourself. But we'll do the math for you: in System 6, the most RAM your machine can use is 8MB. Therefore, never set the System 6 RAM Cache higher than 128K. The lowest you should set it is 32K.

**What's an internal or onboard cache?**

Some Mac models, such as the llci and the Power Macs, are advertised as having an optional "onboard cache" or "cache card."

This special kind of cache is a cousin to the Disk Cache. But instead of storing data from the hard disk that the Mac may be needing again shortly, it stores information from the Mac's main RAM. (The cache card has its own private RAM chips in which to do this storing — usually 32K worth.)

What exactly is the point of storing RAM in RAM? The cache card's RAM is extremely high-speed RAM. It's so fast that, by storing frequently used information in the fast cache-card RAM instead of regular RAM, your Mac's overall speed increases between 10 and 20 percent.

**The maximum size of the Disk Cache**

Of course, if you're running System 7.1 or lower, you're nuts if you set your Disk Cache much above 512K or so. But you can set it as high as one-fourth the total RAM in your Mac. On an 8MB machine, that's a 2MB Disk Cache.

But, as we said: we don't advise it because of the performance drop-off that comes above a 512K setting with system software prior to System 7.5.
RAM Disks: the High-Speed Imaginary Drive

A RAM disk is yet another fun way to use memory. In this scenario, you use a sophisticated program that sets aside a block of RAM and convinces the Mac that it's a disk. The RAM disk even shows up on your desktop as an icon, as shown in Figure 8-15.

Figure 8-15:
The phantom of the disk drive — a RAM disk.

A RAM disk is a wonderful and underused invention. Mac users spend endless amounts of time shopping and comparing hard drives and CD-ROM drives, trying to identify the fastest one. Now imagine that you can have a drive with almost zero millisecond access time! That's what a RAM disk is: a disk that's almost infinitely fast. Any program copied to this disk launches almost instantly when double-clicked. And why not? It's already in memory. Saving huge, complex PageMaker files only takes a fraction of a second. QuickTime movies play tremendously smoothly.

What's wrong with RAM disks

Of course, the RAM disk subtracts its size from the amount of RAM you have available for programs — as always, it's a tradeoff.

The more serious concern used to be that a RAM disk was a dangerous place for your data. If a file is on a RAM disk, it disappears forever when you turn off the Mac.

There are three reasons this doesn't bother us anymore:

- You can do very well just copying your System folder and programs onto a RAM disk. These items are easily replaceable. If your power goes out, you've got the originals safely on your hard disk, where they were to begin with.

- Even if you do put your data files onto the RAM disk, you can just copy them back to a real disk, like your hard drive. If you do this at regular intervals, you still get the speed gain of the RAM disk without losing the safety of having it on a disk.

- This is the biggest not-to-worry argument of all: depending on which RAM disk program you use, the contents of a RAM disk don't disappear when you restart the Mac. They vanish if you turn the Mac off, but not when you restart.

So even if you have a system crash, you can just hit the reset switch on your Mac's case (as described in Chapter 6), and your Mac will restart — with the RAM disk intact.

And which RAM disks offer this high survival instinct? Depends on the model. RAM disks on PowerBooks, but not all desktop models, survive restarting, whether you're using Apple's RAM disk or the one called maxima from Connectix.
Where a RAM disk comes from

A RAM disk is created by a RAM disk program. We italicize this because the terminology can be confusing. Someone may say to you, "Hey, I got a great shareware RAM disk." What they mean is a RAM disk program; a RAM disk exists only on a single machine (the one whose memory it's using), and it can't be handed to friends.

Anyway, all recent Mac models, both desktop and laptop, come with a built-in RAM disk program. (The inclusion of a RAM-disk program on the PowerBook may strike you as odd, since PowerBooks are traditionally strapped for memory, not blessed with it. As you'll find out in Chapter 12, however, you can use a RAM disk to very clever advantage in doubling or even tripling the life of a battery charge.)

One popular RAM-disk option, AppDisk, doesn't survive restarting the Mac. It does, however, have two tremendous advantages: (1) it's much easier to load, resize, and quit than Apple's RAM disk, and (2) you already own it. It's included on the disks with this book. Read about it in Chapter 33 and try it — a RAM disk is really a mind-blower.

RAM disk Secrets

PowerBooks and their RAM disks

A PowerBook 100 is unique. It's the only Mac whose RAM disk is never wiped out, even when you shut down the Mac.

The other PowerBooks safely preserve their RAM disks, right there on the desktop, when you put them into Sleep mode — but not when you shut them down.

How to destroy an Apple RAM disk

Creating a RAM disk is easy. Just open your Memory control panel (if you have the appropriate kind of Mac). Turn on the RAM disk option, set the slider, and restart the computer. (If you're working on a PowerBook with System 7.0, the RAM disk option is in the Portable control panel instead.)

Getting rid of the RAM disk is more difficult; you have to be determined. None of the obvious ideas — dragging the disk to the Trash, using the Erase Disk command — work. (Apple, no doubt, set this up so that you can't accidentally turn off your RAM disk, thus losing everything on it.)

The key is that you must first get everything off of it. Throw it all into the Trash and then empty the trash. Only then can you open the control panel and turn the RAM disk off (or resize it).

The Quadra 950 anomaly

This mighty Quadra has a mighty strange (and ironic) feature: if you install all the RAM you can into it, 256MB, the RAM disk doesn't work at all. A glitch in the circuitry can't handle the creation of a RAM disk. That's unfortunate, since a RAM disk is one of the first things you'd think of if you had that much memory to play with!
Virtual Memory: Instant Free RAM

A RAM disk is when a Mac gets fooled into treating a hunk of memory as a disk. Virtual memory is the opposite — it's when the Mac gets fooled into thinking that a hunk of disk is memory.

At first glance, this doesn't seem to make sense. Haven't we been spending this entire chapter figuring out how to get more data off the disk and into memory (to gain speed)? Why would we consider storing stuff on the disk that rightly belongs in memory? Wouldn't virtual memory slow things down instead of speeding them up?

The answer is that virtual memory offers you yet another speed-for-money tradeoff. The idea is to save money by letting you get by with less actual RAM; the price you pay is speed, since virtual memory slows down the works somewhat.

But for anyone who has a 4MB Mac and wants to run System 7 (2MB), Excel (2MB), and Word (1MB) simultaneously, virtual memory is the only possible solution. It's also a good last resort in emergencies, when you're trying to open some huge Excel spreadsheet for which you just don't have enough real RAM.

Who can use virtual memory

Virtual memory is a built-in feature in System 7. However, it's only available on Macs with an '030 processor or better. That rules out the Plus, SE, original Classic, original Mac II, and original LC. (The Mac II can be made to work with virtual memory if you buy and install a chip called a Motorola MC68851 PMMU.)

Virtual memory also works with System 6 if you buy Virtual from Connectix Corporation.

How it works

When you turn on virtual memory, the Mac sets aside a huge chunk of hard-disk space. (If your hard drive is full, forget about virtual memory.) This area is called the swap file.

In fact, System 7 sets aside a swap file of a size equal to both your built-in RAM and the amount of extra virtual memory you want. If you've got 8MB of real RAM, and you want 12MB total, you can't just create a 4MB virtual memory file. System 7 will use a full 12MB of hard drive space. (However, you have an option: Virtual, the Connectix virtual memory program, does not require the full amount. It lets you set aside only the difference between your actual RAM and the amount of total memory you'll want — in this example, 4MB of hard-drive space.)

No program on earth can run from the disk. Every program must be copied into RAM before it can run. Virtual memory works by rapidly shuffling data between the disk and RAM. This shuffling — and the corresponding delay — occurs mainly when you switch from one program to another. While you're working in a specific program, however, you'll probably notice very little slowdown.
How to turn on virtual memory

We'll assume you're using System 7's built-in virtual memory.

Open the Memory control panel (see Figure 8-16).

![Memory control panel](image)

Click On (that's A in the figure). If you have more than one disk large enough to store the virtual memory swap file, select the one that you want to use from the pop-up menu (B). *All* your hard drives are listed here; the Mac tells you, as you select each, whether or not there's room for a swap file. If there is, you'll be shown how much room there is (C).

Finally, based on that figure, you can set the amount of total memory, real + virtual, you'll want (D). Restart the Mac.

Remember that virtual memory slows things down somewhat. The crunch gets critical if you set the Mac's total memory to more than twice the amount of real RAM it has.

Virtual memory Secrets

**Use virtual memory on SyQuests and removables**

The Memory control panel lets you choose where you want your invisible swap file to be — and we mean on which *hard drive*. What a shame that System 7's virtual memory feature won't let you store the swap file on the most obvious storage device in the world: a removable cartridge like a SyQuest or Bernoulli.

Actually, though, it can be done. You need a shareware program called Virtual Memory Tuner. (You can get it from America Online or a user group.)

**Speed up virtual memory**

Remember that virtual memory works by shuffling data between the hard drive and RAM. It shuffles a lot. It stands to reason, then, that the faster your hard drive is, the better virtual memory works. And that's why some people argue that you can speed up virtual memory by regularly defragmenting your hard drive. (See Chapter 7 for more on this topic.)
But, frankly, we believe that members of the Defragment-for-Speed movement are somewhat deluded. Unless you’ve been working with a totally full disk for weeks, defragmenting your hard drive won’t produce any perceptible speed increase in your virtual memory at all.

**Virtual memory and Power Macs**

If you own a Power Macintosh, you’ve discovered a rude fact about native (Power Mac-optimized) programs: they require much more memory than their pre-Power Mac counterparts. FreeHand, for example, requires 7MB of memory, as compared with the 4MB non-Power Mac version.

Fortunately, the Power Macintosh’s virtual memory feature has a peculiar and wonderful side effect: when it’s turned on, your native programs require less real memory. (Installing RAM Doubler achieves the same results.) In fact, if you look at the Get Info box for a native PowerPC program, you’ll see a message to this effect. You’ll even be shown how much less RAM your program will consume when virtual memory is on. It can be substantial: the aforementioned native version of FreeHand, for example, requires a whopping three megabytes less real memory when virtual memory is turned on — thus returning it to its pre-Power Mac RAM requirement!

The Power Mac virtual memory difference goes beyond this quirk, however. You’re also supposed to set the amount of virtual memory to a much lower level. Instead of setting the virtual memory to twice the amount of your actual RAM, you’re supposed to set it only one or two megabytes higher than your Mac’s real RAM. If your Power Macintosh has 8MB of actual memory, set virtual memory to 9MB or 10MB — not to 16MB as you would on a non-Power Mac.

And good luck to you.

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**ANSWER MAN**

**Virtual memory is dragging me down**

Q: You said above that “While you’re working in a specific program, you’ll probably notice very little slowdown.” I’m using Photoshop, and I have virtual memory turned on, and my Mac has the speed of an anesthetized turtle. Are you guys lying?

A: Not per se. We haven’t, however, mentioned the exceptions to our statement.

First, we’re correct that you won’t notice much slowdown when you’re in a program — if it’s a program that would have run within your real RAM anyway. That is, if your Mac has 4MB of RAM, and you run a program that requires 1MB of RAM, you’ll notice no sluggishness. But if you use virtual memory to run scanning/OCR software that requires an 8MB machine to run at full speed, you’re in for some waiting. That’s because of all the massive copying of information back and forth from the hard drive the Mac is forced to do.

The other exception: programs like Photoshop, which are equipped with their own proprietary virtual-memory schemes. Photoshop creates its own private, huge, temporary file on your hard drive. If you compound all the disk-thrashing that that entails by using virtual memory and its disk-thrashing, you’re in for a seriously slow working setup.
Chapter 9

Keyboards and Mice

In this chapter:

1. What the ADB chain is
2. The extended keyboard: What all those keys do
3. Making the dead keys come alive
4. A few mouse tricks
Keyboards

Ah, yes, the keyboard. Boy, do we depend on that device. If you earned a dollar for every letter the average typist types in a week of eight-hour days, you’d be making $720,000 — a week.

Apple’s been getting weird about keyboards lately. Have you seen the one on the PowerBook Duos? It’s actually somewhat bowed upward, sculpted into a subtle curve. Take a look at the Apple Adjustable keyboard. It breaks in half right down the middle of the keys. You can position the halves any way you want. And the Space bar isn’t a bar anymore. It’s a pad. This keyboard looks weirder than anything, but it is, actually, extremely comfortable.

About the ADB chain

As we mentioned in Chapter 6, the Apple Desktop Bus (ADB) is designed to be a chain of equipment, just like the SCSI chain. You can plug one ADB device into the next, as many as 16 in all — and you don’t even need a terminator at the far end!

This scenario permits some interesting possibilities. Any Mac keyboard has two ADB jacks, for example, and that’s the reason you can plug your mouse into either side. That means that you can plug a full-sized keyboard into the back of the PowerBook, an external numeric keypad into the keyboard, and a mouse into the keypad. We’ve also seen ADB-based modems, remote-controlled mice, and other kinds of substitute mice.

We’d like to call two rules to your attention. First, the total length of the ADB chain has an upper limit, just as the SCSI chain does. In this case, it’s five feet.

Second, turn off the Mac before plugging or unplugging any ADB device. By this point in the book, you’re probably used to us debunking all those typical Mac-advice-book old wives’ tales about all the ways you can fry your Mac by accident. But we mean it this time. We have actually seen mice broken because they were attached or removed while the Mac stayed on.

We’re told this problem is related to the current streaming through all the little pins you can see at the end of the mouse cable. When you, an imperfect human, unplug the mouse, you’re not detaching all of the pins at the same instant. Apparently, the damage is done in the split second when the juice is flowing through some pins but not others as you do the unplugging.

TRUE-FACT

Where did the % symbol come from?

If you’re an Apple designer, which symbol do you choose to mean command?

According to one of the Mac’s original designers, the Mac’s space bar- nesting key originally had a hollow apple graphic on it, as the Apple IIc and Lisa computer keyboards had had. But as the Mac was readied for release, some people at Apple felt that using the corporate logo on a key was somehow trivializing the logo — using it for something it wasn’t designed for.

At the last minute, Mac graphic artists Susan Kare and Barbara Koalkin were asked to come up with a new symbol for this special key. The symbol had to be small, easily represented in a screen font, and unique. Oh — and it had to mean “command.”

The artists pored through books and sources until they found the familiar cloverleaf (or propeller, or flower, or freeway) symbol. It came, of all things, from a book of Swedish campground and trail markers.

It meant “remarkable feature.”

Ironically, when Apple started selling the same keyboards for both Mac and Apple II, it had to put the hollow apple symbol back onto the keyboard with the % symbol.
What are all those keys for?

Apple's smaller standard keyboard has 81 keys. The larger extended keyboard has 105 keys, including a numeric keypad, a bank of page-control keys (Home, End, and so on), and a row of function keys at the top. Interestingly, only 62 keys actually type something on the screen; the remaining 40 percent of the keys are used either to modify what those 62 keys do or to control the computer itself.

Apple was forced to come up with the extended keyboard in order to be taken seriously by the DOS-dominated corporate world, where keyboards of this layout were the norm. The silly thing was, however, that the Mac didn't need these specialized keys; then and now, most of these extra keys do absolutely nothing.

Today, the extra keys — Control, Page Up, Page Down, F1, F2, and so on — still do nothing. (Well, almost nothing — a few programs, such as Word and QuarkXPress, do make use of the page-control keys.)

The Control key

However, you can do something with these keys if you have a macro program, such as Tempo or QuicKeys. The glory of macro software is that you can make these keys do things — in fact, anything you want. Make F1 type out today's date; F2 can type your name and return address; F3 can shut down the Mac; and so on. We've included a special version of Tempo on the disks with this book so you can see what we mean.

We recommend using the Control key as the basis for your own custom macro combinations. The Control key is a safe choice for triggering macros because almost no programs come with preprogrammed keyboard shortcuts involving it. Make Control-C open your Calculator; Control-E empty the trash; and so on. See instructions for Tempo in Chapter 33.

A few odd keys and what they mean

In the few programs that do respond to presses on the bank of six page-control keys, here's what they're supposed to do:

- **Help**: Brings up the on-line help for your software, if there is one.
- **Home, End**: Scrolls the document to the very first or very last sentence on the screen.
- **Page Up, Page Down**: Actually scrolls you a screen up or down.
- **Del**: Deletes the letter to the right of the insertion point. (The regular Delete key nukes the letter to the left.)

We're sure you know these, too, but here they are for completeness' sake:

- **The Return and Enter keys** serve identical functions in most programs. (Excel is a prominent exception, where Return and Enter don't do precisely the same thing.) They can end a paragraph in a word processing program, and pressing them is the same as clicking the button in a dialog box that has a heavy outline, as shown in Figure 9-1.
Part II: Secrets of the Machine

Figure 9-1: Whenever you spot a heavily-outlined button in a dialog box, dispense with the mouse and just press Return or Enter.

- Esc means Escape, which really means Cancel. This key, too, originally did absolutely nothing, and was included solely to soothe the psyches of IBM lovers who were nervous about making the switch to Mac. However, today a number of programs let you press Esc instead of clicking on-screen Cancel buttons with the mouse. All Microsoft programs work this way, for example, and so does Apple software, including the System software.

- Command (⌘) is, of course, the most frequently used modifier key of them all. It's the one most listed in menus to indicate keyboard shortcuts for menu items. When the Mac first appeared, and even today, the glorious simplicity and mnemonics of its keyboard shortcuts made us rejoice. What can be more natural than ⌘-P for Print, ⌘-O for Open, ⌘-C for Copy?

We even forgave Apple for making Paste be ⌘-V, Cut be ⌘-X, and Undo be ⌘-Z, because of the natural adjacency of the Z, X, C, and V keys on the actual keyboard. And you can justify X for Cut (sort of like crossing it out, or a pair of scissors). ⌘-Z is okay, too, because it is directly next to the ⌘ key itself. And ⌘-V is obviously necessary for Paste since ⌘-P is already used for Print.

Anyway, compared to the complex and arbitrary keyboard command sequences in the IBM world, we love this stuff.

The Option key

The Option key is sometimes used as just another modifier key, pressed in conjunction with the Shift or Esc key. When it’s used in conjunction with the mouse, however, it consistently does one of three things. In the Finder, it’s almost always used to close windows; see Chapter 1 for the Golden Option-key Trick.
In graphics programs, Option changes the function of a drawing or painting tool. It might change the magnifying glass’s effect, for example, to “zoom out” instead of “zoom in.”

But the Option key’s most famous function is to turn the entire keyboard into a symbol generator for creating symbols like the ones shown here:

<table>
<thead>
<tr>
<th>To get this...</th>
<th>Press Option and type this</th>
</tr>
</thead>
<tbody>
<tr>
<td>©</td>
<td>g</td>
</tr>
<tr>
<td>TM</td>
<td>2</td>
</tr>
<tr>
<td>ç</td>
<td>c</td>
</tr>
<tr>
<td>©</td>
<td>4</td>
</tr>
<tr>
<td>i</td>
<td>1</td>
</tr>
<tr>
<td>£</td>
<td>3</td>
</tr>
<tr>
<td>•</td>
<td>8</td>
</tr>
<tr>
<td>®</td>
<td>r</td>
</tr>
<tr>
<td>†</td>
<td>t</td>
</tr>
</tbody>
</table>

It’s nice to know that you have a complete built-in cheat sheet that shows the locations of these characters on the keyboard. Two, actually — there’s the Key Caps desk accessory, of course, and PopChar, which comes on the disks with this book. For more info on PopChar, see Chapter 33. And for more on hidden Option-key characters, see Chapter 24.

**The Power key**

For years, this key — the big fat one at the top of the keyboard, with a left-pointing arrow — was the Mac world’s biggest mystery. It did nothing at all. To this day, it’s a useless appendage on computers like the Classic, the LC series, and even the Power Mac 6100.

In any case, we have something that you can do with it, regardless of which Mac you have. Install PwrSwitcher, included with this book. Then, when you’re pressing the Control key too, the power key switches you from one open program to another. You can now switch among programs without ever taking your hands off the keyboard! (See Chapter 33 for details on PwrSwitcher.)

**Just a word or two about Caps Lock**

Any self-respecting Caps Lock key gets locked down in its depressed position when you press it, just as the Caps Lock has for decades of typewriters. However, when locked down, the Caps Lock key doesn’t really work the same as when you hold down the Shift key. Yes, all the letter keys produce capital letters, but the number keys still produce numbers.
In any case, the Caps Lock key on 100-series PowerBooks doesn’t lock down; the only indication you have that you’ve engaged the key is that a hollow up-arrow symbol appears on your menu bar, if the Caps Lock extension was installed when you installed your PowerBook System folder (see Chapter 3).

On the 500-series PowerBooks and Duos, the situation is slightly better. The Caps Lock key still never stays down, but at least a little light comes on within the key itself. This way, at least, if you tend to look at your hands while you type, you won’t inadvertently fill your screen with all-capital typing.

The best solution, however, is like the one included with such PowerBook utilities as the discontinued Norton Essentials: a little system extension that requires two presses of the Caps Lock key to make it engage. This way, when you work on a PowerBook, you’re saved the hassle of having to retype pages of manuscript after accidentally striking Caps Lock.

A guide to the strange keyboard symbols

We all know and love the $8 key. You’re never in doubt as to which key it is — it’s painted right onto your keyboard, for heaven’s sake.

All too often, however, in program manuals and menus, they have started using symbols to represent other keys, too. But these symbols, unlike the $8 symbol, give no hint as to which corresponding key they refer to on your keyboard. Here’s the actual list, with the best mnemonic suggestions we can come up with.

This is the Shift key. Mnemonic: It makes capital letters. Taller letters, so there’s an up arrow, see?

MACINTOSH SECRET

How to fix three pages of accidental ALL CAPS TYPING

It happens. You hit Caps Lock by accident, continue to type, and notice three minutes later that all your text is capitalized, looking like a Western Union telegram.

There’s an easy way to fix what you’ve typed without having to retype anything. Launch Microsoft Word. Open the file, highlight the problem text, choose Change Case from the Format menu, and select Sentence case.

After you convert the text, you’ll have one additional task. You’ll have to change each occurrence of the word I, as well as any proper nouns and acronyms, back to capitals. That’s because Word automatically lower-cases any word that’s not at the beginning of a sentence.
Here's the Option key. It looks like a side view of a key being pressed. Of course, this doesn't exactly specify which key it is, which is why we have trouble remembering this one. Mnemonic: Maybe you can tell yourself it looks like one key being held down while another is about to be pressed, which is how you make those special symbols like © and ®, as we discussed earlier.

This represents the Control key, believe it or not. Mnemonic: It actually has a pretty good mnemonic, if you're a modem junky. In the olden days of IBM-ish telecommunication programs, this caret symbol meant break — as in, “Listen, you remote mainframe computer, stop.” (Something like the Mac’s ¤-period keystroke.) Anyway, this was called a control character.

Weird, huh? It means the Space bar. Mnemonic: It does look like a bar that's being pressed below its usual level.

You’d never guess this in a million years. It’s the Enter key! Mnemonic: We give up.

Incidentally, you can type these and other symbols into your very own documents. Use the Chicago font (the TrueType version that comes with System 7).

<table>
<thead>
<tr>
<th>To get these symbols</th>
<th>press these keys</th>
</tr>
</thead>
<tbody>
<tr>
<td>©</td>
<td>Control-T</td>
</tr>
<tr>
<td>®</td>
<td>Control-Q</td>
</tr>
<tr>
<td>^</td>
<td>Control-B*</td>
</tr>
<tr>
<td>-</td>
<td>Control-C*</td>
</tr>
<tr>
<td>⌘</td>
<td>Option-Control-Shift-A*</td>
</tr>
<tr>
<td>‹</td>
<td>Option-Control-Shift-D*</td>
</tr>
</tbody>
</table>

* The symbols marked with asterisks, interestingly, don’t show up if you use 12-point size (which is what most people would naturally choose for Chicago). Any other size, such as 11- or 13-point, works fine. (It’s not that Apple desperately wanted to hide these symbols; it’s because these symbols are in the TrueType font, but not the bitmapped screen font. [See Chapter 24 for an explanation of these terms.] Therefore, when you choose a nonstandard size, TrueType is called into the act to display all Chicago symbols, and its hidden symbols suddenly appear.)


Keyboard Secrets

Copilots of the same Mac

Our little trick about stringing multiple ADB devices together can be particularly handy when you’re training somebody new, when you’re collaborating two-on-a-Mac, or when you’re playing a two-person game.

The Secret is that you can plug two keyboards and a mouse into the same Mac. And all of it works! (One person can type the vowels, or something.)

On a Mac model with two ADB jacks in the back (a lcx or lcli, for example), you can have two complete ADB chains — that is, a keyboard and mouse. On a Mac with only one ADB jack, you can only have one ADB chain. Because the mouse has no ADB jack, you’ll discover that you can have two keyboards, but only one mouse in such a setup. The mouse must always end the ADB chain. Or must it?

Actually, you can have two mice, if you get an ADB cable with a Y-jack. And they do make such a cable; Sophisticated Circuits sells one, for example.

Extend your ADB

Feel the need to lean back a little farther from your desk? Then you may need an extra-long keyboard cable. You can buy one from Kensington, of course. Or you can go to a home electronics store and buy an S-video cable.

It’s designed to hook up expensive VCRs, but, amazingly, it works as a keyboard cable!

Shave 25 percent off your typing efforts

If you could see how much of this book we actually typed ourselves, it would be so skinny you’d demand a refund.

In reality, we made extensive use of Typelt4Me, a terrific typing-expander program. You teach it to recognize certain typed abbreviations — kb for keyboard, for example. Thereafter, whenever you type one of your abbreviations, in any program, Typelt4Me instantly expands it to its full form.

Y can see th in ts sentence, fex, we let h mc do h work!

(You can see that in this sentence, for example, we let the Macintosh do the work!)

If you do much writing at all, we encourage you to try Typelt4Me and see if you love it as much as we do. We’ve made it easy for you; it’s included on the disks with this book. For full instructions, see Chapter 33.

Type ahead

You may have noticed that the Mac is especially forgiving about premature typists. That is, you can type on several keys before there’s anyplace or anything to type; the Mac will store this typing in a piece of memory called the keyboard buffer, and deliver it to the screen when the time comes.
Here are some examples. Choose Print from the File menu. If you’re sure you don’t want to change any of the Print dialog box settings, press the Return key before the Print dialog box even appears. You’ll see the dialog box — or, rather, its empty outline — blink onto the screen for an instant and then disappear as your previously-typed Return message hits it. In some programs, you can carry this technique to extremes: If you’ve arrived at one dialog box by clicking some button in another, you can close both dialog boxes and return to your document by pressing Return twice in rapid succession.

Or try launching your word processor. You can actually begin to type during the latter half of its launching phase. When a document finally appears on the screen, the typing you’ve done will suddenly tumble into place.

**How to avoid typing “Made in the U>S>A>“**

We hope you know what we mean by that title: It’s that annoying syndrome where you’re trying to type capital letters, and there’s a period in the phrase, but you don’t think to lift your pinky off the Shift key for each letter. Unfortunately, you wind up creating > symbols (Shift-period) in place of periods.

This is incredibly easy to fix; here are three methods. First, you can use a macro program, such as QuicKeys. You need to define an “alias” type macro. Note that an alias in QuicKeys isn’t the same as an alias in System 7; in QuicKeys, it’s the substitution of one letter when you type another. All you have to do, then, is tell QuicKeys to substitute a period and comma when you type Shift-period and Shift-comma. No more < and >! This method has the advantage of being turn-offable: that is, if you ever do need those symbols, you can push whichever key you’ve defined as meaning “Turn off QuicKeys.” Then you can type your < and > symbols and turn QuicKeys back on.

The second method is more permanent and doesn’t require a macro program: use ResEdit to edit your keyboard layout. Instructions are in Chapter 21. And the third method is to use the glorious SmartKeys, another program included with this book, to turn them off. (SmartKeys can also join double hyphens into the more correct long dashes; prevent you from typing a double space after a period; and automatically curl your straight quotes. See Chapter 33 for details.)

**ANSWER MAN**

How the keyboard works

Q: How does the keyboard work?

A: Incredibly, the keyboard is practically its own minicomputer. It’s got a processor and even memory! The keyboard’s processor inspects each key periodically (once every 3 milliseconds) to find out whether or not you’re pressing it. Then it checks the suite of modified keys — Shift, Option, Control, and Caps Lock. Based on what it finds out, it transmits a keyboard code to your Mac.

The keyboard driver (yes, even your keyboard has a driver) consults its table of codes and letters, and then informs the Mac what the appropriate character should be. Finally, the typing appears on your screen.
**The dead keys and how to make them alive**

Certain Option-key strokes are dead keys: When you press them, nothing appears on the screen. The Mac waits for you to type a second letter, which will appear beneath the first. With this method you can create symbols like ü and ñ.

However, there is a way to create the symbol by itself, without requiring a letter below it: Press Shift, too. To create the " or " or " symbol by itself, press Shift-Option N, E, or U.

**Dead keys that aren't supposed to be dead**

You don't realize how much you take a fully operational keyboard for granted until that moment when a key suddenly stops working. If the key that bites the dust happens to be fairly insignificant, such as the bracket or backslash key, you might be able to limp along — but try writing a report without a W or an A key. It's pure agony. Or try doing anything with a nonfunctioning Return key.

There are a few different ways to get around such a dilemma. You could, of course, simply copy any letter you can't type from an existing document and paste it every time you need it. You could use a stand-in character like a % or # and then use your word processor's Find/Replace function to paste in the actual letter later. Here's the best solution: Use ResEdit, included on the disks that came with this book, to remap your keyboard. Assign a working key to type the broken letter. For example, if the Return key dies, remap the keyboard so that pressing the backslash key (located directly above the Return key) generates a Return character instead of a backslash. (For complete instructions on how to do this, see Chapter 21.) This arrangement will tide you over until you can have the keyboard repaired (as we've discovered through painful experience).

**More comfortable typing**

*Time, Fortune, Business Week,* and other organizations gave design awards to the Macintosh PowerBook. We think it's because of the PowerBook's biggest, most ingenious and wonderful innovation — the palm rest. By designing the keyboard to be closer to the screen, Apple created an area on the edge of the computer closest to you where you can rest the fleshy part of your hands while you type.

You can accomplish the same thing on a desktop Mac, and we highly recommend it. You can buy a fat compressed foam-rubber strip designed for this purpose (such as the Wrist Rescue III, 612-475-3550). Of course, you can probably get your own fat compressed foam-rubber strip a lot cheaper.
The Mouse

The mouse is neat. Grab yours right now and follow along.

Journey to the interior

This is perfectly, 100 percent safe, and you don't void any part of any warranty by doing it. Turn the mouse upside-down in your hand. First, check out the strip of waxy stuff at the front end of the mouse and on the retaining ring. Know what it is? Sure you do — you cook on it every day. It's Teflon.

With your other hand, push counterclockwise on the round ring, through whose center you see the mouse ball peeping out. It should rotate a quarter-turn or so and then stop. (The tiny letters L and O stand for Locked and Open.) If your mouse's retaining ring doesn't rotate, then it's the newer style that just slides away from the mouse cable. (Opening a PowerBook trackball is exactly the same.)

Turn the mouse right-side up, dumping the retaining ring and the mouse ball into your waiting palm. Look at the mouse ball first. Its color varies, depending on the Apple manufacturing plant that created it.

Set the ball and ring aside. Then peer into the cavity of the mouse. You're about to see why the movement of this thing on your desk controls the pointer on your screen. See the three little wheels that make contact with the mouse ball? (On most newer mice, these are made of white plastic.) As you roll the mouse across the desk, the ball makes these wheels turn.

One of the wheels (in the lower-right as you look into the mouse cavity) is spring-loaded; it's just a shock absorber. The other two, however, at the 9:00 and 12:00 positions, are on shafts connected to other wheels inside the mouse's body. These hidden wheels have spokes. Incredibly, your mouse has tiny lights inside shining through these spokes. An optical sensor on the other side of each little wheel measures the rate of flashing from the little lamp. By comparing the light-flashing rates from the two perpendicular rollers, the Mac calculates how fast your mouse is moving in each direction. That's how it moves the cursor across the screen.

Cleaning the mouse

Any time your cursor's movement becomes sticky or jerky, chances are extremely high that the mouse is dirty. After all, you spend all day dragging it through invisible dust and paper crumbs. If you've got a pet, forget it — that angora cat hair just loves to cuddle up and wrap itself around the roller shafts inside the mouse.

Open the mouse, as described above. Take out the ball. Run it under the faucet for a few seconds. Shake off the excess water and blow it dry. You've just solved half the sticky-mouse problem.
The other source of trouble is the rollers and the shafts. Gunk tends to accumulate in a sickening stripe right down the center of your mouse's three rollers. Tiny threads and strands of hair get wound around the ends of the shafts, too. We've seen mice so clogged up with debris that they stop working completely.

You can scrape stuff off the rollers with a fingernail, a nail file, straightened paper clip, or a Q-tip dipped in alcohol. Take care, though, not to let the detritus fall anywhere but directly into the center of the cavity, so that you'll be able to tap it out of the mouse completely when you're done.

To reassemble the mouse, just drop the ball inside and replace the ring.

**Mouse alternatives**

About a million mouse replacements flow across the desks of reviewers every year. There are trackballs, joystick-like deals, touch screens, and even head mice (so you can move the cursor without using your hands at all).

Few of them are as good as the good old Apple mouse. (We even prefer Apple's smoothly domed Mouse II to the traditional box design.) A few people prefer trackballs to mice, since a trackball takes up less desk space. But we bet the total number of people using those other wacky mouse replacements don't amount to one percent of America's Mac-using population.

By the way, we couldn't think of any mouse secrets. You already know how to control the rate of the mouse's movement across the screen (Mouse control panel, Chapter 3) and that you can do without the mouse completely (Easy Access, Chapter 3 again). And now you know how to clean it.

At this point, there's nothing left but to reflect gratefully on the fact that you don't live in the age where the only way to control the cursor was by pressing arrow keys.
Chapter 10
Monitors

In this chapter:

- How a CRT picture tube works
- What VRAM is and how it affects your display
- The importance of monitor resolution
- Tricks and shortcuts for multiple-monitor setups
- The PowerBook screen: how it works
- Getting the Mac picture on TV
Monitor Basics

In terms of our attempt to explain monitors, the good news is that a computer screen works essentially like a TV screen. The bad news is that even a TV monitor is hard to explain.

How a CRT works

The CRT is your normal desktop monitor. The term CRT stands for cathode-ray tube because TV sets use something called a cathode to spew the stream of electrons.

The screen itself is coated, on the inside, with phosphorus. When phosphors are excited by energy, they light up. (Remember the glow-in-the-dark Crunchberry stickers from boxes of Cap'n Crunch? It's the same idea.)

In the Mac's case, the excitement comes in the form of streams of electrons, fired from the back of your monitor by an electron gun. That's why TVs and computer screens have to be so deep; the gunner has to be far back enough to be able to hit the entire screen surface.

Of course, if the electron gun were left on its own, it would continuously fire into the center of the glass screen, giving you nothing but a very bright dot, making it exceptionally difficult to do large spreadsheets. In order to counteract this, the electron beam is surrounded by electromagnets. These magnets, with incredible precision, turn on and off exceptionally fast, bending the electron stream in this direction and that. If you saw a map of the beam's path, you would see that it was a zigzag pattern, starting at the top of the screen, painting each row down to the bottom.

The electron stream literally illuminates only one screen dot (pixel, short for picture element) at a time. But it fires so quickly — painting the screen 60 times per second — and each pixel takes so long to fade after being struck, that you perceive a continuous, solid image. (Usually that's what happens. If you want to prove our zigzag phosphor-painting theory to yourself, chew a LifeSaver while watching the screen from 15 feet away. Because the vibrations make your skull move out of its stationary position, you'll see, for the first time, a decided flicker in your screen. The image will break up a little, as you catch only parts of each beam's journey down your screen.)

Flicker

The larger a monitor is, the longer it takes the electron gun to paint the inside of the glass. (The speed of this painting process is called the refresh rate.) If the gun paints the screen 60 times per second, the techies would say "The refresh rate is 60 Hertz." In general, the larger the monitor, the more expensive the electronics are needed to maintain a high refresh rate, which is desirable.

Unfortunately, typical room lighting, especially fluorescents, interact with a typical monitor's refreshing process, and the result is what we know as flicker. If you want less flicker — not to be confused with the entire picture shaking, which is caused by another appliance on the same circuit — turn out the lights.
About VRAM

We’re especially proud to discuss VRAM in this book because we hear about it all the time, and it’s actually very important. However, nobody ever seems to define it or explain it.

VRAM stands for video RAM. It refers to the memory that stores the current screen picture at any given moment. Every Mac has to have VRAM, or it wouldn’t have any screen picture at all. Every single pixel on your screen has a corresponding bit of memory that stores its color.

What gets tricky, though, is that each Mac model stores its VRAM in different places. VRAM may be hidden in three places.

- Scenario 1: The Mac’s VRAM can be a chunk of regular memory (your system RAM) that’s used for video.
- Scenario 2: The VRAM can be a separate bunch of memory chips built into the Mac circuitry and devoted exclusively to the screen picture.
- Scenario 3: The VRAM can come aboard a video card (a NuBus card into which you can plug a monitor), in the form of specialized memory chips.

MACINTOSH SECRET

A 17 percent larger monitor for $25

This used to be one of the most amazing secrets in the world. It still is if you happen to have an Apple 13-inch color monitor and a Mac II High-Resolution video card (4-bit or 8-bit). It doesn’t work if you’re using your Mac’s built-in video feature, or if you have multiple monitors, or if you have any other monitor model, or if you’re using some non-Apple video card.

The trick is this: you know that one-inch block of darkness around the perimeter of your monitor? A brilliant shareware control panel, MaxAppleZoom, eliminates it. This amazing program fills every single pixel behind the glass with usable image, right up to the plastic collar. Suddenly, you’ve got a 704-by-512 pixel screen instead of 640-by-480—as though you traded up to a monitor that’s 17 percent bigger. You put MaxAppleZoom into your System folder and your jaw hits the floor.

Other than your mood and productivity, this control panel doesn’t affect a thing: your software and hardware will never know it’s there. In fact, one of your cheerful authors keeps an old Mac II video card lying around just to use with MaxAppleZoom, for those days when he needs to see two documents side-by-side on his Apple 13” screen.

We didn’t include MaxAppleZoom with this book for one simple reason: most people no longer have the required monitor and video card. (The obsolescence of MaxAppleZoom is about the only downside to Apple’s providing free video circuitry in all recent Mac models.) But it’s widely available from America Online or any other dial-up service, as well as from user groups.

Meanwhile, we can’t help but wonder: if all of that screen area can be made usable just by flipping a software switch, why does Apple leave the dark border around the edges to begin with?

Can you say: sales of the 16-inch model?
This simple fact explains a number of interesting Mac phenomena. We've heard that the i in the model names Ilsi and Ilci stands for integrated video. In other words, these are the Macs whose VRAM is just a chunk of regular system memory (Scenario 1 above). While they don't require a video card (Scenario 3), these Macs won't draw the screen as efficiently as Scenario 2 Macs — those with built-in, separate video memory such as the LC series, the Quadras, Centris models, the Duo Dock, and others. As a matter of fact, in Chapter 8 you can find our secret for speeding up the screen display by fiddling with the Ilsi's Disk Cache, a chunk of system memory.

On the other hand, many Mac models, such as the II, IIX, IICX, and IIFX, come with no video RAM, either as dedicated chips or as system memory. Instead, these Macs require a video card, which is an extra purchase.

And then there are the Power Macs, most of which have two monitor jacks. One is a high-speed version of the IICX scenario, in which some of the Mac's regular system RAM is used as VRAM. The other jack is driven by a little video card.

**Deeper colors = more VRAM needed**

We said that for each pixel on the screen, there must be one bit of VRAM. That's true for black-and-white monitors: the one bit of memory has to say either "on" or "off." (Remember, a bit, the computer's basic thinking unit, is an on/off switch. Therefore, one bit can adequately describe the condition of a screen pixel: either black or white.)

However, if each pixel can be one of four colors, then it requires two bits of memory. (Two bits, each of which can be either on or off, result in a total of four possible combinations.)

A palette of four different colors for your whole screen isn't exactly what you'd call photo-realistic color, however. So they have what they call eight-bit color; this is the most popular Mac video setup. If you count up all the possible combinations of on/off that those eight bits of VRAM can be, you find out that there are 256 possible combinations. Therefore, in eight-bit color, there can be 256 different colors displayed on the screen at the same time.

In the professional world, 24-bit color is the norm for photo retouching, color movies, and so on. Grab the calculator, and you find out that if each screen dot's color is determined by the precise status of 24 bits, then it can be one of 16,777,216 different colors. This may seem silly since the average 13-inch color monitor only has 307,200 pixels. Yes, in 24-bit color, you can't even see all the different colors at once on the screen. But because each pixel can be any one of 16 million colors, the result is a very, very realistic picture.

We read in a recent magazine that the really fussy video and photo professionals are pushing for the Mac to support 48-bit color, which would mean an extremely realistic color picture. We doubt the naked eye could tell the difference between 24- and 48-bit color, however.

At this point, we're talking about a sizable amount of RAM for each pixel. We're also talking about a sizable delay while the Mac computes the correct color for each dot on the
Gray scale

Ah, yes. Then there’s gray scale.

Gray scale is like color in more ways than you realize. It, too, slows things down a great deal. It, too, costs more in a monitor (than black and white). Yet it has only grays and not colors.

Don’t forget that any color monitor is also a gray-scale monitor. The Monitors control panel lets you switch between black and white, color, and gray scale.

There is, however, a substantial price difference between gray-scale and color monitors. In large monitors, color costs almost twice as much as gray scale. Therefore, if you’re really doing black-and-white photo retouching exclusively, get gray scale. If you’re only doing text editing and budget-balancing on your Mac, get a black-and-white monitor.

A Word about dpi

You’ve probably heard the term dpi, meaning dots per inch, used primarily in conjunction with printer quality. That’s because, for years, the Mac’s monitor resolution (the number of pixels per inch) was always the same: 72. In other words, every Mac monitor had 72 screen dots per inch.

And 72 was a clever choice — not only did it ensure crisp, readable text, but there are 72 points to an inch. A point is a unit of typographical measurement. In other words, Mac fonts could be designed so that each increase in point size corresponded perfectly to the addition of one pixel to the character shape. Furthermore, text on the screen would always be actual size.

Today, however, resolutions of monitors vary, even among Apple monitors. The Apple 21" color monitor packs in 79 dpi, while the discontinued 12" color monitor has only 64 gigantic dots per inch.

TRUE FACT

The word Monochrome

We’ve heard an alarming number of people saying, “Aw, I don’t need color or gray scale. I’m just gonna get a monochrome monitor.”

That’s a contradiction, chum.

Monochrome means “one color.” It doesn’t say you can’t have different shades of that color. In other words, monochrome means gray scale, not black and white.

How big is your monitor — really?

Inches-vs.-dpi isn’t the only thing that’s confusing about monitor sizes. For one thing, the Apple 13" and 14" color monitors are actually the same size! For years, computer companies have tried to fudge with the facts to make their monitors seem larger than they actually were. IBM, for example, would measure from corner to corner of the glass of the monitor instead of from corner to corner of the image area, which is always smaller.
Apple, for years, has tried to do the right thing. They measured their monitors (and advertised them) from corner to corner of the actual image area. Of course, that meant that the marketing people had to listen to customers say: "$500 for a 13" monitor? Why, by golly, when I used to own an IBM, I could get a 14-incher for that money!"

As long as nobody was giving Apple any credit for their more truthful approach, Apple said to its corporate self: "The heck with it." From now on, Apple will market its monitors the same way its rivals do — by measuring diagonally across the glass. Thus, the Apple 13" and 14" screens are identical in size, but come from two different marketing policies.

Even so, inches aren't everything. In fact, they can be downright misleading. Here are two examples:

- Consider Apple's sole dud monitor, the 12" color. From the name, it sounds as though it's larger than the Mac Classic screen, which is only 9" diagonally. 

  Surprise! The 12" color monitor has about the same number of pixels as the screen on a Mac Classic. Both have 512 pixels across; the 12" color measures 384 pixels vertically, and the Classic has 342.

- Many griped when the PowerBook Duo appeared. Its screen, measured with a ruler, was an inch smaller than the original PowerBook screen!

Yet you can see every bit as much of a page on a Duo as you can on the original PowerBook. It has the same number of dots (640 across, 400 down) as the original "larger" PowerBook screens — they are just closer together (see Figure 10-2 and Figure 10-3).

---

**Figure 10-2:**
Which PowerBook screen is bigger? It's not an easy question.

---

**Figure 10-3:**
Actually, both PowerBook screens are exactly the same size. Each shows the same slice of a page. The Duo's screen (on the left) packs its dots closer together so that the image is smaller than actual size. But it's showing the same number of pixels.

---

**Some standard monitors and their dots per inch**

Here's a rundown of some typical Apple monitors and the number of dots you get with each.

- Apple 16" color monitor: 832 by 624 pixels (at 70 dpi)
- Apple 21" color monitor: 1152 by 870 pixels (at 79 dpi)
Apple 12" color monitor: 512 by 384 pixels (at 64 dpi)
- Apple Portrait Display: 640 by 870 pixels (at 80 dpi)
- Mac Classic: 512 by 342 pixels (at 72 dpi)
- Color Classic: 512 by 384 pixels (at 76 dpi)
- Apple 13" and 14" color monitors: 640 by 480 pixels (at 69 dpi)
- Performa Display: 640 by 480 pixels (at 67 dpi)
- Performa Plus Display: 640 by 480 pixels (at 67 dpi)
- PowerBook 165c 10" built-in screen: 640 by 400 pixels (at 77 dpi)
- PowerBook Duo 9" built-in screen: 640 by 400 pixels (at 85 dpi)
- PowerBook 180c 8.5" built-in screen: 640 by 480 pixels (at 94 dpi)

The bottom line on resolution: the higher the dots-per-inch rating, the smaller but sharper the image will be. It's the same syndrome when you reduce something on a copying machine — the picture and text get smaller but crisper because the dots are being compressed into a smaller space.

When you reach very high dpi ratings, though (some monitors go as high as, say, 94 dpi), normal-sized text becomes so small it's hard to read. And don't forget your mouse cursor and menu commands also get smaller.

**Multisync (multiple-scan) monitors**

One of the most interesting developments in monitor technology is the multisync, also called multiple-scan or multiple-resolution, monitor. These monitors — made by NEC, Radius, and others — let you switch from one resolution to another. You can kick into 92-dpi mode if you need to do page layout and don't need to read the text, but just want to get an overview of as much graphic image as possible. When you need to edit, you can pop into 70-dpi mode, where text is large and legible.

For example, using the Monitors control panel, you can switch Apple's 20-inch multiple-scan monitor between three different modes: what Apple calls presentation mode (640 by 480 pixels, just like a standard 14" screen — but they're gigantic pixels); actual-size (832 by 624 pixels); and page-layout mode (1152 by 870 small pixels), which shows you two entire pages. Apple's 15-, 17-, and 20-inch multiple-scan monitors have front-panel controls that adjust the overall picture's size, position on the glass, color tone, and so on.
Multiple Monitors

Any Mac into which you can plug an external monitor (almost any Mac made recently) also lets you plug in more than one monitor. Here are three ways to get a multiple-monitor setup going:

- Get a Power Macintosh. It has two video jacks on the back.
- Get a Mac that has a built-in video port, such as a Mac IIci, IIci, Quadra, or Centris. Plug one monitor into the built-in video port. Install a video card into one of your Mac's slots. Plug the second monitor into the jack provided by the video card.
- Use a Power Book that has a video jack (such as a 160, 180, 180c, Duo with a dock of some kind, and so on). Plug an external monitor into the video port. Your built-in Power Book screen acts as one monitor and the external monitor acts as the other.

You can even have more than two monitors (up to six). You can theoretically install more than one video card into your Mac's slots. Or, if you're using a PowerBook, you can attach an LCD projection panel (a plate-glass affair that sits atop an overhead projector); most LCD projector panels we've seen include a jack for an external monitor. Then you'll have the built-in screen (monitor 1), the projector (monitor 2), and the external monitor (3).

Arranging the monitors in space

After you've hooked up all these monitors, you can control their behavior in a number of impressive ways. You control them with the Monitors control panel. (You usually have to restart the Mac after changing any settings.)

You can specify, for example, how the Mac will think the screens are ordered from left to right. For instance, you can specify that your PowerBook be the monitor on the left. When you move your cursor off the right edge of the screen, only then will the cursor appear on the external monitor.
Note, of course, that the external monitor may be physically placed to the left of the PowerBook. Even so, if the Monitors control panel thinks that it's to the right, the cursor will appear at the external monitor's left edge as soon as it leaves the primary monitor's right side (see Figure 10-4).

**Figure 10-4:** Suppose that you indicate, using the Monitors control panel, that the external monitor is on the right (first example in the figure). From now on, the Mac will always treat the external monitor as an extension to the right of the PowerBook screen. You can move the actual monitor to the left (at right in the figure), and the Mac will still treat the external monitor as being on the right.

Now that we've given you the warning, here's how you specify the positioning: simply drag the images of the respective screens within the Monitors control panel (see Figure 10-5).

**Figure 10-5:** Drag either screen to change the Mac's idea of its spatial relationship.

It's possible to get confused as to which little screen icon corresponds to which actual monitor on your desk. That's the function of the Identify button (see Figure 10-6).

**Figure 10-6:** When you click Identify, a number appears on each screen icon in the control panel. A corresponding number flashes onto the physical screens of your monitors.
As you set up your monitors, keep in mind that you can drag these little screen icons into any configuration. The most important point here, though, is that the cursor can only cross from one monitor to another where their little screen icons are touching.

Otherwise, there are no limitations. Screen 2 can appear anywhere relative to screen 1: above it, below it, to the left or right, northwest of it, and so on. If you want the cursor to appear on the external monitor when you move it (the cursor) off the bottom of the main screen, for example, just drag screen icon 2 underneath icon 1.

**Specifying the startup monitor**

The startup monitor is the screen across which the icons of your startup files (control panels and extensions) parade when you first turn on your Mac. We can’t really figure out how this is useful, but there you are.

Anyway, you specify the startup monitor in the Monitors control panel by pressing the Option key. A tiny smiling Mac appears (see Figure 10-7). Drag this smiling Mac onto the icon of another screen, and you’ve done it.

(If you’re a programmer, the startup monitor is also the screen on which the debugger, such as MacsBug, appears.)

**Selecting the main monitor**

The *main monitor* is the one with the menu bar and the Apple menu. You can specify which monitor is the main one by dragging the little menu bar in the control panel from one monitor to another, as shown in Figure 10-8.

Then restart the Mac.
CASE HISTORY

Help! Both my monitors are gray!

We were fortunate enough to witness a near-disaster recently. This took place at a seminar in a New York City hotel ballroom. The incident involved a PowerBook attached to a projector that the presenter had rented for the occasion.

With 25 minutes to go before the presentation, this presenter (who we'll call Gary) hooked up the projector to his PowerBook's video port. It was an LCD projection pad that he'd been guaranteed would work with his Mac. Yet when Gary turned everything on, nothing came on. The projection pad showed a solid black. The PowerBook screen was completely gray: no icons, no menus, no cursor, nothing! Gary began to panic because he could hear the PowerBook's hard drive churning away, exactly as though it was starting up normally.

With five minutes to go before the speech, he finally realized what was happening. First, he saw nothing on the PowerBook screen because it wasn't selected as the main monitor in the Monitors control panel! The external monitor, number 2, was selected. Therefore, the PowerBook was considering its own screen to be an extended area of the external monitor. What is off to the right of any Mac main monitor? Plain, blank, gray infinity.

That's what showed up on the PowerBook.

So why didn't Gary see all his icons and windows on the LCD projector? As it turned out, he would have seen them, except the Contrast control on the LCD was turned all the way up. (This often happens when these pads are shipped or handled.) As soon as he tweaked the Contrast knob, the projector came into sharp focus, complete with his usual desktop.

This combination of two mishaps gave Gary quite a scare. Eventually, he opened the Monitors control panel, dragged the menu bar back onto the screen 1 icon (his PowerBook's built-in screen), and restarted the Mac. Then the projector acted as the extended area of the Mac, just as he'd intended.

Monitor Secrets

Multiple monitors: preventing cursor flyover

When you're just beginning to work with two monitors, you're still used to the cursor stopping when it hits the boundary of your main screen's display area. It can be annoying, at first, when the cursor slips off your main monitor.

We've got a clever solution. When you're using two monitors, the pointer can cross over from one monitor to the next only where the monitor icons (in the Monitors control panel) touch. Position screen 2 so that only its corner touches screen 1, as shown in Figure 10-9.
Then it's **impossible** to move the cursor onto screen 2, unless you decisively roll it through the imaginary "gateway" at the lower-right corner of screen 1.

**The shrinking SE screen**

Macs with built-in black-and-white screens have a chronic problem: over time, the image area gets smaller on the glass. It has something to do with the electronics aging. In any case, it's easy to fix if you can manage to take the cover off your Mac. (This involves getting a special $8 wrench from a mail-order company like Mac Connection. This kind of wrench is normally sold for the purpose of installing RAM chips, but the adjustment you're about to make is actually much simpler.)

On the left side of the Mac (as you look from the front) are two screws. The writing on the white cardboard panel clearly identifies them as monitor-adjustment knobs, one for the width and one for the height of the video picture (see Figure 10-10).

**Figure 10-10:**

On an SE or other one-piece Mac, you can enlarge a shrunken video picture by removing the plastic case and turning the screws on the computer’s side panel.

Get a screwdriver and turn the two screws as marked, slowly. You have to do this while the computer is on, of course, so that you can watch the screen to see what you're doing.

**Correcting Gamma?**

Gamma relates to the balance of the middle colors displayed on the Mac. Gamma correction helps keep colors from looking washed out.

The Monitors control panel gives you access to a gamma-correction feature if you're using certain monitors (including most Apple color monitors). To see it, open the Monitors control panel. Click Options while pressing the Option key. Then you’ll see the Special Gamma options (see Figure 10-11).

**Figure 10-11:** The Gamma nobody knows.
For example, the Apple 16" monitor offers three gamma settings: *Uncorrected*, which means "as it was when Sony manufactured it" and creates a slightly darker picture; *Page White*, which actually makes white images appear slightly yellowish; and *Mac Standard*, which makes whites a crisp white, which is Apple's preferred setting.

**Surviving the 12" monitor**

As we've mentioned, Apple's low-cost 12" color monitor wasn't its crowning achievement in planning. There's nothing wrong with the monitor itself. The problem is that too many programs were written with the assumption that the standard Mac color monitor is 13". If you run these programs on a 12" color monitor, part of the picture — sometimes an important one — is chopped off at the bottom and right side. Games, especially arcade-type games, are particularly likely to be unusable on a 12" screen.

Here's a workaround that may help you scrape by: get a program called Stepping Out II (Berkeley Systems, 510-540-5536). This program uses some of your Mac's memory to create a larger "virtual screen" than the one your Mac really has.

It works like this: your monitor behaves like a window onto a larger canvas. When you move the mouse to the edge of the screen, the entire screen picture scrolls to the side, bringing a new part of the virtual screen into view. It's not as good as having a full-sized monitor, but it may get you past the tight spots.

**Free upgrade for Apple 12" color monitor**

If you have an Apple 12" color monitor and a Quadra 605 (or a Performa 475 or 476), you'll find this secret incredibly valuable: You can upgrade the monitor's resolution and gain nearly 9.5 percent more usable screen space — free!

All you have to do is open the Monitors control panel, click the Options button, and switch the selected video option from Macintosh RGB Display to 560 x 384 RGB. Then restart. Instantly, your screen will display an additional 18,432 pixels. The higher resolution will expand your horizontal view by about two thirds of an inch.

**Cleaning the screen**

As an electronically charged device, the glass surface of your monitor draws dust and grime like moths to a porch light.

This is another one of those are-you-conservative-or-liberal arguments. We've read in plenty of Mac magazines that you're never supposed to use glass cleaner on the monitor. This puzzles us because (a) it is glass, and (b) it's not even glass — it's glass covered by a plastic bonded sealant. As a matter of fact, we've used Fantastik for years to clean the monitor glass, and it works great. (We use paper towels, but a clean rag would probably be better.)

They do make special cleaning fluid for these screens. But we'd bet $100 that if you did a chemical breakdown, you'd find out that it's basically Fantastik.

**Explaining the shadow line**

The Apple 13" and 14" color monitors have a dark thin line that runs horizontally across the screen about two inches from the bottom. Don't bother returning your monitor — it's *supposed* to be there. (The larger Apple monitors have *two* lines.)
Turns out that these monitors are actually Sony Trinitron picture tubes. The design calls for a wire inside the picture tube to stabilize the **colormask grid** (an array of vertical wires that helps the electron beam strike only the correct spots on the phosphor). Despite this shade effect, says Apple, there's no better monitor technology available.

**Enlarging the screen or swapping black and white**

We discussed CloseView, a control panel that comes with every Mac, in Chapter 3. But since it has to do with monitors, we thought we'd remind you here.

CloseView magnifies the screen image. As you move the cursor around the screen, the enlarged picture shifts to follow. CloseView also has an option that inverts your screen, white-for-black, which you should try. It's alarming at first, but can be easier on the eye in the long run.

**Adjusting the multiple monitors finely**

Don't lose sleep over this one, but we thought we'd report it.

When you're working with multiple monitors, you usually start by adjusting the positions of the two little screen icons in the Monitors control panel, as described above. Only one can be selected at a time, however; a selected icon shows a thick black border.

Anyway, here's the Secret: you can nudge a selected screen icon in any direction, one pixel at a time, by pressing the arrow keys.

**Getting the Mac on TV**

See the end of Chapter 23 for details on this frustrating topic — and see Chapter 13 if your Mac has the letters AV in its name.

---

**PowerBook Screens**

If you've ever seen a PowerBook Duo's screen and realized that it's about as thick as a Wheat Thin, you understand that it can't work the same way as a standard Mac monitor. The regular TV-sized CRT monitors have to be a foot deep, to allow the electron gun a little perspective on its target, but a Duo's screen is only $1\frac{1}{4}$" thick.

PowerBook screens use a completely different technology. It's called LCD, for liquid-crystal display. That's the same technology used in digital watches — the ones with gray background and black numbers that seem to float above it.

*Liquid crystal* is an oily goop that's sandwiched between two pieces of plastic. This liquid is filled with crystal molecules that, under normal circumstances, naturally curl into a spiral. This twisted macaroni shell of molecules effectively blocks any light reflected from the back of the screen (from the light bulbs at the edges of the screen or from daylight). The result is a dark spot (shadow) on your screen.

But when an electric current is applied to the electrodes in front and back of this liquid sandwich, the molecules uncurl. They align themselves into a parallel pattern perpendicular to the screen. In other words, they no longer block the light, and a bright spot appears on your PowerBook screen.
If you were able to follow this description even somewhat, then you'll realize that a light pixel on a PowerBook screen is on, and a dark spot is a pixel that's off. That may seem backward, but that's how it goes.

The point is, however, that all of this sandwiching and layering fits between a couple of plastic or glass plates that can be a fraction of an inch thick. That's why LCD screens are flat panels instead of deep boxes (like CRTs). These flat-panel screens also require less power — another plus for use in laptop computers.

We've actually heard it predicted that all computer screens will one day be flat-panel displays. In addition to their small size, weight, and thickness, they also don't emit the ultra-low frequency radiation that CRTs do (a rumored, but unproven, health hazard).

Passive-matrix screens

Our description so far covers the way passive-matrix screens work. Passive-matrix screens adorn the lower-priced PowerBook models: the Duo 210 and 230, PowerBook 145, 160, and so on. (Some models, like the 165c and 520c, have color passive-matrix screens. With three times as many sandwiches to handle, the screen is much dimmer.)

Passive-matrix screens have one big downer with two parts: submarining and ghosting. Submarining occurs when the cursor fades out for a moment if you move it too quickly. Remember those twisted-molecule strings? It takes them ¼ second to twist or untwist. If there's anything on the screen moving faster than ¼ second (such as the cursor or a QuickTime movie), the passive-matrix LCD screen won't be able to keep up. The result is blurring.

Ghosting is something you'll have to see on a PowerBook to understand. It's the faint outline of window edges, or some other rectangular structures, superimposed on the screen. You can eliminate these ghosted horizontal and vertical lines by fiddling with the contrast controls, but that usually makes what you want to see (your text, for example) too light.

Active-matrix screens

The higher-priced PowerBooks (180, 540, Duo 280, and so on) feature an active-matrix LCD screen. Every single pixel on an active-matrix screen has its own private transistor. This transistor is responsible for turning its one pixel on (black) or off (white). On a passive-matrix screen, by contrast, one row of electrodes goes horizontally, and another vertically; their intersections govern the surrounding pixels — an arrangement that offers much less precision.
As a result, an active-matrix screen has none of the visual problems associated with passive-matrix ones. There's no ghosting and no submarining. As another result, however, these screens are expensive to create and cost up to $1,000 more than a passive-matrix screen.

Furthermore, if any individual transistor goes on the fritz, its corresponding pixel is simply broken. (Apple says the pixel is voided.) It's almost inevitable, actually; remember that a typical PowerBook screen has 307,200 individual pixels! The point is that you'll be pretty lucky to get an active-matrix screen on which every single pixel works. Apple won't even give you a replacement screen unless you've got more than five voided pixels.

We've got plenty more to say on the topic of PowerBook displays and how to get the most out of them. But we'll save it for Chapter 12, where the rest of our PowerBook knowledge is revealed.
Chapter 11

From 128K to Power Mac: Model by Model

In this chapter:

- What the specs mean
- The specs for every Mac model ever made
- Secrets of the Mac models
- Just how much your Mac has devalued

Yes, we've already been told that we're nuts to attempt this chapter. Since 1984, Apple has created more than 90 different Mac models. Twice a year, Apple piles on another dozen or so new models. Writing a chapter that's supposed to describe every model is an exercise in futility.

But we're going to attempt it anyway, taking the models one by one and tracking their speeds, specs, and life cycles. This chapter will cover all Mac models from the very beginning to the last possible minute before this book was printed.

Despite the seemingly pointless array of nearly identical models, Apple's lineup actually has some logic: there are exactly four classes of Macs. For the portable person, there are PowerBooks. Educational customers alone are offered the LC series. For the home market, there are Performas. And for business use, there are the only desktop Macs still sold in computer stores: the Quadras and their potent replacements, the Power Macs. Within each line, there's a spread of features and prices; but across the model lines, there's considerable duplication. Keep the laptop/education/home/business distinction in mind as you read.
Coming to Terms

First, here's a quick guide to some of the technical terms we'll be using.

**Processor chip:** Sometimes called the CPU, this is the absolute guts of the computer, a collection of microscopic transistors etched in a single square silicon chip. This microchip does the actual data processing. Until the Power Macintosh, all Macs were built around one of just four microprocessor chips manufactured by Motorola: the 68000, 68020, 68030, and 68040. (The Power Macintosh uses the PowerPC chip, as you'll find out later in this chapter.) The higher the number, the more powerful the processor.

**Clock speed:** This number is the other important speed statistic for a Mac. It refers to the speed at which data moves through the Mac's circuits, as measured in megahertz, or millions of cycles per second. The earliest Macs ran at 8 MHz; the first Power Mac models run at speeds up to 80 MHz. (The Power Macs' names actually hint at their speeds; the 7100/66 model, for example, runs at 66 MHz.) Two Mac models may use the same microprocessor yet run at different speeds (because one has a lower clock speed).

**Data path:** The wider the data path, the larger the chunk of data that a microprocessor can push through the Mac's circuits at one time. (Most manuals and articles prompt you, at this point, to imagine lanes on a highway.) The wider the data path, the faster the Mac. Macs with a 16-bit data path are notably slower than those with a 32-bit data path. The PowerPC chip uses a 64-bit data path, which is one clue to its speed.

**Processor-Direct Slot (PDS):** This connector inside the Mac allows you to plug an expansion card (such as an accelerator, digitizer, or video card) directly into the computer's main processor. Each Mac can only have one PDS.

**NuBus slot:** Like a PDS, this is a thin rectangular connector into which expansion cards can be plugged. A Mac can handle information from several NuBus cards simultaneously. A Iilvx, for example, has three NuBus slots; a Quadra 950 has five. (See Chapter 30 for more on NuBus and PDS.)

**PMMU:** This acronym stands for Paged Memory Management Unit. It's a coprocessor (a second "brain" designed to take some of the load off the main one) specifically designed to handle memory-related tasks. PMMUs are significant for only one reason: they allow a Mac to use virtual memory (see Chapter 8). In the following discussions, we don't specifically identify models with PMMUs; but any Mac based on a 68030, 68040, or PowerPC processor has the PMMU (and virtual memory).

**FPU:** This stands for floating-point unit, the math coprocessor chip included in some Macs to handle certain mathematical computations, such as trigonometric and logarithmic calculations. Read this twice: For most everyday tasks — word processing, database, or even fairly complex business spreadsheet work — an FPU makes no difference to the speed of a Mac. Only if you get into heavy-duty math applications, high-end drafting, a few Photoshop filters, or 3-D rendering does an FPU speed things. The FPs used in Macs are Motorola 68881 or 68882 chips, or they're built into the '040 processor. (The Power Macs have a powerful, redesigned FPU — so different that non-PowerPC software can't use it.)
**SIMM speed, SIMM type:** SIMMs (Single Inline Memory Modules) are the little circuit cards you plug into a Mac to increase the amount of RAM available. (See Chapter 8 for details.) Some types of SIMMs take longer to produce a requested piece of information for delivery to the main processor. This speed is measured in nanoseconds (ns) — that is, billionths of a second. Some Macs require faster SIMMs to take advantage of their microprocessor’s speed.

Each new generation of Macs tends to require a different type of SIMM, too — chips of different sizes and numbers of pins, for example. We include this information in the following discussions, so you’ll know that the 20MB of extra RAM you bought for your Ilci won’t work in your new Power Macintosh.

**VRAM:** In Mac models that include built-in video support (those that don’t require the purchase of a video card), monitor display tasks are handled by separate VRAM, or video RAM. As we discussed in Chapter 8, VRAM consists of memory chips mounted on the main logic board. Generally, you can expand your Mac’s VRAM if you want to increase the number of colors a Mac can display or if you need more VRAM for a larger color monitor.

**Apple upgrade options:** We don’t bother listing expired Apple upgrade offers, like the one that turns your 128K original Mac into a Mac Plus. Neither do we list any third-party upgrade offers, such as Daystar accelerator boards, because this information changes weekly. We just show whichever official (usually overpriced) Apple upgrades are available at this writing.

**Price then/price now:** See Figure 11-1. Of course, our figures here are rough, and they’re likely to change by the time you finish reading this book — or even this sentence. Still, we think it’s fun to see what happens to your investment over a very short period of time.
TRUE FACT
The Mac’s big debut
Apple’s first Macintosh television commercial made its historic debut during the 1984 Super Bowl, right?
Wrong. The famous “1984” ad, directed by film director Ridley Scott (Alien, Blade Runner), actually was run for the very first time by a local station in Twin Falls, Idaho. It aired at 1 a.m. on December 15, 1983. Apple broadcast the ad in December so that it would qualify for the 1984 Clio Awards.

Compact Macs

Macintosh 128K

There it was: a beige one-piece computer with no fan, no expansion slots, and a $2,500 price tag. Steve Jobs’ brainchild, a direct descendant of the Lisa, was born January 24, 1984, out of his passion, his rages, and his vision of a computer as commonplace as the telephone. Jobs borrowed aspects of the Mac’s revolutionary point-and-click interface from prototypes that he saw running at Xerox’s Palo Alto Research Center. He packed in a whopping 128K of memory, twice as much as the popular Commodore 64. And at the last minute, Steve Jobs grudgingly agreed to make the square, 3.5-inch, 400K disks part of the Mac — and only because the disks he preferred, the 143K five-inch floppies then used on the Apple II, couldn’t even hold a System and a Finder. (We shouldn’t make fun of Steve, though. We shouldn’t make fun of anyone who’s got $100 million in the bank by age 25.)

Some people laughed at the Mac. Some called it a toy. It had no SCSI port, no ADB jack, no slots of any kind. In retrospect, it seems astonishing that the little machine caught on at all, having been introduced when virtually no software programs or peripherals were available.

Yet if you were among those who first drew in MacPaint in 1984, you may remember the simple irresistibility of the computer, which was the most user-friendly ever built.

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Macintosh 512K

The Macintosh 512K — the “Fat Mac” — was introduced September 10, 1984. An Apple press release described it as a “powerful business computer” that allowed users to “take advantage of larger documents and models, faster response time, and the more than 40 business productivity software packages now shipping.”
The 512K is simply the original Mac with four times as much RAM. Its debut was accompanied by two Apple marketing announcements that set the pattern for future Mac generations. First, the price of the original Mac 128K dropped (by $300); second, Apple offered an upgrade from the earlier model to this latest one.

The Macintosh 512Ke, for enhanced, appeared in April 1986, sporting an 800K floppy-disk drive.

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**Macintosh Plus**

“One Full Megabyte of Memory.” With these words, Apple proudly announced the release of the Mac Plus in January 1986.

Compared with previous Macs, the Mac Plus was a major step forward. “With one full megabyte of RAM available, the Macintosh Plus can accommodate memory-intensive application programs,” boasted Apple in one press release. And storage? The sky was the limit — 800K on each double-sided floppy disk. That wasn't all the good news for storage addicts, either: the Mac Plus was the first model with a built-in SCSI port on the back, to which you could attach a (very expensive) hard drive.

The Plus remained part of Apple's product line longer than any other model, before or since: it was available for nearly five years. But today, the Plus shows its age. It doesn’t have an internal hard drive, uses the older-style keyboard that predates the Apple Desktop Bus, and can't be expanded beyond 4MB of RAM without the use of third-party accelerators and expansion kits. Nevertheless, thousands of Pluses are still around and still being used effectively. We know of at least one semiweekly newspaper that's written almost entirely on dusty old Mac Pluses (not a lot of the reporters are happy about it, though). Incredibly, the Mac Plus cost the same as a Power Macintosh 7100/66 today.

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<td>Equipment:</td>
<td>Built-in, black-and-white, 9&quot; screen; no slots; no FPU</td>
</tr>
<tr>
<td>System software notes:</td>
<td>Requires System 3.2 or later</td>
</tr>
</tbody>
</table>

**Mac Plus Secrets**

**Avoid overheating**

A general rule when working with compact Macs: be careful about placing objects on top of or against the sides of the computer. The air vents on the casing are vital to internal air circulation. Without adequate ventilation, the innards of the computer can overheat and get damaged. This warning applies especially to the Plus; it was the last Mac model produced without an internal fan for cooling.
**Changing the internal battery**

A small 4.5-volt battery is responsible for keeping the Mac Plus’s internal clock ticking after you shut down. You need to replace this battery after about two years. This is a do-it-yourself job on a Plus. Pull the battery out of its compartment on the upper-right side on the back of the computer case. Replace it with an EverReady 523BP, Ray-O-Vac RPX21, Duracell PX21, or Panasonic PX21.

**Finding the programmer’s message**

Here’s a trick that will give you a taste of the wacky, madcap humor that’s so typical of Apple’s development staff.

Hit the rear part of the programmer’s switch — the interrupt switch, as described in Chapter 6. Type G 40E118. (That’s a zero, not the letter O.) This produces the message “Stolen from Apple Computer.”

When you stop laughing and regain your composure, press the front part of the programmer’s switch (the restart switch).

**Zapping the PRAM — Plus-style**

We’ve mentioned the Mac’s parameter memory: the portion of the Mac’s memory that holds Control Panel settings and preferences. To reset the PRAM on a Plus running System 6, simply shut the machine off and take out the battery for a few minutes. (See the “Changing the internal battery” Secret above.) When you reinstall the battery and restart, the PRAM will be cleared.

**Macintosh SE**

The SE, released in March 1987, originally was billed as Apple’s mainstream business computer. The SE shares the Plus’s compact design and 68000 microprocessor, although it runs 15 to 20 percent faster than the Plus. New SE users who had owned previous Mac models probably were shocked the first time they powered up an SE; it made noise! This was the first Mac equipped with a cooling fan, ending an era of silent Mac computing.

**MACINTOSH SECRET**

**The very first Mac surprise**

By now, you’ve probably learned that if you poke around the Mac’s System software long enough, you’ll eventually find the name of a Mac programmer or two hidden in some unlikely spot. It usually takes some obscure Option-mouse click combination to uncover these hidden credits.

But the ultimate hidden-credits trick dates back to the very first Macintosh model (and persisted through the SE models). Crack open the case of an original 128K or 512K Macintosh, and you’ll find the signatures of the first 47 Mac team members etched (in raised handwritten lettering) in the rear part of the plastic casing.
Chapter 11: From 128K to Power Mac: Model by Model

The SE marked several other firsts: it was the first Corporate Gray Mac (its predecessors were beige), it had the very first expansion slot, and a built-in hard drive was optional. (It had the first ADB keyboard jack, if you didn't opt for the hard drive, you could get an SE with two floppy-disk drives.)

<table>
<thead>
<tr>
<th>Price:</th>
<th>$3,700 then, $350 now</th>
</tr>
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<tbody>
<tr>
<td>Apple code names:</td>
<td>Aladdin, Chablis</td>
</tr>
<tr>
<td>On the market for:</td>
<td>2 years, 5 months</td>
</tr>
<tr>
<td>Processor and speed:</td>
<td>68000 at 8 MHz</td>
</tr>
<tr>
<td>Memory:</td>
<td>1MB, expandable to 4MB (150-ns, 30-pin DRAM chips required)</td>
</tr>
<tr>
<td>Equipment:</td>
<td>Built-in, black-and-white, 9&quot; screen; 1 Processor Direct Slot; no FPU</td>
</tr>
<tr>
<td>Special note:</td>
<td>Some later models (bearing the FDHD logo on the front) were produced with SuperDrives capable of reading high-density 1.4MB disks</td>
</tr>
<tr>
<td>Apple upgrade options:</td>
<td>High-density disk-drive installation</td>
</tr>
<tr>
<td>System software notes:</td>
<td>Requires System 4.1 or later</td>
</tr>
</tbody>
</table>

Mac SE Secrets

The hidden SE development team

A picture of the SE development team is hidden in the SE's ROM chips. To reveal this picture, press the computer's Interrupt switch. (For details on the Interrupt and Reset switches, see Chapter 6.) Then type the following sequence: G 41D89A. Press Return. You get to see a slide show of four alternating pictures. To stop the show, press the Reset switch (the one with a triangle on it).

Another hidden message

When you get handy with that Interrupt switch, you can try this one, too. Push the switch. When the message window appears, type G 4188A4 and press Return. As on the Mac Plus, you see the zany message “Stolen from Apple Computer” in the corner of your screen.

Macintosh SE/30

Four times faster than an SE, the Macintosh SE/30 was released in January 1989 and was an extremely popular workhorse.

The SE/30 was another machine of firsts: the first compact Mac to be based on the 32-bit Motorola 68030 microprocessor; the first with an FPU to speed complex math functions; the first with an internal SuperDrive to read high-density floppy disks and provide MS-DOS and OS/2 disk compatibility; and the first to include color QuickDraw, enabling you to add a video card to the SE/30's processor-direct slot and connect it to a color monitor.

<table>
<thead>
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<td>On the market for:</td>
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<td>Processor and speed:</td>
<td>68030 at 16 MHz</td>
</tr>
<tr>
<td>Memory:</td>
<td>1MB, expandable to 128MB (120-ns, 30-pin DRAM chips required)</td>
</tr>
<tr>
<td>Equipment:</td>
<td>Built-in, black-and-white, 9&quot; screen; 1 Processor Direct Slot; FPU</td>
</tr>
<tr>
<td>System software note:</td>
<td>Requires System 6.0.3 or later</td>
</tr>
</tbody>
</table>
SE/30 Secrets

Making the SE/30 32-bit clean

The ROMs of older Macs, such as the SE/30, II, IILx, and ILCx, are not 32-bit clean. As we discussed in Chapter 8, these models use only 24 bits instead of 32 to reference individual memory locations in RAM. Such machines are therefore limited to using 8MB of memory, no matter how much you install.

You can make these machines 32-bit clean with a free extension from Apple called the 32-bit Enabler. This extension (for System 7.1 or later) allows the Mac to address up to 128MB of RAM. (See Chapter 8 for more information on 32-bit Enabler and Mode32.)

The SE/30's secret attitude

Press the Interrupt switch on your SE/30. When the message box appears, type `dm 4082E853 20` and press Return. There on your screen, spelled out in plain-text letters, are the words WHAT ARE YOU STARING AT?

Macintosh Classic

After releasing increasingly faster and more powerful computers for several years, Apple released a cheaper, more basic compact Classic model, based on the slower 68000 microprocessor, in October 1990. Why this step backward? Apple was attempting to create a truly competitively priced computer, one that would be especially attractive to new users. The stripped-down Classic without a hard drive listed for about $1,000 — a new low in Mac pricing.

The modest price also meant modest equipment. The Classic performs only 25 percent faster than the Mac Plus released more than four years earlier. The limited processing power outdated the Classic quickly; it was discontinued less than two years later and replaced by the more powerful Classic II.

| Price: $1,500 then, $425 now | Apple code name: XO |
| Price: $1,500 then, $425 now | Apple code name: XO |
| Apple code name: XO | Apple code name: XO |
| On the market for: 1 year, 11 months | On the market for: 1 year, 11 months |
| Processor and speed: 68000 at 8 MHz | Processor and speed: 68000 at 8 MHz |
| Memory: 1MB, expandable to 4MB (requires a RAM card); 120-ns, 30-pin | Memory: 1MB, expandable to 4MB (requires a RAM card); 120-ns, 30-pin |
| Equipment: Built-in, black-and-white, 9" screen; no slots; no FPU | Equipment: Built-in, black-and-white, 9" screen; no slots; no FPU |
| Apples upgrade options: Upgrade to a Classic II for $630 | Apples upgrade options: Upgrade to a Classic II for $630 |
| System software notes: Requires System 6.0.6 or later | System software notes: Requires System 6.0.6 or later |

A Mac Classic Secret

The hidden ROM disk (and hidden credits)

The Classic was and is the only Mac model with a secret internal ROM disk (a disk whose contents are permanently etched into the computer's ROM chips and whose icon shows up on the Desktop like any other disk).
TRUE FACT
The height of computing
If you had to write a novel while perched high atop Pike's Peak, which Mac would you pick for the task?
According to Apple's own specifications, not all Macs could do the job; some are not designed to work in super-high altitudes. The LC II, Centris 610, and Quadra 950, for example, are rated to operate at a maximum altitude of 10,000 feet, which means that your CPU could give out while you were still nearly a mile from the summit. (At 36 pounds, the Quadra probably would be a bad choice anyway).
A lightweight PowerBook would be convenient on the ascent, but not just any PowerBook; the 180 and 165c also have a maximum operating altitude of 10,000 feet. The right choices: a Classic, Color Classic, or PowerBook 100, among others. Each model can operate safely at an altitude of 15,000 feet.
Temperature, however, might be a problem on your mountain trek. Most Macs are rated to operate in temperatures no colder than 50 degrees Fahrenheit (and no hotter than 104 degrees).

Hold down four keys while starting the Mac: ⌃, Option, letter o, and letter x. Wait. In a moment, a new disk appears on your Desktop, containing System 6.0.3. (Don't leave your fingers on the keys too long, however, or the Mac will think that you're trying to rebuild the ROM disk's Desktop. You'll probably get a system crash.)
If you have ResEdit (which you do; it comes with this book), open the ROM disk's System Folder and look at the invisible folders therein. You'll see the names of the engineers.

Macintosh Classic II (Performa 200)
The Classic II, also marketed as the Performa 200, was the last of the original compact Macs. It runs twice as fast as the Classic and includes a connector for an optional math coprocessor. Unlike the Classic, the Classic II has a microphone jack for sound input. It also supports virtual memory and 32-bit addressing, so that you can expand your RAM to 10MB.

The Alternate Disk?
The first Macintosh owner's manual provided detailed instructions about how to use the Mac's Alternate Disk. This was an imaginary disk whose icon was supposed to have appeared on the Mac's Desktop; its purpose was to help you copy one disk onto another (because the original Mac only had one disk drive).
The Alternate Disk wasn't actually a disk; it was more like a temporary holding area for data. The idea was that you first would copy files to the Alternate Disk icon, and then eject the floppy disk, insert a destination disk, and copy the files from the Alternate Disk to the new floppy disk.
As it turned out, the Macintosh programmers at the last minute figured out a more intuitive way to accomplish disk copying. They eliminated the Alternate Disk just before shipping the first Macs. So the Alternate Disk didn't appear in the first version of the System software, but it did show up in the owner's manuals and the original Macintosh Guided Tour disks.
Part II: Secrets of the Machine

The Classic II is newer than the SE/30, which it replaced in October 1991. To the chagrin of Mac users who loved the SE/30, however, the Classic II handles most processing jobs about 30 percent slower, even though it’s equipped with the same microprocessor. What accounts for the difference? The data path. The Classic II is equipped with only a 16-bit data path between the '030 processor and the RAM chips, whereas the SE/30 provides a 32-bit data path. In other words, the Classic II can move only half as much data at one time between the computer’s memory and central processor as the SE/30.

When the Classic II was released, it cost about $1,000 less than an SE/30 (which at the time was selling for more than $3,000), making it a good deal despite the slower performance. Now, however, a new Classic II and used SE/30 are about the same price, and the SE/30 is a more powerful, more expandable machine.

Price: $1,900 then, $550 now
Apple code name: Montana
On the market for: 1 year, 11 months
Processor and speed: 68030 at 16 MHz
Memory: 2MB, expandable to 10MB (100-ns, 30-pin DRAM chips required)
Equipment: Built-in, black-and-white, 9" screen; no slots; FPU optional
System software notes: Requires System 7.0.1 or later

Classic II Secrets

The Brightness control panel

The Classic II and Classic are among the few Macs that actually makes use of the Brightness control panel — part of the System software that does nothing on most Macs but often comes preinstalled with the rest of the System software. Controlling the screen brightness via software instead of a physical knob on the monitor was a cost-saving measure.

When the Brightness control panel is open, you can adjust the Classic’s screen brightness with the on-screen slide control. You also can use this keyboard shortcut: type a number between 1 and 9 to set the brightness you want (1 is the dimmest setting).

If you choose a brightness setting lower than 4, the Classic automatically resets the screen brightness to a higher level the next time you start your Mac. Evidently, Apple worried that if you kept the brightness too low, you’d forget about it and think that the computer’s display was broken the next time you tried to use it.

Color on a Classic II?

The Classic II has a black-and-white monitor, but it does have 32-bit QuickDraw in its ROM. Therefore, it can display color and gray-scale information. Because it has no expansion ports, however, you need a third-party device — such as Radius’ PowerView or Aura Systems’ Scuzzy View — to connect the Classic II to a color monitor through the SCSI port. (That arrangement offers relatively slow video-display speed.)
**Macintosh Color Classic (and CC II)**

The squat/tall, strange/wonderful-looking Color Classic was the first compact Mac with a built-in 256-color screen. It was released in February 1993 and discontinued 15 months later. Electronically speaking, the Color Classic is an LC II in a compact case.

The Color Classic also was the first compact equipped with an easily accessible logic board (main circuit board). You can slide the entire board out the back of the Mac simply by unlatching two clasps at the rear of the Mac. This makes adding RAM or expansion cards much easier than in previous compact models, for which special tools were required. The Color Classic also was the first desktop Mac with a tiny electret microphone built into the front of the case, making it easy to record voice annotations or other sounds. The unusual front-panel sound-volume control buttons make playing with sound even easier.

Although it's built around the same processing chip and runs at the same clock speed as its black-and-white counterpart, the Color Classic is slightly slower overall than a Classic II. (The Color Classic II, on the other hand, zips along at a goosed-up 33 MHz and can handle up to 36 MB of memory — but, alas, was sold only in Asia.)

| Price: $1,390 then, $675 now |
| On the market for: 1 year, 3 months |
| Processor and speed: 68030 at 16 MHz |
| Memory: 4 MB, expandable to 10 MB (100-ns, 30-pin DRAM chips required) |
| Equipment: Built-in 512-by-384-pixel Trinitron color display with 76 dpi; 256K VRAM (can be upgraded to 512K); 1 LC-style PDS slot; FPU optional |
| System software notes: Requires System 7.1 (with Enabler 401) or later |

**A Color Classic Secret**

**Shutting-down weirdness**

You turn off the Color Classic differently than you do most Macs. Instead of choosing the Shut Down command from the File menu, you press the Power key on the keyboard. You'll be asked whether you want to shut down. Click OK. After each program quits (and offers you the chance to save your work), the machine turns itself completely off.

**ANSWER MAN**

**Powering up the Color Classic**

Q. Help! I just got a new Color Classic, and it seems to be dead. When I turn on the main power switch, absolutely nothing happens. The computer is completely silent, and the screen is dark. What's going on?

A. You say you turned on the main power switch? On the back on the Mac?

Q. Yes!

A. Relax. Your Mac is doing exactly what it's supposed to do. On a Color Classic and the LC/Performa 500 series, the power switch doesn't turn on the Mac; it simply delivers power from the electrical outlet to the computer. To actually power up the machine, you have to use the Power key on the keyboard, which now acts as the Classic's on/off switch. You press it once to turn the machine on and once to turn it off.
The Mac II Series

The era of modular Macs — those designed with separate, detachable monitors — began in 1987 with the release of the first Mac II. Since then, Apple has released dozens of other modular Macs.

Compact Macs are endearing. Still, the two-piece design of modular Macs offers practical advantages. A modular Mac is easy to expand, for example, because you can open it easily. There’s plenty of room in the case for multiple expansion cards and additional storage devices. Also, with a modular Mac, you can shop for any size and type of monitor you prefer. Finally, the modular design allows you to place a large, bulky CPU on the floor instead of on your desktop, leaving more room on the desk for large monitors and other peripherals.

Macintosh II

The Macintosh II (March 1987 to January 1990) was the first Mac built around the 68020 microprocessor. It also has a 32-bit data path, allowing it to operate roughly four times faster than a Plus. (The only other Mac with the ’020 chip is the LC, introduced three years later.)

The II had a major emphasis on expandability. You could add RAM up to an unprecedented 68MB. Furthermore, the six NuBus slots (and the pop-off lid) made installing add-ons particularly easy. Except for the IIx and IIfx, no other Mac model (even the Quadras) ever offered six NuBus slots.

Like most of the early modular Macs, the Mac II has no built-in video capability. To connect a monitor to it, you must install a video card.

Price: $6,500 then, $375 now
Apple code names: Jonathon, Milwaukee
On the market for: 2 years, 10 months
Processor and speed: 68020 at 16 MHz
Memory: 1MB, expandable to 68MB (special 120-ns, 30-pin PAL chips and 32-bit Enabler, required)
Equipment: Video card required; 6 NuBus slots; FPU
Apple upgrade options: Apple offers an $1,800 upgrade to a IIfx; upgrade to a SuperDrive floppy-disk drive also available
System software notes: Requires System 4.1 or later

Mac II Secrets

Making the Mac II 32-bit clean

The Mac II itself does not support 32-bit addressing, a feature you need to use more than 8MB of RAM. But you can endow it with 32-bit addressing capabilities; see the earlier Secret titled “Making the SE/30 32-bit clean.”

Note, however, that the original Mac II, with its 800K disk drive, won’t be able to use more than 8MB of RAM, even with the 32-bit Enabler (or its predecessor, Mode 32)!

To use more than 8MB of RAM at all, you must upgrade the Mac II by purchasing Apple’s SuperDrive/ROM upgrade. This upgrade adds a PMMU chip (for virtual memory), a high-density disk drive, and new ROM chips to the Mac.
Chapter 11: From 128K to Power Mac: Model by Model

Special memory
You can install SIMMs in any capacity into the Mac II. If you install 4MB SIMMs, however, you must use special SIMMs for the Macintosh II (and the Ilx). These SIMMs are PAL SIMMs, which are SIMMs that contain eight RAM chips and a ninth PAL chip.

Actually, you probably don’t have to worry much about this, as long as you specify that you have a Mac II or Mac Ilx when you’re buying the chips. The company you’re buying from will know what to do.

Macintosh Ilx

Released in September 1988, the Ilx was the first modular Mac equipped with a 68030 microprocessor and an FPU. The use of the ’030 instead of the ’020 chip makes the Ilx about 10 to 15 percent faster than the Mac II.

On the Ilx, a SuperDrive is standard (instead of an option, as on the Mac II). The Ilx also offers better memory-expansion possibilities than the II; RAM can be boosted to 128MB instead of 68MB. For notes that also apply to the Ilx, see “Mac II Secrets” earlier in this chapter.

Price: $9,700 then, $675 now
Apple code name: Spock
On the market for: 2 years, 1 month
Processor and speed: 68030 at 16 MHz
Memory: 1MB, expandable to 128MB (120-ns, 30-pin DRAM chips required)
Equipment: Video card required; 6 NuBus slots; FPU
System software notes: Requires System 6.0.0 or later

Macintosh Ilfx

The Ilfx debuted in March 1990. Dubbed “wicked fast” by the industry press, it reigned as the top-of-the-line speed-demon Mac until the introduction of the Quadra in October 1991. The Ilfx is housed in the same larger-size case as the original Mac II.

Though it employs the same 68030 microprocessor used in previous models, the Ilfx runs at a faster clock speed of 40 MHz. That made the Ilfx the first great choice for high-end applica-

TRUE FACT

More products daily
In 1984, Macworld magazine carried a one-page advertisement for MacConnection, a major mail-order house, offering a full inventory of — brace yourself — 27 products for the Macintosh. Of those listed, a dozen were accessories, such as dust covers, surge protectors, and floppy-disk cases. Of the 15 actual programs available to Mac owners, 10 were games. The advertisement did, however, promise that “more products are arriving daily.”

Obviously, it was true. A typical 1994 MacConnection ad lists more than 1,000 items and covers seven pages of the magazine.
Part II: Secrets of the Machine

Tions: scientific data analysis, commercial publishing, multimedia production, 3-D animation, and so on. Also contributing to the Ilfx's blazing speed is its built-in 32K static RAM cache, which stores the processor's most frequently used instructions.

- **Price:** $10,000 then, $1,150 now
- **Apple code names:** F-16, Stealth, Blackbird
- **On the market for:** 2 years, 1 month
- **Processor and speed:** 68030 at 40 MHz
- **Memory:** 1MB, expandable to 128MB (80-ns, nonstandard 64-pin DRAM chips required)
- **Equipment:** Requires video card; 6 NuBus slots, 1 Processor Direct Slot; FPU
- **System software notes:** Requires System 6.0.5 or later

### A Ilfx Secret

**Brought to you by...**

A digitized color picture of the Ilfx's design team awaits your discovery. To see the picture, set the Mac's internal clock to 3/19/90, and set the monitor to 256 colors. Then restart your computer. As it restarts, hold down four keys: ⌘, Option, and the letters f and x.

### Macintosh Ilcx

Six months after the release of the Ilx, Apple introduced the Ilcx. The two machines are very similar, but the Ilcx has a smaller, more compact design and a quieter fan. (It's one of the few models that can be set either vertically or horizontally on a desk.) The Ilcx offers three NuBus expansion slots instead of the Ilx's six.

The Ilcx was widely hailed as a breakthrough computer because it was designed for manufacture—that is, for the first time, components were designed with ease of factory assembly in mind.

### ANSWER MAN

**SIMmetry**

**Q:** Why can you add SIMMs to an LC or Classic in groups of two but have to install four SIMMs at a time in an SE/30, IIsi, Ilci, and Ilfx?

**A:** The answer has to do with the way information is transferred to and from your SIMMs. Each individual SIMM can accept or send out only 8 bits of memory at a time. Because the LC and Classic's processors gulp down data in chunks of 16 bits each, they need to grab data from two SIMMs at a time (2 x 8 = 16).

On the other hand, the processors of the SE/30, IIsi, Ilci, and Ilfx access data in chunks of 32 bits each. Therefore, these processors have to slurp information from four SIMMs at a time to fill the 32-bit data path.

**Q:** OK, so how come you have to add only one SIMM to the LC II, Quadra 800, and Centris models?

**A:** Those Macs use larger 72-pin SIMMs. These special chips can send and receive data 32 bits at a time, so only one SIMM is needed to accommodate the Mac's data path.

**Q:** I'm with you so far. But that doesn't explain why the Power Macs go back to requiring SIMMs in pairs, even though they're 72-pin SIMMs!

**A:** Ahh. That's because the PowerPC models have a data path that's twice as wide — 64 bits wide, which is four times wider than the LC or Classic. So a Power Macintosh can gulp down data from two 72-pin chips simultaneously.
in mind. Its parts, for the most part, snap into the IIcx case without screws or solder. (In a famous demonstration, Apple Vice President Jean-Louis Gassée assembled a IIcx in about a minute in front of a huge crowd at a Macworld Expo.) As a result, the IIcx was less expensive to build and easier to repair.

Apple was rewarded for its thoughtfulness by great enthusiasm from the Mac community, many members of which thought that the IIcx was one of the best-designed Macs ever. Great gnashing of teeth followed when the IIcx was discontinued at the height of its popularity.

**Price:**
- $7,000 then, $450 now

**Apple code name:**
- Aurora

**On the market for:**
- 2 years

**Processor and speed:**
- 68030 at 16 MHz

**Memory:**
- 1MB, expandable to 128MB (120-ns, 30-pin DRAM chips required)

**Equipment:**
- Video card required; 3 NuBus slots; FPU

**System software notes:**
- Requires System 6.0.3 or later

**Note:**
- Requires 32-bit Enabler to use more than 8 MB of RAM

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**Macintosh IIci**

When it was released in September 1989, the IIci was the fastest Macintosh computer ever made. Physically, the IIci looks exactly like the other three-slotted modular Mac, the IIcx. But the IIci's processor runs at 25 MHz instead of 16, giving it enough horsepower for almost any kind of work (short of 3-D renderings and scientific modeling), including color graphics and QuickTime movies.

Rumor was that the *i* in the name stood for *integrated video* — it was the first Macintosh that didn't require you to buy a $400 video card to make a monitor work. Instead, the IIci has video circuitry built right in, resulting in a new port on the back panel into which you can plug a monitor directly.

The IIci can hold a *cache card* (described in the next section) that increases the machine's speed by up to 20 percent. At first, the cache card was a $300 add-on. Two years later, Apple offered a free cache card for a limited time. In the end, Apple's promotion never did wrap up; the cache card came free with every IIci until the day this model was discontinued in 1993.

**Price:**
- $6,700 then, $700 now

**Apple code names:**
- Aurora II, Pacific

**On the market for:**
- 2 years

**Processor and speed:**
- 68030 at 25 MHz

**Memory:**
- 1MB, expandable to 128MB (80-ns, 30-pin DRAM chips required)

**Equipment:**
- Built-in color video support; 3 NuBus slots; FPU

**System software notes:**
- Requires System 6.0.4 or later

---

**IIci Secrets**

**Cache cards and the IIci**

The IIci has a special slot that holds a *cache card*. The cache card is 32K (or more) of super-high-speed RAM dedicated to storing recently used instructions for the CPU, so that the Mac doesn't have to refer to main memory. As noted earlier in this chapter, the result is a speed increase of 10 to 20 percent. If your IIci doesn't have a cache card, by all means spend the $75 or so that it costs to buy one today.
Maximizing the IIci’s memory
To an extent, you can crank a speed boost out of your IIci exactly as you can with a Ilsi (see the “Speeding up the Ilsi” Secret below). The speed boost won’t be as great, however, and the trick works only if your IIci has 5MB of RAM.

Again, if you crank your Disk Cache up to 768K, you may see some improvement in the machine’s speed. The fastest option of all, of course, is to use a video card instead of the built-in video option.

See the IIci design team
To see a full-color picture of the IIci’s design team, change the date on the Mac’s internal clock to 9/20/89 and set your monitor to 8-bit (256) color. Restart the Mac while pressing four keys: , Option, letter c, and letter i.

Macintosh IIcsi
The inexpensive IIcsi (born in November 1990) was based on a 68030 chip running at 20 Mhz. This machine was the first in the II-series to have at least 1MB of RAM soldered onto the main logic board. And it was the first Mac — along with the LC — to include built-in circuitry for recording your own sounds. You can plug the included microphone into the sound input port.

As with most subsequent models, you don’t have to install a separate video card to hook a monitor to the IIcsi. All these features fit into the slimmest, most elegant gray plastic case ever — a low-standing shape that Apple calls the “pizza-box” design.

Price: $3,800 then, $500 now
Apple code names: Ericson, Raffica
On the market for: 2 years, 5 months
Processor and speed: 68030 at 20 MHz
Memory: 1MB, expandable to 65MB (100-ns, 30-pin DRAM chips required)
Equipment: Built-in 256-color support, using System memory; 1 slot (with adapter, can hold NuBus or 030 Direct cards); FPU optional
System software notes: Requires System 6.0.6 or later

IIcsi Secrets
IIcsi sound woes
The IIcsi’s sound output has a nasty habit of momentarily dropping out without warning. The chronic problem involves a faulty contact between the computer’s speaker and the motherboard. You sometimes can fix the problem — at least temporarily — by opening the Sound control panel, dragging the volume slider bar down to zero, and then resetting the volume to the level you want.

For a longer-term fix, open the IIcsi’s case, clean the contacts between the speaker and the logic board, and replug the speaker cable. Alternatively, simply plug an external speaker into the speaker jack on the back of the IIcsi. Because this sound-output jack has nothing to do with the speaker, the sound is always clean and crisp.
**Speeding up the llsi**

Most Macs that don't need a video card have a built-in video memory chip (VRAM). The llsi also has built-in video support — but instead of having a dedicated memory chip, the llsi uses system RAM to handle display tasks. As a result, the llsi gets much slower when your monitor is set to show colors — as much as 60 percent slower.

Here’s the famous Secret: you can get a huge speed boost from your llsi by setting its Disk Cache (see Chapter 8) to 768K!

The reason: the llsi has 1MB of RAM soldered onto the main circuit board, plus whatever SIMMs are in its RAM slots. The computer uses that soldered-on RAM both for video RAM and for the Disk Cache. If there's any RAM left over from that 1MB, your programs try to use it — but they'll be much slower than they would be if they used RAM in the SIMM sockets. By filling that soldered-on RAM with an extra-large Disk Cache, you force your programs to use the memory in the SIMM sockets. Thus, you avoid the slowdown caused by the llsi’s internal video feature.

A video card, of course, adds even more speed. The llsi then won’t have to rely on the slower built-in memory for video at all.

---

**Macintosh llvx (Performa 600), llvi**

The llvx, released in October 1992, was the last member of the Mac II series. Its price was similar to that of the discontinued llci; interestingly, so was its speed, despite the fact that the llvx’s processor runs at 32 MHz and the llci’s runs at 25 MHz. The llvx loses its speed advantage because of the system bus speed: the llvx pushes information through the processor at only 16 MHz, compared with the llci’s 25 MHz.

The llvx’s new twist: it was the first Mac to come with a built-in CD-ROM-drive option. Like the llfx, the llvx was equipped with 32K of cache memory to give its performance an extra boost. A lower-speed llvx — without the cache or math coprocessor — was sold as the Performa 600.

After getting rave reviews in the Macintosh trade press, the llvx — outpriced and outperformed by the Centris machines — was discontinued by Apple less than a year later. Thousands of buyers felt burned, despite the fact that the llvx was (and is) a solid, flexible performer.

The llvi, a llvx that runs at half the clock speed, was never sold in the United States.

<table>
<thead>
<tr>
<th>Price:</th>
<th>$2,950 then, $850 now</th>
</tr>
</thead>
<tbody>
<tr>
<td>On the market for:</td>
<td>11 months</td>
</tr>
<tr>
<td>Processor and speed:</td>
<td>68030 at 32 MHz</td>
</tr>
<tr>
<td>Memory:</td>
<td>4MB, expandable to 68MB (80-ns, 30-pin DRAM chips required)</td>
</tr>
<tr>
<td>Equipment:</td>
<td>Built-in video (512K VRAM, expandable to 1MB); 3 NuBus slots; cache slot; FPU</td>
</tr>
<tr>
<td>Apple upgrade options:</td>
<td>Convert to Power Mac 7100/66 for $1,500 or 7100/66AV for $1,700</td>
</tr>
<tr>
<td>System software notes:</td>
<td>Requires System 7.1 (with Enabler 001) or later</td>
</tr>
</tbody>
</table>
The LC Series

LC originally stood for *low-cost color*. It wasn’t exactly a powerhouse computer, but it was dirt-cheap, and that’s all that mattered to the thousands who snapped up this slim machine to make it one of Apple’s biggest hits.

Over time, LC has come to be the educational line. Indeed, today you can buy LC computers only through schools and universities. Still, the line became more and more powerful, finally offering Quadra power at the same low LC prices. Later LC models may even be upgraded to Power Macintosh status.

Macintosh LC

The LC was introduced in October 1990 as the lowest-cost color-capable Macintosh. Apple intentionally scaled back some features that were present in the II-series — eliminating all but one expansion slot, for example — to keep the size and cost down and to attract buyers who wanted color capability on a modest budget. The strategy worked. The LC quickly became one of Apple’s best-selling computers; more than 500,000 were sold in the first year.

The LC, like the Mac II, is built around the 68020 microprocessor. That makes it about twice as fast as an SE or Classic but slower than most other Macs. (It also means no virtual memory.) The LC was discontinued in 1992, having been replaced by the LC II and III.

<table>
<thead>
<tr>
<th>Price: $2,400 then, $275 now</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple code name: Elsie</td>
</tr>
<tr>
<td>On the market for: 1 year, 5 months</td>
</tr>
<tr>
<td>Processor and speed: 68020 at 16 MHz</td>
</tr>
<tr>
<td>Memory: 2MB, expandable to 10MB (100-ns, 30-pin DRAM chips required)</td>
</tr>
<tr>
<td>Equipment: Built-in video (256K VRAM, expandable to 512K); 1 Processor Direct Slot; FPU optional</td>
</tr>
<tr>
<td>Apple upgrade options: Upgrade to LC III for $600</td>
</tr>
<tr>
<td>System software notes: Requires System 6.0.6 or later</td>
</tr>
</tbody>
</table>

**LC Secrets**

*The LC-series power key*

The large rectangular power key on the standard Macintosh keyboard behaves differently on the LC series. In fact, it doesn’t function at all; it can’t turn the LC on or off. It does, however, have a function; you can press Control-Shift-Power to reset the Mac in the event of a crash or freeze. And Shift-Power serves as the LC’s Interrupt switch. (This hidden keystroke also works on most later Mac models; see Chapter 6 for more on the Reset and Interrupt switches.)

*The LC III upgrade*

Get it! Borrow, beg, or steal the money. It’s the best value Apple ever offered in its upgrade programs.
Macintosh LC II (Performa 400–430)

The LC II, introduced in March 1992, was destined to be a short-lived Mac model. Apple replaced the LC’s 68020 microprocessor with the faster 68030. But Apple retained the 16-bit data bus, limiting the computer’s capability to take advantage of the extra processing power. The result: an upgraded computer with absolutely no improvement in speed.

The only practical difference between the LC and LC II is that the latter can use virtual memory (because it includes a PMMU on the ‘030 chip). The LC II’s memory, however, still is expandable only to 10MB. The LC II lasted on the market only about a year before being displaced by the LC III.

The LC II also was sold as the Performa 400. With a built-in modem, preinstalled software, and monitor, it was called the Performa 405, 410, or 430, depending on the hard-drive size.

<table>
<thead>
<tr>
<th>Price:</th>
<th>$1,240 then, $400 now</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple code name:</td>
<td>Foster Farms</td>
</tr>
<tr>
<td>On the market for:</td>
<td>1 year</td>
</tr>
<tr>
<td>Processor and speed:</td>
<td>68030 at 16 MHz</td>
</tr>
<tr>
<td>Memory:</td>
<td>4MB, expandable to 10MB by installing 12MB and wasting 2</td>
</tr>
<tr>
<td></td>
<td>(100-ns, 30-pin DRAM chips required)</td>
</tr>
<tr>
<td>Equipment:</td>
<td>Built-in video (256K VRAM, expandable to 512K); 1 Processor Direct</td>
</tr>
<tr>
<td></td>
<td>Slot; FPU</td>
</tr>
<tr>
<td>Apple upgrade options:</td>
<td>Upgrade to LC III for $600 or LC 475 for $800</td>
</tr>
<tr>
<td>System software notes:</td>
<td>Requires System 6.0.8 or later</td>
</tr>
</tbody>
</table>

Macintosh LC III (Performa 450, 460–467)

Introduced in February 1993, the LC III (Performa 450) is what the LC II should have been: a significant improvement from the LC. The LC III’s ’030 chip runs at 25 MHz, making this model twice as fast as the LC or LC II. The LC III also came with more video RAM (512K) to support larger color monitors without additional memory. Its price and expandability made it a perfect entry-level Mac. (On the other hand, its requirement for a new kind of RAM chip — the 72-pin style, popular on IBM clones — irritated some owners of previous Macs, who couldn’t use their previously purchased SIMMs.)

The Performa 460, 466, and 467 look and act identical to the LC III — same slim shape, same video possibilities — except that they’re faster. They run at 33 MHz instead of 25.

<table>
<thead>
<tr>
<th>Price:</th>
<th>$750 then, $500 now</th>
</tr>
</thead>
<tbody>
<tr>
<td>On the market for:</td>
<td>1 year</td>
</tr>
<tr>
<td>Processor and speed:</td>
<td>68030 at 25 MHz</td>
</tr>
<tr>
<td>Memory:</td>
<td>4MB, expandable to 36MB (80-ns, 72-pin DRAM chips required)</td>
</tr>
<tr>
<td>Equipment:</td>
<td>Built-in video (256K VRAM, expandable to 768K); 1 Processor Direct</td>
</tr>
<tr>
<td></td>
<td>Slot; FPU optional</td>
</tr>
<tr>
<td>Apple upgrade options:</td>
<td>Upgrade to LC 475 for $800</td>
</tr>
<tr>
<td>System software notes:</td>
<td>Requires System 7.1 (with Enabler 003) or later</td>
</tr>
</tbody>
</table>
An LC III (Performa 450) Secret

A free 16-bit miracle

We'll mention this trick in Chapter 10, but it's too good not to repeat here. The LC III and Performa 450 come with 512K of video memory — enough to display 256 colors on-screen at once. Nice, but not what you'd call lifelike. But these two models (and others, such as the Duo 270c and PowerBook 540c) can dedicate the same VRAM to giving you more realistic color, even though you'll have a smaller overall display.

Open the Monitors control panel; click Options. Select “640 by 400 Hi-Res.” Restart the Mac. The picture is shorter (you've lost 80 pixels vertically), but now you have super-vivid 16-bit color.

Macintosh LC 475 (Performa 475 and 476)

See “Quadra 605” later in this chapter. Same Mac, different names.

Macintosh LC 520

In June 1993, with this strange-looking, one-piece hybrid of the LC III and Color Classic, Apple introduced a peculiar new shape for its Macs. It's nearly as big as (and contains the same electronics as) an LC III with a 14-inch monitor, but it's constructed as a one-piece unit, complete with juicy multimedia features like a built-in CD-ROM drive, microphone built into the monitor, and — unlike any Mac before it — stereo phase-shift speakers.

Like all LC models, the 520 wasn't available through computer or electronics stores; it was offered exclusively to schools. The new package proved to be such a hit that Apple replaced the 520 with faster but identical-looking models only seven months later.

Price: $2,000 then, $1,400 now
On the market for: 7 months
Processor and speed: 68030 at 25 MHz
Memory: 5MB, expandable to 36MB (80-nos, 72-pin DRAM chips required)
Equipment: Built-in, 14" Trinitron color monitor; 1 Processor Direct Slot; no FPU
Apple upgrade options: Upgrade to LC 575; install Power Mac PDS card for $700 (available in 1995)
System software notes: Requires System 7.1 (with Enabler 403) or later

Macintosh LC 550 and 575 (Performa 550–578)

The popularity of the 520 — a result of its low cost and multimedia prowess — led Apple to follow it up with two speedier sequels. In February 1993, these one-piece, stereo-speakered, 14-inch-Trinitronned, built-in-CD-ROMmed Macs made their debut.
Chapter 11: From 128K to Power Mac: Model by Model

The only difference between the LC 550 and the LC 575 is the speed; the latter offers a potent 68040 chip instead of '030. These relatively inexpensive machines prove once and for all that the LC designation doesn’t mean underpowered. Both machines were enthusiastically received by Mac fans, who appreciated their crisp color screens, speedy performance, rich sound, and upgradability to Power Macs down the line.

Apple ensured wider access to a good thing by selling these same computers as Performa models, bundled with CD-ROM discs, software, and keyboard. The Performa 550 is identical to the LC 550. The 560 is the “Money Magazine edition” of the 550 and comes bundled with financial-management software; the 577 and 578 simply are the LC 575 with additional RAM and hard drive space.

All 575 family members have a special internal connector that Apple calls the communications slot. It’s designed to accept either of two cards from Apple: a $100 Ethernet card, making your LC Ethernet-ready, or a high-speed fax/modem card.

<table>
<thead>
<tr>
<th></th>
<th>LC 550</th>
<th>LC 575</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price</td>
<td>$1,200, including keyboard</td>
<td>$1,700, including keyboard</td>
</tr>
<tr>
<td>Processor and speed</td>
<td>68030 at 33 MHz</td>
<td>68040 at 33 MHz</td>
</tr>
</tbody>
</table>

**Both**

- Memory: 4MB, expandable to 36MB (80-ns, 72-pin DRAM chips required)
- Equipment: Built-in, 14” Trinitron color monitor (512K VRAM, expandable to 1MB); 1 Processor Direct Slot; no FPU
- Apple upgrade options: Install Power Mac PDS card (available in 1995)
- System software notes: Requires System 7.1 (with Enabler 065) or later

**MACINTOSH SECRET**

**The LC 550’s secret partition**

If Apple’s programmers, in creating the Performa series, were aiming to make idiotproof computers, they were serious about it. The Performa 550 is an amazing case in point. When you run the included Apple Backup program (see Chapter 14), you get a little surprise that you didn’t count on: a hidden partition on your hard drive!

This invisible chunk of hard drive space contains a miniature, invisible System Folder. Apple’s internal memo explains it this way:

“When a system problem (one that prevents the Performa from booting) is detected, a [dialog box] informs the user of a system problem. The user can choose to fix the problem manually or to reinstall software from the backup partition’s Mini System Folder.”

If you choose to reinstall your System software, you get the wristwatch cursor for a moment while the miniature System Folder is silently copied to your main hard-drive partition. The Performa restarts from the restored hard drive, and the invisible system partition disappears once again.

We got a Performa team member to admit that this kind of sneaky save-the-users-from-themselves approach may well be adopted in other Performa models.

Who knows what goodness lurks in the hearts of men?
LC (Quadra) 630 (Performa 630–638)

This Mac is destined, no doubt, to be among the last ever designed around a Motorola 68000-family chip. Released in August 1994, this small, attractive desktop Mac represented new highs in speed and multimedia flexibility — and new lows in pricing.

The 630 has a 33 MHz '040 processor — surprisingly enough, as fast as the old Quadra 950 — and is sold as part of the Performa, Quadra, and LC families. This replacement for the Quadra 610, 650, and 660AV has three slots, each of a different type: (1) an LC-style PDS; (2) a communications slot like that found on the LC 575 (for an Ethernet card or — as bundled with the Performa models — a fax/modem card); (3) a video slot for either the $150 Apple Video System card (which lets you record video as a quarter-screen, 10-frames-per-second, 16-bit-color QuickTime movie), or a $250 TV/Video System card (which offers a TV tuner and cable hookup, for watching TV in a resizable window, as well as QuickTime recording). You can also hook up the 630 to the $300 Apple Presentation System, a converter card that can send the Mac’s image to a TV or VCR.

All this for $1200? Some of the cost-cutting strategies are apparent; there’s only one SIMM socket for memory; only one keyboard/mouse jack; you can’t expand the 1MB of video RAM; the 630 can only play back, not record, stereo sound; and the internal hard drive uses something called an IDE (Intelligent Drive Electronics) connection — not SCSI — which may not work with some hard-drive formatting programs.

Nonetheless, the 630’s slide-out motherboard, high speed/price ratio, easy upgradability to PowerPC, and distinctive front panel (which has volume buttons, headphone connector, and a tiny receiver panel for the TV tuner’s remote control) — add up to a remarkable, and remarkably popular, machine.

**Price:** $1,200 (Performa with monitor: $1,500)

**Processor and speed:** 68LC040 at 33 MHz (Quadra: full 68040)

**Memory:** 4MB, expandable to 36MB (80-ns, 72-pin DRAM chips required)

**Equipment:** Built-in video (nonexpandable 1MB VRAM); 1 LC-style PDS slot; FPU (in Quadra model); 1 Apple Video System slot; 1 Communications Slot; optional built-in CD-ROM

**Apple Upgrade Options:** Install Power Mac PDS card for $600; install full logic-board upgrade, with PCI slots, in 1995

**System software notes:** Requires System 7.1 (with Enabler) or later

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**Macintosh TV**

This jet-black, weird-looking, one-piece hybrid machine is...a computer! It’s a CD player! It’s a television?

All of the above. (It resembles the LC 500-series enough that we included it here in our LC descriptions.) Everything’s black: the TV, the mouse, the keyboard, and the remote control. With a video source plugged into the back of the machine, be it a VCR, cable, or camcorder,
this Mac suddenly becomes a 14-inch stereo TV. The remote control handles both channel-changing and the CD player. You press a key on the keyboard to switch the Mac between showing your work and showing the TV signal.

You can capture single frames (from whatever you’re watching) as PICT graphics files. You can’t, alas, watch TV in one little window as you work on a spreadsheet in another (although you can hear the TV sound while you work). Neither can you capture incoming TV as a QuickTime movie. Yet this Mac is an interesting and, in many ways, practical piece of electronics. Perhaps because of its limited availability (250 stores) and limited expansion options, the Mac TV was quietly discontinued only a few months after its October 1993 introduction.

### Price:
$2,000 (including keyboard) then, $1,500 now

### Processor and speed:
68030 at 32MHz

### Memory:
5MB, expandable to 8MB (80-ns, 72-pin DRAM chips required)

### Equipment:
Built-in, 14", 69-dpi monitor (8-bit Mac, 16-bit TV); 1 Processor Direct Slot; FPU optional

### System software notes:
Requires System 7.1 (with Enabler 404) or later

## The Centris/Quadra Line

Apple’s early-'90s mainstream business Macs were built around two variations of the Motorola 68040 processor: the regular '040 and the 680LC40, a less expensive chip that lacks an FPU chip. (We like to think that the LC stands for lacking chip.)

### Macintosh Quadra 605

Apple’s October 1993 shakeup introduced one new Mac with four different names: Quadra 605, LC 475, and Performa 475 or 476. To many people, this was a revolutionary Mac: inside its neat, slim case is a very fast processor, the likes of which would have cost $10,000 three years ago. Unbelievably, this Mac costs less than $1,000.

That chip is the 680LC40. With its single LC III-style Processor Direct Slot, which accepts boards designed for all LC models, the nine-pound 605 is like an '040-based LCIII: sleek, fast, and pretty.

### Price:
$900

### Processor and speed:
680LC40 at 25 MHz

### Memory:
4MB, expandable to 36MB (80-ns, 72-pin DRAM chips required)

### Equipment:
Built-in video (512K VRAM, expandable to 1MB); 1 Processor Direct Slot; FPU optional

### Apple upgrade options:
Install Power Mac PDS card for $700 (available in 1995)

### System software notes:
Requires System 7.1 (with Enabler 065) or later
Part II: Secrets of the Machine

Macintosh Quadra 610 (Centris 610)

The Centris 610 was introduced in February 1993. It introduced the broad, low-slung, CD-ROM-ready case that became a staple of the Macintosh model line. It also introduced one heckuva strange power button. Instead of turning the machine on with the keyboard or a back-panel switch, owners of this design (and all subsequent Macs based on it) must use a protruding button/nub on the front panel to turn the machine on and off.

The Centris 610 was built around the 680LC40 (no FPU). In October 1993, this model was renamed the Quadra 610 and (except for the 8/160 model) blessed with a faster 25 MHz processor with the FPU. Neither 610 can take memory chips in sizes less than 4MB each.

The 610 doesn’t have a ready-to-use NuBus slot; by adding a $100 adapter, you can install either one 7-inch NuBus board or one PDS board. The Centris 610 can use up to 68MB of RAM. Because the Centris models were expected to find homes in corporate offices, high-speed Ethernet circuitry is available.

Price: $2,520 then, $900 now
On the market for: 8 months
Processor and speed: 68040 at 25 MHz (Centris: 680LC40 at 20 MHz)
Memory: 4MB, expandable to 68MB (80-nS, 72-pin DRAM chips required)
Equipment: Built-in video (512K VRAM, expandable to 1MB); with adapter; slot can hold a 7-inch NuBus board or PDS board; FPU
Apple upgrade options: Convert to Power Mac 6100/60 for $1,000 or 6100AV for $1,400; install Power Mac PDS card for $700; install DOS compatibility card for $400
System software notes: Requires System 7.1 (with Enabler 040) or later

Macintosh Quadra 610 DOS Compatible

In February 1994, Apple released a special edition of the Quadra 610. From the outside, it looks exactly the same as previous 610s — except for the intriguing words DOS Compatible painted on the nameplate. Indeed, this model has Intel inside, a PDS card containing IBM-clone circuitry. By pressing 3€-Return, you can make the Mac screen fade smoothly to black; fading in is the hostile world of DOS, right there on your Mac screen. You even can run Windows at respectable speeds.

This nod to Mac/IBM compatibility was simply the next in a long line of Apple’s insults to the dignity of Mac purists. For those who have to coexist in offices with IBM-heads, however, the DOS Compatible is a clever, inexpensive solution (except that it doesn’t work, obviously, with IBM add-on cards). The 25,000 of these machines that Apple manufactured were snapped up quickly, making everybody wonder what the company was thinking when it announced, two months later, that no more would be manufactured. That gives this model the dubious honor of being the shortest-lived Mac model in Apple history. (The specs are the same as those listed for the Quadra 610, except for a $1,500 original price tag and an additional 25-MHz Intel i486 processor.)

Macintosh Quadra 630

See “LC (Quadra) 630 (Performa 630-638),” a couple pages back.
Chapter 11: From 128K to Power Mac: Model by Model

Macintosh Quadra 650 (Centris 650)

The Centris 650 (born in February 1993), like the IIvx, has a new Macintosh case shape, one that strikes us as uncharacteristically ugly: the IIcx-size, tallish gray box with a bizarre set of perforations on the lower front panel.

It's bigger than the 610, yes, but also more expandable, thanks to its three NuBus slots. The 650 is faster, too, built on a quicker 040 chip, giving it a natural niche at the high end of Apple's 1993 product line. All but the base-model 650s include a math coprocessor (which is missing on the 610). The 650 offers roughly the same speed as the discontinued Quadra 700; the Quadra 650, which it was dubbed in October 1993, is faster still, thanks to its 33 MHz chip.

Like the 610, the 650 has an internal compartment that can hold an optional CD-ROM player, hard drive, or other storage device. (Also like the 610, 4MB RAM chips are the smallest denomination you can install.) All but the base-model 650s include Ethernet capability.

Price: $2,700 then, $1,500 now
On the market for: 1 year
Processor and speed: 68040 at 33 MHz (Centris = 25MHz)
Memory: 4MB, expandable to 136MB (80-ns, 72-pin DRAM chips required)
Equipment: Built-in video (512K VRAM, expandable to 1MB); 3 NuBus slots; 1 Processor Direct Slot (adding a PDS board, however, covers one of the NuBus slots); FPU
Apple upgrade options: Convert to Power Mac 7100/66 for $1,500 or 7100/66AV for $1,700; install Power Mac PDS card for $700
System software notes: Requires System 7.1 (with Enabler 040) or later

Macintosh Quadra 700

The Quadra 700, released in October 1991, was the first Macintosh built around the 68040 chip — and, with the Quadra 900, was the first to displace the IIvx as the top-of-the-line Mac. Both the Quadra 700 and 900 run about 20 percent faster than a IIvx. The Quadras were the first Macs with built-in support for Ethernet networking.

The original Quadras look different from other modular Macs; they have a tower-style case designed to stand upright and to be placed below or beside a desk. The 700, however, is the size of a IIcx; therefore, it's small enough to be placed on a desk and can be used in a horizontal orientation.

Price: $6,000 then, $1,300 now
Apple code names: Shadow, Ilce
On the market for: 1 year, 5 months
Processor and speed: 68040 at 25 MHz
Memory: 4MB, expandable to 20MB — or, with sometimes-problematic 16MB chips, to 64MB (80-ns, 30-pin DRAM chips required)
Equipment: Built-in 256-color video support (512K, expandable to 2MB); 2 NuBus slots; one Processor Direct Slot; FPU
Apple upgrade options: Install Power Mac PDS card for $700
System software notes: Requires System 7.0.1 or later
Part II: Secrets of the Machine

A Quadra 700 Secret

Throwing away your RAM

To boost a Quadra 700 to its maximum RAM (64MB), you need four 16MB SIMMs. When you add these to the 4MB soldered onto the logic board, you get 68MB. But the Quadra 700 can address only 64MB, so the last 4MB are wasted.

Macintosh Quadra 800

The 800, released in February 1993 and discontinued 13 months later, is a terrific machine. It’s less expandable than the 950, but it also is faster, lighter, more compact, and less expensive. One reason for the improved performance is that the 800 uses faster memory chips. (It requires 60ns SIMMs.) It also uses faster ROM chips than any previous Mac.

The 800 also offers memory interleaving, whereby the Mac can access two SIMMs of the same size and speed at the same time. (Memory interleaving also is a feature of the Centris 650.) And like other tower Macs, the 800 has two extra bays. Only one of the two extra spaces is big enough for a 5½-inch device, such as a SyQuest or CD-ROM. The other bay can hold a smaller appliance, such as a hard drive or one of those new mini-cartridge systems.

Price: $4,700 then, $1,850 now
On the market for: 13 months
Processor and speed: 68040 at 33MHz
Memory: 8MB, expandable to 146MB (60-ns, 72-pin DRAM chips required)
SIMM slots: Four slots that accept 72-pin SIMMs
Equipment: Built-in video support (512K VRAM, expandable to 1MB); 3 NuBus slots; 1 Processor Direct Slot; FPU; Ethernet
Apple upgrade options: Convert to Power Mac 8100/80 for $1,900 or 8100/80AV for $2,000; install Power Mac PDS card for $700
System software notes: Requires System 7.1 (with Enabler 040) or later

ANSWER MAN

Starting from a CD-ROM

Q: Apple has started using CD-ROM discs to distribute software. I hear that CD-ROM-equipped Macs come with one single CD, instead of 50 million floppies, with the System software and Installer. But I didn’t even know that a Mac could start from a CD-ROM disc at all. Can it?

A: According to Apple, the only models that can’t use a CD-ROM as a startup disk are the Macintosh 128K, 512K, 512Ke, Plus, SE, SE/30, Portable, II, Iix, IIcx, and Classic. All other models can, and all future models will. We like the way that CD-ROM-equipped Macs come with the complete set of System software on a single disc. This arrangement makes life simpler, easier, and harder to lose.

By the way, Apple has begun distributing commercial software on CD-ROM, too. So far, we’ve heard a lot of unhappy reports about Apple’s first such attempt, called Software Dispatch: tales of botched code numbers, incompatible programs, and clueless help-line people.
Macintosh Quadra 900

The huge, tower-design Quadra 900 was released simultaneously with the Quadra 700 at the beginning of 1992. Like most of the Quadras, it has built-in Ethernet and video support. The 900 had the most expandable memory of any Macintosh before it; you can boost it to 256MB by plugging SIMMs of 16MB each into each of the 16 slots. It also has room for up to four internal hard drives (or other storage devices).

Along with the usual mouse and keyboard, the 900 comes with one piece of equipment that was alien to all previous Macs: a key. The key-lock control can be set to Off, On, and Secure. When the key-lock is set to Off, the machine can't be powered up. In Secure mode, the ADB port (and, thus, the mouse and keyboard) and the floppy disk drive are disabled, presumably for use when the Quadra is doing duty as a dedicated file server.

Price: $7,200 then, $1,750 now
Apple code names: Darwin, Hex
On the market for: 6 months
Processor and speed: 68040 at 25 MHz
Memory: 4MB, expandable to 256MB (80-ns, 30-pin DRAM chips required)
Equipment: Built-in video (1MB VRAM, expandable to 2MB); 5 NuBus slots; Processor Direct Slot; FPU; Ethernet
Apple upgrade options: Install Power Mac PDS card for $700
System software notes: Requires System 7.0.1 or later

Quadra 900 Secrets

Upgrading the 900

The upgrade to the Quadra 950 (no longer available) speeded the 900's performance. But you can speed the 900 just as much by adding an inexpensive cache card instead. You can buy a card for the Quadra 900 for less than $300.

The Quadra 900 and SCSI termination

On most Macintosh models, an internal SCSI device should be terminated, but the Quadra 900 is an exception to the rule. Internal SCSI devices connected to a Quadra 900 should be unterminated because the 900's internal bus already is terminated on the motherboard and on the internal cable. The external SCSI jack on the Quadra 900, however, is just like that of any other Mac. (For more on SCSI and termination, see Chapter 29.)

Macintosh Quadra 950

The hulking Quadra 950, which replaced the identical-looking 900 after only six months, weighs more than 36 pounds without a monitor. Running at 33 MHz, it runs applications 30
percent faster than the Quadra 700, and it can display 16-bit color on monitors of up to 19 inches. The 950 offers a faster hard-drive data-transfer rate than any Macintosh before it: 3800K per second.

<table>
<thead>
<tr>
<th>Price:</th>
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<tbody>
<tr>
<td>Processor and speed:</td>
<td>68040 at 33 MHz</td>
</tr>
<tr>
<td>Memory:</td>
<td>8MB, expandable to 256MB</td>
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<tr>
<td></td>
<td>(80-ns, 30-pin DRAM chips required)</td>
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<tr>
<td>Equipment:</td>
<td>Built-in video (1MB VRAM, expandable to 2MB); 5 NuBus slots; 1 Processor Direct Slot; FPU; Ethernet</td>
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<tr>
<td>Apple upgrade options:</td>
<td>Install Power Mac card for $700</td>
</tr>
<tr>
<td>System software notes:</td>
<td>Requires System 7.0.1 or later</td>
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</tbody>
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Macintosh Quadra (Centris) 660av, 840av

The original audiovisual duo of July 1993, the 660av and 840av, are based on the '040 chip running at 25 MHz and a sizzling 40 MHz, respectively. The Quadra 660av, originally called the Centris 660av, resembles the Centris 610 in its low-slung case. The Quadra 840av has the same towerlike case as the Quadra 800 and probably will forever rest secure in its place as the fastest non-PowerPC Macintosh ever built.

Both models introduced several redesigned components, including a new **32-bit data path** that gives all internal components direct access to the memory chips (meaning that 32-bit addressing is on all the time; see Chapter 8); an improved input/output subsystem for faster access to attached disks and storage devices; **built-in 24-bit** (840av) or **16-bit** (660av) video for more lifelike colors; and **TV input and output**, which allows you to watch the Mac’s video picture on a TV, or record it directly to videotape, in a variety of TV-signal outputs (NTSC, PAL (the European standard), and S-video).

Most impressive of all, however, is the new AT&T DSP (digital signal processor) chip in both Macs. This special chip can process huge streams of sound and video information. It makes possible a number of amazing options (see Chapter 13 for a more detailed discussion):

- **Speech recognition.** You speak into the microphone, and the Mac understands you. This so-called PlainTalk technology requires no training period, as other speech-recognition programs do. You don’t even have to speak especially slowly or distinctly. You do, however, have to preface each command with your Mac’s name — “Computer, empty trash” — so that it knows when you’re addressing it and not just chatting on the phone.

  On the other hand, we’re not talking about a Mac that takes dictation. The AV Macs (and the Power Macs equipped for this feature) recognize only certain sets of commands that have to do with using the Mac — menu commands, for example. Furthermore, this feature consumes a huge amount of RAM, sometimes misunderstands you, and always takes a moment to respond. Still, it’s impressive.

- **Talking.** These Macs don’t just listen; they also speak. The Speech Manager converts pieces of text sent by your programs to the correct phonemes for use by a speech synthesizer. A custom integrated circuit actually speaks the words over your speaker. At the moment, only a special, included version of TeachText uses this feature; in theory, other programs will be upgraded to accommodate talking, too.
Sound digitizing. Like other models, these Macs can digitize (record to disk) sounds. Because of the DSP chip, however, these models and the Power Macs can record in 16-bit sound — the same fidelity as that used by audio compact discs!

GeoPort. This is a new serial-port connector on these Macs, akin to the modem port found on older Macs. Previous Macs’ serial ports handled only one task at a time. But the GeoPort’s speed is so great that it can, in theory, print, send a fax over the phone lines, and remain connected to a network — all from a single port. Most people, however, use the GeoPort jack only to connect the GeoPort Adapter ($100), which can impersonate a modem’s chirps and squawks. You can plug a phone line directly into the GeoPort Adapter without actually owning a modem.

When used with the included ApplePhone software, the AV Mac can serve as a glorified speakerphone, dialing your numbers for you and allowing you to converse hands-free. (It works better if you buy a Jabra EarPhone, a combo microphone/earphone that fits lightly into your ear.) Apple says that this software was meant for demonstration purposes only, however — which is little consolation to AV owners who find that the volume level’s too low, that the answering-machine feature doesn’t always work, and that callers sometimes have a hard time understanding them.

To further complement this multimedia mogul machine, Apple introduced its AudioVision monitor, with stereo speakers and a built-in microphone.

All this miraculous technology carries, for some, a steep price in compatibility. The AV Macs’ (and Power Macs’) new sound software throws a lot of music- and sound-intensive programs into a tizzy. Other programs, such as Suitcase, ATM, After Dark, and most fax/modem software, need upgrades to be compatible. Perhaps worst for many people is the “sync on green” problem — the AV Macs don’t work with many standard Mac monitors. For some monitors, you can get a special cable that works with the AV (call the monitor company and find out); others can’t be made to work at all.

**Quadra 660av**
- Price: $2,300 then, $1,200 now
- On the market for: 14 months
- Apple code name: Tempest
- Processor and speed: 68040 at 25 MHz
- Memory: 8MB, expandable to 68MB (70-ns, 72-pin DRAM chips required)
- Equipment: Built-in 16-bit video support; 1 7" NuBus slot (requires adapter); no FPU
- Apple upgrade options: Convert to Power Mac 6100/60 for $1,000 or 6100/60AV for $1,400
- System software notes: Requires System 7.1 (with Enabler 088) or later

**Quadra 840av**
- Price: $3,550 then, $2,400 now
- Apple code name: Cyclone
- On the market for: 9 months
- Processor and speed: 68040 at 40 MHz
- Memory: 8MB, expandable to 128MB (60-ns, 72-pin DRAM chips required)
- Equipment: Built-in 32-bit video; 3 enhanced NuBus slots; FPU; Ethernet
- Apple upgrade options: Convert to Power Mac 8100/80 for $1,900 or 8100/80AV for $2,000
- System software notes: Requires System 7.1 (with Enabler 088) or later
Quadra AV Secrets

FREE! Upgrade to the next Mac model!

If you bought your 660av before October 1993, you've probably been gurgling with jealousy at everyone who bought after October 1993. *You* wound up with a Centris. *They* got a Quadr. Sure, these two Macs are 100 percent identical, but nonetheless, the latecomers got Quadras!

Take heart — here's an exclusive Secret that enables you to upgrade your Centris 660av to a Quadra 660av without using a screwdriver. All you need is the *enabler* from a Quadra 660av (Enabler 088), version 1.1 or later. Get it from an Apple dealer or an on-line service. Drop the Enabler into your System Folder (remove your original Enabler) and restart. Choose "About This Macintosh" from your Apple menu. Hey, presto! Your Mac's had an identity overhaul — now you've got a *Quadra 660av*!

(Changing the painted words *Centris 660av* on the front panel is your responsibility.)

The secret Apple QuickTime movie

If your AV Mac came with a CD-ROM drive, you also received a CD-ROM containing System software. This CD-ROM contains a hidden QuickTime movie of the AV development team cheering, staring at circuitry, and drinking champagne. To find it, launch a QuickTime-playing program (such as Word or Simple Player). Choose Open from the program's File menu and look on your system CD-ROM disc, inside the System Folder, inside the Preferences folder. Thar she blows!

Portable Macs

Macintosh Portable

The Mac Portable, born in late 1989, was Apple's first attempt at a laptop version of the Macintosh. It failed miserably, mainly due to its weight. Though it has a laptop-style fold-down design, the Mac Portable weighs 16 pounds — as much as a compact Mac! Its excessive weight and high price — almost $7,000 — made it very unpopular.

Nevertheless, the Portable has an active-matrix LCD screen (the same type as the later PowerBook 170 and 180) that provides a sharp, clear image, free of ghosting. And the Portable is the forerunner of the PowerBook 100, which inherited much of the Portable's internal design.

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<tr>
<td>Apple code names:</td>
<td>Esprit, Laguna, Malibu</td>
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<td>On the market for:</td>
<td>1 year, 5 months</td>
</tr>
<tr>
<td>Processor and speed:</td>
<td>68000 at 16 MHz</td>
</tr>
<tr>
<td>Memory:</td>
<td>1MB, expandable to 9MB (special 30-ns static RAM card required)</td>
</tr>
<tr>
<td>Equipment:</td>
<td>Built-in, 10&quot;, black-and-white, active-matrix 640-by-400-pixel LCD screen (backlighted on later models); video-output jack for external monitor; 1 nonstandard 120-pin PDS slot; no FPU</td>
</tr>
<tr>
<td>System software notes:</td>
<td>Requires System 6.0.4 or later</td>
</tr>
<tr>
<td>Battery:</td>
<td>Lead-acid; lasts about 5 hours</td>
</tr>
<tr>
<td>Weight:</td>
<td>16 pounds</td>
</tr>
</tbody>
</table>
Mac Portable Secrets

Keeping a Portable awake

To conserve battery power, Mac Portables automatically lapse into a dormant state if no mouse, keyboard, or peripheral activity occurs for 15 seconds. Unfortunately, this feature also can slow any automated routines performed by the Mac.

To disable the Automatic Sleep feature, open the Portable control panel and click the words Minutes Until Automatic Sleep while holding down the ⌘ and Option keys. Choose the “Don’t Rest” option in the dialog box that appears. The computer remains on, at full power, until you change this setting.

A Portable battery Secret

Don’t let the lead-acid battery in a Portable become fully discharged; it can become unusable. If the battery’s charge drops below 5.4 volts, it no longer takes a recharge. A Portable’s battery is being slowly drained even when the power is off. So don’t put your Portable on a shelf for weeks; keep it plugged in regularly to keep the batteries freshly charged. (See Chapter 12 for more insight on this and other portable Macs.)

PowerBook 100

The PowerBook 100, born with the PowerBooks 140 and 170 in October 1991, is the low-end, budget version of the PowerBook. It is equipped with the same slower 68000 microprocessor found in the Mac Classic.

The 100 is lighter than the other early PowerBooks, but that’s because it’s missing a lot of features; it has no internal floppy disk drive, only a 20MB hard drive, and no sound-recording capabilities. (You could buy a $200 floppy drive that attached to the back of the PowerBook.) The case is made of lightweight plastic instead of the polycarbonate used for the other PowerBooks. The 100’s sealed lead-acid battery lasts two to four hours before requiring a recharge.

Probably because of the missing components, the PowerBook 100 didn’t sell well. Apple shrugged and decided to sell off as many remaining 100s as possible. It slashed the price; PowerBook 100s were selling for $900 on the West Coast and $700 on the East Coast. Suddenly the 100 was the hottest Mac ever. Soon, as Apple had hoped, the inventory was gone.

| Price: | $2,500 then, $650 now |
| Apple code names: | Derringer, Rosebud |
| On the market for: | 10 months |
| Processor and speed: | 68000 at 16 MHz |
| Memory: | 2MB, expandable to 8MB (100-ns pseudostatic RAM card required) |
| Equipment: | Built-in, 9", black-and-white, passive-matrix 640-by-400-pixel LCD screen; no slots; no FPU; no video-output jack |
| System software notes: | Requires System 7.0.1 or later |
| Battery: | Lead-acid; lasts about 2 hours |
| Weight: | 5.1 pounds |
PowerBook 100 Secrets

The PowerBook 100 and System 6

Here's a good Secret to keep in mind, given the PowerBook 100's limited memory: the PowerBook 100 happens to be the only PowerBook that does not require System 7 software. It can run on System 6.0.7 or 6.0.8, both of which require several hundred kilobytes less memory than System 7.

Using the PowerBook 100 in SCSI mode

The 100 is the only first-generation PowerBook that can be used as a SCSI device. In other words, you can connect it to your desktop Mac's SCSI port and copy files to and from it as though it were an external hard drive.

SCSI Disk Mode, as this setup is called, allows you to transfer files much faster than you can with System 7's File Sharing. The PowerBook 140 and 170 both lack this feature.

We've included full instructions on using a PowerBook in SCSI Disk Mode in Chapter 12.

PowerBook 140

Heavier and more powerful than the 100, the 140 is the middle of the original three PowerBook models. It's equipped with a passive-matrix screen similar to that of the 100, but the 140's screen is larger, and its dots are less dense on the screen. As a result, text is easier to read.

Instead of a lead-acid battery, the 140 uses a NiCad battery that provides between 90 minutes and two hours of power. The 140 also has a larger trackball than the PowerBook 100 (30mm instead of 25mm), making it easier to control. Finally, the 140 can record sound (and comes with a microphone), unlike the PowerBook 100.

- Price: $3,000 then, $800 now
- Apple code name: TIM Lite
- On the market for: 10 months
- Processor and speed: 68030 at 16 MHz
- Memory: 2MB, expandable to 8MB (100-ns, pseudostatic RAM card required)
- Equipment: Built-in, 10", black-and-white, passive-matrix LCD, 640-by-400-pixel screen; no slots; no FPU; no video-output jack
- System software notes: Requires System 7.0.1 or later
- Battery: NiCad; lasts about 2 hours
- Weight: 6.8 pounds

TRUE FACT

The Macintosh Portable and the PowerBook 100

What do the PowerBook 100 and the defunct, overweight Macintosh Portable have in common? A lot. Sony, the company contracted by Apple to build the 100, started with the original Mac Portable and simply miniaturized its components to create the 100. That's why the design of the 100 is fundamentally different from that of the other PowerBook models; it's really just a shrunk-down Mac Portable. The Portable and the 100 share the same overall design and even the same ROM.
MACINTOSH SECRET

Getting the whole picture

PowerBooks are routinely advertised by Apple as having a “full-size screen,” but that’s not quite true. All PowerBooks before the 180c have 640-by-400-pixel screens — which means that they display 51,200 fewer pixels than standard 640-by-480 desktop monitors (the Apple 13” and 14” displays, for example).

You probably won’t notice the more limited view in most cases. But if you try to view graphics or multimedia presentations designed to fill a standard-size screen, those 100-series PowerBooks can’t display the whole picture. They simply chop off the bottom 80 pixels of the images.

PowerBook 145

The 145 is a faster (and less expensive) version of the 140, which it replaced at the end of 1992. The sole noticeable difference is that the 145’s chip runs at 25 MHz instead of 16 MHz.

Price: $2,150 then, $925 now
On the market for: 10 months
Processor and speed: 68030 at 25 MHz
Memory: 2MB, expandable to 8MB (100-ns, pseudostatic RAM card required)
Equipment: Built-in, 10”, black-and-white, passive-matrix LCD, 640-by-400-pixel screen; no slots; no FPU; no video-output jack
System software notes: Requires System 7.0.1 or later
Battery: NiCad; lasts about 2 hours
Weight: 6.8 pounds

PowerBook 145b

Whenever Apple lowers its prices, it’s rewarded by a huge groundswell of new purchasers. That phenomenon clearly is what Apple has in mind for this PowerBook model, which debuted in June 1993.

The specs of the 145b are identical to those of the PowerBook 145 except for the price: about $1,300 for the 40MB-hard-drive model. What you lose in the bargain (compared with a PowerBook 145) is the microphone and a set of System disks. The 145b’s low price and the fact that the low price doesn’t mean less computing power put all the necessary nails into the 145’s coffin.

PowerBook 150

In the never-ending series of replacements for replacements, the 150 is the next heir in the 140-145-145b lineage. Its $1,300 price tag appeals to the budget-minded. But “inexpensive” no longer must mean “slow”; the 150’s 33 MHz 68030 processor is the same as the one that drives, for example, the Macintosh LC 550.

The most startling aspect of the 150 is the appearance of some PowerBook Duo technology. For example, the 150 uses Duo-style memory SIMMs, and it preserves the contents of RAM while you change batteries, just like the Duos. Unfortunately, the paucity of jacks also matches the Duos — the 150 has only one serial (modem/printer) jack, and it lacks the Ethernet and monitor jacks of its PowerBook contemporaries.
But we know what members of the student-and-starving-artist class will say: "ports, schmorts!" This model's speed, low price, and unusually low weight (1.3 pounds less than other full-size PowerBooks) give it definite appeal.

### PowerBook 160

Released in September 1992 and dropped 11 months later, the PowerBook 160 is similar to the 145 — same weight, dimensions, processing speed. But the 160 also offered five important improvements:

- The 160's LCD screen offers 16 levels of gray instead of just black and white.
- The 160 has a video-out port so that you can connect it to an external monitor easily. The 160 can fill the external monitor with up to 256 colors.
- The 160 can hold an internal hard drive of up to 120MB, whereas previous models could be expanded only to 80MB.
- The 160 is the first PowerBook since the original PowerBook 100 that can be used in SCSI Disk Mode (in which it's connected to your desktop Mac just as though it were an external hard drive) for super-fast data transfers. (See Chapter 12 for details.)
- Finally, the 160 was the first PowerBook on which memory could be expanded beyond 8MB. You can boost it to 14MB.

All these features came at a price of only about $300 more than the PowerBook 145, making the 160 an exceptionally flexible, functional Mac.

### PowerBook 165

See the preceding section. What we mean is that the 165 (born in August 1993) is identical to the PowerBook 160 in every possible way, except that it runs at 33 MHz instead of 25 MHz. Yet it's even less expensive than the model it replaced; at this writing, a PowerBook 165 costs about $1,500.
PowerBook 165c

The PowerBook 165c, released in February 1993, was the first color PowerBook. The 165c's passive-matrix LCD display is smaller than that of most other PowerBook models — only 9 inches instead of 10 — but it can display 256 colors.

The 165c, like the PowerBook 180 on which it's based, is a fast and powerful machine, with a 68030 microprocessor running at 33MHz and an FPU chip. But many Mac fans don't find its color screen (manufactured for Apple by Sharp) very impressive. The passive-matrix technology is slow, it lacks brightness, and it's tough to read in bright sunlight. Another negative involves the 165c's NiCad battery life: a charge lasts only about an hour, thanks to the juice required by the dual backlights.

Like the 160 and 180, the 165c has a security slot built into the back of the unit. This slot is designed to be used with third-party devices that lock your PowerBook to a desktop to prevent theft.

Price: $3,400 then, $1,300 now
On the market for: 10 months
Processor and speed: 68030 at 33 MHz
Memory: 4MB, expandable to 14MB (85-ns, special notched chips required)
Equipment: Built-in, 9", 256-color, passive-matrix LCD, 640-by-400-pixel screen; no slots; FPU; video-output jack
System software notes: Requires System 7.1 (with Enabler 131) or later
Battery: NiCad; lasts about 1 hour
Weight: 7 pounds

PowerBook 170

The PowerBook 170 was the top-of-the-line PowerBook in 1991 — one of the original three models. It eventually was replaced by the faster, cheaper, sharper-screened PowerBook 180.

Overall, the 170 runs about 50 percent faster than the PowerBook 140. The key differences between the 170 and the 140: the 170 has a clock speed of 25 MHz (instead of 16 MHz); it's equipped with a math coprocessor; and it comes with an optional, troublesome, built-in fax/modem.

The quality of the 170's display is superior. This model was the first PowerBook to offer an active-matrix display (the type of screen used in the old Macintosh Portable), which produces a much brighter, crisper image with less ghosting and sluggishness than the passive-matrix display used on other PowerBooks. (See Chapter 12 for more on PowerBook screens.)

Price: $4,600 then, $1,300 now
Apple code name: TIM
On the market for: 1 year
Processor and speed: 68030 at 25 MHz
Memory: 2MB, expandable to 8MB (100-ns, pseudostatic RAM card required)
Equipment: Built-in, 10", black-and-white, active-matrix LCD, 640-by-400-pixel screen; no slots; FPU; no video-output jack
System software notes: Requires System 7.0.1 or later
Battery: NiCad; lasts about 2 hours
Weight: 6.8 pounds
A PowerBook 170 Secret

PowerBook 170 pixel problems

The 170's active-matrix display is gorgeous, but the display is plagued by one flaw that has driven some users absolutely crazy. It's not uncommon for a few of the 256,000 pixels on the 170's display to get stuck permanently on, glowing white no matter what is supposed to be on-screen. (See Chapter 10 for insights on why this happens.)

The bad news is that Apple doesn't consider this situation to be a defect unless (a) at least five pixels go bad or (b) two of the broken pixels are within one inch of each other. If a few defective pixels are scattered across the screen, Apple won't do anything about it. Obviously, then, if you're in the market for a used 170, scrutinize its screen carefully before you purchase. (This is true of all PowerBooks with active-matrix screens.)

PowerBook 180

The PowerBook 180, which debuted in October 1992, was by far the most sought-after PowerBook to date. Months after its introduction, Apple still couldn't manufacture them fast enough for its customers. In frustration, Apple dealers took orders, pleaded with Apple, and waited for a few precious machines to come their way.

The 33-MHz 180 is a faster version of the 170, with enough processing power for even heavy-duty business tasks. The 180 also is the first PowerBook with a 4-bit active-matrix gray-scale screen, the clarity and beauty of which was primarily responsible for this Mac's popularity. This gray-scale screen makes the Desktop look richer and more attractive, and it makes possible some QuickTime and graphics work.

Like the 160, this model has a video-out port so that you can connect it to an external monitor. The 180 is the first PowerBook to sport a built-in microphone. Like the 160, the 180 can be connected to another Macintosh as a SCSI device. A fax/modem is optional.

Price: $4,110 then, $1,700 now
On the market for: 1 year, 7 months
Processor and speed: 68030 at 33 MHz
Memory: 4MB, expandable to 14MB (85-ns chips required)
Equipment: Built-in, 10", 16-level gray-scale, active-matrix LCD, 640-by-400-pixel screen; no slots; FPU; video-output jack
System software notes: Requires System 7.1 (with Enabler 131) or later
Battery: NiCad; lasts about 2.5 hours
Weight: 6.8 pounds

PowerBook 180c

This was the screen that everyone had been waiting for: an active-matrix, built-in color screen (the first PowerBook model to have one). Introduced in June 1993, the 180c offers a glorious display that is not only vibrant, but also big — not in inches, but in image area. That is, the 180c’s screen was the first on a PowerBook to match, pixel for pixel, the dimen-
sions of a standard Apple 13" or 14" monitor. But because the screen resolution is 94 dots per inch, the dots are densely packed, and the physical dimensions of the screen are smaller than on a traditional PowerBook.

As usual, you pay a price for the active-matrix screen, both in battery power and (dramatically) in dollars. Nonetheless, the 180c was the hot model for quite a while — at least until the active-matrix color screen came to other PowerBook models.

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<tr>
<td>Equipment:</td>
<td>Built-in, 10-inch, 256-color, active-matrix LCD, 640-by-480-pixel screen; no slots; FPU; video-output jack</td>
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<tr>
<td>System software notes:</td>
<td>Requires System 7.1 (with Enabler 131) or later</td>
</tr>
<tr>
<td>Battery:</td>
<td>NiCad; lasts about 1 hour</td>
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<tr>
<td>Weight:</td>
<td>7.1 pounds</td>
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**PowerBook Duo 210 and 230**

The PowerBook Duos, introduced in October 1992, are super-lightweight portables. Their name stems from the fact that they can function either as stand-alone notebook computers or, when inserted into a docking station (called a Duo Dock) or attached to a connector strip (the Mini Dock), as a desktop system. After the Duo is connected to the Duo Dock or Mini Dock, you can attach a large color monitor, a full-size keyboard, a proper mouse, and so on. The Duo Dock can even hold one or two NuBus cards.

The first Duo models — 210 and 230 — look the same. Built around a light-but-sturdy magnesium frame, they weigh just 4.2 pounds each — nearly three pounds lighter than the other PowerBook models. The Duos are only 1.4 inches tall.

Of course, many features were shrunk or eliminated to compress the Duos into such a compact package. There’s no built-in floppy drive; a separate disk drive is optional. The screen is an inch narrower than previous PowerBook screens, although it has the same number of pixels (they’re just packed in more closely). And the trackball is more than a centimeter smaller than other PowerBook trackballs. There are only three connectors on the back of either Duo: a modem/printer port, a power adapter jack, and the 152-pin connector for attaching the computer to a Duo Dock or Mini Dock.

The Duo nickel-metal-hydride battery recharges faster than the NiCad batteries used with most PowerBooks. There have been three generations of Duo batteries, known as Type I (shipped with the Duo 210 and 230), Type II (Duo 250 and 270), and Type III (the 280s). Each type lasts longer than the preceding type, ranging from about two hours of power (Type I) to three hours (Type III). All three types work in all Duos. Apple also equipped the Duos with several power-management mechanisms that help conserve battery power. One of the most convenient: you can put a Duo to sleep simply by closing its flip-up screen.

Despite their size, the Duos have powerful features. The 210 and 230 are built around the 68030 microchip and can be upgraded to 24MB of RAM. The displays can show 16 levels of gray scale. Because of their fast processing speed, the original Duos require unusually fast 70-ns RAM. The 210 is the slower of the two machines, running at 25 MHz.
PowerBook Duo 250

The second generation of Duos, the 250 and 270c, rescued the Duo line's flagging reputation in the computer press. Two changes accounted for that effect. First, the active-matrix LCD screens on these new models, introduced in October 1993, are glorious to look at. Second, these models come with the improved Type II Duo battery, which means that a Duo can hold a charge much longer than before — perhaps just under three hours with normal use.

The 250 is simply a 230 except that it has a super-crisp, nonghosting active-matrix gray-scale screen instead of a passive one.

Price: $2,500 then, $1,650 now
On the market for: 7 months
Processor and speed: 68030 at 33 MHz
Memory: 4MB, expandable to 24MB (70-ns DRAM card required)
Equipment: Built-in, 9", 16-level gray-scale, active-matrix LCD, 640-by-400-pixel screen; 2 NuBus slots (in Duo Dock only); FPU (in Duo Dock II only); video output (with full or mini Dock)
System software notes: Requires System 7.1 (and PowerBook Duo Enabler) or later
Battery: NiMH; Type II lasts about 2.5 hours
Weight: 4.2 pounds
Apple upgrade options: Upgrade to Duo 280 for $900; probable upgrade to PowerPC-based Duos in 1995

PowerBook Duo 270c

Something had to give when Apple designed its first color Duo — size, weight, and battery-charge length. The Duo 270c is almost a half-pound heavier than other Duos. It's also a quarter-inch taller, making it slightly too big to fit into a Duo Dock. (You have to buy a replacement top half of the Duo Dock from Apple to accommodate the 270c, or else use a Duo Dock II.)
Still, this model offers a fast processor, a stunning screen that offers a complete 640-by-480 display area, and an FPU. It even has a remarkable color-display feature in common with the LCIII (see the following Secret). It may not weigh much, but the 270c is no lightweight.

<table>
<thead>
<tr>
<th>Price:</th>
<th>$3,100 then, $2,400 now</th>
</tr>
</thead>
<tbody>
<tr>
<td>On the market for:</td>
<td>7 months</td>
</tr>
<tr>
<td>Processor and speed:</td>
<td>68030 at 33 MHz</td>
</tr>
<tr>
<td>Memory:</td>
<td>4MB, expandable to 32MB (70-ns DRAM card required)</td>
</tr>
<tr>
<td>Equipment:</td>
<td>Built-in, 8.4&quot;, color active-matrix LCD, 640-by-480-pixel screen (or, in 16-bit color, 640 by 400); 2 NuBus slots (in Duo Dock only); FPU (in Duo Dock II only); video output (with full or mini Dock)</td>
</tr>
</tbody>
</table>

**A Duo 270c (and 280c) Secret**

**Getting 16-bit color**

As we hinted earlier, the Duo 270c normally displays up to 256 colors on a screen that, pixel for pixel, is as large as the standard 14-inch desktop monitor. If you’re willing to lose 80 pixels, you can redistribute your video memory so that it shows thousands of colors (16-bit color) in a smaller area. This trick makes photos and QuickTime movies look awesome. See “An LC III Secret” for instructions.

**PowerBook Duo 280 and 280c**

Apple’s May 1994 Duos further refined its subnotebook genre by adding a critical ingredient: speed. The 280 (active-matrix gray-scale screen) and 280c (active-matrix color screen) are identical to the 250 and 270c, except that they include a 33-MHz 68LC040 processor — in other words, Quadra power in a four-pound package. Apple sweetened the deal by including the longer-lasting Type III batteries with these Duos, along with the promise that these models will be easily upgradable to the PowerPC-based Duo models in 1995.

**Duo 280**

<table>
<thead>
<tr>
<th>Price:</th>
<th>$2,600</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equipment:</td>
<td>Built-in, 9&quot;, gray-scale active-matrix LCD, 640-by-400-pixel screen; 2 NuBus slots (in Duo Dock only); FPU (in Duo Dock II only); video output (with full or mini Dock)</td>
</tr>
</tbody>
</table>

**Duo 280c**

<table>
<thead>
<tr>
<th>Price:</th>
<th>$3,750</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equipment:</td>
<td>Built-in, 8.4&quot;, color active-matrix LCD, 640-by-480-pixel screen (or, in 16-bit color, 640 by 400); 2 NuBus slots (in Duo Dock only); FPU (in Duo Dock II only); video output (with full or mini Dock)</td>
</tr>
</tbody>
</table>
Both
Processor and speed: 68LC040 at 33 MHz
Memory: 4MB, expandable to 24MB (70-ns DRAM card required)
System software notes: Requires System 7.1 (and PowerBook Duo Enabler 2.0) or later
Battery: NiMH; Type III lasts about 3 hours
Weight: 4.2 pounds (280c = 4.8 pounds)
Apple upgrade options: Upgrade to PowerPC chip in 1995

PowerBook 520, 520c, 540 and 540c

Apple's May 1994 crop of PowerBooks, code-named Blackbird, introduced several dramatic improvements to the PowerBook line:

- They were the first full-size Mac laptops to contain a speedy '040 processor chip, just like a Quadra. (The 520s run at 25 MHz; the 540s go at 33 MHz.)
- They can be upgraded to Apple's PowerPC-based PowerBook models.
- These sleek models offer, for the first time on a PowerBook, a full-size keyboard that even includes a row of function keys. (A 100-series PowerBook keyboard is, overall, 1/2 inch narrower than a desktop keyboard.)
- The trackball is gone; it's replaced by a small touchpad that you operate by dragging your finger. (There's only one mouse button now, below the trackpad.)
- Small stereo speakers adorn the upper corners of the screens.
- New battery technology gives these Macs longer life per charge.

Finally, most remarkably, a 500-series PowerBook has a module bay, into which you can insert a second battery, for a total of about four hours of color-screen working time. Eventually, Apple hopes that other companies will manufacture additional modules for this bay — such goodies as PCMCIA cards (credit-card-size expansion cards, popular on IBM clones), cellular modems, and so on. You can leave the bay empty for lighter weight.

TRUE FACT

Losing the drive

Apple's marchers for progress have stepped aside to make way for the marketing staff. First, Apple replaced its terrific SuperDrives of old with a new style that doesn't grab the disk out of your hand. In this new drive — which you'll find in all recent Macs — you have to push the disk all the way in until it disappears.

And it's only going to get worse: a recent Apple newsletter indicated that the auto-eject feature of today's SuperDrive floppy drives will soon become an expensive option. New Macs will feature a floppy drive that gives up its disk only when you push a manual-eject button.

We're guessing that this is Apple's response to the whiners who complain that IBM clones are less expensive than Macs — the same people who ignore all the ways in which a Mac is better than those clones. Apple seems to be saying, "Hey, if you really want us to compete in price, let us compete in less-featured equipment."
The stereo speakers, larger (and higher-quality) screens, and quick performance make these the first serious multimedia PowerBooks. Despite the sleek feel of the 500s' rounded, Duo-esque two-tone gray cases, they're actually slightly larger and heavier than the 100-series PowerBooks. Like the Duo family, they also include only one serial port: a modem/printer jack. Most people, attracted by the full-size keyboard, life-size screens, and upgradability to PowerPC models in 1995, won't mind a bit.

<table>
<thead>
<tr>
<th>Model</th>
<th>Price:</th>
<th>Processor and speed:</th>
<th>Equipment:</th>
</tr>
</thead>
<tbody>
<tr>
<td>PowerBook 520</td>
<td>$2,270 then, $1,960 now</td>
<td>68LC040 at 25 MHz</td>
<td>Built-in, 9.5&quot;, gray-scale passive-matrix LCD, 640-by-480-pixel screen; video-output jack</td>
</tr>
<tr>
<td>PowerBook 520c</td>
<td>$2,900 then, $2,500 now</td>
<td>68LC040 at 25 MHz</td>
<td>Built-in, 9.5&quot;, color dual-scan passive-matrix LCD, 640-by-480-pixel screen (dual-scan's quality is halfway between that of previous passive- and active-matrix color screens); video-output jack</td>
</tr>
<tr>
<td>PowerBook 540</td>
<td>$3,160 then, $2,700 now</td>
<td>68LC040 at 33 MHz</td>
<td>Built-in, 9&quot;, gray-scale, active-matrix LCD, 640-by-480-pixel screen (or, in 16-bit color, 640 by 400); video-output jack</td>
</tr>
<tr>
<td>PowerBook 540c</td>
<td>$4,840 then, $4,080 now</td>
<td>68LC040 at 33 MHz</td>
<td>Built-in, 9&quot;, color active-matrix LCD, 640-by-480-pixel screen (or, in 16-bit color, 640 by 400); video-output jack</td>
</tr>
</tbody>
</table>

**All four**

<table>
<thead>
<tr>
<th>Memory:</th>
<th>4MB, expandable to 36MB (70-ns DRAM card required)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery:</td>
<td>PowerBook Intelligent Battery; lasts about 3 hours</td>
</tr>
<tr>
<td>System software notes:</td>
<td>Requires System 7.1.1 (and PowerBook 500 Enabler) or later</td>
</tr>
<tr>
<td>Weight:</td>
<td>7.1 pounds</td>
</tr>
<tr>
<td>Apple upgrade options:</td>
<td>Upgrade to PowerPC chip in 1995</td>
</tr>
</tbody>
</table>

### PowerBook Futures

Apple's not done with PowerBooks yet. Laptops with faster chips, lower prices, and more features have already been glimpsed in Apple's research labs.

For example, it's no surprise that the PowerPC chip (see the next section) is at the heart of the 1995 PowerBook family. You can upgrade any 1994 PowerBook in the 500 series (the 520, 540, and so on) to be PowerPC-equipped, of course; but 1995's PowerBooks are designed from the ground up around the PowerPC processor. (These new PowerBooks will use the so-called PowerPC 603 or 603+ chip, which requires less memory than its predecessor, the 601.)

Screens will be getting larger, too. Expect to see more removable parts, as in the PowerBook 520 and 540; one PowerBook prototype even has a removable floppy-disk drive. Special miniature CD-ROM drives are on their way to the PowerBook family, and new, lithium-ion batteries will take some of the weight off your shoulder strap.
CASE HISTORY

Clients from Hell, Part VI

David Schargel, president of Aladdin Systems, has a pretty good idea why even the Macintosh isn’t easy for everyone.

Years ago, he says, he got a phone call from a frustrated elderly woman who was trying to turn off her Macintosh. David did what he could to talk her through the process, much as the air-traffic tower may try to talk down a novice pilot.

But things weren’t going well. Over and over again, Schargel calmly attempted teach her how to use the Shut Down command (in the Special menu). “OK, Mrs. Speck,” he’d say, “do you see the word Special at the top of the screen?”

“Yes,” she’d say.

“OK,” David would reply. “Now just point to that word, Special, and press down on the button.”

“All right, I’m doing that,” Mrs. Speck would say.

David wiped his brow. “All right. So now do you see the list of commands? Including the one that says Shut Down?”

“No,” she’d say. “All I see is that word Special and the gray screen.”

So David would go through it all again. “You’re pointing right at the word Special? And you’re holding down the button?”

“Yes,” she’d say.

Finally, after 20 minutes of this, Mrs. Speck interrupted the cycle. She asked him, “When you say ‘the button,’ you mean the big button, right?”

David’s blood ran cold. “Um... what... what do you mean, ‘the big button’?”

She told him, “I’m pressing the big button. With one hand. And with the other, I’m pointing at the word Special. Right?”

From there, it was only another five minutes before David realized what she’d been doing. For the entire call, she’d been pointing to the Special menu — with her finger.

And she had indeed been pressing the button. Not the mouse button — the big button.

The spacebar.

As with the original 500 models, some of the new PowerBooks will include PCMCIA slots; the cards you can buy for these slots can include modems, Ethernet networking features, and so on. Finally, you may see the return of the Newton’s infrared transmitter built into the new PowerBooks’ screen, letting you connect to other Macs wirelessly.

The Power Macintosh Series

The Power Macs, introduced in March 1994, are a new breed of Macintosh — the first Apple computers built around the revolutionary high-speed PowerPC chip. Apple is deadly serious about getting these Power Macs into the world; the prices are low, easy upgrade options are available for existing models, and Apple has promised that all future Mac models will be based on the PowerPC chip.
Remember, the PowerPC isn't a computer. It's just a processor chip that can form the basis of a computer, whether it be a Macintosh, a DOS machine, or an automobile transmission. This much-hyped RISC chip, which began shipping in September 1993, is the result of joint development by the two former archenemies—Apple and IBM—and Motorola. (For your cocktail-conversation pleasure: yes, the PowerPC chip is faster, cheaper, and less energy-demanding than the corresponding Pentium chips found in high-end IBM compatibles. Furthermore, the PowerPC is a new architecture with plenty of room for growth, whereas the Pentium chip is already reaching its limits.)*

*RISC, by the way, stands for reduced instruction set computer. This reduced instruction set is one of the things that makes the chip so fast; the RISC chip uses a more concise, less convoluted vocabulary of instructions. Therefore, it can handle more tasks in less time than earlier chips. Furthermore, the RISC chip can not only process instruction data in larger chunks (32 bits instead of 16 on 68040-based Macs) but also handle more than one set of instructions at the same time. Even the slowest Power Mac can theoretically run programs six times faster than, say, a Quadra 800.

The first Power Mac models—the 6100/60, 7100/66, and 8100/80—ran at sizzling clock speeds of 60, 66, and 80 MHz, respectively. For the first time, you know how fast a Mac goes just by looking at its name. By comparison, the fastest regular Mac—the Quadra 840AV—runs at 40 MHz. Yet incredibly, even the most expensive, top-of-the-line Power Mac costs about $1,000 less than the original Mac SE/30!

**All about emulation**

To experience the exhilarating speed of a Power Mac in all its glory, you have to run software specially written for the PowerPC chip. This special software is called native software. Every program you owned before March 1994, on the other hand, was written in a foreign language, as far as the Power Mac is concerned.

Obviously, Apple couldn't release a Mac that doesn't run existing Mac software. So, to ensure compatibility with existing Mac programs, Apple included an emulator program in the Power Mac's ROM. This emulator works behind the scenes, automatically translating the normal Mac code (in which your programs were written) into a format that the PowerPC chip understands. So despite the blisteringly fast processor speed, these older programs don't run any faster in Mac emulation mode than they would on, say, a Quadra 700. The Power Mac uses nearly all its extra speed to translate program code.

On the positive side, emulation mode means that a Power Mac runs almost all the software you already have. Only about 10 percent of pre-PowerPC programs don't work on a Power Mac—an impressive achievement on Apple's part.

The only programs guaranteed not to run on a Power Macintosh are those that require an FPU (math coprocessor chip for high-speed computations); the PowerPC's FPU is a completely different (and incompatible) design from the relatively inefficient FPU of the Quadra series. As a result, those few 3-D rendering and drafting programs that require an older-style FPU will crash on a Power Macintosh. Fortunately, those are the very programs most likely to take advantage of the RISC chip's speed and, therefore, likely to be the first converted to native PowerPC versions.
MACINTOSH SECRET

A fake-out FPU for the Power Mac

As we mentioned, a few high-end programs (scientific analysis, modeling, and so on) crash on the Power Mac because they require the old-style math coprocessor chip (FPU), which the PowerPC chip lacks. If you're a modem-savvy person, you can trick about 75 percent of these programs into working on the Power Mac; just install the $10 shareware program Software FPU (available on America Online or another on-line service). It's much, much slower than a real FPU (although not so bad for Photoshop filters), but at least it'll carry you through until your high-end programs are released in native versions.

On the other hand, some programs run extremely slowly in emulation; Microsoft Excel 4, alas, is one of them. The missing FPU (and the emulation process) hits this program particularly hard, grinding its spreadsheet recalculations nearly to a halt. Some calculations can take 20 times longer on a Power Macintosh than on a Quadra 800.

So why the large variation in nonnative software speeds? Ironically, Apple's own software (System 7.1.2, for example, provided with the first Power Macs) is largely nonnative. In its rush to get the Power Macintosh to market, Apple had time to rework only a small percentage of the Mac's behind-the-scenes Toolbox (the set of computer instructions, upon which all commercial programs rely, that handles basic Mac tasks such as creating windows and menus).

Apple tried to convert the most frequently used Toolbox instructions to native code. But not every program calls upon the same Toolbox pieces. Some music-notation program may use the rewritten Toolbox code all the time, whereas a spreadsheet program may use very few of the native "calls." As a result, emulation speeds vary widely from program to program.

The occasional program — such as FileMaker Pro — actually runs faster in emulation mode than on a Quadra, because it relies heavily on those Toolbox instructions that Apple rewrote in native code. As Apple converts more of its own operating system to native code (in future System versions), your programs, including the Finder, will become much faster and more fluid.

All is forgiven, in any case, when you run native software, for which no emulation/translation is required; these programs leave even the fastest Quadra in the dust. Fortunately, all the major Mac software companies — Microsoft, Aldus, Adobe, and more than 100 others — have released, or soon will release, their programs for native-mode performance.

Look and feel

On the outside, the Power Macs look like Quadras. They run what looks and acts just like System 7. And the first PowerPC models use the same 72-pin SIMMs used in recent Mac models. (You have to install the SIMMs in pairs; Power Macs access memory 64 bits at a time, and a single 72-pin SIMM delivers only 32 bits at a time.) All your existing Mac appliances — printers, modems, CD-ROM drives, and so on — work fine with Power Macs.

About the only thing un-Maclike about the new machines is their names, which sound like random strings of hexadecimal code. The first three models are the 6100/60, which looks like a Quadra 610; the 7100/66, which looks like a Quadra 650; and the 8100/80, which resembles a Quadra 800. (We'll get to their specs in a moment.)
CASE HISTORY

World’s dumbest user stories, Part I

As consultants and troubleshooters, we’ve seen it all. We’ve taken the calls from people whose printer simply wouldn’t work (it wasn’t plugged in); people who couldn’t manage to stick a floppy disk into the drive (a disk was already in the drive); and people whose work disappeared suddenly and without a trace (they had clicked the desktop, sending their word-processor window to the background).

But that’s small potatoes compared to some of the stories we read in the Wall Street Journal recently. A technician at Compaq Computers told of a frantic call he received on the help line. It was from a woman whose new computer simply wouldn’t work. She said she’d taken the computer out of the box, plugged it in, and sat there for 20 minutes waiting for something to happen. The tech guy asked her what happened when she pressed the power switch. The lady replied, “What power switch?”

In the Mac world, we’re used to pressing Return or Enter to dismiss a dialog box. In the PC world, however, it’s common for the screen to say “Press any key to continue.” Incredibly, literally hundreds of people wind up calling the computer makers to complain that they can’t find the Any key on the keyboard. Compaq is actually considering changing the instruction to “Press the Return key.”

Then there’s the immortal tale of the help-line technician who asked the caller to send him a copy of the disk that was giving her trouble. Sure enough, several days later, the technician received a Xerox photocopy of the disk. (It was a two-page enclosure, of course, since the disk was double-sided.)

Our credulity is stretched nearly to the breaking point, however, by the following story told by a Dell computer technician. As the Wall Street Journal put it: “A customer called to say he couldn’t get his computer to fax anything. After 40 minutes of troubleshooting, the technician discovered the man was trying to fax a piece of paper by holding it in front of the monitor screen and hitting the Send key.”

Special features

Every Power Macintosh offers several audiovisual features previously associated only with the AV Macs (see Chapter 13 for details). These features include speech recognition (if you can find and purchase the software/microphone kit), the GeoPort, CD-quality stereo recording and playback, and a talking version of TeachText. All Power Macs come with built-in Ethernet, too (see Chapter 31).

Other options include: a built-in CD-ROM player in any model (a player of the more recent type, in which the disc tray is permanently attached to the Mac); a cache card for the 6100 and 7100 that cranks out another 15 percent speed gain (the cache card is included with the 8100, not optional); and a package that includes 16MB of RAM with SoftWindows, a program that turns your Power Macintosh into a 386 IBM clone.

CASE HISTORY

World’s dumbest user stories, Part II

The Dumb User stories we mentioned in a previous sidebar are sad indeed, but we’ve heard tales on our own that we think match the Wall Street Journal’s.

For example, a Microsoft friend told us about a guy who wanted to insert one of the old-style 5½-inch floppy disks into his 3½-inch drive. Frustrated, he simply folded the disk in half — and then called tech support in disbelief when the drive would not read his mutilated diskettes.

Or this, from Aldus: A woman called the company, irate and screaming, when she learned that PageMaker had no keyboard shortcut that would translate her newsletter into French.

Hmm... 86-f, maybe?
TRUE FACT

Where the PowerPC chip comes from

Who makes the processor chip inside a Power Macintosh? We'll give you three choices: (a) Motorola, (b) Motorola, and (c) Motorola.

Incredibly, contrary to every expert and popular opinion, Motorola does not manufacture the PowerPC 601 chip found inside the first-generation Power Macs. Motorola helped design it, and Motorola manufactures the other PowerPC chips (603, 620, and so on). But Motorola decided to wait out the 601 generation and spend its resources on gearing up for subsequent PowerPC generations.

So who does manufacture the 601 chip? Open the lid of a Power Macintosh and see for yourself. To the certain horror of Mac purists everywhere, there's the logo, printed right smack on the chip itself: IBM.

The AV option

You also can buy your Power Mac with the AV option — an internal board that adds TV input, output, and recording features, exactly as on the AV Macs. (Apple also sells this card separately, but you must remove your non-AV 7100/8100's PDS card to accommodate it.) You don't need the AV card for the speech, sound, and GeoPort features listed earlier; these come built into every Power Mac. The AV bundle also includes the built-in CD-ROM drive, including a System 7 startup CD.

For details on the special AV features, see Chapter 13.

Monitors and color depth

The video-output options for Power Macs are complex. Every Power Mac has the regular, back-panel, built-in video jack, which uses your normal system memory instead of separate VRAM (a scheme not used since the IIci). As you can see in Table 11-1, a 14-inch monitor plugged into this jack can display 16-bit color (thousands of colors simultaneously), but a 19-inch monitor won't work at all. (See Chapter 10 for definitions of these terms.)

All models except the non-AV 6100 also include a second monitor jack. This jack is provided by a circuit board plugged into the PDS jack — either the AV card (on the AV Power Macs) or a simple PDS video card on the regular models. The jack provided by either card provides, at minimum, 24-bit photorealistic color on 14-inch monitors or eight-bit color on 21-inch monitors; Table 11-1 shows other possibilities. (The AV card's video RAM can't be upgraded. The PDS video card's RAM can be doubled, as the table shows.)

Like the AV Macs, the Power Macintosh line works with multisync monitors (see Chapter 10): monitors whose resolutions you can switch at will, enlarging or reducing the screen area as needed. Apple's 17-, 15-, and 20-inch monitors fall into this category.

Special problems

As with any radically new Mac technology, some existing products are incompatible with the Power Macs. All the usual suspects fall into this category: After Dark, MacDraw, fax/modem software, some sound-intensive games, and certain NuBus cards need to be upgraded. Nonnative extensions are particularly problematic for Power Macs, because these programs run constantly in the background. Versions of ATM before 3.8, for example, slow a Power Macintosh by as much as 15 percent.
Chapter 11: From 128K to Power Mac: Model by Model

Table 11-1: Maximum Monitor Color Settings for First-Generation Power Macs

<table>
<thead>
<tr>
<th>Jack</th>
<th>VRAM</th>
<th>14&quot; monitor</th>
<th>16&quot; monitor</th>
<th>21&quot; monitor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Back panel (any model)</td>
<td>n/a</td>
<td>thousands</td>
<td>256</td>
<td>won't work</td>
</tr>
<tr>
<td>AV card (any model)</td>
<td>2MB</td>
<td>millions</td>
<td>millions</td>
<td>thousands</td>
</tr>
<tr>
<td>7100 PDS card</td>
<td>1MB</td>
<td>millions</td>
<td>thousands</td>
<td>256</td>
</tr>
<tr>
<td>7100 PDS card</td>
<td>2MB upgrade</td>
<td>millions</td>
<td>millions</td>
<td>thousands</td>
</tr>
<tr>
<td>8100 PDS card</td>
<td>2MB</td>
<td>millions</td>
<td>millions</td>
<td>thousands</td>
</tr>
<tr>
<td>8100 PDS card</td>
<td>4MB upgrade</td>
<td>millions</td>
<td>millions</td>
<td>millions</td>
</tr>
</tbody>
</table>

*Uses main system RAM, up to 615K

A handful of programs also have trouble with the Power Mac's new memory-handling software, represented in the Memory control panel by something called Modern Memory Manager. Think C (version 5) is among the victims. To make these programs work, open the Memory control panel and turn off Modern Memory Manager. America Online 2.1 works only if you increase its Get Info Memory allotment.

The bigger problem, for many users, is the monitor situation. If you plan to use a monitor that you already own with your Power Mac, be prepared for two unhappy surprises.

First, you can't plug your monitor directly into the Power Mac's back-panel monitor jack; Apple changed the jack style (to accommodate its AudioVision monitor). Fortunately, this problem is easy to overcome, because the Power Mac comes with a cable adapter. And on most models, you always can use the standard monitor jack provided by the PDS card instead.

Worse is the "sync on green" problem described in Chapter 13. As with the AV-model Macs, older monitors may not work at all with the Power Mac as a result of this electronics change on Apple's part. A new graphics card, new cable, new software, or several of these may be required. Unfortunately, the big, expensive 24-bit systems, like the accelerated 24-bit cards from the former rivals Radius and SuperMac, are among those that don't work; you have to get a ROM and/or software update from the manufacturer.

**Power Mac PowerBooks**

Apple plans to release a PowerPC-based PowerBook sometime in 1995. The new PowerBook will contain a sister of the first PowerPC chip: the 603. The 603 offers about the same speed as the 601 chip but consumes only a third as much power. It also has three reduced-power sleep modes. The 603 chip itself also is a bit smaller than the 601, making it the perfect chip for a laptop.

In any case, Apple has promised to make upgrades to the 603 chip available, eventually, for all PowerBook models introduced in 1994. That includes such models as the PowerBook 500 series and Duos numbered 250 and higher.
TRUE FACT

The Power Mac does Windows

So what's this about the Mac running IBM software?

It's true. If you pay the extra $500 or so, you can outfit your Power Macintosh with a program called SoftWindows, which runs software designed for IBM-compatible computers, and Windows, the Mac-clone software from Microsoft. That configuration includes an extra 8MB of memory required for SoftWindows.

SoftWindows does OK; version 1 gives your Mac the speed of a 25MHz Intel 486SX-based Windows PC, according to Macworld tests. Notes for the PC-savvy, however: version 1 of SoftWindows is based on Windows Standard mode, but more and more Windows programs require 386 Enhanced mode, which the original SoftWindows can't simulate.

The original SoftWindows also doesn't handle programs that require the popular PC-clone SoundBlaster audio cards, meaning that you won't be able to run SoundBlaster-dependent CD-ROMs and games on your Power Macintosh. Insignia Solutions, which makes SoftWindows, worked frantically to release an upgraded version that correctly emulates both Enhanced mode and the SoundBlaster; it's probably available as you read this.

Upgrading to PowerPC

Apple, feeling the pressure of the ultracompetitive computer industry, is banking on the success of its PowerPC machines. Therefore, it wants to make upgrading easy and cheap for as many current Mac owners as possible. Apple provides upgrade options in two ways:

- **Install a PDS accelerator card.** This card costs $700. It doesn't confer all the benefits of a Power Mac, such as the speech and sound-recording options. It does, however, provide the speed, doubling the clock rate of your existing Mac. If you have a 33-MHz Centris 650, for example, it now will run native software at 66 MHz. One advantage of an upgrade card is, of course, that you can always turn it off, as needed, to accommodate the occasional grumpy program. Simply switch it off, using a control panel, and then restart; your Mac is back to its pre-PowerPC condition. Another advantage is that you can install this card yourself; you simply push it into the PDS slot.

  The models for which Apple sells upgrade cards include any Quadra with a PDS slot — namely, the **Quadra 700, 800, 900, 950, 610 (and Centris 610), and 650 (and Centris 650).** Apple (and DayStar, an accelerator company) also have said that upgrade cards will be available in 1995 for the **Quadra 605,** the **LC 475 through 575 models,** and the **Performa 550, 475,** and **476.**

- **Replace your main circuit board.** This more expensive option ($1,500 to $2,000) must be performed by an Apple dealer. It entails turning your Mac into a bona-fide Power Mac, including replacing the motherboard and any other parts needed to accommodate the new architecture.

  This more complete upgrade is available for the **Centris and Quadra 610, 650, 660av, 800, 840av; the Performa 600, the Ilvx and Ilvi; and Apple's Workgroup Servers.**

DayStar, the popular accelerator-card company, also makes official PowerPC upgrade cards. These cards, called PowerPro, are significantly more expensive than Apple's upgrade options, but they also deliver more. The PowerPro card is a user-installable PDS card, just
like Apple's lower-cost upgrade card. But instead of simply doubling the clock rate of the affected Quadras (like Apple's PDS card), the DayStar cards throttle the affected Mac up to the full speed of the onboard PowerPC chip (66 or 80 MHz, for example). In addition, you can install up to 128MB of additional memory on the DayStar card.

**What the PowerPC really means**

Yes, you get some nifty audiovisual features with the Power Macintosh. But mainly, you get speed. Think about the time you spend watching the wristwatch icon. Think about Photoshop operations that currently make you wait for minutes on end. Recall the time you wait for QuickTime movies to be saved — and how jerkily they play back. Imagine how slowly a document scrolls in Word. Many of these waiting moments will vanish or become insignificant when you run PowerPC-ready programs.

Furthermore, PowerPC means more than speeding old technologies. It's also an invitation to software companies to dream up entirely new kinds of software — perhaps involving video, 3-D graphics, telephone or answering-machine features, and the like — that previous Macs simply were too slow to handle.

On the other hand, this new RISC business has a few downsides. For one thing, you have to pay upgrade fees for all your programs if you want native versions. For another thing, native programs take up much more disk space than nonnative software. Be prepared to watch your hard-disk space dwindle.

Worse, PowerPC gobbles up memory like you wouldn't believe. System 7.1.2 alone, for example, takes up more than 3MB of RAM, and each native program has an enormous appetite — on the order of 3MB more than its nonnative equivalent's memory requirement. (Using virtual memory on a Power Macintosh is the only way to reclaim some of that memory. See Chapter 8 for the rationale and instructions.) The absolute minimum amount of RAM for a PowerPC Mac is 8MB, just as 4MB was the absolute minimum for an ordinary System 7 machine.

Therefore, your PowerPC experience may cost you in three ways: software upgrades, bigger hard drives, and more memory.

**TRUE FACT**

**The history behind the history-makers**

As the 1990s dawned, the battle lines were drawn in the computer industry. Microsoft (software) and Intel (chipmaker for IBM compatibles) dominated personal computers. Apple, Motorola (chipmaker for Macs), and IBM were down on their luck and worried about the future. The latter three formed the PowerPC alliance in an effort to swing fortune their way.

The alliance couldn't set up shop at one headquarters or another; the cultures (Apple's jeans-and-T-shirt, IBM's buttondown) were too different. So a new facility was built in Austin, Texas. The companies called it Somerset, after the location of King Arthur's Round Table, where the knights were supposed to check their quarrels at the door. About 350 people work at Somerset. Most of them came from IBM, Motorola, or elsewhere in the industry; only six people there work for Apple, a company that never did make processor chips.

The group's main efforts are directed toward developing the 603, 604, and 620 chips. Believe it or not, the PowerPC 601 chip found in the first-generation Power Macs wasn't developed by this alliance. Instead, this particular chip was designed — and nearly completed — by IBM for use in its workstations. Apple and Motorola, in a hurry, merely adopted it.
Power Macintosh (Performa) 6100

Introduced in March 1994, the 6100/60 is the entry-level Power Macintosh (read: least expensive). Its wide, low-slung case looks exactly like that of a Quadra 610. It's equipped with the 601 PowerPC chip running at a 60-MHz or 66-MHz clock speed.

Like the 610, the 6100 offers a PDS slot, which (with a $99 adapter) can accommodate a NuBus card. (Buyer, beware: the special circuit board on the AV model fills the PDS slot, so the 6100/60 AV can’t accept any additional cards.) Also like the 610, you turn the machine on by pushing a front-panel button, not by using the keyboard. The price is around $1,600 in metropolitan areas — an incredible value. With the optional $300 cache card, this Mac even blazes faster than the 7100.

The 6100 has only two RAM slots, which you have to fill with same-capacity chips (2MB chips are the minimum). If you’re lucky enough to dig up a couple of the rare 32MB chips, this model's maximum memory capacity is 72MB (including the 8MB that comes preinstalled). As always, the Performa versions (6110, 6112, 6115, 6117, 6118) include monitor, modem, CD-ROM, and preinstalled software.

| Price:         | $1,600 ($2,500 for AV option) |
| Apple code name: | PDM                        |
| Processor and speed: | PowerPC at 60 or 66 MHz    |
| Memory:        | 8MB, expandable to 72MB (80-ns, 72-pin DRAM chips, in pairs, required) |
| Equipment:     | Built-in video (uses System RAM); with adapter, slot can hold a 7-inch NuBus board or PDS board (except on the AV model, whose slot is already filled); optional AV model includes TV input/output, additional video jack; optional cache card provides 15 percent speedup; Ethernet; 2 GeoPort jacks; records and plays CD-quality, 16-bit stereo sound |
| System software notes: | Requires System 7.1.2 (with PowerPC Enabler) or later |

Power Macintosh (Performa) 7100

This Mac was the middle-priced, midrange model of the original Power Macintosh trio that debuted in March 1994. The 7100 looks like a Quadra 650 and runs at 66 or 80 MHz. It has three NuBus slots and room for one PDS card. As on the 6100, the optional cache card grants you another 15 percent speed increase — a worthy feature.

This Mac has four RAM slots; as with the other Power Macs, you must fill those slots with pairs of identical SIMMs. The 7100, like the 6100, is an impressive amount of computer for the money, if the programs you want are available as native applications.

| Price:         | $2,900 ($3,900 with AV option) |
| Apple code names: | Carl Sagan, BHA              |
| Processor and speed: | PowerPC at 66 or 80 MHz       |
| Memory:        | 8MB, expandable to 136MB (80-ns, 72-pin DRAM chips, installed in pairs, required) |
| Equipment:     | Built-in video (uses System RAM) plus PDS video on non-AV model (1MB, expandable to 2MB); three NuBus slots; AV model includes TV input/output and additional video jack (2MB VRAM); optional cache card provides 15 percent speedup; Ethernet; 2 GeoPort jacks; records and plays CD-quality, 16-bit stereo sound |
| System software notes: | Requires System 7.1.2 (with PowerPC Enabler) or later |
Chapter 11: From 128K to Power Mac: Model by Model

Power Macintosh 8100

On the outside, the 8100/80 looks like a Quadra 800. Its roomy case houses the same three NuBus slots, and the 8100 has the same amount of room for extra internal storage devices, such as additional hard drives, CD-ROM players, or SyQuest drives. At its introduction in March 1994, the 8100 was the fastest personal computer ever made, running native software at an unheard-of 80 MHz and equipped with a 256K cache for additional speed. The 8100 with the AV option (a PDS card that adds television inputs and outputs) was the first Mac in several years to cost more than $5,000. The 8100/100 and the 8100/110 were built on faster-still 601 chips. The only thing more impressive than their speed was their scarcity; virtually nobody could find one to buy. (8100/110: $6,400 with 16MB of RAM and a 2GB hard drive).

Price: $4,200 ($5,600 with AV option)
Apple code name: PowerPC at 80, 100, or 110 MHz
Processor and speed: 8MB, expandable to 264MB (80-ns, 72-pin DRAM chips required)
Memory: Built-in video (uses System RAM) plus PDS video on non-AV model (2MB, expandable to 4MB); three NuBus slots; optional AV model includes TV input/output, additional video jack (2MB VRAM); 256K cache card; Ethernet; 2 GeoPort jacks; records and plays CD-quality, 16-bit stereo sound
Equipment: Requires System 7.1.2 (with PowerPC Enabler) or later

System software notes: Requires System 7.1.2 (with PowerPC Enabler) or later

Power Mac Secrets

Use the right video jack, Jack

As we mentioned earlier, most Power Mac models offer two video jacks: the one on the back panel and the one provided by the AV or PDS-video card. This arrangement may leave you with a dilemma: to which jack should you hook your main monitor for the best speed?

Check Table 11-1. If you need a certain color setting for a certain-size monitor, you may not have a choice.

If you do have a choice, however, here's the scoop. If you're running native PowerPC programs, use the built-in back-panel jack for a 15 percent screen-redraw speedup. If you're using nonnative programs, the back-panel jack gives you a 35 percent slowdown. Therefore, if you're doing most of your tasks in emulation, use the card-provided video jack.

The classic Power Mac car-crash sound

When something goes wrong on a Power Macintosh, you hear neither the four tones of a Mac II-class machine nor the "Twilight Zone" theme of the Quadras. Instead, you hear a horrific digitized recording of a car crash.

Want to hear it for yourself without actually damaging anything? The next time you start your Power Mac, press the Interrupt switch just after the machine begins to start up. You'll hear it, all right. (See Chapter 6 for the locations of this switch.)
How to tell if it's a native application

Life sure is confusing now that there are two strains of Mac software — native and non-native. Wouldn't it be nice if you could tell at a glance whether some program was native or not?

You can, sort of. Just highlight an application's icon and choose Get Info from the File menu. If, at the bottom of the Get Info window, you see a message about turning on virtual memory (and how much real memory you'll save as a result), you've got native software on your hands. If not, not.

Memory savings recapped

In case you missed it: the most important money-saver on a Power Macintosh is the virtual-memory oddity. Turn on virtual memory, even a little bit, and each native program requires up to 4MB less memory. (Look at the Get Info box for a native program and see for yourself!) Again, for the rationale and instructions, see Chapter 8. This is one hunk of hard-disk space that's well worth trading away.

An updated Memory Secret

You already know, from Chapter 3, that there's a buried surprise in the Memory control panel — you turn on virtual memory, press Option, and click the hard drive pop-up menu.

On the Power Macs, though, there are new surprises in that secret pop-up menu. Our favorite: "Mr. 601 — the Power to Crush the Other Microprocessors." (You did see that Saturday Night Live ad spoof, didn't you?)
An updated Monitors Secret

Open the Monitors control panel on a Power Macintosh. Press Option and click the version number. Keep the mouse button down, and press the Option key over and over again.

This Secret works much like it did pre-PowerPC, with a couple of differences: first of all, some even wackier names and transpositions take place — and now there's color!

Thread manager — for tech-heads only

This one we got from an Apple programmer. And it's so buried that we haven't even tried it ourselves.

You need a native-code, “thread-manager savvy” application (the Thread Manager is an extension that permits a certain degree of true multitasking, such as initializing a disk in the background). Launch it while pressing the B and E keys — and you'll get a rolling list of credits.

The native-app hidden credit

This one's supposed to work with any native-mode Power Mac program. We checked it out using the Graphing Calculator, the only native-code program that came with the original three Power Mac models. This one's not so interesting for its content — yet another list of credits — as for its unique approach.

Highlight the native program's icon in the Finder. While pressing Option and Shift, choose Get Info from the File menu. Instead of the usual Get Info box, you get a completely different screen, which comes as something of a shock if you're not prepared for it! (Once you click the mouse, the usual screen returns.)
A deeply buried credit

For programmers only.
Write a little native-code application. Write a little procedure that makes a call to the Print Copyright trap. More hidden credits!

An even more deeply buried, important credit

You need MacsBug, Apple's debugging software for programmers, for this one. (It's available on America Online, among other places.)
Ask MacsBug to display memory address 40B2E280.
You'll get a testimonial to Gary Davidian, the Apple software genius who single-handedly wrote the 680x0 emulator code that lurks inside every Power Mac — and that just may have saved the company.

The much too colorful Mac

Purchasers who laid down multiple thousands to become an early adopter of Power Mac technology were in for a fascinating surprise. On the non-AV 7100/66 and 8100/80 models, a couple of important choices are missing from the Monitors control panel — namely, any color settings below "Thousands." You read that correctly: these are the first Macs ever made that cannot be switched to black-and-white!
And not just black-and-white — you can't switch these Macs into 4- or 16-color mode, either. The only people who'll care are those several million Mac fans who have games and CD-ROM discs that require 16-color or black-and-white modes to run.
You'll discover that this quirk only kicks in if your monitor is connected to the Power Mac's extra video jack (the PDS video-card's output), not the built-in video jack at the bottom of the case.
We called one of our friends in the engineering department at Apple. We got the classic response: "It's a feature, not a bug."
(What he meant, of course, was "It's less expensive this way.")

The future

The Power Macs are certainly a major leap forward, but the biggest leaps are yet to come. Apple, IBM, and Motorola are already working with prototypes of future incarnations of the PowerPC technology. There's the energy-saving PowerPC 603 chip, described previously; the PowerPC 604, significantly faster than the 601; and the fabled, super-fast 620 chip, also already well in development.
Furthermore, each chip can be accelerated; 100 and 120 MHz breeds of the existing 601 chip are already being manufactured. The second generation of Power Macs are likely to use these chips, including the tower-style models code-named TNT (larger than the 8100 model, offering six slots); the Tsunami (another large-case Mac, sold without video circuitry so that graphics pros can install the video card of their choosing); Nitro (an 8100-style, three-slot, three-bay unit); Catalyst (the replacement for the 7100, with slots and storage bays to match); and the low-cost Alchemy, whose design is based on the LC logic board. All of these models use PCI slots instead of the traditional NuBus connectors, as described in Chapter 30.

**Better emulators**

The emulation software built into the original Power Macs, that enables the RISC chip to run existing nonnative software, is amazing: as fast as a Quadra 700 and nearly bug-free. Still, Apple has already improved it — dramatically. The new emulation code is twice as fast as the original; the second-generation Power Mac models that include it will therefore run both native and nonnative programs faster than any Mac in history.

**Beyond Macintosh**

The PowerPC chip's speed and genius of design won't confer benefits only to Macintosh, by the way. As a codeveloper, IBM is also free to use the chip in its personal computers, placing these two PowerPC-alliance members in the awkward position of competing against each other. Ford and Time-Warner are installing the PowerPC processor in their cars and TV-top boxes, respectively. And get this: Apple has even licensed System 7 and the PowerPC Macintosh ROM chips to a select handful of low-budget computer makers so that they can begin building *Macintosh clones*. Apple hopes that its loss of the monopoly on Mac-making will be recouped by collecting licensing fees — and the further proliferation of Macintosh.

For us, however, the primary meaning of PowerPC is that Apple's stream of ever faster, ever less expensive Macs will continue into the late '90s — and beyond as shown in Figure 11-2.
TRUE FACT
Code name: LAST LAUGH

As you may have surmised from reading this chapter, Apple engineers have a code name for each Mac model while they're designing it (and before Marketing has figured out what they'll actually call the thing).

As Apple bet more and more of its future on the PowerPC Macs, the code names for the three first models began to leak out. The least expensive one was known internally as PDM, the middle model was Carl Sagan, and the high-powered Mac was nicknamed Cold Fusion.

Meaningless, right? Not a chance; Apple programmers are famous for their stinging wit. In this case, everything becomes clear when you find out what PDM stands for: Piltdown Man. Remember that case? In 1909, an archaeologist unearthed this fossil skull in Sussex, England. For years, it was believed to be the missing link between apes and men — and then, in 1953, it was proved to be a fake.

OK. So we've got a hoax, another hoax (cold fusion), and... Carl Sagan.

Well, this famous astronomer didn't much care for the implications. He got legal. His lawyers met with Apple's, and he wrote a couple of stem letters stating that his name was being used without permission. Apple's legal staff promised to make its programmers change the code name of the new Mac model.

So they changed it to BHA. "Random initials," they told the lawyers. Carl Sagan was happy. He went away. Guess he didn't know what BHA stood for: butt-head astronomer.
Apple Computer really knocked the ball out of the park with its PowerBook. If you own one, you already know the secret little pleasures associated with this strain of Macintosh: the hedonism of lying in bed with the computer on your stomach; the joy of getting off the plane having gotten meaningful work done en route; and the intoxicating pleasure of sitting somewhere cool, green, and shady and word processing to the accompaniment of birdsong (well, for 90 minutes, anyway, unless you have a second battery).
A Little History

It wasn't that it never dawned on Apple to make a laptop Macintosh. Believe us, they wanted to. The ill-fated, way too heavy Macintosh Portable — every ounce as heavy as the Macintosh SE — is evidence of that.

No, the complicating factor was miniaturization. A computer has lots of components inside it, and some of them are pretty chunky. (Pop off the lid of a regular Mac and you'll see what we mean.) Each PowerBook component is a fraction the size of the equivalent desktop-Macintosh component. The hard drive is the size of a deck of cards; the main circuit board is a quarter the size of a regular Mac's; even the RAM chips are smaller.

The most brilliant aspect of the PowerBook is that, in a thousand glorious ways, it's exactly like a regular Macintosh. The software works the same way; the interface is the same; the keyboard shortcuts are the same.

Yet life with a PowerBook is distinctly different from life with a desktop Mac, even if you never budge from your desk. In this book, you've got hundreds of pages detailing the ways of everyday Macintosh life. This chapter, therefore, is dedicated to documenting the eight ways in which PowerBook computing differs from desktop computing:

- Working with the screens
- Working from a wall outlet
- Working from a battery
- Working off a RAM disk
- Sleep mode
- Getting information into and out of the PowerBook (printing, presentations, modem use, faxing)
- Actually traveling with the PowerBook
- Keeping the computer secure

The Screen

The screen of a PowerBook is, technologically speaking, utterly different from a regular CRT (TV-style) monitor. It's a flat-panel display (see Chapter 10), having nothing to do with the weight, depth, or possibly dangerous electrical emissions of its desktop relations.

Passive-matrix screens

The passive-matrix screens are the less expensive ones. (As we observed in Chapter 10, this is a result both of the technology involved and of the U.S. government's import tariffs on the nicer active-matrix screens.) The lower-cost members of each PowerBook family have this kind of screen; see Chapter 11 for model-by-model descriptions. Most people think these screens aren't as good as the active-matrix screens.
For one thing, a passive-matrix screen requires more adjustments. Every time you start PowerBooking in a new location (or at a new time of day), you have to fiddle with both the contrast and brightness controls on the lower-right corner of your screen/lid. Sometimes it’s a trick to find the exact spot where the contrast control makes the ghosting horizontal and vertical lines disappear without making the image look too washed out.

Another drawback to passive screens is that they have a narrower viewing angle than active ones. If you try to view the PowerBook screen when you’re not seated directly in front of it, you see a sort of bluish, milky cast over the whole screen. If you’re sitting far enough to the side, you can’t read the screen at all. (This complaint always makes us giggle a little, though, because who works on a laptop from the side? It’s only a drawback, as far as we can tell, if you’re trying to do a presentation hunched around your laptop’s screen, which isn’t such a bright idea no matter what kind of screen you have.)

The final disadvantage of passive-matrix screens is that they exhibit the cursor-fadeout syndrome, called *submarining*. It takes $\frac{1}{8}$ second for a passive-matrix screen pixel to flex from its On position (white) to Off (black). Therefore, any movement of the cursor that takes place in less than $\frac{1}{8}$ second won’t be shown clearly on the screen.

### Active-matrix screens

The active-matrix screen has brightness and contrast controls, too (except on the 170 model). But these screens look sharp and crisp without daily contrast adjustments, and they’re more readable from the side. Active-matrix screens come on the most expensive PowerBooks (again, see Chapter 11).

These screens have one or two disadvantages, however. Cost is the primary one. Take the Duo models 230 and 250. They’re identical in every respect but one — the screen technology. Yet while they were both available, 250 cost $1000 more!

Then there’s the fact that an active-matrix screen drains the battery faster than a passive one, and the fact that Apple doesn’t consider an active-matrix screen defective unless it’s got more than five broken (stuck) pixels.

Nonetheless, if you’re wondering which to buy, our advice is to put the two machines side by side — and then put ten $100 bills next to the passive-matrix model. See which one calls out to you.

### PowerBook Screen Secrets

**Passive-matrix: angle is everything**

Fiddle with the angle of your PowerBook’s lid/screen just as much as you do with the contrast and brightness controls! Looking straight into the faces of those tiny pixels can make a dramatic difference in the screen’s overall clarity.
Passive-matrix: contrast is also everything

In any given lighting situation, you can definitely find one contrast setting that makes the passive-matrix screen look absolutely great. Get into the habit of adjusting that little knob, slider, or button every time you whip open the lid.

Passive-matrix: finding the cursor

Not only is cursor submarining sometimes a problem on passive-matrix screens, but it's even possible to lose the cursor altogether!

We have two solutions. The hard way is to roll the trackball or trackpad furiously in the upper-left direction, for what seems like ten seconds. Eventually, your cursor will have no choice but to bump into the corner where the Apple menu is — and stop. You can now start hunting for it, knowing exactly where to look and wasting no additional time.

A much better solution, in our opinion, is to use special software. Some people enjoy that old shareware goof called Eyeballs, which puts a pair of cartoony eyes in your menu bar — and they always look at the cursor, wherever it may be. A better solution is the clever Cursor module, part of Claris Power To Go. (We've done you the courtesy of including it with this book.) Hit the keystroke of your choice, and a vivid, unmistakable, animated display leads your eye directly to the cursor.

Passive or active: make hay while the sun shines

If you read Chapter 10, you know that an LCD screen of any kind (active or passive) works by reflection. That is, the light that bumps off that gray background material is either blocked (to create a dark pixel) or allowed to pass out of the glass (to create a light pixel).

It stands to reason, then, that you see the best picture in bright light, especially sunlight. In our experience, in fact, if you're sitting in nice sunshine, you can't even tell if the PowerBook's backlighting is on. The illumination from the sun provides more reflective power than those built-in neon tubes ever could.

And that's a useful phenomenon indeed. It turns out that the backlighting on your PowerBook is one of the major drains of your battery charge. It's nowhere close to the scary "50-percent-of-your-power" claims you may have read — it's more like 20 percent — but turning your backlighting off will definitely gain you some more working time.

Working from a Wall Outlet

What's great about the PowerBook is that you don't need a separate recharger, really. The battery is recharging whenever the computer is plugged into a wall outlet, whether you're working on it or not. (Recharging is faster, though, if the computer isn't on.)

And where might the PowerBook-wielding soul find publicly available juice? It's not always easy, but it's almost always possible. Look for electrical outlets in every airport, train station, and bus terminal. When you're desperate for a charge — between legs of a flight, say — they're a godsend.
To find these cherished AC dispensers, you need to think like a janitor. These outlets, after all, are provided for the benefit of the vacuum cleaners and floor polishers that come out in the middle of the night.

We almost included a list in this book, showing the hidden locations of outlets in the public waiting areas of the nation’s major airports. (We were told the accountants wouldn’t go for our spending a month jetting around the countryside.) Anyway, in various airports we have visited, we’ve found outlets as follows:

- At the bases of pillars
- Next to the gate agent’s station, set into the floor
- In the wall, but covered with a silver spring-loaded cap to hide it
- Right next to the door you use to go onto the plane, at waist height
- Nowhere near the waiting lounge, but easily found in the airport’s overpriced fast-food joint or bar

The problems with battery gauges

Along with your PowerBook, you received either a desk accessory called Battery or a control panel called Control Strip. Each is designed to serve several important functions, including:

- To tell you when your Mac is plugged into the wall and recharging
- To tell you how much juice remains in your battery
- To let you force the PowerBook into Sleep mode (we’ll get to this)

Because the chemical changes in a battery are subtle and unpredictable, and because your work’s demands on the PowerBook components change from moment to moment, software gauges of this type face an impossible task. The Control Strip, especially in conjunction with the PowerBook 500-series’ “intelligent” batteries, does a fairly good job.

But the older Battery desk accessory is decidedly mediocre. For one thing, it’s not a very good gauge of how charged the battery is. It has eight little rectangular notches (see Figure 12-1). Supposedly, all eight are black when the battery is fully charged. All eight are supposed to be white when the battery is depleted.

As you may have noticed — let us confirm your suspicions — these indications are highly bogus. When you’re recharging a completely dead battery, for example, all eight of the DA’s notches turn black by the time the battery is, in reality, only half charged. The same thing happens in reverse: when you’re working with a fully-charged battery, the notches vanish alarmingly quickly as you begin the session. They Blanch more slowly as the juice runs out.
Another Battery DA failing

There's another problem with the Battery DA: you can't tell when your battery is recharging!

Don't contradict us just yet. Consider this alarming fact: When you plug in the Mac, and open the Battery desk accessory to see whether or not you're receiving power, you'll see the lightning-bolt icon regardless of whether or not the outlet is working.

In fact, you'll see this “now recharging” icon even if the far end of the PowerBook's adapter cord isn't plugged into anything!

And by the way, it's not just the Battery DA that gives you this erroneous message. It's any of the popular battery-charge indicators (the one in Microsoft Word's ruler, SuperClock, and so on). They all think the Mac is getting AC power just because the adapter is plugged into the PowerBook!

On the PowerBook 100 series, it actually takes about 20 minutes before the Mac finally displays a message that tells you that your battery isn't, in fact, recharging. (The 500-series PowerBooks are much smarter; their Control Strip gauge, for example, tells you instantly whether you're plugged in.)

Therefore, let us make our profoundly low-tech suggestion to anybody who hopes to get any work done outside of the home, office, or hotel: take a night-light. Go to the hardware store and spring the $1.59 on some cheapo Disney-character night light. Sock it into your PowerBook carrying case. When you want to confirm that some outlet is actually working, shove Mickey into it and get an immediate answer.

Power-outlet Secrets

A safety plug for the PowerBook Duo

The power adapter for the Duos and the PowerBook 500 models is certainly a masterpiece of design. Those two little prongs flip up for you to wrap the cord around. And instead of having a permanently attached cord, the adapter has a male three-pronged socket. Into it you can plug a regular long Mac power cord or a short “duckhead” plug that keeps the adapter snug against the wall. When you're traveling overseas, there's an added advantage to this socket: you don't have to fuss with a special adapter for the alien-looking wall jacks you may find. You can grab the power cord of any Mac or other three-pronged appliance you find already in that country, and pop it into the socket. (Its wall end, of course, will have already been adapted to the local wall-outlet style.)

Furthermore, the whole adapter is much less bulky than most appliances' adapter cubes.

However, the Duo/PowerBook 500-series' adapter has one feature we don't like — it's a three-pronger instead of a two-pronger. The 100-series PowerBook models' adapter cords had only two prongs, making them compatible with twice as many American wall plugs.
Still, there’s a cheap and easy way around this problem: Get a three-to-two-prong adapter from a hardware store. Carry that in your case, too.

**One more trip to the hardware store**

While you’re at the hardware store, buy an outlet extender. Usually, this thing looks like a multi-plug cube or something, with the male prongs on one end and receptacles on all the other sides.

This gadget lets you plug any PowerBook AC adapter into a wall outlet or power strip without blocking all the other outlets. It acts as stilts, pushing the PowerBook’s power cube far enough out of the way of the power strip (or wall) that you can use the adjacent sockets.

**Nothing to fear when overseas**

That cool gray AC power adapter that came with your PowerBook is smarter than you think. It can automatically convert most foreign countries’ currents into the correct voltage for the PowerBook.

Before you go abroad, however, understand that you still need to buy a plug adapter for the country you’ll be in. This isn’t something to convert the current — we’re talking about a simple prong adapter that lets you plug the PowerBook in to a differently shaped outlet. (The outlets in most of Europe and Australia, for example, look like Figure 12-2.)

![Figure 12-2:](image1)

Figure 12-2:

On the left, the outlet shape in most of Europe (but not the U.K.). On the right, the outlet shape used in China, Australia, and New Zealand. Get the appropriate plug converter here before you travel.

You’ll discover that it’s much easier to find the appropriate converter plug here, before you travel, than to find one in the foreign country itself.

On the other hand, if you plan to use your modem while overseas, you’re in for a rough ride. Not only are foreign phone systems nowhere near as reliable as the one in the U.S., but each may require a different phone adapter. You’ll have to buy the correct adapter when you get there.

**Nothing to fear when in the air...maybe**

There used to be a little razor outlet in every plane’s bathroom. Pathetic though it feels to sit there on the little toilet just for the sake of eking out some work while drawing juice from that razor outlet, it’s an emergency measure that’s worth remembering.

We’re mixing our tenses in this paragraph deliberately, because over the last ten years, airplane designers have stopped putting razor outlets in those bathrooms. (Obviously, they’ve never owned a PowerBook.) About a third of the planes we’ve traveled in the last couple of years still have outlets on board. But all the newer planes have no outlet, nowhere, nohow. If your last PowerBook battery dies, your hope dies with it.
We’ve heard a rumor that a very few, very new planes are actually going to have outlets built into the floor or even on the armrest, which would be, to PowerBook owners, like a gift from the gods. But given the recent headlines about laptop computers’ possible interference with cockpit navigational equipment, we won’t hold our breath.

**Of plugs and batteries**

Whenever your PowerBook is plugged in, it’s getting power from the wall outlet. If you unplug the PowerBook from its cord, it seamlessly and immediately switches to getting power from the battery.

This is an excellent reason never to work with the battery removed from the machine. You can work just fine with such a gutted PowerBook, as long as it’s plugged in. But if the power cord comes out, whatever’s in memory vanishes. (And furthermore, the battery’s sliding panel protects the laptop’s innards from wayward dust.)

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**Working from a Battery**

Working with a PowerBook on battery power is a strange feeling. Even if you’re not trying to beat a deadline, the battery’s imminent demise can leave you *feeling* as though you are. Unless you’ve got extra batteries ready to go, you feel the continuous tick of the clock at your back. Every time you hear the hard drive whir into action, you wince, because you know it’s draining precious battery power. You fiddle with the backlighting to the lowest readable level, hoping you’ll be granted a few extra working minutes.

If you want to study our battery-conservation Secrets, please do; we’re quite confident that the Secrets to follow include every suggestion ever made for conserving juice. You may even want to buy a battery-conservation program designed for PowerBooks; you’ll find, for example, that one of the Claris Power To Go modules we’ve included with this book can maintain tight control of your Mac so that your hard drive and backlighting don’t eat up juice without your control. (See Chapter 33.)

Every now and then, though, step back to admire the forest instead of the trees. That is, remember that a new PowerBook battery doesn’t cost more than a couple of nice dinners for two. If you ask us, a second or a third PowerBook battery is a much better investment than worrying yourself sick over whether or not you’ve tweaked your backlighting and hard drive to battery-saving perfection.

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**Meet your battery**

The PowerBooks 140 through 180 use a nickel-cadmium (NiCad) battery. If you don’t touch your PowerBook, this battery can last for five or six hours. If you do work on it gingerly, it lasts about three hours. If you use it as you use a desktop Mac, you’re looking at an hour and a half.
The Duo and 500-series batteries use a newer technology: they’re composed of nickel and metal hydride, so they’re called NiMHs or NiHy’s. (Sounds like a brand of cookie to us.) Their estimated juice per charge is about a half hour more than the NiCad in each scenario. The Duo Type II and Type III batteries each last another 45 minutes more than the previous type.

**Charging batteries**

A NiMH battery doesn’t just last longer, though; it also recharges faster than a NiCad. A PowerBook 140 through 180 battery, for example, recharges at full throttle for about two or three hours, up until the point where it’s 80 percent charged. Then, so as not to fry the battery, the recharging slows to a trickle, taking another three or four hours to complete the full charge.

A Duo or PowerBook 500-series battery, on the other hand, doesn’t have this wimping-out phase at the end of the recharging cycle; it recharges fully in about three hours.

In both cases, the only way to gauge for yourself whether or not the battery is fully charged is how long it’s been charging. You can’t trust the Battery desk accessory’s gauge. (As we’ve mentioned, this gauge shows the battery to be completely full after only an hour of charging, at which point the battery is probably only half full at best.)

Oh, and incidentally, a PowerBook 100 battery is a lead-acid battery. It doesn’t suffer from the so-called *memory effect* (see the upcoming sidebar). But it, too, has a two-stage recharging cycle: two hours to reach 80 percent, and then two more to reach 100 percent. (By the way, *because* it doesn’t get the memory effect, you should not follow the frequently given advice to “deep discharge” your PowerBook battery [let it run all the way down]. Doing so will shorten its life.)

All PowerBook batteries are good for about 500 chargings. That, as well as common sense, should be your cue to use the PowerBook plugged into the wall whenever possible. You’ll know when it’s time to retire a battery when it just won’t hold a charge anymore (see the next section for details). At that point, don’t chuck this lethal chunk of toxic chemicals into the garbage; return it to any Apple dealer, who will send it back to Apple’s battery-recycling program.

We’ve even heard it suggested that you affix a label to each of your batteries that gives a battery number (1, 2, or 3, say) and the date you first started using it. Keeping track of the date will make it easier to rotate your batteries evenly. If a battery doesn’t seem to be able to charge anymore, the date will help you decide whether or not old age is the problem.

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**TRUE FACT**

**Battery shelf lives**

The three kinds of PowerBook batteries have different shelf lives. The PowerBook 100’s lead-acid battery retains its charge for several months.

The NiCad and NiHy batteries, according to Apple, lose their charge much faster; after about two weeks on the shelf, their charge is half gone. (Presumably they would be completely depleted after a month or so.) Batteries are extremely temperature-sensitive, though, and high or low temperatures can affect shelf life dramatically.
Using a recharger

As we've mentioned, the PowerBook battery recharges automatically whenever it's in the Mac and the Mac is plugged in.

If you're a serious PowerBook mogul, though, with several additional batteries, you may find it worthwhile to buy an external battery recharger. Apple sells one that juices up two batteries at a time (but this takes twice as long as charging just one). It's a little awkward because it requires the PowerBook's wall adapter — which, therefore, you can't be using with your Mac at the same time.

One tip about Apple's recharger: don't leave batteries in the recharger when it's not plugged in. You'll wind up draining the batteries all over again.

You can buy a recharger from Lind Electronic Design, too (612-927-6303). It's more expensive, but does more for you. In addition to giving you a set of lights that indicate the battery's current charge status, it can deep discharge your battery. (This, as we've mentioned, is the cure for the memory effect, and keeps your battery in tip-top condition.)

Battery-swapping notes

When you swap batteries on a Duo or 500-series PowerBook, start by putting the machine to sleep. Now, you don't have to be frantic. You have four minutes. Everything in memory, everything on the RAM disk, any programs you were running, will all remain exactly as they were, even with no battery or power cord in the machine.

On a PowerBook 100-series, however, you must shut down the machine before changing batteries; if you remove a battery while the Mac is on or asleep, you'll lose everything in memory. You may find this shut-down routine inconvenient (and don't forget about the time you lose afterward, while the PowerBook restarts, loads extensions, and so on). If so, for $25 or so, you can buy a little gizmo that plugs into the AC adapter jack; it's powered by a 9V battery, which provides just enough juice for you to change main batteries without shutting the PowerBook down completely.

TRUE FACT

The memory effect

The memory effect is a problem unique to the NiCad and NiHy batteries found in PowerBook and Duo models 140 and higher. Here's the symptom: Your battery suddenly loses half its capacity, and you find that it now gives up the ghost after, say, 45 minutes.

The problem is the memory effect. If you repeatedly discharge a battery only to its halfway point, eventually the battery "remembers" that point, and decides that that halfway point is the full point. Thereafter, it quits recharging itself when it reaches that halfway point, thinking that it's full.

This effect — which happens to camcorder batteries too, by the way — has been seriously overpublicized. Actually, avoiding the problem is simply a matter of letting each battery run down completely every couple of months. That's also how you cure a battery that does exhibit the memory effect — just leave the Mac on, even past the low-battery error messages, until it shuts itself off. (They call this "deep discharging." The Duo 270c and 280c include a utility that does this re-conditioning for you.)

Then plug it in. The battery will have forgotten its halfway-recharging point and will recharge fully.
TRUE FACT
The PowerBook 100's battery switch
You'll read, if you haven't already, our advice to discharge a PowerBook's battery completely every couple of months. This does not apply to the PowerBook 100, however. Its lead-acid battery is very different and may actually be damaged if you let it drain away to nothing.
Under normal working circumstances, this can never happen. The Mac will let you know when the battery is approaching that danger point, and it goes to sleep before the battery becomes too depleted.
However, once the computer's asleep, the risk remains that the tiny trickle of power (that maintains the PowerBook's memory while the computer is asleep) will deplete the battery to the danger point if it's left untouched for weeks.
That's why, on the left side of the back panel (right next to the power-adapter jack), there's a battery cutoff switch. If you're going to be storing the PowerBook 100 for a long time, flip this switch downward (Off) to prevent further depletion.

Conserving battery power
As we've mentioned, the best experience using a PowerBook is when you don't have to worry about battery power at all. That's why PowerBooking in a hotel room is a completely different experience than PowerBooking on the plane.
Still, we've got dozens of techniques for saving juice. We'll pile them into one section — the Secrets listed below. In the meantime, remember that the biggest consumers of your battery power are:
- The hard drive spinning
- The neon light bulbs that illuminate the screen
- The built-in modem, if you have one
- AppleTalk

ANSWER MAN
The little slider on the Duo battery
Q: On the side of my Duo's Type I battery, there's some kind of sliding, two-position switch. One position is marked by a white battery icon, the other by a black one. What does this switch do?
A: No one, but no one, knows the answer to this one but us. There's not a word about this switch in the manuals, as you may have noticed. As a result, there hasn't been a word in any book or magazine about it. It took some very persistent phone calls to Apple for us to finally find out the mystery of the Duo's battery switch.
Guess what? It doesn't do anything. Or, we should say, it doesn't do anything. It's designed strictly to be a handy indicator for you, so that you'll know whether or not this battery is charged up.
When the battery conks out, you're supposed to take it out of the Duo and flip the switch so that the black battery icon shows (meaning: this is uncharged). Then, when you've charged it up, you flip the switch so the white battery icon shows (meaning: ready to go). It's for human use, not computer use.
Actually, it's a nice idea. You might consider creating a homemade edition of the same switch for use on your non-Duo PowerBook batteries. Use a red sticker when it's charged up, for example, and then take the sticker off when the battery is depleted.
We, like all Mac gurus, will dwell on these items and ways to reduce their appetites.

The most dramatic trick of all, however, is the RAM-disk trick. This is a powerful method for doubling your battery charge's life span, and we've provided elaborate step-by-step instructions on how to do it. In fact, we've devoted a separate section to it, following this more general discussion of battery-saving tips.

### Battery Secrets

**Cut down on the backlighting**

We've said this before, but here it is again: the screen is a big consumer of your battery juice. (Apple says up to 50 percent of the power goes to light up the screen; our tests show it's somewhat less.) When you're desperate to conserve power, dim the backlighting. It's not always easy; the dimmer control at the corner of your screen, as you know, goes from 100 percent bright, to 90 percent, to 80 percent, to off.

Along the same lines, consider not using the backlighting at all. This is feasible under two conditions: first, when you're sitting in bright sunlight (see Chapter 10 for the rationale). Second, if you're sitting in a meeting typing notes, it sometimes works well to type blind, even when you can't see what you're typing.

Finally, you can use the PowerBook Display control panel (System 7.1 or later) to control automatic dimming of the backlighting. You can set the dimming to take place after one to five minutes of inactivity on your part. After the lighting blinks off, it comes back on when you move the mouse or touch any key. (For even more control over backlighting, check out Power to Go, included with this book and described in Chapter 33.)

**Avoid using the hard drive I: minimize usage**

The hard drive is the #1 power drain on your PowerBook. When it's not actually spinning, however, it hardly drains anything at all. It drains the most energy when it's just beginning to spin. Your goal, therefore, should be to make the drive stop spinning whenever you won't be needing its services for a minute or so, but to let it continue if you'll be needing it shortly.

Obviously, this presents a question: how can you tell if it is spinning? If you're in a quiet place, you can hear it grind into gear. If it's noisy, you can get a program, such as DriveLight (included with this book), that gives you a visual indicator on the menu bar.

The best way to avoid using the hard drive is to load your entire work session onto a RAM disk, as described in the next section.

The next best way is to use programs that don't need to read information from the hard drive very often. If there's no need to read from the hard drive, then the hard drive can sit idle and no power will be required to make it spin. Unfortunately, Microsoft programs, among the most popular, are also among the most disk-intensive. Word, for example, seems to make the disk spin all the time.

Of course, using the Save command from any program makes the disk spin, but that's probably a little juice worth expending.
Avoid using the hard drive II: control its spin-down moment

The PowerBook control panel (Version 7.2 or later is best) lets you specify when you want the hard drive to “spin down” (stop spinning) — between 30 seconds and 15 minutes after the last time its services were called for. Better yet, with the help of some utility software, you can make the drive spin down on command!

For example, you could install Power To Go (sample modules are on the disks included with this book) and press the magic keyboard shortcut (which you can specify). At your command, at any time, the hard drive will stop spinning. You can use the Control Strip, if you have it (see Chapter 3) to do the same thing.

Suppose, for example, that you’ve been merrily typing away into WriteNow for 20 minutes. The hard drive has been peacefully still. But now you want to save your work. The drive spins into action, and your file is saved. Now, as far as you’re concerned, the drive’s work is done. If left unattended, the drive continues to spin needlessly for another 15 minutes (or whatever period you’ve specified using the PowerBook control panel). That’s 15 minutes of hard-drive juice you can save yourself by pressing the predefined keystroke instantly after the saving is over.

Rest mode (processor cycling)

The PowerBook’s brain, as on any Macintosh, is its CPU (its Motorola 68000 or 68030 chip). As with a human being, the more alert and lively it’s asked to be, the more energy it uses up.

Therefore, PowerBooks have a clever battery-saving feature that kicks in without your even knowing about it. When you’re not actually doing something with the keyboard or mouse (when you’re just reading something, for example), the laptop goes into processor rest. That is, the CPU quits worrying about doing calculations and more or less doeses off, requiring less energy and producing less heat.

ANSWER MAN

Why are there all those warnings?

Q: When my battery is running down, the Mac starts displaying warning messages about finishing my work and putting the PowerBook to sleep. Why does it show three? Which one should I believe?

A: Actually, each message is more dire than the previous.

The first message says it’s going to dim your screen. (It’s trying to squeeze out a little more work time for you.) You can basically ignore this message. You’ve still got about 12 or 15 minutes of solid work time left.

The second warning says: “Very little of the battery’s reserve power remains.” Now it’s serious. At this point, you’ve got about five minutes of power left. You should, as the message suggests, save your work and prepare to change batteries (or stop working).

The last warning, one of our favorites, announces: “The Macintosh will go to sleep within 10 seconds. Good Night.” (We love that!) This message is serious, too. It does not mean you’ll lose any work, however. It simply means that the machine is going into sleep mode. All your work will remain frozen in RAM, just as it was when it went to sleep.

After this, you have two days in which to find a power outlet and plug the machine in. When you do, you can wake up the PowerBook to find everything just as you left it. (Or, if you have a Duo or 500 model, you can insert a fresh battery while it’s sleeping, if you prefer, instead of plugging it in.)
Then, upon the least indication that you're at it again (such as a touch on the trackball or a keyboard key), the CPU springs to full alertness. (A sleeping hard drive, by contrast, does not necessarily spin up again when you begin typing.)

All of this happens behind the scenes. You'll probably never even notice this on/off CPU cycling unless you're running several programs at once and they seem to be acting sluggish. (You may also notice the numbers in SuperClock — the menu-bar clock included on the disks with this book — increasing more slowly.)

Depending on which PowerBook model you have, you can turn off this feature. If you have System 7.1 or later, see “PowerBook & PowerBook Setup” in Chapter 3 for full instructions.

If you have System 7.0.1 and its Portable control panel, the processor-cycling control is hidden. Option-click the words “Minutes until automatic sleep.” A special dialog box will appear, displaying the Rest and Don’t Rest buttons.

**One more juice-saver: Processor speed**

One of the primary differences between the PowerBook models is the clock speed — in essence, the blood pressure of the informational arteries. The clock speed measures the rate at which information is cranked through the brain. The discontinued PowerBooks 145, 180, and 160, for example, have the same Motorola '030 chip for a brain. But the clock speeds of their chips are 16, 33, and 25 Mhz, respectively. As with a human being, the more cranking that goes on, the more energy it takes.

The faster '030 PowerBooks (models 160-180c) all offer an additional battery-saving feature. Using this option, you essentially rein in the horses, slowing the CPU to the speed of the slowest PowerBooks, which is 16 Mhz.

Unfortunately, Apple keeps moving this control around. It’s usually in the PowerBook control panel in plain sight (see “PowerBook & PowerBook Setup” in Chapter 3) — unless you’re using the older PowerBook control panel, in which case you have to click Options to find it (see the display shown in Figure 12-3). On the '040-chip PowerBooks (the 500 series, for example), this control isn’t available at all.

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**Figure 12-3:**  
In the lower half of the box, you see the Processor Speed control. It helps you scrape out a few more minutes' worth of work time from any charged battery.
(On the old PowerBook 170, you trigger this slow-processor feature by opening its Battery desk accessory. You'll see an on/off switch for something called PowerSaver. That's the CPU slowdown thing we're describing here.)

If all you're doing is word processing or reading and you're trying to save battery juice, you may as well turn on this feature. You don't need a powerhouse computer unless you're doing serious number-crunching or graphics.

**A word about AppleTalk...and MIDI**

When one of your cheerful authors first purchased his PowerBook, he was truly appalled at the short life of each battery charge: about an hour and ten minutes. *This* was three hours!?

At last a friend alerted him to the problem: AppleTalk. This network-ready feature may be switched on and off from the Chooser desk accessory.

Here's our Secret: when you want the most out of each battery charge, turn AppleTalk off! It saps nearly a half hour out of any battery charge.

Then again, if you're a musician, a *PowerBook can only send MIDI information if AppleTalk is on!* (We've seen more than one musical demonstration ruined by a seemingly MIDI-broken PowerBook — where, actually, the only problem was that AppleTalk had been turned off.)

**Another power user: the modem port**

If your PowerBook has a built-in modem, keep in mind that it's drawing battery power whenever a telecommunications program is open. When you finish sending e-mail on CompuServe, for heaven's sake, quit MicroPhone (or whatever front-end program you prefer) when you log off.

**TRUE FACT**

**The battery cover**

We all know that computing can be dangerous to your health. Your wrists can get carpal-tunnel syndrome. Your body can be bombarded by ELF radiation from the CRT monitor. You can be mugged by a thug with his eye on your laptop.

But in 1992, Apple announced what had to be the weirdest potential hazard yet: spontaneously combusting PowerBook batteries.

Well, not spontaneously, really. But apparently the company had two reports of charged-up batteries igniting briefcases when some metallic object accidentally touched both battery terminals.

As of that moment, Apple made available a free plastic box for PowerBook batteries. And every PowerBook battery ever since has come with said box.

The Duo battery isn't prone to this potential firestorm; its circuitry automatically cuts off the juice when it's not inside a computer. But it, too, comes with a cute plastic box, just for the sake of aesthetics.
A few more battery-sappers

A few other PowerBook items use up battery power. They’re all fairly negligible, but here they are:

First, there’s the speaker. Use the Sound control panel and set the volume to zero if you’re absolutely maniacal about conserving juice. Then there’s the ADB port, better known as the keyboard/mouse jack. It, too, sucks its life-giving power from your Mac’s battery when something’s plugged into it.

And don’t forget the monitor jack. Actually, only Duo owners need to think about this, because the full-sized PowerBooks can’t even drive an external monitor unless they’re plugged into the wall. Duo owners may simply want to note that an external monitor draws some power from the battery, even if it (the monitor) is plugged into a wall outlet.

Battery savings and virtual memory: mutually exclusive

The PowerBook manual is pretty clear on this topic. So is the software; if you try to turn on virtual memory in the Memory control panel, a message appears warning you that this isn’t a great idea.

The point is that (as you can read in Chapter 8) virtual memory is a scheme that treats the hard drive as extra RAM. It requires the hard drive to spin continuously. As a result, your battery is likely to drain very fast.

However, we pooh-pooh the notion that you shouldn’t use virtual memory on a PowerBook! Virtual memory is great on a PowerBook: when you’re at your desk at home and trying to run three big programs; when you’re in the hotel room, touching up a giant presentation; and so on.

It’s only to be avoided when you’re running on battery power. After you’re plugged in, turn on virtual memory, by all means!

When a battery is depleted

Recharge your battery as soon as possible. If you leave a battery empty for longer than two weeks, especially in a hot place like a car trunk, it may never be rechargeable again.

The RAM-Disk Trick

As you discovered in Chapter 8, a RAM disk is a portion of memory that’s treated like an additional floppy disk in some imaginary drive. It shows up on your desktop like any other disk icon (see Figure 12-4).

Figure 12-4:
A RAM disk is, as far as the Mac is concerned, just another disk. But there’s a big difference.
However, a RAM disk is made of RAM. It delivers information to the Mac's brain with immense speed (when compared with real disks). RAM disks were invented, then, for the purpose of speeding up Mac computing.

But the RAM disk, while still speedy, is useful on the PowerBook for a completely different reason: it's a disk that requires no electricity. Because the largest consumer of PowerBook battery power is the hard drive, the less you make the hard drive work, the longer a battery charge will last. When you let your RAM disk do the work of a hard drive, you render the hard drive completely redundant, and it never needs to spin. You can literally work for five hours on a single PowerBook battery charge using this secret.

It's commonly stated that you can only use the RAM disk trick on a PowerBook with six or more megabytes of RAM. While working is certainly more convenient and more effective with a memory-packed Mac, we've made terrific use of the following technique even on a standard four-megabyte PowerBook. Here, step by step, is how the RAM-disk trick works. If you do have more than four or six megabytes of RAM, then you won't have to make quite as many sacrifices as we propose here.

Choosing the right size for the RAM disk

First, you need to figure out how much disk space your RAM disk contents will require. In other words, how many files are there on your hard drive that you want to use?

You're always using the System folder, whether you know it (or like it) or not. You'll probably also want to use a word-processing program. Finally, there's the document you're working on.

Look at your hard drives and add up their sizes on disk. (Do a Get Info on each.) If your PowerBook has four megabytes of RAM — as most do — then you won't be able to fit a full-sized System folder, word processor, and document onto a RAM disk.

You can, however, create a stripped-down System folder that will fit. Use the System 7.1 folder on your Disk Tools disk, for example. It has no control panels, no fonts to speak of, and few frills, but it only takes up 1200K on disk.

As word processors go, Microsoft Word is about the worst choice for use on a RAM disk. It's a big, bulky program, and it needs to read information from the hard drive a lot. If you're going to be serious about this RAM disk business, consider WriteNow (WordStar, 415-382-8000), which is smaller. It only takes up 290K on the disk. Finally, suppose that we're working on a 50K document.

So we've got:

- A System folder = 1200K
- WriteNow = 290K
- A document = 50K

The grand total is about 1550K. Your RAM disk, then, must be at least that size. In this example, we'll set the RAM disk to, say, 1600K.
Creating the RAM disk

Open your Memory control panel and click the RAM disk On button. Move the slider to the right and then drag the little handle to the right (see Figure 12-5) until it shows the size you calculated (1600K, in this example).

Of course, we're using the memory-tight 4MB PowerBook as an example here. If you have more RAM to spare, make the RAM disk bigger. (If you can't slide the slider up to 1600K or whatever number you've arrived at, turn the RAM disk switch off again. Restart the Mac after making your Disk Cache smaller [see Chapter 8] and turning off the most memory-hungry extensions and control panels, such as Adobe Type Manager and QuickKeys.)

After you set the slider to the size you want, close the control panel and restart the Mac.

Figure 12-5:
The little RAM disk size slider slides toward its target size, 1600K, which is the utter minimum for a 4-megabyte PowerBook.

Loading up the RAM disk

When you restart the Mac, you see the RAM disk at the right side of the screen (see Figure 12-6). Wild, isn't it?

Figure 12-6:
Your desktop after the RAM disk has been created (middle icon). In this figure, you can also see the Disk Tools disk in the floppy drive, ready for System folder-copying.
Chapter 12: PowerBooks Exposed

Drag the System folder from the Disk Tools system disk onto the RAM disk. (Be sure to include any system enabler your PowerBook needs to run!) You’ll notice that things copy very quickly onto a RAM disk; memory is a medium that’s much faster than any disk. (Alternatively, you can use the normal System 7 Installer to install a Minimal System onto the RAM disk. Apple recommends this method, but we find it to be a great deal of time and effort.)

Then copy your word processing program onto the RAM disk. Finally, copy the documents you want to work on after you’re on battery power.

If everything doesn’t fit, then you may have to do some further stripping down. You may wind up having to sacrifice one component or another, for example. You may even have to leave your document on the hard drive or leave the System folder there.

(One more point: After you load up your RAM disk, consider copying it all to your hard drive and compressing it, using a compression program like Stuffit or DiskDoubler. Afterwards, every time you need to create your RAM disk, you load it up with a simple double-click. Or use Apple’s PowerBook Assistant, whose Toolbox extension can do this loading up automatically.)

**Putting the RAM disk in charge**

After the RAM disk is set up, you still have to tell the Mac that you want its System folder, and not the one on the hard drive, to be the System folder in charge.

Open the Startup Disk control panel (see Figure 12-7). Click RAM disk and close the window.

![Figure 12-7: How you put the RAM disk in charge.](image)

Then restart the Mac. This time, it seems to start up very quickly. When you reach the desktop, the RAM disk is in the top right corner of the screen!

Now you’re rolling. But while you’re still at home and hooked up to a power outlet, try opening one of your RAM disk documents. We mention this because some programs (notably Microsoft ones) create invisible temporary files, which they scatter hither and yon on the disk. If your RAM disk is filled with stuff, these temporary files may have nowhere to go. They will either (a) attempt to store themselves on the RAM disk, run out of room, and crash or (b) write themselves onto the hard drive, forcing it to spin, and defeating the entire purpose of using a RAM disk.

One more memory topic here: the RAM disk, even though it’s actually a piece of memory, behaves as though it’s a disk. Your Mac still has to have enough free memory left over to run the programs on that disk!
In the example above, then, it's going to be a tight squeeze. You start with four megabytes of RAM. Of that, the stripped-down System itself requires 1500K (memory, not disk space); then there's your 1600K RAM disk; thankfully, WriteNow runs in only 325K of memory, so that you still come in under your 4096K total. But even an extension or two more — or any attempt to open a second program — will surely put you over the top, and you'll be out of memory.

**Hot power-user's secret**

If you've come this far with this RAM-disk trick, consider taking the final plunge: drag your hard-drive icon to the trash! The Mac will warn you that you're doing something kind of nutty; click OK. But if the hard drive is off the screen completely, there's virtually no chance that it can spin up unbidden and deplete additional power.

Now you're wondering: well, great, but how do I get it back? Good question. Before you drag the hard drive to the trash, make an alias of it! Then, at any time after the real drive icon is gone, you can summon it back to the screen simply by double-clicking the alias.

**Saving and being safe**

The usual warning about using a RAM disk is this: never put a document on a RAM disk because a RAM disk is a fleeting, fragile thing. If the power goes out on the Mac, so the scare-tactic goes, then your document disappears into the ether.

This is *not* true on a PowerBook! Anything on a PowerBook RAM disk stays safely on the RAM disk, even if you restart the computer or the battery dies and you leave it in the machine. (You have two days to plug in the PowerBook in order to recover your RAM disk contents). And, yes, it's *even* true if you have a system crash!

All you have to do is remember this critical phrase:

*Never shut down the PowerBook — only restart it!*

If you have a system crash, press the computer's Reset switch (which restarts it). On a full-sized PowerBook, this involves sticking a toothpick or pin into a tiny hole on the back (see Chapter 6); on a Duo, it involves pressing `Control`, `Command`, and the power button simultaneously.

When you return to the desktop, your RAM disk will still be safe.

All of this is not to say, however, that you can be reckless. We do recommend that, every hour or so, you save your document and then return to the Finder and drag-copy your RAM disk-based document back onto the hard drive. Paranoia pays in the computer world.

**Wrapping it up**

In any case, you'll find that working from the RAM disk and preventing your hard drive from spinning up is a glorious, fast, and liberating experience. If you follow every single one of the battery-conservation secrets above, you'll only squeeze, say, 50 percent more juice out of each charged battery — but if you use this RAM disk trick, you'll *double or triple* the length of each charge.
Getting rid of the RAM disk and reclaiming its memory for normal use is a little tricky. First, you can’t very well kill the RAM disk while it’s serving as the startup disk. The first step, then, is to open the Startup Disk control panel and select your hard drive.

We already know what you’re about to discover. When you open your Control Panels folder on the RAM disk, it’s going to be empty. That’s because to save RAM disk space, we suggested that you use the stripped-down System folder from the Disk Tools disk (which has no control panels).

Fortunately, as you may recall from Chapter 3, the wonderful thing about Apple’s control panels is that they do their deeds no matter where they are, and regardless of whether or not they were located in the Control Panels folder at startup.

Find ye, then, the Startup Disk control panel on the hard drive! Double-click it and you will at last see the image in Figure 12-8. Click the name of the hard drive and close the window.

Then restart the Mac. When it awakens, the RAM disk will no longer be the disk on top.

Next, you have to get everything off the RAM disk. Trash it all. Wipe that disk clean. Finally, you may open your Memory control panel and turn the RAM disk option off.

**Resizing a RAM disk**

First, follow most of the steps above: select a different disk to be the startup disk, restart the Mac, and erase the RAM disk completely.

Then you can open the Memory control panel and change the slider position, resizing the RAM disk.

Then you have to restart again.
Part II: Secrets of the Machine

RAM and RAM disk Secrets

Conserving RAM I: use At Ease
When you're using a PowerBook from a RAM disk, memory, as you know, can get pretty tight. You may spend considerable effort trying to shave out a few K here and there, and we can help.

Install At Ease, for example (see Chapter 14). It uses over 200K less RAM than the Finder and is just as good at launching files. Of course, you can't rename or trash files while it's running. But when memory is tight, and you've got a long flight, you might not mind.

A word of warning, however. At Ease offers a convenient Go to Finder command. (It's in the File menu.) Don't use it when memory is in short supply! If you do, you'll launch the Finder. At this point, you have more than undone the advantage of running At Ease — you're running both it and the Finder, which uses up more RAM than running the Finder alone.

Conserving RAM II: check the Disk Cache and more
All of the usual suspects play a role in using up memory: extensions, ATM, and so on. Chapter 8 covers them pretty well.

When memory is running low in a RAM-disk setup, though, here are two quick ways to get added RAM doses. First, check the Disk Cache setting (in the Memory control panel). Chances are you can afford to crank it down a little, maybe to 64K or even 32K.

Second, for heaven's sake make sure File Sharing is off. (Check the Sharing Setup control panel.) This RAM-gobbler eats up 250K or more and probably depletes your battery faster to boot.

Finally, remember that the RAM disk itself is RAM. The smaller you make your System folder, the better. If you create a System folder on the RAM disk by using the stripped-down one on the Disk Tools disk, okay.

But if you've installed a more complete System folder onto the RAM disk, keep in mind that half of those control panels can go straight to the Trash. (See Chapter 3 for more details.) In the meantime, you can immediately toss half the desk accessories. First, make your changes to settings in the Color, Date & Time, Easy Access, Keyboard, Labels, Mouse, and Numbers control panels — and then trash 'em.

Upgrading the RAM
Eventually, after all this fussing over a few K of RAM, it may dawn on you to simply install more.

But PowerBook RAM is much more expensive than regular Mac RAM. And it's not just the SIMMs — you've got to hire some technician to install them for you, which is an additional expense. It's also complicated because each family of PowerBooks uses a different kind of RAM chips.

The point is that upgrading a PowerBook's RAM is a more expensive and convoluted prospect than upgrading a desktop Mac's. But once it's over — oh, what joy!
TRUE FACT

The battery nobody knows

Your PowerBook has another, much less-discussed battery. It’s the lithium backup battery that keeps your clock going even when the computer is off, just like the lithium backup battery on desktop Macs.

You can replace the backup battery on the PowerBook 100 yourself: get a standard 3-volt lithium cell — three of them, actually — such as the Sony CR2430 or the Duracell DL2430, available from electronics stores. Put the Mac to sleep, close the lid, and hinge open the battery door on the right side (as you look at the back panel).

All other PowerBook models’ backup batteries have to be replaced by an Apple dealer.

Sleep Mode

When a PowerBook is sleeping, nothing moves. The hard drive and all other components are still and dark. The only thing that lives, in fact, is whatever was in the computer’s memory. That’s a great thing. It means that the next time you want to use your computer, there’s no five-minute startup period, no startup chime, no parade of icons across the bottom of the screen. You press a single key — any key except Caps Lock — and your entire work world springs to life, exactly as you left it.

Sleep vs. restart

This is going to sound very radical. But we advise you to leave the PowerBook in Sleep mode all the time. We can think of only four instances when you have to restart a PowerBook:

- When it’s a Duo, and you want to insert it into a Duo Dock
- When you want to start up with a different assortment of extensions and control panels
- When you want to make it part of the SCSI chain of a desktop computer
- When you want to attach or remove an external monitor

Otherwise, there’s no practical reason to restart the Mac, ever. It’s even okay to plug in keyboards, mice, modems, printers, and floppy drives to PowerBooks while they’re sleeping. They don’t have to be off.

It’s perfectly all right to travel while sleeping (the PowerBook, not you). Even ultra-conservative Apple, in a recent Tech Note, admitted that it’s okay to travel when the PowerBook is asleep.

How much time you have

After your PowerBook is asleep, a tiny trickle of battery power keeps the contents of memory intact. The computer can sleep for as long as there’s any battery power remaining. On a fully charged battery, that’s probably about a month. In fact, even if your battery has gone dead while you were using it, saying that no “reserve power” remained, you’ll still have two days of trickle-juice left in the battery.
**ANSWER MAN**

**Shut up and go to sleep**

Q: I absolutely hate the way the PowerBook always gives me that stupid warning box about network services, whatever they are, when I try to put it to sleep. Isn't there any way to make it stop?

A: First of all, network services basically means (a) your connection to other Macs, and (b) your laser printer. It’s just warning you that if you put the Mac to sleep, and later awaken it, the laser printer might need to be reselected in the Chooser. Or you might need to re-establish your hookup with the other Macs.

In the meantime, there’s a way to make this box stop appearing. Two ways, really.

First, if you never want the message to appear, open your Chooser and turn off AppleTalk. Of course, then you’ll really lose network services — you won’t be able to laser print or hook up to other Macs at all — but at least you won’t get this message. You’ll also get another half-hour out of each battery charge.

If you want to leave AppleTalk on, but just don’t want to see the warning message, open the Battery desk accessory. Option-Shift-click the battery icon. Your laptop goes out like a light — with no ifs, ands, or alert messages.

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**Sleep Secrets**

**Make the PowerBook sleep I: Menu, DA**

You’re probably familiar with the most common method of putting a PowerBook to sleep: choosing Sleep from the Special menu.

That involves returning to the Finder, though, which is an extra (and, given the crankiness of the trackball/trackpad, difficult) step, requiring you to choose Finder from the application menu.

You can make the PowerBook sleep on command, though, without leaving the program you’re in. If you don’t have the Control Strip and its one-click Sleep command (see Chapter 3), the Apple-sanctioned method is to open the Battery desk accessory. Click the tiny lever on the right so that the panel expands (see Figure 12-9).
To make the machine sleep, click the System Sleep icon.

What if the Battery DA isn’t in its expanded, lever-clicked position? Easy: Option-click the tiny battery icon in the top strip.

**Make the PowerBook sleep II: hit a keystroke**

With a little bit of add-on software, you can have an even easier method of sending your computer to sleep land. If you have QuicKeys or a commercial PowerBook utility-program kit (Power to Go, CPU, and so on), you can press a key combination you specify to get that Mac snoring. System 7 Pack Extras, included with this book, works, too.

**Make the PowerBook sleep III: click SuperClock!**

SuperClock is a terrific piece of freeware that we’ve included with this book. It puts a clock in your menu bar so that you always know the date and time. If it’s installed onto a PowerBook, it automatically displays a battery-level indicator.

So here’s the trick: to make the PowerBook sleep, Control-click SuperClock’s battery icon, regardless of which program you’re in or what you’re doing. That’s probably the simplest method of all.

**The remarkable PowerBook 100**

The PowerBook 100 is a truly remarkable machine: in a funny way, it only sleeps. That is, to turn it on, you press any key, even if you previously used the Shut Down command. Even when the computer is shut down, the contents of its RAM disk are preserved. No other PowerBook model can claim that stunt.

### Getting Info In and Out

When Apple designs a PowerBook, one of its objectives clearly seems to be to give it as many ports and connectors as a desktop Mac. True, a Duo has only a single printer/modem jack, but its MiniDock or Duo Dock gives it all the jacks of any other Mac. And the back of a full-sized PowerBook looks almost exactly like the back of a desktop Mac.

This is critical for several reasons. For one thing, suppose that you own both a PowerBook and a desktop Mac. Every time you return from a trip with your laptop, you’ll probably want to copy your files back to the larger Mac.

Furthermore, one of the huge selling points of a PowerBook is that it’s an ideal portable presentation machine. Hook it up to a projector, a large monitor, or even a TV, and suddenly you can give color presentations for large groups, driven only by this diminutive machine.

Another of the laptop’s most important features is its capability to send information over the phone lines — usually to the home office, for example. We’ll cover this capability, called *Apple Remote Access*, in the Networking chapter, too.
Transferring files between a PowerBook and another Mac

When it comes to transferring information between a PowerBook and another Mac, you've got several options:

- Pass files back and forth on a floppy disk. This is a very, very slow procedure.
- Attach the two computers as though they're a little network. Transferring files this way is rather slow, too, but it's certainly easy. We'll show you how to set up a mininetwork between them, step by step, in Chapter 31.
- Attach a SCSI hard drive to the PowerBook. Copy files onto the external drive, then shut everything down, and then attach the drive to a desktop Mac and copy files onto it from the disk. This is way too much trouble.
- Plug the PowerBook directly into a desktop Mac as a SCSI device itself. It's fast, cheap, and convenient.

We'll cover these two SCSI methods one by one.

SCSI: when the PowerBook is the Computer

Connecting SCSI devices (see Chapter 29) to a regular PowerBook isn't tough. You do, however, need a special cable; Apple's is called the HDI-30 SCSI System Cable. (A better idea is the SCSI Doc connector from APS.) If you look at the back of a PowerBook or a MiniDock, you'll see why: the standard wide SCSI connector has been replaced by a smaller, nonstandard square jack.

In this configuration, the PowerBook behaves just like a desktop Mac. The SCSI address of its internal hard drive (see Chapter 29 for details) is 0, as it is for any Mac.

Apple advises that, when using SCSI appliances with a PowerBook, you turn on the external devices before you turn on the PowerBook. (As a matter of fact, the PowerBook probably won't start up unless the SCSI devices are on.)

Note, too, the one dramatic difference between PowerBooks (not the Duos) and desktop Macs when it comes to terminating interconnected SCSI devices. The normal method of attaching terminator plugs is to fasten one to each end of the chain of SCSI devices. But because the internal hard drive of any Mac is self-terminating, you normally only have to worry about the far end of the chain.

But the non-Duo PowerBook, for all practical purposes, has no internal terminator. Therefore, despite the complicated-looking series of rules in the PowerBook manual, the PowerBook difference actually boils down to this:

*Put a terminator plug at the far end of the HDI-30 cable, where it attaches to the first SCSI device.*

You still need termination at the far end of the chain of SCSI devices, as detailed in Chapter 29. It doesn't matter if there's one device or several.
For a PowerBook Duo, on the other hand, follow the rules of termination exactly as we’ve stated them in Chapter 29 — no funny business.

**SCSI: when the PowerBook is the SCSI device**

This arrangement, where the laptop acts as an external hard drive for another Mac, is called *SCSI Disk Mode*. Only certain PowerBook models — such as the 100, 160 and 165c, 180 and 180c, and the Duo in a MiniDock — offer this feature.

Because SCSI is a very fast method of transferring files, it’s the only way to go when you have a lot of stuff to transfer to or from your PowerBook.

After you’ve mastered this technique, you’ll absolutely love it. Getting going, though, requires crossing some oddball technical terrain. Here’s the step-by-step guide. Keep in mind that the PowerBook is always going to be the *last* device in the chain of SCSI machines (if you have any others).

1. Buy an HDI-30 SCSI Disk Adapter cable from an Apple dealer.
   Note that this is *not* the same as the HDI-30 SCSI System Cable we mentioned above, despite the similarity of name, catalog number, price, and appearance. Don’t use the wrong cable in the wrong configuration. Nothing will blow up, but nothing will work, either. (Once again, the little adapter called the SCSI Doc, from APS, is a better alternative. It can serve as *either* a normal SCSI adapter or a SCSI Disk Mode adapter — you just flip a switch.)

2. Open the PowerBook control panel (older models) or the PowerBook Setup control panel (newer ones; see Figure 12-10). Select a SCSI address for the PowerBook.

   ![Figure 12-10: Choose a SCSI address for your PowerBook.](image)

   You’ve probably always assumed that a Macintosh’s SCSI address was seven and its internal drive’s address was always zero. In SCSI Disk Mode, though, this Mac is *not* going to be a Mac; it’s going to be an external hard drive! So choose an ID number between one and six. If you plan to daisy-chain other SCSI devices with the PowerBook, make sure their numbers are different.

3. Shut down both Macs and turn off any other SCSI equipment.

4. Connect the PowerBook to the SCSI Disk Adapter cable you bought. Put a terminator at the free (fat) end of it.
   (Omit the terminator if you’re attaching the PowerBook directly to a Macintosh Portable or to a Mac Plus with no internal drive.)

5. Connect the terminated end of the SCSI Disk Adapter cable either to the desktop Mac or to the end of the existing SCSI chain.
Part II: Secrets of the Machine

If the desktop Mac has no internal drive, make sure there’s another terminator plug at the end of the desktop Mac’s SCSI cable. (If the PowerBook is the only device you’re hooking up, this will result in two terminators plugged into each other. That’s perfectly okay.)

If the desktop Mac is a Classic, LC, IIfx, or Portable, you use fewer terminators. We’re aware that this is getting hairy, but slog on. The following descriptions summarize the cabling arrangements:

**Without an internal hard drive**
- *Classic series, LC series, IIfx*: Desktop Mac → normal SCSI cable → (any other SCSI devices) → the terminated PowerBook/cable ensemble
- *Portable (with or without internal drive) or Mac Plus*: Portable/Plus → normal SCSI cable → unterminated PowerBook/cable ensemble
- *Any other Mac*: Desktop Mac → normal SCSI cable → a terminator → (any other SCSI devices) → the terminated PowerBook/cable ensemble

**With an internal hard drive**
- *Any Mac (except the Portable)*: Desktop Mac → normal SCSI cable → (any other SCSI devices) → the terminated PowerBook/cable ensemble

If you need a walk around the block at this point, please indulge. Then:

6. Turn on the PowerBook!

This has got to be the weirdest thing you’ve ever seen a Mac do. Across the face of the otherwise completely blank PowerBook screen marches a huge SCSI logo (like the one on the back where you plug in the SCSI cable). Inside it is a large digit, representing the SCSI address you selected. And we mean it marches. It actually moves, back and forth, across the screen, bouncing off the edges like some kind of Neanderthal screen saver.

7. Turn on any other SCSI devices. Finally, turn on the Desktop Mac.

It works like magic! The PowerBook’s hard drive icon shows up on the desktop Mac’s screen just as though it were an external hard drive. You can drag huge amounts of files back and forth and revel in the speed of the copying.

To reverse the procedure, turn off the desktop Mac first, then the PowerBook, and then the other SCSI devices, if any.

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**ANSWER MAN**

**What are all those clicks?**

*Q:* My PowerBook is always clicking about something or other. It drives me crazy. What is all that clicking?

*A:* Actually, you’re hearing two different sets of clicks.

The clicking that comes out of the PowerBook speaker is the machine’s circuitry trying to do you a favor. After any sound has played, the Mac cuts off battery power to the speaker, thus blessing you with a cumulative few extra minutes of working time. The little click you hear is the juice being turned off to the sound chip and speaker.

The other click you hear, primarily on newer PowerBook models, is the IBM-made internal hard drive. (Yes, that’s right: Apple buys hard drives from IBM, of all companies.) After being accessed, the hard drive pops its heads aside, causing that loudish click.
Note, by the way, that the PowerBook still needs power when it’s in SCSI disk mode. If it’s not plugged in, the battery will gradually run down, just as when you’re using the PowerBook unattached to any SCSI chain.

Also, Apple warns you not to change the battery of a PowerBook in SCSI disk mode.

If you regularly plan to connect and disconnect your PowerBook from the SCSI chain, you can actually leave the special dark gray SCSI cable dangling, unattached, from the end of your SCSI chain. Your desktop Mac will work fine.

Whenever you need to transfer files, just shut off all the Macs, hook the PowerBook up to the dangling cable, switch it on first, and you’re rolling.

**Keeping track of which files are current**

As you toss files back and forth from PowerBook to main Mac, keeping track of which copy of which file is the most recent can get to be a headache. The truly nightmarish scenario is when you realize you’ve done *some* editing to a certain document on *each* machine, and you no longer remember which sections of the document are the most current!

The only way to avoid these situations is to practice safe *file synchronization* techniques. A zillion programs on the market are designed expressly for this purpose (Inline Sync, Apple’s own PowerBook Assistant, and so on). Essentially, such a program compares the contents of two folders (one on each Mac). Then it replaces older files with newer ones, regardless of which Mac contains each. When it’s done, both Macs contain the newest versions of all files.

**Making presentations**

Except for our multimedia tips in Chapter 23, we’re going to leave the headache of *creating* your presentations up to you.

We can, however, advise you as to how to *project* your presentation. The PowerBooks with a built-in video output connector are the models 160 (and later) and the Duos with a MiniDock.

You can hook up a few things to this video output port. Of course, you can always plug in a regular Mac monitor. Even if you have a black-and-white or gray-scale screen on the PowerBook, the external monitor can show full color. (If you have a Duo hooked up to a Duo Dock, you can even add more VRAM to the dock. That will let you show more than the usual 256 colors on the external monitor.)

You can also hook up an LCD projection pad. This item looks like a metal-framed, two-inch-thick slab of glass. You plug it into the Mac’s video output jack, and then you set the slab atop an ordinary overhead projector. (Yes, the same overhead projector they’ve used to show transparencies in sixth-grade biology class since time immemorial.)
We're not sure if you've seen these projectors recently, but they look great. The black-and-white ones cost about $1,400; the nice color ones run all the way up to $4,000 or so.

The only significant information we have to impart on this topic is how to work video mirroring. This is yet another great feature of the video-output-equipped PowerBooks. When an external monitor or projector is connected to the Mac, this feature lets you choose one of these two options:

- View the same image on the PowerBook screen and on the external monitor.
- Treat the external monitor as an extension of the PowerBook's monitor, exactly as though you're working with a multiple-monitor setup (see Chapter 10 for details).

If you do choose the mirroring option, and you've plugged in some nice big Mac monitor, it may alarm you that the image on the external monitor is much smaller than it usually is. That's because older PowerBook screens are 80 pixels shorter than the usual 13” or 14” Mac monitor. Video mirroring, of course, is designed to mirror on the external monitor exactly what you see on the PowerBook screen.

Finally, whenever you hook up an external monitor of any kind, remember that you must open the Monitors control panel and make the usual adjustments. (These, too, are described in Chapter 10.) If you don't, the external monitor may remain dark, and you'll wonder if something is broken. Furthermore, after you have made those adjustments (main monitor, startup monitor, and so on), you usually have to restart the PowerBook to make the changes work.

**Using the fax/modem**

Chapter 27 will discuss the general aspects of using the modem and fax/modem.

PowerBook fax and modem techniques are only slightly different. For one thing, this add-on appliance is usually built into the PowerBook. That can be trouble; Apple's PowerBook fax/modems, for example, are notoriously buggy.

The Apple Express Modem for the Duo is certainly inexpensive, small, and lightweight. But it relies on software and the Duo's own processing powers to do part of its job. That means that if you find a bug in the software, your faxing and sending through a modem won't work. Fortunately, continual revisions of the software have dramatically improved the reliability of the Express Modem. You can also get replacement software made by Global Village — or just get a Global Village PowerBook modem to begin with.

The only problem you may encounter traveling with your telecom-ready PowerBook is the phone jacks of America. As you may know, the most recent style of wall phone jacks — those installed in the last 15 years — are called RJ-11 jacks. The end of a typical phone cable has a male RJ-11 plug; it's usually a clear plastic rectangular plug with a clip that clicks when inserted into the proper outlet.
Unfortunately, far too many of the world’s (and even America’s) hotels haven’t quite caught up to the technology. Their phone lines are fastened to the wall with one of the older, four-screw faceplate systems, making it tough for you to hook up your modem.

You can use one of two ways to avoid this telecom-void zone. First, call ahead. Yes, we actually intend to suggest that you select a lodging facility based on its phone jacks. If you’re going to be doing business via modem or fax, you may as well be businesslike.

The second solution is a pricey one, but will earn you the admiration of your coworkers: get yourself a cellular modem. With this kind of modem, you won’t care if the hotel room’s jacks are clip-style, four-screw-style, or coated in cement.

A word or two about printing

Naturally, the PowerBook prints just as well as any other Mac, and to just as wide a variety of printers. The question here, though, is portability. In the following Secrets, we’ll outline a few strategies.

PowerBook printing Secrets

The ol’ fax-it-to-yourself Secret

We’re rather taken with this trick, actually. If your PowerBook has a built-in fax/modem and you’re staying at a hotel or working at an office, you can fax a document to the hotel or office’s own fax machine. It’s a little strange — half the time you’re sitting right next to the receiving fax machine, for heaven’s sake — but it’s a good quick way to get something on paper.

We’ve heard a lot of people bashing this idea lately. Yes, it usually gives you a greasy, curly fax-paper printout. If it’s a hotel, it may cost a dollar or two per page. And, we suppose, it’s fairly crude.

But compared with the expense, weight, and hassle of most other printing options, we still find the fax-it-to-yourself thing to be a clever and effective spur-of-the-moment printing option.

Portable printers

These devices are out there, for sure, but they’re not exactly wonderful. You can buy the WriteMove II, microscopically sized at two pounds. It has great printouts, but it’s horribly slow, and it uses ribbons that expire after 25 pages (GCC, 617-275-5800). You can try the Mannesman-Tally MobileWriter, a PostScript-clone portable. But it, too, is bigger and heavier than most people would want in their luggage. And, if you’ve read Chapter 25, you know that we steer very clear of PostScript “clones.” There’s also an Apple Portable StyleWriter, a five-pound, slimline adaptation of the StyleWriter I. The Apple and WriteMove printers can both run on batteries.
Printer-conversion kits

For about $130, you can buy a disk/cable kit designed to make your PowerBook work with any of the zillion IBM-compatible printers on the market (GDT, 604-291-9121). In a way, this option makes a lot of sense. It's cheap, it's lightweight, and very portable; and chances are good that you'll find some IBM printer no matter where you go!

StyleWriter printing caution

Some models, such as the Duos and PowerBook 500-series, have only a single modem/printer jack on the back. Yet when you open the Chooser and click the StyleWriter II icon, you're supposed to choose one of the two icons shown there: either the little telephone or the little printer.

Big secret: click the telephone or your StyleWriter won't work.

Traveling with the PowerBook

In the Airport

After you've gotten your PowerBook out of the computer store, you're going to start going places with it (we hope). The classic locale for PowerBook-spotting is the airport. We've had considerable experience toting PowerBooks of all kinds through these teeming public spaces.

Let's make this perfectly clear: the X-ray machine cannot hurt your PowerBook. Don't waste a single minute's sleep worrying about it.

If you travel with your PowerBook while it's asleep, then the much-derided security check — whereby somebody in a uniform who understands nothing about computers except their capacity to screw up a paycheck requires that you turn on your computer long enough to view text on the screen (yes, that's the criterion) — will mean nothing to you. You'll breeze through, tap a key to wake the PowerBook up (where the menus suffice as text), put it back to sleep, and be on your way.

CASE HISTORY

Carrying the Duo

At this writing, there aren't even any carrying cases on the market that are designed to fit the PowerBook Duo.

So one of your cheerful co-authors used a Magenta 7 carrying case designed for the original PowerBook — the smallest he could find — to carry his Duo. Turns out that if he put the MiniDock onto the Duo, its added bulk made the Duo just about fit right into the case.

But eventually, a funny problem turned up: the lower mouse button seemed to be losing its alignment and responsiveness. Turned out that this non-rocket scientist had been inserting the Duo/MiniDock unit into the case front-edge first. If you're familiar with the Duo, then you realize what that also meant — mouse button first. (The Duo's lower trackball button wraps all the way around the front edge of the machine like a protruding lower lip.)

And that put the combined weight of the Mac and its dock onto the mouse button as the entire affair was carted around the violent city of Manhattan. No wonder the lower-lip button got cranky.

Today, this author still uses the same carrying case and transportation scheme (attaching the MiniDock before traveling). Now, however, he puts the MiniDock edge into the case first, and hasn't had any further problems.

Come to think of it, this advice probably applies even if the Duo isn't attached to a MiniDock.
Security on the road

Security is a hot topic when it comes to PowerBooks. Even undereducated thugs, who probably don’t know the meaning of the word double-click, recognize a PowerBook (and even a PowerBook carrying case) when they see one.

You can find all kinds of devices designed to lock your laptop down to something heavy. Many of them attach to the security jack in the back of all the more recent models. We find most of them rather clunky. There are also all kinds of software protection programs that protect your screen, or certain files, or your entire hard drive from anybody who doesn’t know the correct password.

For information on both of these product types, we’ll refer you to the ads in *Macworld* and *MacUser*. Frankly, we’ve never really played with many of them.

*Our* security secret is much simpler, and much more effective. Our advice: keep the PowerBook attached to you in public places. Don’t set it down.

We know exactly two people whose PowerBooks have been stolen. Neither was stolen from a hotel room. Neither had secret documents swiped from the hard drive. Both were in public places (at a rent-a-car counter and an airport waiting lounge), and both put down the PowerBook in its case. In both cases, somebody grabbed the bag and disappeared into the crowd.

We don’t mean to say that you have to *carry* it at all times; just keep in contact. Loop the shoulder strap around your foot if you’re going to set the thing on the ground. Or wrap it around your wrist if it’s in the waiting-lounge chair next to you.

PowerBook and Airport Secrets

Inflight silliness

Once aboard the airplane, you’ll be asked to turn off your PowerBook for the first and last 15 minutes of each flight. If you blinked during the three-day period in 1991 where the newspapers explained why, you might have missed it.

Apparently, there was a rash of mass hysteria about laptop computers confusing the cockpit navigational equipment. When *PC World* magazine investigated, however, they found out how shaky the evidence was. Out of 19,000 reports of navigational equipment acting up that had been reported to the FAA, *three* featured pilots who had learned after the event that a laptop user had been aboard. That’s as solid a link as has ever been established.

We don’t know about you, but that’s a half-hour per flight that we could really use.

Notes on the startup chime

The PowerBook’s wonderful second-inversion C triad startup sound has a breathy, relaxing feel to it. But there’s nothing relaxing about the angry glare you’ll get from the sleeping passenger next to you if you’re continually chiming away (each time you restart, for example).
The beginner can’t be blamed for making a racket; it turns out that, unlike any other Mac, the PowerBook 100-series’ startup chime is controlled by the sound level you’ve set in the Sound control panel. Set it at 7 and you get a loud startup chime. Set it at 1 and you get a soft one.

Set it at zero, though, and you get the loudest startup chime!

We don’t know what sense this makes, either, but we have two solutions to propose. First, go ahead and set the speaker level to 1. The resulting chime is pretty darned quiet.

The second method is to plug some miniplug into the speaker jack in back of the PowerBook. A miniplug is the little pinlike affair found on the end of Walkman headphones, for example. In fact, a pair of Walkman headphones does just fine for this purpose; anytime a miniplug is in the PowerBook’s speaker jack, no sound comes out of the PowerBook speaker at all.

Of course, it’s less klutzy to get a miniplug that’s not connected to headphones or anything else — just a miniplug. You can get one at a Radio Shack or you can snip one off the end of some stereo cable (or off a pair of Walkman headphones).

Or just get a later-model PowerBook; the recent Duos and full-size PowerBooks startup chime shuts up completely when you set the Sound volume to zero.

Duo Notes

The PowerBook Duo is the smallest, sexiest Macintosh ever made. It has the pleasing heft, size, and shape of a nice hardbound book, yet it packs some serious horsepower.
Duo advantages

There are other advantages over the full-sized, boxy-comparison PowerBooks: the Duo batteries tend to last longer than those on full-sized PowerBooks. The Duo battery recharges faster. And the Duo goes to sleep when you simply close the lid.

But the incredible thing about the Duo is its size and weight — or lack of it. At 4.2 pounds, the Duo approaches half the weight of the original PowerBooks, and it's an amazing 1.4 inches thick. Every edge, button, and control is rounded, bulging like a portable CD player or a Ford Taurus.

To achieve the PowerBook Duo's impressive weight loss, Apple had to take out a few computing necessities. The floppy-disk drive is probably the most dramatic example. If you want to use floppy disks, you have to buy the $200 external floppy drive and an adapter (either the $135 floppy adapter or a $500 MiniDock). The Duo is also missing jacks for a microphone, speaker, SCSI, keyboard, video, or floppy drive. Instead, hidden by a flip-up panel, there's a strange, single, slim, three-inch wide connector.

This connector mates with any of three peripherals: that external floppy-disk drive (the same one made for the discontinued PowerBook 100); a MiniDock (a foot-long bar crammed with the full contingent of ports); or a full-sized, expandable, two-NuBus-slotted Duo Dock or Duo Dock II. (The Dock, half light gray and half dark, looks like a set piece from Star Wars. It's the size of a Mac or something, with a big rectangular slot in the front. That's where you insert your closed laptop Mac, which gets sucked in the last 1/2 inch like it's a videocassette.) Various other companies, like E-machines, make competing dock contraptions.

The point of all this — and the derivation of the name Duo — is that this Macintosh does double duty. In the plane or the meeting, when you probably won't need a floppy drive, you've got the most beautiful purebred typing machine made. Back at your office, you can attach the Duo to its dock, where the amenities of a desktop computer (big color monitor, full-sized keyboard, floppy drive, and so on) are waiting in instant readiness. In effect (goes the marketing wisdom), you get two computers for the price of one.
Some Duo drawbacks

In the first year of its existence, the Duo's sales didn't skyrocket. Most people theorized that the concept itself was the problem. It was too hard for people to understand, we kept hearing. There were some reports of mechanical problems: the original keyboard had a numb spacebar, for example, that would sometimes fail to type a space when you pressed it.

Then there was the Apple Express Modem, a $300 high-speed internal modem for the Duo. For a year, it was the only internal modem on the market for the Duo — and it was trouble-prone.

But we've got to say that Apple has pretty much cleared up the Duo's mechanical flaws. If you have the unresponsive Space bar, call 800-SOS-APPL, and they'll happily send someone to pick up the Mac, install a redesigned keyboard the next day, and overnight it back to you, all for free. The new keyboard is no bigger, but the touch is better and the keys all work. As Apple has updated the Express Modem's software, it's gotten better, too.

Duo Secrets

Recover from your Duo's window deprivation

The Duo's elegant gray-scale screen leaves only one thing to be desired: the shading of the windows. Any desktop Mac in gray-scale mode shows a nice 3-D tinting to its title bar and scroll bars, but not the Duo.

TRUE FACT

A friend of BOB W

As Apple was developing the Duo computer, its internal code name was BOB W.

Only when the advertisements for the new tiny Macintosh appeared did the significance of this code name, which was based on a popular Star Trek: the Next Generation episode's title, become clear.

"The PowerBook Duo: Best of Both Worlds."
Having read Chapter 3, you know how to adjust whatever color scheme the PowerBook uses for these accents (with the Color control panel). But you'll find that, weirdly enough, on a Duo nothing happens at all when you choose from among the delicious-sounding choices.

It turns out that the black-and-white window phenomenon is a side effect of the Duo's System Enabler.

In theory, you can restore the tinting to your windows as follows: Start up the Duo from your Disk Tools disk. Launch ResEdit, included with this book, and open the System Enabler inside your Duo's System folder. Find the icon called WDEF and click it. Then choose Cut from the Edit menu, save, and restart.

We say in theory, because we tried this twice. Once it worked beautifully and restored the gray tinting to the windows. Another time it made our windows act funny. Both times we restored everything by reinstalling the System folder.

**What you can attach when**

The rules for connecting various devices to your Duo are a little involved. For reference, here's the list.

*Shut down the Duo before:* inserting or removing it from a Duo Dock; connecting it to a SCSI cable; or attaching an external monitor.

*Put the Duo to sleep before:* connecting it to a MiniDock; plugging in the floppy-disk drive; or attaching keyboard or mouse.

*You can leave the Duo on to connect or disconnect:* a printer cable; an external modem; the AC power cable; microphone; speaker; or phone cord (if you have an internal modem).

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**MACINTOSH SECRET**

**The Very First Newton Secrets**

OK, the Newton isn’t a Mac. But Apple’s palmtop, keyboard-less, handwriting-recognizing, quick-faxing, phone-dialing, day-scheduling, Etch-A-Sketch—descended, snazzy corporate showoff computer is a fave of ours. We wanted to be the first to reveal a few Newton Secrets.

First, hold the pen tip steadily on the clock icon at the bottom-left of the Note Pad screen. You’ll see the internal temperature of the Newton!

Second, try this. With the Newton turned on, open the battery compartment. Use the stylus to push the Reset button; after a moment, the Newton will restart. Tap Undo. You’ll get an error message that says there’s nothing to undo. Now tap the overview dot between the two arrows at the bottom of the screen.

You’ll see a little window listing “Newton” twice. Tap the top one to get a “Welcome to Newton” screen. On that screen, hold down the pen tip on the circled I (for Information). You’ll be shown, of all things, the date July 20, 1969, 2:35 am — the moment when man first landed on the moon!

Tip #3: Write About Newton and tap Assist. Surprise! (Ko Isono, whose name appears on the final credits screen, was a young Newton programmer who, during the intense preproduction phase of the Newton, took his own life.)

But #4 is the best: Tap Find. Enter Elvis. Tap All. The Newton will tell you and show you (on the Map!) where the King was last seen!
Chapter 13
Power Mac and AV Technologies

In this chapter:

- How to talk to your Mac — and make it listen
- How to get your Mac to talk back
- Making the GeoPort work
- Getting TV on the Mac screen — and vice versa
- CD-quality sound comes to the Mac

For a year or so, the owners of Apple's original pair of AV models — now known as the Quadra 660av and 840av — knew their place in the universe. Yes, OK, they were thrust into incompatibility hell; their fax/modem software no longer worked, ATM and After Dark needed updating, and not since the original switch to System 7 had so many mysterious crashes plagued the system. But in return, these Mac fans got some astounding cutting-edge technologies. These Macs responded to voice commands. They could convert your family videos into editable QuickTime flicks. They could show your Photoshop files on TV. They could record sound at CD quality. Their GeoPort jack eliminated the need for an expensive modem. They could answer your phone and dial your friends for you.

Then came the Power Macintosh models. To the dismay of original AV owners everywhere, most of those specialized, expensive features now came standard with every Mac sold — at a far lower price. Furthermore, the Power Macs accomplish the same stunts without the special DSP (digital signal-processing) chip that made the AV models so special. To add insult to these injuries, Apple announced that no Mac model would ever again include a DSP. The purchasers of the original AV models — and the companies that had developed products to take advantage of the DSP chip — were, in effect, orphaned. In retrospect, they seem to have been guinea pigs for the burgeoning Apple AV feature set.
But even if the DSP won’t be developing any new capabilities, the features that it always has offered are impressive enough. In this chapter, we’ll delve into each of the audio, video, GeoPort, speech-recognition, and telephonelike features that the AV Macs introduced — and that the Power Macs took from there. And while we’re at it, you’ll find that a goodly chunk of this chapter applies equally well to the 630 series of LC, Quadra, and Performa Macs.

AV Models vs. Power Macs

Before we chug ahead into this chapter, however, we probably should make it clear that the AV features of these two Macintosh types — AVs and Power Macs — aren’t identical. As we mentioned, the Power Macs lack the DSP chip of the Quadra AV models, but that’s not the only difference.

- **Speed.** A Power Macintosh is faster than an AV (depending on the software, of course). You really feel this speed edge in the speech-recognition features; a Power Mac simply responds faster than an AV to each command you utter.

- **Simultaneity.** The DSP chip of the AV models can’t devote its attention to two audiovisual features at the same time — for example, you can’t have speech recognition on while you use the GeoPort modem jack. The Power Mac can.

- **GeoPorts.** As a matter of fact, the Power Mac can handle two GeoPort streams at the same time; its modem and printer jacks are both GeoPorts (described later in this chapter).

- **Completeness of features.** A Quadra AV model includes all the Big Five audiovisual features: (1) CD-quality sound recording; (2) voice control; (3) a GeoPort modem jack, making possible phone-dialing and -answering features; (4) TV on your screen, for viewing or recording; and (5) the capability to record your Mac screen images on a VCR. The standard Power Mac model, on the other hand, includes only the first three. The TV input and output features are available only on Power Macs equipped with the AV option (a special PDS card described in Chapter 11).

- **TV jack types.** A Quadra AV model has two sets of video input and output jacks: one set for standard TV (called composite) signals, and a second set for S-VHS or Hi-8 equipment (called S-video) signals, such as from expensive camcorders that provide superior picture quality. The Power Mac AV models, by contrast, offer only S-video jacks; if you want to plug in standard-TV (composite-signal) equipment, you have to use the included adapter cables.

AV-Mac Troubleshooting Secrets

*The Top 10 visit the AV Macs*

In Chapter 32, we’ll present our idea of the 10 most troublesome software doodads you can possibly add to your System Folder.

Our Top ten list holds particularly true for the AV Macs. These machines have modified circuitry and software, and therefore are more likely to damage non-Apple software (and even Apple software). Suitcase (Symantec), SAM (Symantec), Norton
Utilities (Symantec), ATM (Adobe), FaxStf (FaxStf), and After Dark (Berkeley Systems) are classic system-crashers until you upgrade to post-AV versions.

In addition to those ten, you may run into sound problems with CD-ROM discs and shareware games that predate the AV technologies. With the Quadra AV series, Apple introduced new sound circuitry (known as Sound Manager) that renders the sound on those older entertainment products inoperable. There's no hope except to call the makers of those CDs and games and inquire about upgraded versions.

Finally, some products don't work at all: no version of Prodigy works, and the QuickTake digital camera didn't work with the Power Macs when they were first released. Apple Remote Access 1.0 doesn't work on the Power Macs, either.

**Non-composite SIMMs only**

You can increase the memory of both the Power Macs and the AV Macs. However, don't let any memory-chip company sell you *composite SIMMs*: RAM boards in which several smaller chips are piled in rows onto a single board. Composite SIMMs, though cheaper than non-composite (especially 16MB SIMMs or larger), are almost guaranteed not to work properly.

### Audio Heaven

The key to understanding the various sound recording and playback features of Apple's special Mac models is its Sound control panel. Unlike the control panel that Mac lovers had come to know and love for nearly a decade, this redesigned panel — later made standard for all Macs — includes a special pop-up menu that allows you to access your new sound features (see Figure 13-1).

![Image of Sound control panel](image)

> **Figure 13-1:** The Sound control panel’s pop-up menu is the key to the AV sound features.

When the pop-up menu says Alert Sounds, you get something that resembles the Sound control panel you've known for years, where your Mac's various beeps and quacks are listed (and where you can change their volume level).

For most of the special audio tricks, you have to start by using this pop-up menu to specify where the sound is *coming from* and where you want the sound to *go*. 
Where sound can come from

When you choose Sound In from the Sound control panel, you see a “Choose a source” window, which usually lists only one option: “Built-in.” If you own an AudioVision monitor, you also see a second icon. In other words, you use the first screen to indicate which of your two microphones you want to use (the one in your monitor or the one plugged into the back).

For the fun stuff, though, click the Options button (see Figure 13-2).

![Figure 13-2: Where in the world will the sound come from? Click Options to see your choices.](image)

This Input Source window might offer any of several additional sound-source options, depending on your Macintosh model. These options include:

- **Microphone.** An AV Mac or AV-option Power Mac comes with a strange-looking, crescent-shaped microphone called the Apple PlainTalk microphone. This mike plugs into the Sound In jack on the back of the computer. Be warned, however: the old, circular Apple microphone won’t work on your Mac model, because its miniplug pin simply isn’t long enough to insert into your Sound In jack properly.

- **AV Connector.** On a Power Mac with the AV option, this refers to the sound coming in through the S-video input jack on the AV card (or from the AudioVision monitor, if you have one).

- **Internal CD.** If your Mac has a built-in CD-ROM drive, it can, of course, play normal audio compact discs. If you want to record a little bit of music, click this option.

- **External Audio.** You also can record from a tape deck, Walkman, DAT (digital audio tape) player, your TV set, and so on. Just make sure that you have the correct cables; each cable must end in a miniplug like the one on the end of Walkman headphones. You may need to visit Radio Shack and get an adapter cable; it should have male RCA plugs at one end (for your tape deck, VCR, and so on) and a stereo miniplug at the other.

When you plug the connector into your Mac's Sound In jack, the Mac is smart enough to detect that the microphone is not a PlainTalk microphone; the Microphone icon pictured in Figure 13-2 changes to External Audio. Make sure that this icon is selected, and you’re ready to roll. (How does the Mac know that the PlainTalk mike is missing and that an external audio device has replaced it? The PlainTalk mike is slightly longer than a standard miniplug; the extra length taps into a power source, which powers the microphone and signals the Mac that it’s plugged in.)
The only trouble you may have is that the AV models require an *amplified* input signal. That's why the old Apple microphones and non-Apple microphones don't work.

Also in the Input Source window is the famous Play-Through checkbox. This option represents a major difference between the AV Macs and previous ones. On most Macs, the built-in speaker is silenced *immediately* when you plug something into the back-panel speaker jack. On AV-type Macs, however, you can turn the built-in speaker back on again — by choosing Play-Through. When this option is selected, sound flows from the Sound In source to the Mac's built-in speaker (*and to anything plugged into the speaker jack*). You'd turn this option on if, for example, you wanted to listen to an audio CD as you work.

If your microphone is plugged in while Play-Through is selected, you may get that irritating squeal known as feedback.

## Where the sound can go

When you choose Sound Out from the pop-up menu, you get an additional set of choices. You might think that you'd be offered a choice of Built-in Mac Speaker and External Speaker — in other words, that you'd specify where the sound should go.

Ironically, you're supposed to answer *that* question in the Sound In panel, through your Play-Through setting. The misnamed Sound Out panel, on the other hand, offers settings pertaining to sound quality (see Figure 13-3).

![Figure 13-3: Are you a high-quality type of audiophile?](image)

The Rate pop-up menu controls the sound quality. When you read Chapter 23, you'll discover that most Macs can record at a crummy telephone-type quality called 11 KHz and also at a better quality called 22 KHz (used for your alert sounds, such as Wild Eep and Sosumi). The AV and Power Macs, however, offer a startling third choice: 44 KHz, which, as you've probably read, is audio-CD quality. Sounds made at higher quality settings, also called higher *sampling rates*, take up more disk space, however.

You'll probably discover that you can't change the Size and Use options in this panel. AV-style Macs *always* use 16-bit sounds, and they're *always* played back in stereo.
**ANSWER MAN**

**Bits? KHz? Huh?**

Q: I’m afraid I don’t get it. Which is better: a high KHz setting in my Sound control panel, or a high Bit setting (like 16-bit)?

A: The sampling rate defines the frequency response of a sound — how accurately the highs and lows are reproduced. In other words, 22 KHz is twice as hi-fi as 11 KHz.

The bit depth, on the other hand, specifies the dynamic range of the sound, from very soft to very loud. Therefore, audio-CD quality recording on an AV Mac — 44.1 KHz at 16 bits — is extremely clear recording that takes up a lot of disk space.

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**AV Sound Secrets**

**Why is my speaker sound so faint?**

It seems as though every AV and Power Mac owner complains at first that the sound coming out of the speaker is too quiet, even when the sound-level slider in the Sound control panel is all the way up.

As they say, "It’s a feature, not a bug." Turns out that your Mac now has two volume sliders. One of them is hidden.

From the Sound control panel’s pop-up menu, choose Volumes (see Figure 13-1 earlier in this chapter). You’ll see the master volume sliders: one for your headphones and one for the speaker. When the Speaker slider is all the way up, your main-panel Sound slider will finally work as it does on other Macs.

**How to record sounds from your CD, stereo, or mike**

To record from your PlainTalk microphone or stereo, plug it into the back of the Mac, as described earlier. Use the Sound In window (in the Sound control panel) to select the appropriate sound source: Microphone, External Audio (if you plugged in your stereo), or Internal CD (to record from a CD-ROM drive). You probably will want Play-Through turned off if you’re using the mike and on if you’re using an external device or a CD. (If you’re using the CD drive, use the AppleCD Audio Player or CD Remote desk accessory to choose the track that you want to hear.)

Now go to the Alert Sounds window (also in the Sound control panel), and click Record. The rest should be easy.

**How to record at CD quality**

The preceding Secret has one problem: even these high-powered Macs record alert sounds at the medium-quality 22 KHz sampling rate, just like Macs of old. To record at the highest possible quality — the 16-bit, 44-KHz, CD-quality setting — you have to use special recording software. SoundEdit, Premiere, and other programs can record at the higher quality.

If you’re not into spending money, here’s how to use the FusionRecorder program that came with your AV-style Mac. (It’s usually in a folder called Apple Extras.) After specifying the sound source, as described earlier, launch FusionRecorder. In essence, you’re going to record a QuickTime movie that has no picture. Click the Record button, and you’re in business.
Alas, to play back the resulting QuickTime movie/sound, you must use a QuickTime movie-playback program, such as Simple Player or FusionRecorder itself. Here are two methods for converting that recording to standard, double-clickable System 7 sound:

Option 1: Use ResEdit to suck the sound out of the movie (as described in Chapter 21), and then paste the sound into your System file, which you then can open in the Finder. From there, you can manipulate the sound normally.

Option 2: Use a shareware program, such as SoundMover, to accomplish the same thing.

How to listen to a CD as you work

Use the Sound In window of your Sound control panel to select Internal CD. If you want the music to play through your Mac speaker, be sure that Play-Through is turned on; leave this option off if you have headphones or external speakers hooked up. Use the Sound Out window to select the 44.100 KHz option (for best quality).

Insert your music CD. Then use your AppleCD Audio Player or CD Remote desk accessory to start the music and specify the tracks to be played (see Chapter 3 for full instructions).

Now the bad news: when CD-ROM Play-Through is enabled, the Quadra AV Macs ignore your microphone. No more voice-activated menus — you must choose one deluxe AV feature or the other. (The Power Macs don’t impose this tradeoff.)

Free sound effects

Here’s a Secret that applies only to Quadra AV-model owners.

Insert the CD InstallMe disc that came with your Mac. On it, you’ll find a folder called Apple Extras. Inside is another folder called Sound Effects. This folder contains an extension called Sound Effects. If you install this extension in the System Folder and restart your Mac, you’ll find a new option in the pop-up menu of your Sound control panel: Effects.

When you choose Effects, you see a new window that lists several undocumented sound effects, which essentially are various amounts of echo (reverb). From now on, any time your selected alert sound plays, it’ll play with the reverb effect you selected!

TV and QuickTime Features

As we’ve mentioned in other chapters, the video signal that creates a picture on the Mac screen is utterly unlike the one in a TV set. The electron guns scan the screens at different rates and in different patterns.

Therefore, the fact that the AV Macs can show your Mac’s picture on a TV set, or vice versa, is remarkable — and the quality is higher than that provided by those $300 add-on converter boxes you sometimes see advertised.
Bringing TV to your Mac

It's easy enough to watch TV on your AV Mac. First, run a cable from the video-output jack of your VCR (or TV, if it has output jacks) to the Video In jack on the back of the AV. (Again, if you're using S-VHS or Hi-8 equipment, use the S-video input port on the Mac.) If you want sound as well, make sure that you connect the audio output of your TV or VCR to the microphone jack of the AV.

Watching TV

After you're wired, watching TV on the Mac is as easy as launching the Video Monitor program in your Apple Extras folder. Feel free to resize and reposition the video window; you'll find that choosing Full Size from the Monitor menu turns your entire monitor into a glorified TV set — a sure way to get gasps from fellow Mac fans.

Unlike recording video (as QuickTime movies), simply showing video on your screen involves no decrease in picture smoothness, quality, or frame size. You may have to change your Monitors control panel to a lower color setting, however; not even a Power Mac AV with 2MB of VRAM can display live video at the Millions of Colors setting. For more on this topic, read on.

Recording TV

The wiring that you need to record TV, VCR, or camcorder footage on your Mac (thus turning that footage into a QuickTime movie) is the same as for simply watching TV. Recording, however, requires a different software program. You can use a QuickTime editing program like Premiere, of course, but you also can use VideoFusion, which comes with your AV-model Mac.

VideoFusion is fairly self-explanatory, except for one whopping oddity that almost everyone encounters (see Figure 13-4).

![Figure 13-4: The bugaboo of AV video recording: you can't see photorealistic colors when recording — only when playing back.](image)

Weird as it sounds, the AV Macs record the incoming video in full 16-bit color (the "Thousands of colors" setting). But depending on your Mac model's amount of video memory (VRAM), you won't be able to see the incoming picture while recording unless your Monitors control panel is set to 256 colors!
Power Mac AVs come with a nonexpandable 2MB of VRAM. That's enough memory for VideoFusion to work when the Monitors control panel is set to thousands of colors — but no higher. Quadra AV models, however, come with only 1MB of VRAM. This puts you in the awkward position of having to set Monitors to 256 colors while recording and having to switch back to thousands when playing back the movie you made.

**Bringing your Mac to TV**

You can display your gorgeous QuickTime movies (and other goodies that normally are displayed only on your Mac screen) on your TV set. For that matter, you can record your Mac presentations on a VCR or camcorder. If you have a Power Mac AV, you can even switch between the TV and your normal monitor without restarting the Mac.

The connections are what you'd guess: run a cable from the Mac's Video Out jack (or S-Video Out, as appropriate) to your VCR's input jack. Do the same with the sound cable.

Now it gets hairy. Open the Monitors control panel, and click Options. You see a special box full of options (see Figure 13-5, and read the caption carefully).

If your TV (or camcorder, or VCR with TV) is connected properly, you can switch the video signal to it in four simple clicks:

- First, click Display Video on Television. (If you're in Europe or Australia, also click PAL Standard. The NTSC signal is used in Japan and the United States.)

- Second, if what you're planning to display on the TV includes Mac interface elements — windows, menu bar, and so on — select "Use flicker-free format." The flicker-free mode eliminates the jittery edge flickering that otherwise would plague your NTSC television display.

Unfortunately, this option has a side effect: it greatly decreases the realism of your colors. Under most circumstances, you can't even turn on the flicker-free feature unless
you’ve switched to 256-color mode. In other words, in flicker-free format, Photoshop illustrations, QuickTime movies, and color scans look especially crummy. (To display those elements on TV, don’t use the flicker-free feature.)

- The third click is the OK button.
- Finally, in the warning box that appears (see Figure 13-6), click Switch.

(If you’re using a Quadra AV, however, you can’t switch to the TV on the fly as we’ve described. You have to select the poorly punctuated checkbox called “Upon Restart Display Video on Television” and then restart the Mac.)

Figure 13-6:
Your last chance to abandon this madcap scheme.

![Warning box]

If all has gone well, your TV now is showing what’s usually on the Mac screen. If it’s not, something’s wrong with your connections.

Incidentally, in our dozens of experiments with these controls, dozens of odd things happened. Depending on the order in which you click the various controls, the following oddities may occur:

- All Monitors color-choice settings above 256 simply disappear from the list.
- All color-choice settings above 256 may be present but not selectable.
- The “Display Video on Television” option may not be selectable (because the wrong monitor size, such as one larger than 640 by 480, is selected).
- The “Flicker-free format” option may not be selectable (indicating that you need to reduce your color-depth setting).
- The “640 x 480” option may disappear from the Options box until you restart your Mac.

Just remember the golden rule: to capture your movies, photos, and other color-sensitive works on tape or TV, don’t use the flicker-free feature. You’ll get jittery horizontal lines (like menu bars), but at least you’ll get 16-bit color. In other words, Apple’s giving you a tradeoff: 8-bit, stable TV picture of your Mac screen — or 16-bit, glorious movies that don’t include any horizontal lines of the type you’d find in Mac windows.

The other golden rule: you can do far more on-the-fly switching (of color depth, Mac-vs.-TV display, and image size) on a Power Mac than you can on a Quadra AV. You may have to restart a Quadra AV (or close the Monitors control panel) for a change to take effect.
AV Video Secrets

The 512-by-384 miracle

When you try putting your Mac's image on TV, you'll notice one problem: everything's tiny. Normal-size text is too small to read. Your menus are barely visible at the top of the screen. Worse, your QuickTime movies — which usually aren't full-screen to begin with — look positively puny, desolately stranded in the center of your yawningly big TV screen. But we know a great trick.

While the picture is displayed on your Mac monitor, open the Monitors control panel, click Options, and select the 512 x 384 monitor setting. When you click OK (Power Mac) or close the control panel (Quadra), you'll see a startling sight: your normally glorious full-screen picture now is a tiny, tunnel-vision, nine-inch picture in the center of your screen.

Terrible, you say? Not for our purposes. Go back to the Monitor control panel's Options window. Switch to displaying the picture on TV, as described earlier. Now the picture is bigger on the TV screen, making it truly easy to read text, restoring your menu bar to clarity, and making any centered QuickTime movie fill much more of the screen!

Make your own movie stills

As "Roseanne" plays away in your VideoMonitor window, don't forget that you can take a snapshot at any time simply by choosing Copy from the Edit menu (or by pressing ⌘-C). The Mac saves the frame that it grabbed from the screen as PICT 0, PICT 1, or whatever (unless you changed your Preferences). Feel free to edit the resulting picture in, for example, Color It, which comes with this book and is ideal for, say, editing your ex-spouse's head out of a captured frame of your Thanksgiving footage.

The magic keystroke for TV as a monitor

You've traveled thousands of miles with your Quadra AV to give a demonstration. You've been counting on using a TV as a screen. You hook it up, turn on the Mac — and get a staticky mess. You remember that you were supposed to tell the Monitors control panel that you'd be using a TV while you were still connected to a regular monitor!

You'd be sunk if you didn't know this trick. Restart the Mac; as it starts, hold down the ⌘, Option, T, and V keys. Your Mac automatically switches to using the attached TV as its screen.

Fortunately, the Power Macs are smart enough to detect when no Mac monitor is attached and to switch to the TV automatically.
Why your old monitor doesn’t work

The Quadra AV and Power Macintosh AV models have one common feature that we haven’t yet mentioned — a feature that you’ll probably wish these models had. Neither the Quadra AV nor the Power Mac AV works with many pre-AV monitor brands.

In the past, a controlling signal — known as the sync signal — was sent to your monitor on the same wire as the signal for the color green. But during the development of the Quadra AV, Apple changed the signal. Any older monitor that expects that sync-on-green signal won’t work.

Sometimes, you can get your monitor to work by obtaining a new cable or NuBus card from the manufacturer. Otherwise, you’ll simply have to sell your monitor and replace it with one that’s AV-compatible.

Why your movie is only .02 second long

If you use the VideoFusion program to record a QuickTime movie, your first experience is likely to be short and very disappointing. Sure, you can preview the incoming TV picture (provided that you switched down to 256 colors, as described earlier). But VideoFusion stops recording almost immediately!

The problem lies in VideoFusion’s Record Preferences (in the Record menu). The default option is “Record to memory, then write to disk” — meaning that VideoFusion will record only as much movie as it can store in your Mac’s current free RAM, which probably is only a second’s worth (unless your computer is endowed with extra RAM).

If you choose “Record directly to disk” instead, you’ll be able to record much longer movies. Unfortunately, you’ll also get much choppier movies; recording straight to the hard drive gives you the jerky low frame rates that you’d normally associate with less AV-savvy Macs.

The solution, of course, is to get a lot of memory and enjoy the higher frame rates — or to forgo VideoFusion altogether and buy a real QuickTime production product, like VideoSpigot or VideoVision. (Make sure that the product will work with your specific model. For example, a Power Macintosh 6100 with the AV card can’t accept an additional NuBus card.)

The secret movie for Quadra AV owners

If your Quadra AV has a built in CD-ROM drive, try this. Insert the CD InstallMe First disc into the drive; then launch the Simple Player (or another QuickTime playback program). Choose Open from the File menu. Open the CD’s System Folder, and open its Preferences folder. Then find and play the file called Our Gang — a long, dull, self-congratulatory movie of the AV Hardware design team toying with circuitry.
The GeoPort

The GeoPort, a small round jack on the back of the Mac, looks for all the world like the modem or printer port on traditional Macs. And, indeed, you could go on with your life using it as simply a modem or printer jack, plugging in your same old peripherals the same old way.

If you look closely, however, you'll discover that the GeoPort jack has one tiny pinhole more than the traditional modem jack. This extra wire provides electricity to whatever special GeoPort-capable device you plug in there.

What are these devices? Actually, there's only one: the GeoPort Telecom Adapter, otherwise known as the Pod. The Pod is a strangely shaped gray plastic box that dangles off your GeoPort jack. When it's plugged into a phone line (and when you've installed the appropriate software), the Pod serves as a fax/modem.

That, of course, is small potatoes; fax/modems have been plugging into the backs of Macs for ages. The difference is the price: the GeoPort costs about $90, compared with the usual high-speed-modem price of around $200. As it turns out, the Mac can imitate all the usual squeals and shrieks of a modem; the Pod supposedly serves only as a connector to your phone line and isn't a modem itself.

GeoPort Adapter problems

There's one other difference between the Pod and a real fax/modem: the Pod has problems. We hear complaints like these all the time: “My Pod won't connect with America Online,” “My Pod won't answer incoming fax calls,” and “My Pod sends gibberish to the local BBS.”

Our advice is as follows:

- Monitor the user groups and on-line services like crazy for announcements of software updates — both for the Express Modem software (which the Pod uses) and for the telecom programs that you use. The America Online 2.1 software, for example, finally ended most Pod problems.

- Keep your ears open (by calling 800-SOS-APPL, for example) for the appropriate modem-initialization strings to use with the GeoPort Adapter. Typing the appropriate codes in the appropriate places in your telecom programs can work wonders.

- If you really rely on your modem and use it every day, and you can't afford to waste time troubleshooting, get a real modem instead of the Pod. The headaches you save may be your own.

Telephony

*Telephony* rhymes with *Stephanie* and refers, very simply, to using your Mac as a phone, an answering machine, or both. When equipped with a GeoPort Telecom Adapter and the right software, your Mac can, in theory, perform telephony.
Unfortunately, the only evidence of this hypothesis is a sad little program called ApplePhone that comes with your AV Mac. This program does indeed allow you to use the Mac as a phone: you speak into your PlainTalk mike or AudioVision monitor, and you listen to your caller through the Mac speaker. (Figure 13-7 shows the basics.) Unfortunately, unless you're using a Jabra EarPhone, this glorified speakerphone setup is likely to create whining feedback, and your callers are likely to complain that they can't hear you well enough.

ApplePhone supposedly can serve as an answering machine, too, but it doesn't really work. After the caller hangs up, for example, ApplePhone tends not to notice, and it hangs on to the line forever.

In the face of angry feedback, Apple finally threw up its hands and declared ApplePhone to be “only a demo” of telephony’s potential — and, by implication, not to be confused with actual useful software.

At this writing, then, the promise of AV technology and telephony remains unfulfilled.

GeoPort Secrets

How to make the thing work

Much of the GeoPort Telecom Adapter’s problem is that its software is Apple’s Express Modem software, originally developed for Apple’s equally troublesome internal PowerBook modems. In essence, your GeoPort-equipped Mac thinks that it has an Express Modem inside it.
To make the Pod work as a modem, therefore, begin by opening the Express Modem control panel. You must choose between two listed options: Use Express Modem or Use External Modem. Which do you choose? After all, the Pod is both, really. Answer: choose Use Express Modem.

**How to fax conveniently**

This isn’t much of a Secret, but we couldn’t risk your not knowing it.

Many people we know think that when they want to fax something, they have to open the Chooser, click the Express Modem icon, and then “print” the document they mean to send. Actually, the keyboard shortcut is much faster. Simply press Control and Shift together and then go to the Print command — which now, magically enough, is the Fax command. Type the phone number, and your document is on its merry way.

**One more troubleshooting trick**

If your Pod is giving you trouble as a standard modem, check your modem software’s menus for a Settings or Setup command. Look for a Modem or Port pop-up menu.

If you find it, choose GeoPort from the pop-up menu. If GeoPort isn’t listed, (a) it may be time to upgrade that application, and (b) you may be able to muddle through by using the Modem Port setting instead.

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**Speech Recognition**

The AV models’ voice-command feature seems incredibly exciting. This is the future! This is *Star Trek!* This is James Bond! You speak; your computer obeys.

For most AV owners, though, using the speech-recognition feature creates a series of disappointments. First, the feature sucks up a huge amount of memory — up to 2.5MB. Second, the feature simply doesn’t work very well. That it works at all is impressive. But even if you can get it to work 80 percent of the time, you’re still spending 20 percent of your time repeating a voice instruction, getting more and more irritated that you didn’t just use the mouse to begin with. Furthermore, speech recognition works only for American English speakers with no accent.

**Setting up speech recognition**

Before you can start blathering away at your uncomprehending computer, you must endure quite a bit of setup.

The master switch for the speech-recognition feature is the Speech Setup control panel (see Figure 13-8).
A galaxy of extensions

Q: Good God — what on earth are all these extensions and control panels? Can’t I get rid of some of ’em?

A: If you really want to know exactly what they are, read Chapter 3.

We can tell you this much here: each AV feature requires its own phalanx of System Folder junk. Sure, you can throw some things out — a dozen at a time, in fact — if you don’t need one feature or another. Here, for the record, is what you get for each AV aspect:

**CD-ROM drive:** Apple CD-ROM, Apple Photo Access, Audio CD Access, CD Remote Init (older systems only), Foreign File Access, AppleCD Audio Player, High Sierra File Access

**GeoPort Telecom Adapter:** Express Modem Tool, Fox Extension, Fox Sender, GeoPort™ Extension, GeoPort™ Telecom, Shared Library Manager, Express Modem control panel

**Speech recognition:** AppleScript, Apple® Event Manager, PlainTalk™ Speech Recognition, PlainTalk™ Text-To-Speech, QuickTime™, Serial Extension, SR Monitor, SR North American English, System Speech Rules, TTS Female Voice, TTS Male Voice, TTS Male Voice Compressed, Speech Setup control panel

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The primary pair of controls in this control panel are the On/Off switch (and slider) and the Options pop-up menu.

**On/Off and tolerance slider**

The On/Off buttons, of course, switch speech recognition on or off; the salient point here is that the On option gulps down the 2.5MB required for speech recognition to work. (Click Off to regain that memory instantly.)

The Tolerant/Strict slider is the single most important setting for getting good results from speech recognition. Set the slider toward Strict if you work in a noisy environment; the Mac will execute a command only if it’s pretty darned sure what you uttered. If the Mac seems to be ignoring you completely, set the slider toward Tolerant.
The Options pop-up menu

This pop-up menu lists four setup options:

- **Introduction.** Choosing this option reveals the Introduction button, which, when clicked, launches the Introduction program (stored elsewhere on your hard drive). This screen is important reading; follow it all the way through. The tour is more fun if speech recognition is on so that you can try the little lessons.

- **Name.** You’re generally supposed to address your computer by prefacing each command with its name: “Computer, empty the trash,” for example. The idea is to prevent the Mac from going wild, pulling down menus, and so on, when you’re just talking on the phone.

  Use this option to indicate what name you want to use and how strict you want to be about having to use it. The name must contain more than one syllable, and it has to be a pretty straightforward word or phrase. (Added fun: Try “Simon says.”)

- **Feedback.** The name that you choose for your computer has nothing to do with the Character that you choose as your Feedback persona (see Figure 13-9).

![Figure 13-9: The four Feedback settings, which allow the Mac to tell you what it's thinking.](image)

This option allows you to control how the Mac talks to you, both visually and aurally. The Character pop-up menu lists the little cartoony guys shown in Figure 13-10. The image that you choose will float on your screen in a little window, acting perky, sleepy, or confused, depending on how the Mac is reading you.

![Figure 13-10: The hidden faces of your Mac's personality, embodied at last.](image)
Part II: Secrets of the Machine

TRUE FACT

Valley of the TV nerds

The eight Feedback characters offered by the Speech Setup control panel are designed to communicate the Mac’s disposition as you use the speech-recognition feature. The characters communicate even more, however, about the Apple programmers who created them.

Think about it. There’s Pat, who’s the spitting image of the mystery-gendered Pat from the “Saturday Night Live” skits. There’s Raymond, a dim-witted-looking guy whom you wouldn’t be nuts to assume is based on Dustin Hoffman’s character in the movie Rain Man. There also are Connie (Chung) and Sally (Jessy Raphael, of daytime-talk-show fame).

We think it’s safe to say that these programmers spend quite a bit of time being influenced by pop-culture TV and movies. Our only relief is the fact that Vincent, the severed-ear character, is a clear reference to its artistic namesake (van Gogh). At least somebody over there has culture.

The Voice pop-up menu lists the various timbres of voice that the Mac can use to talk back to you — to reply, for example, when you ask the computer what time it is. In the Quadra AV series, your choices boil down to various qualities of Male and Female; the compressed voices don’t sound quite as good, but they take up less memory. (And the None choice uses even less!)

On the Power Macintosh, however, you get a list of dozens of amazing voices, ranging from the crazy old Deranged guy to the chilling calm of Mr. Whispered. We were especially impressed by Good News, which spookily sings its responses.

You can combine any voice with any Feedback character; Raymond can have a female voice, if you so desire.

The Responding and Completed pop-up menus specify what sound the Mac plays when it actually recognizes a command and finishes executing it, respectively. These sounds are various clicks and whistles — quick audio confirmations.

■ Attention Key. You can think of the attention key you specify as being a temporary on/off switch for the Mac’s listening mode. In other words, one press of this key makes the Mac ignore anything that you say (useful if you’re about to be on the phone for a while, discussing a lot of Mac menu commands), and a second press makes the Mac start reacting to you once again. (When the Mac isn’t listening, your Feedback character cutely slumps into sleep.)

What you can say to the Mac

So what, exactly, can you do when speech recognition is turned on and configured?

Well, the Mac can’t take dictation, writing down what you say. That technology is still in its infancy. What it can do is execute menu commands when you speak them (“Shut down,” “Restart,” “18 point,” and so on). It also can respond to a few basic Finder commands, such as “Zoom window” and “Empty the Trash.”

More interestingly, the Mac will respond (usually) to such utterances as these:

■ “Hello.”
■ “Off” (turns off Speech Recognition).
■ “What day is it?”
Chapter 13: Power Mac and AV Technologies

- “What time is it?”
- “Print [a number] of copies.”
- “Print from [page number] to [page number].”
- “Print [page number].”

Incidentally, those printing commands are fine unless you want to combine them — if you want to print two copies of pages 1 to 5, for example. The Mac can’t understand more than one kind of parameter per command.

The Mac also acts on command buttons such as OK and Cancel (but not on radio buttons or checkboxes).

Finally, the Mac can open any file that you command it to open (by saying, for example, “Open letter to Mom”). Well, sort of: it can open any file that you’ve put (or whose alias you’ve put) in the Speakable Items Folder in the System Folder. Apple says that after you put more than about 30 icons in that folder, the response rate slows too much to be practicable. On a Power Mac AV model, however, we had 60 Speakable Items and were still adding them, and we still hadn’t noticed any slowdown.

What the Mac can say to you

The Mac doesn’t just listen; it can read out loud to you, too. This amazing act, of course, requires a program that can work with Apple’s PlainTalk technology. One of the few such programs is the copy of TeachText or SimpleText that came with your Mac.

Launch the program, type a few sentences, and then choose Speak All from the File menu. In its charming, halting way, the Mac will read what you typed. Use the other commands in the File menu to specify which voice the Mac uses. (Press ⌘-period to interrupt the talking.)

Speech-Recognition Secrets

A recursive Easter egg

Here’s something you might not think to ask your Mac on your own: “Computer, are there any Easter eggs?” Try it — you’ll find out.

Make recognition work better

Many of the Mac’s troubles in understanding you have to do with the way it picks up your voice: through an inexpensive mike placed a couple of feet from your mouth.

You can see, then, why the purchase of a Jabra EarPhone makes speech recognition work so much better. This tiny device hangs from your ear and acts as both a microphone and earphone, so it’s much closer to the source of the sounds that you make. If you’re interested in using speech recognition at all, you probably should invest in an EarPhone to preserve your sanity.
Part II: Secrets of the Machine
In general, the Performa models of Mac are identical to certain mainstream Mac models. In other words, Performa 200 = Mac Classic II, Performa 450 = Mac LC III, and so on.

The Performas are also different because, until late 1994, they were sold exclusively through discount stores (Sears, Silo, Wal-Mart, office-supply stores) instead of computer dealers — an effort to market Macs to the masses. And all but the earliest Performa models come with a fax/modem at no extra cost.

But most of all, Performas differ from regular Macs in the software that comes with them. A Performa has name-brand, commercial software that comes free and preinstalled on its hard disk (ClarisWorks, America Online, and clip art, for example). But there's also a gaggle of specialized System software components that makes a Performa's System Folder even more exciting to explore than a normal Mac's.
CASE HISTORY

Performa Stores

Neither one of your cheerful authors actually owns a Performa. Yet we needed to take screen shots of the Performa screen in order to illustrate this chapter. Off we ventured, floppy disk in hand, to our nearest Performa-selling office-supply store.

Now, Apple is perfectly aware that the worker whose normal job is selling three-ring binders and electric hole-punches is not, right off the bat, necessarily good at selling computers. This might be the reason why Macs have hitherto been sold at computer stores, where there are supposedly some knowledgeable people. You can ask questions. You can call up when something goes wrong.

Therefore, Apple has made sure that the Performa buyer is going to be okay with his or her purchase. First of all, because there's no salesman to call up with questions, Apple provides Performa owners with a toll-free phone hotline, staffed by smart people who can answer Mac questions. Second, because the office-supply store is not about to do Mac repairs, Apple gives Performa owners a second toll-free number — this one to summon a technician to come to your house (or wherever the Performa happens to be) and fix the thing, for free, on the spot.

This being said, we must echo the sentiments of many appliance-store Mac buyers: Yikes! On the day we went questing for screen shots, we approached the three Performas on display. All three were mouseless. We're not sure what kind of thug would steal a mouse, but in any case the clerk we asked shrugged and didn't know anything about it.

So we went to a second Performa dealership. We saw two Performas on display — each had a mouse. But the clerk-person went ballistic on us when he heard what we were up to. He eyed the blank floppy disk in my hand. "I'm afraid I can't let you do that," he said, putting his hand in front of the floppy-disk drive.

We assured him that we were fully competent Mac users, and guaranteed him we wouldn't harm the machine. We finally offered him $20. He took it gingerly, waved us toward the machines, and muttered another warning not to mess things up.

But our problems were just beginning. We couldn't take our screen shot on the first Mac because its System software was deeply troubled. (The three complete System folders we counted may have been responsible.) We finally took our screen shot on the other Performa. We even cleaned out some superfluous junk (A/ROSE, DAL, Caps Lock) from its System folder as our way of saying thanks for the use of the machine.

We felt sorry for the poor little machines — manhandled by the public and misunderstood by the sales staff. But it was, nonetheless, a thrill to see a real Mac in mainstream America, nestled among the pencil sharpeners and staples.

The Launcher — Old and New

Every Performa comes with a control panel called the Launcher. Until late 1993, you got something we'll call the original Launcher. It was responsible for all a Performa's unique features, which we discuss one by one:

- one-click launching of programs from the Launcher window
- auto-filing of new documents into a Documents folder
- automatic hiding of background programs — even the Finder

Eventually, Apple redesigned the Launcher to be just a launcher. The latter two features were moved to another control panel — called the Performa control panel, described later.
In any case, both Launchers still create a little window on your desktop, listing your application programs (see Figure 14-1). You can launch any of these programs with a single click of the mouse, and you can add programs to this launching bay by dragging their icons (or aliases thereof) to the Launcher Items folder inside your System folder.

The original Launcher relies on a sophisticated set of four interrelated software pieces. After you double-click the Launcher control panel, for example, you don't get a typical control panel window — you open the Launcher window itself! (There aren't any settings you can change with the Launcher. That's why the fact that it's a control panel is a little weird.)

Still, because the Launcher is, technically speaking, a control panel, the Performa comes with an alias of it on the desktop, at the right side of the screen, between the hard-disk icon and the Trash. With this alias in plain sight, you can close the Launcher window (by clicking its close box in the usual way) without guilt or remorse, secure in the knowledge that the window will reappear whenever you double-click the alias icon.

So far, then, we have the Launcher control panel (in the Control Panels folder); its alias (on the Desktop); the Launcher window (in the Finder); and the Launcher Items folder (in the System folder). Believe it or not, there's another alias of that Launcher in the Startup Items folder. This alias is responsible for making sure the Launcher window is open every time you turn on your Mac, even if it was closed when you last turned off the machine.

The new Launcher, released with Performa System software 7.1p3, even has separate "pages" full of icons. It was so successful, furthermore, that it was welcomed to the mainstream-Mac System folder as of System 7.5. See Chapter 3 for a long, juicy discussion of this new Launcher and some of the neat stunts it can do.

The Documents Folder

The Documents folder isn't exactly found in the System folder per se. It's actually found out on the Performa desktop per se.

If you think back to the time when you were a Mac beginner, you may recall how frustrating it was to save a file and then never find it again. Life with a Performa is different; anytime you create a new document, it's automatically saved into the Documents folder. The same thing happens when you use the Open command of a program: instead of facing a baffling list of files deep within some oddball folder, you're shown the list of what's in the Documents folder (see Figure 14-2). It's a darned great idea — so great that this feature, too, is now an option in System 7.5.
Self-Hiding Programs

The Performa makes one other aspect of System 7 life easier: It automatically hides the Finder's windows when you launch a program.

TRUE FACT

The Mac/Performa Equivalence Table

Exactly how much Mac meat have you got there in that Performa? The following information wasn’t easy to come by, but here it is: the ultimate Performa-to-Mainstream-Mac Equivalence Table.

<table>
<thead>
<tr>
<th>Performa</th>
<th>Based on</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performa 200</td>
<td>Classic II</td>
</tr>
<tr>
<td>Performa 400</td>
<td>LC II</td>
</tr>
<tr>
<td>Performa 405</td>
<td>LC II with larger hard drive</td>
</tr>
<tr>
<td>Performa 410</td>
<td>LC II with extra VRAM</td>
</tr>
<tr>
<td>Performa 430</td>
<td>LC II with extra VRAM, larger hard drive</td>
</tr>
<tr>
<td>Performa 450</td>
<td>LC III</td>
</tr>
<tr>
<td>Performa 460</td>
<td>LC III with faster (33MHz) processor</td>
</tr>
<tr>
<td>Performa 466</td>
<td>LC III with faster (33MHz) processor, larger hard drive</td>
</tr>
<tr>
<td>Performa 467</td>
<td>LC III with faster (33MHz) processor, larger hard drive</td>
</tr>
<tr>
<td>Performa 475</td>
<td>Quadra 605 with 160MB hard drive</td>
</tr>
<tr>
<td>Performa 476</td>
<td>Quadra 605 with 230MB hard drive</td>
</tr>
<tr>
<td>Performa 550</td>
<td>LC 550</td>
</tr>
<tr>
<td>Performa 560</td>
<td>LC 550, financial software (&quot;Money Magazine Edition&quot;)</td>
</tr>
<tr>
<td>Performa 575</td>
<td>LC 575, 250MB hard drive</td>
</tr>
<tr>
<td>Performa 577</td>
<td>LC 575, 320MB hard drive</td>
</tr>
<tr>
<td>Performa 578</td>
<td>LC 575 with more RAM, 320MB hard drive</td>
</tr>
<tr>
<td>Performa 600</td>
<td>Ivx (minus the cache, minus FPU)</td>
</tr>
<tr>
<td>Performa 630</td>
<td>LC 630</td>
</tr>
<tr>
<td>Performa 635CD</td>
<td>LC 630 with CD-ROM and 15&quot; monitor</td>
</tr>
<tr>
<td>Performa 636</td>
<td>LC 630; no fax/modem</td>
</tr>
<tr>
<td>Performa 638CD</td>
<td>LC 630 with 8MB RAM, CD-ROM and 15&quot; monitor</td>
</tr>
</tbody>
</table>

Note: All Performas also come with keyboard, monitor, fax/modem and about 10 commercial software programs pre-installed.
One of the most common difficulties of using a Mac for the first time is the alarming disappearing-window syndrome, where an accidental click outside your document window brings the Finder windows abruptly to the fore. With a Performa, however, the Finder disappears when you launch a program. You can click outside your word processor’s window, and nothing surprising happens — no other program comes forward. And when you quit that program, you return to the Finder, and not to any other program.

The Performa does not, as is commonly misreported, hide every program’s windows. It hides only the Finder. In other words, here’s how you’d get both a Rolodex program and a word processor going at the same time:

- In the Finder, open the Rolodex program. The Rolodex appears on the screen, and the Finder completely disappears. The whole deal — icons, Trash, windows — is gone.
- From the Application menu, choose Finder. The Finder comes forward, but the Rolodex window stays visible (though inactive).
- Launch the word processor. Once again, the Finder disappears. You’re left with a sight that’s never been seen on any other Mac using any other System software: two programs’ windows open with a completely blank desktop behind them (see Figure 14-3).

In other words, the Performa system treats the Finder as one layer of activity, and all-others- programs-lumped-together as a second layer, all visible simultaneously.

That’s good, actually. If you couldn’t see two program windows open simultaneously, you’d have a much harder time copying information between them. And you’d never be able to look at a graphic in one window while writing about it in another.
The General Controls control panel

True-blue Mac users are scoffing at this entry. The General control panel!?, they say. Why, every Mac has that!

Yes, but the Performa's is special. For a reason that's no doubt tied in somehow to Apple's focus groups and user studies, the Performa's General control panel (see Figure 14-4) doesn't let you edit your desktop pattern. If you like making the backdrop to your Macintosh environment a teeming mass of little letter /'s, as your friendly author Joe does, you're out of luck.

Figure 14-4:
The Performa's General Controls panel has a different desktop pattern control than the one found on other Macs.

However, the Performa offers a consolation prize: The patterns listed in the desktop-pattern control are much more colorful and interesting than the ones provided with a normal Mac (see Figure 14-5) — at least on Macs not equipped with System 7.5 (see Chapter 5). And they're in a handy pop-up menu that makes selecting one much easier and more obvious than the usual way.

Figure 14-5: The Performa patterns, represented here in black-and-white.

Furthermore, using ResEdit on the SECRETS disks, you can edit the Performa patterns. Open the General Controls panel and double-click the ppt#.
The Performa Plus monitor

We found this message on America Online. Readers of this book’s first edition raved about this trick:

“The Performa Plus color monitor is muddy and washed-out, especially compared with the Apple 13” color monitor. But if you’re brave, and aren’t afraid to adjust the contrast and brightness controls, you can do much better.

“With the brightness turned all the way down, and the contrast turned all the way up, surprise! You get a better image than the Apple 13” color monitor! Better color rendition, too. Trust me. I’m an artist. I notice such things.

— Geoff Alexander

The Performa Control Panel

Every Performa model made since October 1993 (the 550, 475, 476, 460, 466, and 467, for example) comes with a unique new feature: the Performa control panel.

This control panel is responsible for several of the features originally created by the first Launcher (Finder hiding, Launcher opening, Documents folder-handling). But unlike the old Launcher, the Performa control panel lets you turn these features off individually (see Figure 14-6).

In fact, the Performa control panel introduces a pair of additional features: System Folder Protection and Applications Folder Protection. These options simply prevent anyone from dragging icons out of the System folder or Applications folder. If you try, you get a strange message about not having enough “access privileges” to move those icons. (Only the “root level”—items loose in the folder—are protected; you’re still free to drag individual control panels out of the Control Panels folder, for example.)

ANSWER MAN

Forgot your password? No big deal

Q: Oh my God! Help! I forgot my own At Ease password! I can’t get into my own Mac! Holding down the Shift key at startup doesn’t even faze At Ease! Help!

A: First, take a chill pill. Next, find your Disk Tools disk, and restart the Mac from that. Now just open your hard drive’s System folder, open the Preferences folder, and throw away At Ease Preferences.

Now At Ease can’t remember your password, either!

Restart the Mac and you’re back in business.
All the Performa control-panel features were dreamed up by Apple's tiny Performa team. Paul Meijer, one of its members, notes with pride that every single one of the features in the Performa control panel was incorporated into the mainstream Mac system software as of System 7.5. (We suspect, therefore, that one day soon, there won't be a separate set of Performa system software; all Macs will offer the same features.)

**Performa-tizing Your Mac**

The essential trio of ideas that make the Performa unique — self-hiding programs, auto-document filing, easy file launching — are pure genius. They make us say: "Hey! How come we, the owners of regular non-Performa Macs, can't have the same goodies?"

Actually, you can. The Performa system software (7.0.1p, 7.1p, 7.1p6, and so on) works fine on normal Macs, provided you throw in your model's Enabler. But you'll have two problems with this approach. First, Apple doesn't support the "p" versions of its System software on non-Performa Macs; don't come crying to our phone-help staff, they say, when something doesn't work quite right. A second problem is getting the "p" software. You can't exactly call up a friend who has a Performa and ask to copy the System disks that came with it — the Performa doesn't come with any System disks!

Therefore, the much better solution to Performa envy is simple: get System 7.5. Virtually every one of the Performa system features is available in this system update. (See "General Controls [7.5 and later]" in Chapter 3.) It all works beautifully with any Mac model — and Apple will take your phone calls!

See Chapter 5 for more on System 7.5.

**Mac-ifying Your Performa**

But suppose you're the opposite kind of person. You've got a Performa, but you're a power honcho with no interest in those sissified user-friendly features. Suppose you want a real, thoroughbred Mac.

You can run regular Mac system software on your Performa. Again, just make sure your new System folder contains the correct enabler (see Chapter 4). But once more, Apple won't want to hear from you; you're on your own if things go wrong.

If your Performa has the Performa control panel in its Control Panels folder, there's a much simpler solution: turn off the Performa features (see Figure 14-10). You're left with a plain-vanilla Mac — no more hand-holding.

On the other hand, if your older Performa doesn't have the Performa control panel, it's easy to neutralize most of the special Performa features. Believe it or not, your old-style Launcher control panel is responsible for not just the Launcher window, but also the Document folder on your desktop and the self-hiding programs!
Take the Launcher out of the Control Panels folder, restart, and suddenly there's no more Documents-magnet-folder feature; you'll have to file your documents in your own folders, just like everybody else. (Hint: Renaming the Documents folder also turns off the auto-document filing feature.) And — once the old Launcher panel is gone — your Finder windows will now stay open all the time, just as on any non-Performa Mac.

At Ease

At Ease is a Finder-hiding gadget designed for those in control (a parent, a teacher, a service-bureau owner). It protects the Mac from those who are out of control (a kid, a student, a customer).

At Ease comes free with the Performa, or can be purchased for around $60 from Apple or a mail-order place. It actually has certain aspects in common with the Launcher, in that it creates a palette of jumbo icons that one click, not two, will open. But At Ease fills up the entire screen. Control Panels, the Trash can, and your disk icons are all hidden from view, making it impossible for accidental renaming, deleting, or setting changes to occur without the grown-up's knowledge.

In its place, you see something like Figure 14-7. When you launch a program, the At Ease window itself disappears, only to reappear when you quit that program.

![At Ease screenshot](image)

*Figure 14-7: What you see instead of the Finder when you're at At Ease.*
Make yourself At Ease

At Ease only makes the Mac easier to use for other people. You, the owner of the machine (or administrator), still have to set up and maintain At Ease. Here's how.

1. Open the At Ease Setup control panel. You see the box in Figure 14-8.

![Figure 14-8: The At Ease control panel, opened and ready for action.](image)

2. Click On and then click Select Items. You see the dialog box in Figure 14-9, which looks and works frighteningly like the Font/DA Mover window turned 90 degrees.

![Figure 14-9: You're ready to start loading up the At Ease screen with program and document icons.](image)

Dialogue: At Ease

JS: David, I loved the section you wrote about At Ease. However, I couldn't help but notice that you missed a couple of At Ease's best features.

DP: Oh? Such as?

JS: Well, for starters, At Ease takes up 300K less memory than the regular Finder. This, methinks, would make At Ease somewhat appealing to PowerBook users.

DP: Look, don't start with me. I was as even-handed as I could be in writing that section. Frankly, At Ease makes me uneasy.

JS: Cute.

DP: For starters, At Ease may let you launch applications and open documents, but it doesn't do anything else the Finder does. You can't rename a file, or move an icon, or drag unwanted documents into the Trash. It's hardly a substitute for the Finder.

JS: But think of the simplicity and security it brings to your Mac. With At Ease, you no longer have to worry about your precocious four-year-old daughter dragging your tax records into the Trash, or opening your checkbook program and making fallacious entries when you think she's just quietly working on a Kid Pix drawing.
DP: Some security. All you do is reboot with the Disk Tools floppy and At Ease is history.

JS: Oh, sure. And your four-year-old daughter knows about Disk Tools?

DP: I don’t have a four-year-old daughter.

JS: Well, that explains a few things.

DP: All right, look — suppose you want to find a document?

JS: Okay.

DP: You can’t. There’s no Find command.

JS: There’s no Find command because you don’t need one. With At Ease, it’s virtually impossible to lose a document in a deeply buried folder. All your new documents show up as icons right on the Documents page, right before your eyes, ready for opening. It’s absolutely foolproof.

DP: Oh, great. A new jumbo-size icon popping up on the screen every time you save another new file. In a week, you’re going to have 20 Documents pages and you won’t be able to find anything. That’s why folders were invented on the Mac to begin with.

JS: Ah, but you can remove any of the files you don’t need from the Documents page...

3. Using the upper half of the box, navigate to a program or a document you want to add.

4. Double-click the name of a program or document. You see its alias appear in the lower half of the box. You just selected an item whose icon At Ease will, in a moment, be placed on the appropriate screen (Applications or Documents). The icons are listed alphabetically. When you finish adding items, click Done.

Then you have to restart the Mac. When you do, you find yourself in the strange simplified world of At Ease.

Apple Backup

You, O Lucky Performa Owner, get your own very, very simple backup program. It’s called Apple Backup. It’s a way for Apple to assuage its guilt at having provide you with no System disks — you get Apple Backup as a way to make your own System disks.

It couldn’t be much easier. Double-click the Apple Backup icon or, if Apple Backup is one of the programs listed in the Launcher (as it is when you first set up your Performa), click once.

You are asked whether you want to back up just the System folder or the entire disk. Doing either one is a slow but steady process, requiring a lot of high-density disks (see Figure 14-10).

You’re now asked to feed in blank floppy disks, one after another. You need a lot of them, and you need some time. The program patiently and steadfastly copies one file after another from your hard disk onto the floppies, until it’s all done. As it works on each disk, Apple Backup tells you how to label the floppies it’s making.
If anything ever happens to your hard drive, use Apple Restore to put it back together from your floppy-disk backups. It will ask you for the specifically labeled floppies you created using Apple Backup, and will re-create your System folder (or your entire hard drive, if necessary).

14-10: Apple Backup makes backing up about as easy as it can get.

MACINTOSH SECRET
System disks in times of crisis
Performas (and certain low-cost PowerBook models) are the only Macs that don’t come with any System disks. The Performa manual gamely suggests that, immediately upon opening the box, you back up the System folder that came pre-installed on your hard drive. This, in effect, creates your own backup disks.

We’ve got some useful news. There’s only one circumstance under which Apple will send you Performa system disks, and that’s if something goes wrong with your hard disk before you’ve had a chance to create a copy of the System folder.

Our secret: If anything goes wrong with your Performa’s System software, call 800-SOS-APPL and tell them that your hard drive got messed up, and that all you see is a blinking question mark on the screen, and you need System disks. Apple will send them to you via overnight express.

DP: Right! By going back to the Finder — which is where you should have been in the first place.
JS: I feel another gripe coming on.
DP: Yes. Suppose you have two documents with the same name placed in two separate folders on your hard drive. Normally, you know which is which because they’re in different folders. But with At Ease, all folder hierarchy disappears. If one of the identically-named files is on the Documents page, you can’t tell which of the two it is. Now, there’s a problem.
JS: Some of us wouldn’t be foolish enough to give two documents the same name, Mr. Pogue.
DP: I’ll pretend I didn’t hear that. Anyway, here’s my biggest problem: At Ease may simplify some Finder functions for children and Mac beginners, but after you actually open a document or launch an application, At Ease’s super-simplified interface says bye-bye. You’re left on your own to deal with the Mac’s usual windows, menus, and dialog boxes — and that’s the stuff that generally gets people confused. At Ease stops helping just when you need it the most — when you actually try to use one of your applications.
JS: Call me when you have a four-year-old. We’ll talk.
Chapter 14: The Performa Chapter

At Ease and the death of your hard drive

The manual makes a big deal about the specific way you remove At Ease. It tells you that you must run the Installer, click Customize, hold down the Option key, and click Remove. It specifically warns you not to drag the At Ease files to the Trash. The manual doesn’t, however, specify exactly what will happen if you don’t remove At Ease in the officially sanctioned manner.

Frankly, we couldn’t imagine that Apple would release any software — especially a program geared for households with kids — that could cause much damage. So we thought, in the interests of science and research for this book, that we’d give it a shot. Without turning At Ease off, we dragged it and its associated files to the Trash.

Our first sign of impending doom was that the Trash wouldn’t empty. A message told us that its contents were “in use.” Oh well, we thought. We restarted.

When the Mac came to life again, everything seemed fine at first. We got the “Welcome to Macintosh” screen, extension icons marched across the bottom of the screen, and then — nothing. Just a flickering system-bomb icon in an empty dialog box.

We restarted. We restarted with the Shift key held down. We ran Disk Tools, which didn’t even acknowledge the existence of the hard drive. We even ran a disk-repair program like Norton Utilities. Nothing. Our drive, as far as these signs told us, was officially trashed.

Finally, we took our own advice from Chapter 32, and we did a clean reinstall of the system software. At last, our Mac sprang happily back to life.

An Apple programmer friend later told us that At Ease does something rather un-Kosher when it installs itself: It modifies the boot blocks of your hard drive (the very first instructions that get processed when the Mac is turned on) to ignore the Finder and launch At Ease instead. Of course, once At Ease is gone, the Mac goes on a wild-goose chase, and throws up its electronic hands in frustration.

The message is clear: remove At Ease only using its original Installer program, or you’re asking for trouble.
In this chapter:

- Buying a Mac, and planning for obsolescence
- Ergonomics of desktop Macs
- Ergonomics of PowerBooks
- Surge protectors

This won't be a long chapter. But your cheerful authors' combined man-years in the Mac biz total over 20, and our combined Mac-models-owned total is embarrassingly high. So we thought we'd impart what little knowledge we could to the act of buying and setting up a Mac.
Buying a Macintosh

First, a word about obsolescence. We’re certain that you’ve heard all the usual arguments:

■ Apple is introducing more new computer models, and retiring old models, faster than ever before. Some models, like the Quadra 900, were on the market for only 90 days or so before being canned. Furthermore, newer models are always much less expensive and much more powerful than previous models. (This is true, of course, of any personal-electronics gadget.)

■ However, this will always be the case. Your holding off buying a Mac in hopes that one day the market will settle down simply means that you’ll go longer without having any computer at all. If you wait forever, after all, you’ll get an absolutely incredible deal—but you’ll never get any work done.

Therefore, do your best to anticipate what new models Apple has in the pipeline (by reading the Macintosh-area America Online messages, for example), make a decision, and then buy something.

■ Just because a computer has been discontinued by Apple doesn’t mean it’s obsolete. It still does your word processing, doesn’t it? It still does what you bought it for. By definition, then, it’s still a good computer. Don’t fall prey to LAGS (latest-and-greatest syndrome). At least don’t fall prey to it as much as we do.

Ergonomics Basics

In the interest of fending off lawsuits from carpal-tunnel sufferers, Apple now includes extensive instructions for creating a comfortable ergonomic computer setup in every Mac manual. To recap: Feet flat on floor, knees higher than seat of chair, shoulders relaxed, minimize glare, occasionally focus on distant objects, blink often (no joke, this is what it says), take frequent short breaks, and consult a physician if chronic arm pain develops.

To this we’d like to add the following secrets, which we’ve developed through painful experience:

■ Spend money on your chair. If you work in an office that’s already sprung for a nice ergonomic full-back-support chair, no problem. But otherwise, heed this advice, for your short-, medium-, and long-term comfort. Really decent, well-designed desk chairs cost a couple hundred dollars or more. Trust us, it’s worth it.

■ Don’t put the monitor in front of a window. It turns out that if bright light is coming in from behind your monitor, your pupils contract, adjusting to the light. Trouble is, what you’re trying to focus on is the screen, which is relatively dim. The result, by the end of the day, is a burning, painful eye strain. Put your monitor at right angles to the light source, on the other hand, and you’ll be much happier.
TRUE FACT

Mac Products, R.I.P.

Here's a list we had fun compiling. These are all Mac products, heavily promoted, much discussed, that were supposed to change the face of Macintosh computing. For one crazy technological or marketing reason or another, they all wound up on the dustbin of computing history.

Caulin Softstrip Reader: Remember this? A Softstrip was a one-inch-wide strip of printed computer dots, looking like the tire tracks from a Tonka truck that had skidded across a page. You'd buy a $250 Softstrip Reader — something that looked like a foot-long fluorescent light bulb in a plastic hot dog bun — and place it carefully over the piece of paper on which the strip was printed. Slowly, slowly, the Reader would scan the printed strip, turning the gray mesh of tiny dots into an actual file on your Mac’s disk. The Softstrip was hailed as the software-distribution medium of the future. After all, you could distribute software for mere pennies — for the price of a piece of paper! MacUser magazine began printing Softstrips right in the magazine. Everybody waited. Magazines and software companies waited for enough people to buy Readers to justify publishing Softstrips. Mac users waited for enough Softstrips to be published to justify buying a Reader.

Neither happened. It took a minute to read a strip, and your reward was a puny 3K file on disk. (At that rate, it would take you five days to scan in Microsoft Word 6, even if you didn’t stop to eat or sleep.) The Softstrip Reader died.

Outbound: This was the first decent Mac portable. Long before the PowerBook arrived on the scene, people were buying Outbounds.

People found a number of reasons to like these boxy, lightweight Mac portables. They weren’t outrageously expensive; the company was great to deal with; and the portables were easily upgraded. Of course, there were drawbacks, too. Because nobody can make a Macintosh ROM chip but Apple, the Outbound company was compelled to scavenge ROM chips from discarded Mac Plus and SE models. Or, you, the consumer, could provide them. A weird mouse replacement, too, the Isobar, sat where the PowerBook’s trackball sits. It was like a thin, rolling, horizontal straw, sliding back and forth on a thin rod. You slid the straw from side to side or rolled it forward and back to move the mouse, and you clicked directly on the bar to click it.

In the end, the Outbound — like the DynaMac and other attempts at packaging a portable Mac — sank not because it was poor technology, but because nobody could compete with Apple and its sleek, heavily marketed PowerBooks.

HyperDrive: Remember this item? It was the very first internal hard drive available for the Mac — and it wasn’t even from Apple. It was from General Computer (now called GCC). The HyperDrive was incredibly expensive, and it was dealer-installed. But it was the first, and all the cognoscenti had to have it.

Apple eventually caught up to the technological wave pioneered by third-party companies, and began making an internal hard drive an option on the SE model. General Computer was forced to drop the HyperDrive, but moved smoothly and competitively into making other kinds of hard drives (and other peripherals) for the Mac.

Macware, Forthought, Nashoba: What are these? Indian tribes?

Nope. They’re the companies that, at one time or another, were the vendors of one of the cleverest and most useful programs of all time: FileMaker. Each, in turn, sold this crown jewel and disappeared from the earth. We’re glad FileMaker wound up at Claris, where the program continues to get better.

Envisio Display Adapter: In the one year that Apple sold PowerBooks without a video port, a hot market flourished for non-Apple companies. The idea was to sell a very expensive ($1,500) circuit board that, via a dangling connector that protruded from the PowerBook’s hinge, could be plugged into an external monitor.

The Display Adapter had many buyers; for some, it worked fine. For others, life was a nightmare. The first 500 units, for example, had exposed metal that could, and once in a while did, short-circuit with the underside of the keyboard, producing a smelly, gray smoke (and a dead PowerBook). Various software and hardware revisions followed. Just when the product was working well, Apple introduced its new PowerBook models that had built-in video. Envisio dropped the Display Adapter, and moved into the Duo MiniDock market.

Ann Arbor Softworks, 1st Byte, Haba, Living Videotext... We print these names here just to give Mac vets that “Ohhhh, yahhhhh!” moment. And to observe just how difficult it is to survive in the Mac marketplace of the 68 companies whose products were listed in Mac Connection’s ad in the February ’85 Macworld only eight are still in business (Microsoft is one of them).
In terms of desk height and position, you'll read all kinds of wild measurements and statistics. As far as we're concerned, though, there's only one big rule: your elbows can't be lower than your wrists!

If they are, then the angle of your wrists, cocked down to grab the mouse, is a surefire repetitive-strain inducer.

**PowerBook ergonomics**

About that trackball (if your model has one). There are as many different styles of using the PowerBook's trackball and trackbuttons as there are people. The manual suggests three different keyboard/trackball positions:

- Keep your fingers on the keyboard. Reach out to the trackball with both thumbs. (No word on how you hit the mouse button in this arrangement.)
- Keep your fingers on the keyboard; reach the trackball with one thumb, and the edge of the upper button with the other.
- Keep both hands on the keyboard. When you need to use the mouse, move one hand off the keyboard, fingers on the trackball, thumb on the lower button.

Of course, on the PowerBook 500-series trackpad, your choices are more limited; you'll probably wind up with your thumb on the button and your index finger on the pad.

As with computer ergonomics of any sort, variety is the key. Change hand positions often. Change body positions often. The way to avoid repetitive-strain injury, Apple says, is to avoid repetitive strain itself.

**Duo ergonomics**

This doesn't appear in the manual at all. But we've got to say it.

The Duo's trackball is almost half the size of other PowerBooks' (it's 19 mm in diameter instead of 30). You'll probably find that it's virtually impossible to...
the mysterious shutdowns disappeared. In fact, I've even heard that you should format your hard drive only when the Mac is in its permanent position. And, if you don't, you're inviting gravity to play tricks, and you could get system crashes and stuff.

DP: Oh, no. I've never heard of that. I've got clients who always put their Mac II-series Macs — the II, llfx, llx, whatever — on edge. No problems.

JS: Then they're being especially careless. Only the llcx and llci were designed to go sideways. If you put those other Macs on their sides, you'll block the air vents. It can be done, but you need to buy a stand to keep the vents clear.

DP: Well, let's not waste any more page space on this topic. I can settle it here and now. I've changed my Mac's orientation back and forth many a time since I first got it, and I've never had any problems.

JS: You've never had a system crash?

DP: Well, not never. I mean, everybody gets crashes.

JS: Aha! You see?

DP: Oh, please. Crashes can be a result of buggy software, of running out of memory, of SCSI cabling problems. There's no evidence whatever to suggest...

JS: But you can't positively say that your crashes aren't a result of your careless Mac positioning, can you?

DP: Somebody talk to this man.

handle the same way you'd handle a full-size PowerBook trackball. In fact, if you try, for example, to operate the trackball and a button with one hand, as you often do on a 100-series PowerBook, your hand will ache after a day or two.

If you carry around a MiniDock, you may as well carry around a mouse, too, and use it whenever possible.

However, we have an interesting and worthwhile proposal: if you own a Duo, force yourself to roll the ball with the fingers of one hand and click the button with the thumb of the other. It definitely takes some coordination. But it's less awkward and, in the long run, less painful.

Surge Protectors

A surge protector usually looks like a power strip (a row of power outlets). It's supposed to protect the Mac from jolts in the house current. We've seen surge-protected power strips for as little as $15 at the hardware, and we've seen serious corporate catalogs selling them for $200.

Frankly, we're not convinced a surge protector is worth the money, particularly if you live in a city or suburb. If you live in a rural area where power spikes, surges, and blackouts are a way of life, well, OK. Otherwise, we think surge protectors are another old wives' tale.

For one thing, the Mac has a built-in surge protector. It won't save the circuitry from the power of a lightning strike — but guess what? Neither will a surge protector! A surge protector is supposed to protect you from fluctuations in the current provided by the power company. A lightning bolt will fry your Mac and your surge protector simultaneously. (There is something called a surge arrestor. If you're willing to spring the $300 or so, it will shield your equipment from direct lightning strikes.)

Which explains our other problem with surge protectors: We can cite at least one case where a surge-protected Mac got fried during an electrical storm. We also know a guy whose Mac was perfectly fine with no surge protector, even though his house's circuitry was zapped by lightning.
If somebody can give us evidence to the contrary, we'd love to hear it. In the meantime, consider us skeptics. Then again, it's hard to find a power strip that's not surge-protected these days... so you've got nothing to lose.

The Only Upgrade Guide You'll Ever Need

All of us fall victim, now and then, to latest-and-greatest syndrome. Every time Apple comes out with new Mac models that are much faster than the ones we already own, we get Megahertz Envy, and we start to seek advice on upgrading our own aging machines.

We have only one word of advice about upgrading your Mac: Don't.

The new models Apple releases every Wednesday aren't just faster; they're also continually less expensive. We've done the math about a thousand times, and we're hard pressed to come up with a scenario in which you're better off, financially speaking, upgrading your Mac. Instead, you should sell your old Mac and buy the latest model from Apple. Here's how we figure it. (The following prices are current at this writing, but this principle will still apply when you read this.)

Suppose you own a Macintosh LC III. Now, Daystar is the leading maker of accelerator cards; they make great stuff for almost every Mac model. They offer an upgrade card for the LC III that boosts its speed to a stunning 50 MHz (see Chapter 11 for more on megahertz). That card costs $1,000.

However, you could sell your LC III for, say, $600. (Advertise in the library, grocery, user-group newsletter, newspaper, or in the America Online Classifieds forum.) With that money and $900 more, you could then buy a Power Macintosh 6100/60. You've saved $100 over the accelerator-card option, you now own an even faster model, and you start fresh with a new one-year warranty.

Here's a less grandiose example: suppose you own a Performa 400 (the equivalent of an LC II). For $580, you can get a Daystar card that gives it a 25 MHz '040 chip, just like the Quadra 605. But here again, you'd be better off selling your old Performa. You'd get, perhaps, $400 for it. For $500 more, you could get a brand-new Quadra 605. Once again, you've saved money ($80), gained a new, actual Quadra 605, and wound up with a new warranty, disks, and manuals.

We admit that there are exceptions to our general "don't upgrade" policy. Upgrading your RAM, for example, can make a lot of sense; SIMMs aren't a huge investment, and they can give your existing system a lot more power. Apple's Power Macintosh upgrades are a pretty good deal, too — especially the PDS-card option, which doubles or even quadruples the speed of certain models for about $700. (For more on PowerPC upgrades, see Chapter 11.) Otherwise, we think Mac upgrades are rarely worth it, regardless of Apple's offerings-of-the-moment.
Chapter 16
Multitasking

In this chapter:

- How multitasking works
- Handling memory and multiple programs
- Publish and Subscribe
- Type and creator codes
- Quitting the Finder

For years, the concept of running more than one program at a time on the Mac was a strange and alien concept. It even seemed to betray the Mac’s professed simplicity. You did one thing at a time. Either you shuffled floppies in and out (in the Finder) or you typed and printed (in MacWrite). *Multitasking* was something that fancy UNIX programmers did.

The first time anyone saw more than one program running on a Mac was when Switcher came along. This little software program put a little double-headed arrow on the menu bar. Click the arrow and the next program’s window rotated into view, like a new slide in a projector. You didn’t see the programs’ windows simultaneously, cluttering up your screen. And those were the days when the fattest Mac was the 512K model; we’re not talking about running dozens of programs at once. Nonetheless, Switcher, we think, was the precursor to MultiFinder and even System 7. In retrospect, we’re amazed that Switcher went essentially unheralded and unannounced; it never made the cover of any Mac magazine.
How the Mac Multitasks

Eventually Apple extended the Switcher technology and developed MultiFinder. (We'll examine MultiFinder in a moment.) The goal of both programs was simple: to run more than one program simultaneously. The benefits were obvious. With more than one application in RAM, you would be spared the frustrating 60-second wait as you quit MacPaint (from which you copied a logo) and launched MacWrite (in which you wanted to paste it). If both programs were in the Mac's memory at once, jumping between them would be instantaneous and convenient.

Furthermore, allowing more than one program to run at a time opened the door to a wealth of background tasks. These are jobs that take the computer a long time to do, such as printing or receiving files over the phone line, but which don't involve any input from you. The dream was to let you, the user, continue to do something useful with the Mac — word processing, say — while part of the computer's attention was focused on doing this background task. In other words, people wished the Mac could do multitasking.

When a computer is multitasking, it doesn't really do more than one thing at a time. If you study the computer's work, millisecond by millisecond, you find that it's actually doing only one thing at a time — but changing its job description extremely fast. It might spend a few milliseconds handling a printout you're doing, then a few receiving a fax, then back to the printout, and so on.

All of this work on background tasks happens when you're not doing anything. It takes place during the fractions of a second between letters you're typing, for example. The computer constantly checks the mouse and the keyboard — is anything going on? — and if not, it goes back to working on the background tasks.

MultiFinder

Of course, multitasking really broke into the big time with the invention of MultiFinder, which first saw the light of day in System 4.2. Today, this descendant of Switcher is an option in System 6. To turn it on or off, you choose Set Startup from the Special menu (see Figure 16-1).

You click MultiFinder, click OK, and restart the Mac.
MACINTOSH SECRET

Switch-launch into MultiFinder

As you know, the instructions for using MultiFinder say that turning multitasking on and off involves restarting the Mac each time. In a given work session — that is, one time that the Mac is turned on — it can only be in MultiFinder mode or not.

This isn't perfectly true, however. Here's an undocumented tidbit that lets you use both Finder and MultiFinder in the same work session.

Start up the Mac with the regular Finder. When you want to switch to MultiFinder, open your System folder. While pressing Shift and Option, double-click the MultiFinder icon.

Your Mac will jump-start into MultiFinder without your having to restart the machine.

To go back to single Finder, however, you still have to use Set Startup and restart the Mac; this is a one-way Secret.

Under MultiFinder, when you launch a program, the Finder doesn't disappear, as it usually does. Instead, all of its icons and windows continue to lurk in the background. So, to launch a second program, you switch to the Finder and then double-click a program or document icon normally.

When the programs are up and running, they're listed in your Apple menu (see Figure 16-2).

Figure 16-2:  
In MultiFinder, the programs running are listed at the bottom of the Apple menu. Choose a program name to switch to it.

After multiple programs are running, there are five ways to jump from one program to another:

- Click the miniature program icon that's always displayed in the upper-right corner of your menu bar. This single click brings forward the next application in the list. You can't control which program comes forward because you can only step through your programs in one direction. As a result, people have gotten into the habit of clicking rapidly several times, hunting for the desired application.

- Choose a program name from the Apple menu. This is more mouse work than giving the menu bar a simple click, but it lets you jump directly to a specific application without having to step through them all.
Part III: Application Secrets

- Click anywhere in a visible application's window. Exactly as in the Finder, clicking in a window brings it to the front. In MultiFinder's case, however, bringing a window to the front also involves switching programs.
- In the Finder, double-click the dimmed icon of a program that's running. (Double-click a normal-looking program icon to launch it, too.)
- In the Finder, double-click a document icon. You switch to the corresponding application (if it's running). If the program isn't running, you launch the corresponding program.

To turn off MultiFinder and return to the simpler one-program-at-a-time scenario, you use the Set Startup command in the Special menu again. This time, you select Finder, click OK, and restart the computer.

Multitasking in System 7

In System 7, multitasking is no longer optional. You can always launch more than one program and keep them — and the Finder — in memory at the same time.

System 7's "built-in MultiFinder" moves the list of running applications from the bottom of the Apple menu to a new menu, called the Application menu (or the process menu, if you're a programmer). The Application menu is marked on the menu bar by a small-scale icon, exactly as in MultiFinder — but in this case, a single click on the icon does nothing. You have to choose a program name from this menu, exactly the way you used to choose a program name from the Apple menu in System 6. We've actually heard a number of people bemoan the loss of the click-to-switch simplicity of System 6's menu bar icon; they argue that System 7 forces you to use the menu to switch programs. (There's even a shareware program or two that give this feature back to System 7.)

Still, it's not as though it's difficult to switch among applications in System 7. Most of the techniques that worked under MultiFinder still work: clicking an open window; clicking a program or document icon in the Finder; and so on.

Furthermore, we think PwrSwitcher, included on the disks with this book, is even better than the one-click-to-switch method. See Chapter 33 for details.

Hazards of Multitasking

Multitasking isn't just a more complicated task for the computer; it's a more complicated task for you, too.

Memory management

Your immediate concern when running several programs is memory. Your Mac has a finite amount of it. Every program demands a hefty chunk of it. You need to worry not just about how much RAM your Mac has, but also about how much each program needs, and how much you decide to give it. You also have to worry about memory fragmentation.
Read Chapter 8 for details on assigning more RAM to a program. (You use the Get Info command on its icon, and type a new number into the box at the lower right of the Get Info window.) The key guidelines to specifying a program's memory allotment (its memory partition) are as follows:

- Avoid giving a program a smaller memory partition than the one recommended as the minimum size in its Get Info box (see Figure 16-3).

![Figure 16-3: The Get Info box for a program is critical. Its Memory Requirements section may well determine whether your program runs well, unreliably, or not at all. (This is the System 7.1 Get Info box; in previous versions of the system software, the number you can change is labeled Current Size.)](image)

- A program needs a larger partition when, even though its memory partition matches the original recommendation, you get out-of-memory messages when you use the program.

- The Mac also provides a hint when a program's memory partition is too big (see Figure 16-4).

![Figure 16-4: It's perfectly possible to give a program too much memory — memory that you could be using for other purposes. In this illustration, the TeachText program's bar is almost completely gray (or white). That means that it's barely using the 500K assigned to it. Better quit the program, use Get Info on its icon, and change the RAM usage to a more reasonable (lower) number.](image)
As we suggest in Chapter 8, the trick is to first launch programs you plan to use all day. Save
the programs you'll be starting and quitting for the end. Otherwise, you'll wind up fragment­
ing your Mac's memory. You may be prevented from loading a new program you want to
open, even though, technically, there's enough memory left. (You can always defragment
your memory by quitting all programs and relaunching them. But that's a time-consuming
procedure, to say the least.)

Fortunately, System 7 is much smarter than previous Systems when it comes to informing
you about low-memory situations. Suppose that you try to launch a new application when
there isn't enough unfragmented memory left. Depending on which version of System 7
you're using and whether or not you have the Tuner installed, you see a message that
suggests one of the following:

- Quitting unnecessary programs (see Figure 16-5).
- Quitting one specific program, based on its usefulness in alleviating the memory
  shortage (the last program launched, for example).
- Quitting a program that has no windows open (that is, one that probably doesn't need
to be open).

Virtual memory

We're sure you already know this tip, but this is a great time to remind you of it. Running a
bunch of programs, any one of which fits in your Mac's available RAM, but whose combined
memory requirements are too much for your Mac, is the perfect scenario for using virtual
memory. (See Chapter 8 for more on this unique, built-in System 7 feature.)

People sometimes avoid virtual memory based on its reputation for slowing down your
Mac. But as long as each application you're running would fit into your Mac's RAM by itself,
virtual memory only makes the Mac sluggish when you switch between them. While you're
working in a program, you won't notice much slowdown at all.

Suppose that your Mac has four megabytes of RAM. Your System heap (the System plus all
your control panels, extensions, and so on) is, let's say, 2,000K. That leaves you with about
2,000K of memory in which to run your programs.
Now suppose that you want to open Canvas (suggested RAM partition is 1,500K) and HyperCard Player (suggested size 1,000K). Simple math shows you that either program can fit into the 2,000K of free memory, but not both.

This is a perfect time to use virtual memory. The Mac will load Canvas into RAM, along with as much of HyperCard as it can fit. Then, when you switch to HyperCard, a chunk of Canvas is deposited onto the disk, and the remainder of HyperCard is fed into memory. As we said, you'll only notice sluggishness when you switch between programs.

**Not knowing which program is open**

Another complication of multitasking on the Mac — for beginners, at least — is losing track of which program you're actually in. Think about it: if there's any screen space not filled by a program's window, the Finder desktop shines through, right? It stands to reason, then, that if no program window is open, then your screen looks exactly like you're in the Finder!

This can cause all kinds of frustrating side effects for the novice. You may, for example, wish to shut down for the day. But you'll scan the menus endlessly, and the Shut Down command simply isn't there! In fact, it only looks like you're in the Finder; actually, you're in some program that has no open windows.

Savvy Mac users know of four visual cues to determine which program is in front:

- Look at the icon in the upper-right corner of the screen (the Application menu). Though small, it shows the icon of the program that's currently in front.
- The name of the program in front has a check mark beside it in the Application menu (see Figure 16-6).

**Figure 16-6:**
Two visual clues as to which program is really in front: the icon atop the Application menu and the check mark next to the program name.

- If the menus say File, Edit, View, Label, and Special, there's not much doubt as to which program you're in.
- The first command in the Apple menu always provides the name of the active program ("About Quark XPress," for example).

And while we're on the topic of first-time Mac users: when you're running multiple programs, the familiar Finder desktop is always shining through from behind any other programs' windows. In fact, even if you're smart enough to choose Hide Finder from the Application menu, the Finder desktop and icons still don't disappear! Worse, one accidental mouse click outside of an application's window instantly deposits you back in the Finder, whether you want to be there or not. Ask any novice how many times he or she's seen an entire word processor window full of text completely disappear (behind some Finder windows), and you'll understand the extent of the problem.
Given all of this confusion, is it any wonder that the Performa system software — and System 7.5 — give you the option of automatically hiding the Finder completely whenever you launch another program? And we mean really hiding it, icons and all. No wayward click will send you back into the Finder. There’s never any doubt as to whether you’re in the Finder or not, and there’s no Hide Finder command to only half-work.

ANSWER MAN

Diamonds in the bar

Q: What are those diamonds and flashing icons all about? Sometimes they’re at the top of my Apple menu. Sometimes they’re on my Application menu. What’s happening?

A: We’ve been discussing the ins and outs of multitasking for several pages now. Generally, we’ve conveyed the impression that only the front-most program — the active one — gets much attention from you. Programs in the background are permitted to use only the grains of time in which you and the foreground program aren’t doing anything. That leaves them available to do tedious, computerish tasks like printing or receiving a fax.

When we were kids, whenever our parents had a fancy dinner party, we were supposed to have fun upstairs all evening and not disturb the grownups in the living room. But that always presented a quandary: what should we do if something really important happened? Like a sister getting her tongue caught in the faucet opening or something?

Background programs face the same challenge: having been told firmly not to intrude on the main event, they are content to huddle in the background, waiting for the Real Work to get done. Yet sometimes there’s a crisis. The background program doesn’t want to interrupt you — it has too much respect for you to do that. So it timidly starts blinking.

In System 7, this blinking usually happens on the Application menu icon. Your foreground program’s icon starts alternating with that of the background application that’s in trouble. If you then put your cursor on the Application menu icon, the distressed background program’s name appears with a diamond beside it (just in case you didn’t recognize the blinking icon).

When you finally have a moment to respond to the background program’s tactful signal, you choose its name from the Application menu, and you’re finally told what the trouble is.

By far the most common programs that present these Notifications, as they’re called, are PrintMonitor (see Chapter 25), the Finder, and electronic mail software (to let you know a message has come in). The Finder is generally trying to tell you that it has run out of memory for keeping busy windows open. PrintMonitor usually wants to say that your printer is (a) off, (b) out of paper, or (c) ready for the next sheet of hand-fed paper (if you’ve used the Manual Feed option).
Multitasking Secrets

Hide one program en route to another

This isn’t a very secret Secret, but it’s a very nice Secret indeed.

Of the four ways you can switch from one program to another in System 7, two of them let you hide program A as you switch from it to program B. If you press Option while either (1) choosing a program name from the Application menu or (2) clicking in a background window to bring it forward, the program you’re working in hides itself. The Option key is an important tool in keeping a bunch of overlapping, confusing windows under control.

The most prominent example of this technique’s usefulness is switching to the Finder. In this case, hiding other program windows is almost essential because they may be concealing the icon you need access to: the Trash and your disk icons, for example. Therefore, if you’re in (for example) FileMaker, Option-clicking whichever patch of the desktop you can see is a common power-user habit.

Switch with a keystroke

One of the most efficient ways to jump from one program to another is to use QuicKeys or Tempo (like the version included with this book). Most people are already aware that these programs let you launch any program on your hard drive with a single keystroke.

Fewer realize, however, that the same macro can be used to bring that program to the front even after it’s running. Allowing your Tempo or QuicKeys to launch programs lets you worry less about what’s running; you learn to associate Control-W, say, with Microsoft Word, without having to remember whether or not it’s already running.

The Finder-in-a-window trick

As mentioned in a preceding Secret, one way to get around the Trash-is-covered-up problem is to Option-click the desktop when you switch from a program to the Finder.

That solution isn’t ideal, however, if you’re running several programs. In that event, you must switch to the Finder and then choose Hide Others from the Application menu.

Here’s a trick that reduces that one step down to zero. Create a folder called Desktop Window. Make aliases of your disks, both attached and networked. Also make an alias of your Trash can. Put them all into this window (see Figure 16-7).

Now, whenever you switch to the Finder (by choosing its name from the Application menu, clicking in a window, or using a QuicKeys macro), you see what would otherwise be covered up by the other programs’ windows. Double-click a disk icon to open it. Drag anything into the Trash alias to delete it.
Opening desktop items without closing windows

Here’s a neat way to select and open desktop icons, even if they’re covered up by open windows: Press ⌘-Shift-up arrow. This instantly jumps you to the desktop level, regardless of how many windows are open. Then type the first letter or letters of the name of the disk icon or file you want to select. If you want to open the Trash, for example, press T. If the Trash happens to be behind an open window, you won’t be able to see that you’ve really selected it — but you have. Just press either ⌘-O or ⌘-down arrow, and the Trash window will open. You’ve selected and opened an item on the desktop without seeing it, without closing a single window, and without lifting your fingers from the keyboard.

Publish and Subscribe

The most interesting and under-exploited feature of the Mac’s multitasking capabilities is System 7’s Publish and Subscribe feature.

Remember Copy and Paste? You select information from one document or program. Then you paste it into a different (or the same) document or program.
Publish and Subscribe is almost exactly the same, but there's one critical difference: the "pasted" material is intelligently linked to the original. When the original chart, text, or graphic gets edited, the copies are automatically changed to match. What's especially amazing is that this change can even take place if the copies exist as files on other Macs, provided they're connected by a network.

An impressive number of programs have Publish and Subscribe commands, including all of the bestselling business programs. Of course, if you're running System 6, the Publish and Subscribe commands do nothing.

Why hasn't it caught on?

We know a few people using Publish and Subscribe. One couple, for example, puts together a weekly newsletter. The PageMaker page-layout document remains the same from week to week, filled with ads that don't often change and regular columns and features in the same positions each week.

To change the newsletter, the couple simply edits the original Word files that were imported into PageMaker. Without any further effort, the PageMaker file's contents change to reflect the new material from the word processor.

Yet we know many more people who don't use Publish and Subscribe. We think three factors are responsible for this:

- It's not all that useful if your needs don't happen to call for it. If you're not on a network, collaborating on documents with others, or embedding one kind of data (such as PostScript graphics) inside another (such as a word processor), you'll probably have less call for Publish and Subscribe.

- Not all programs are equipped with Publish and Subscribe features. In fact, only programs that deal with the layout and manipulation of text, graphics, and charts have Publish and Subscribe features. We couldn't find any music programs, for example, that had Publish and Subscribe features.

  Of the programs that do have Publish and Subscribe, few work just alike. Copy and Paste made it big because everyone always knows where to find these commands and how they're going to work. But Figure 16-8 shows that few programs have Publish and Subscribe features laid out quite the same way.

- But most of all, we feel that Publish and Subscribe hasn't quite become universal because it's just too darned hard.

This last item we hope to do something about. We encourage you to walk through it just this once, if only so you'll know what Apple had in mind.
The basics of Publish and Subscribe

Copy and Paste takes place in two spots. You copy a selection (location A) and put it down somewhere else (location B).

Publish and Subscribe, however, involves three locations. You copy a selection (location A). When you use the Publish command, the Mac saves that selected paragraph or picture in a new file (location B) on the hard drive. You have to name it and place it into a folder, just as you would any ordinary document. Sticking with this magazine analogy, the saved text or graphics file is called an edition.

At this point, you’ve achieved nothing useful. You’ve copied some material and saved it into its own file on the disk.

Now, however, you go to another document (location C). It can be created by the same program that created the edition, or it can be a totally different program. Into this document you import the edition file on the hard drive, using the Subscribe To command. The contents of the edition file appear in the new document, just as though they had been pasted there.

Let’s recap: You select some material (the publisher) and save it onto the disk into a separate file (an edition). Then, in another document, you open the edition. The receiving document, naturally, is called a subscriber. As in the magazine industry, there’s only one publisher. But there can be an infinite number of subscribers. That’s true in Publish and Subscribe, too, as Figure 16-9 clearly shows.
Chapter 16: Multitasking

A graphic in Canvas or FreeHand
A file on your hard drive
A MacWrite Pro document, a Quark Xpress document, a Word document, and so on

**Figure 16-9:** The publisher is the material in the original document. (There can be several publishers in one document.) Using the Create Publisher command, you save the graphic into a disk file of its own, called an edition. Finally, you can import the graphic into any number of documents, whereupon each imported edition file is called a subscriber. The beauty of this system: if you ever reopen the publisher document and change the graphic, it automatically changes in all the subscriber documents too.

This may seem to be several steps more complicated than Copy and Paste. But Publish and Subscribe's real magic now kicks in. If you open the original document, change what you published, and use the Save command, then the edition file — and all subscriber documents — are instantly updated to reflect the change you made.

Here are a few great uses for Publish and Subscribe:

- Create a chart in Excel and publish it. Import it (subscribe) into a report you did in a word processor. Each month, when the numbers change, you can update the numbers in the spreadsheet and print out the updated report with very little effort.

- Do an advertisement in FreeHand or Illustrator. Publish it and subscribe to it from a page-layout program. When the specs or prices listed in the ad change, edit the original graphic in the drawing program. You've saved the time of re-importing, placing, and sizing the graphic.

- Publish from one Word document — or even part of a document — to another. When you create a presentation, for example, write your speech and the audience-handout text on the same page (which you'll be looking at). Then publish only the audience-handout text into a separate document, which you can print and hand out.

**Publish and Subscribe step-by-step**

You'll learn more by trying Publish and Subscribe one time than by reading reams of material. So here we go.
First, get a program that has Publish and Subscribe features. Almost any word processor, spreadsheet, page-layout program, or graphics program does. (The current versions of Word, Excel, FreeHand, PageMaker, Canvas, ClarisWorks, MacWrite Pro, WriteNow, and MacDraw are some examples.) If you have two different programs, terrific; you can publish from one to another. But if you only have one, that's useful too.

Create a graphic, chart, or block of text (from one typed character to many pages long) and select it. From the Edit menu, find the program's Create Publisher command (see Figure 16-10).

![Figure 16-10](image)

You're asked to give this edition a title and to save it on your hard drive. Go ahead and do that (see Figure 16-11).

![Figure 16-11](image)

Repeat this process with as many other selections of source material as you want.

In most programs, a gray, nonprinting border appears around the published material.
Before you quit the first program, by the way, you must save the document that contains the published material! If you don’t, your magical linking of material evaporates. You are left with the lonely edition file on your hard drive, not tied in to anything at all.

Now go to the program, document, or part of a document where you ultimately want to integrate what you just published. Find the Subscribe To command. Choose it; a box appears, in which you can locate the edition you created earlier (see Figure 16-12). The Mac automatically highlights the last edition you created, regardless of the program that created it.

Double-click the name of the edition you want. It appears in your document, usually enclosed by a nonprinting gray border (see Figure 16-13.)

How do you edit the subscriber?

After you subscribe to an edition file, you can’t do much with the imported material. If it’s a graphic, you can move or resize it. If it’s text, you may or may not be able to make overall formatting changes. (See the next Secret.)
But to make any serious editing changes — or any changes to individual words in subscribed text or individual elements of a graphic — you must go back to the original publisher document. Of course, this is the whole point of Publish and Subscribe.

Open the publisher document. (Aren’t you glad you were forced to save it?) Make some changes to it and then save the publisher document. The edition file on disk — and, therefore, the subscriber document — is automatically updated.

**Controlling when editions are updated**

We mentioned that an edition file is updated when you save the publisher document. Actually, there’s more to it than that. You can also elect to have the editions updated on command, either before you save the publisher document or later. You can even permanently destroy the link between the original and the copies.

Most programs have a Publisher Options command and a corresponding dialog box (see Figure 16-14). Note well, to avoid confusion: this command is available only when something that you published is selected in the publisher document!

![Figure 16-14: Get more control over when the Mac updates the subscribed copies.](image)

In the dialog box, you see a Send Edition control. Generally, it’s set to “On Save,” meaning that you have to save the publisher document to update the edition files.

But using the controls in this dialog box, you can have more flexible control over when the edition is changed.

- To halt all edition-updating until you are ready, choose Manually.
- To stop all edition-updating forever (break the link), click Cancel Publisher.
- To send an edition update right now, before you save the publisher document, click Send Edition Now.

**Subscriber options**

Most programs generally include a Subscriber Options command and dialog box. This can get confusing; often the same command, in the same menu, is used for both purposes. Only its wording changes according to what is selected in the document (either something you published or something that is subscribed). Figure 16-15 makes this clearer.
Figure 16-15: Same menu, same program, different command. In ClarisWorks, for example, the command's wording changes depending on what material is highlighted in the document. Ditto in Microsoft programs.

When you at last find the command, you get the dialog box shown in Figure 16-16.

Figure 16-16:
The Subscriber Options dialog box is the alter ego of the Publisher Options box.

In this dialog box, you see familiar controls for changing the frequency of the updating. If you leave the Automatically button selected, then the selected subscriber changes whenever the original (publisher) document is saved (or you click its Save Edition Now button). You can create the same three variations on that theme as you can with publishers:

- To halt all edition-updating until you're ready, choose Manually.
- To stop all edition-updating forever (break the link), click Cancel Publisher.
- To update the selected edition (if it has, in fact, been changed) when you've selected Manual updating, click Get Edition Now.

This dialog box offers a useful, additional option — the Open Publisher button. Using this command, you can open the original document and program that created the published material to begin with (if your Mac has enough memory). It's a fast, direct channel to the precise document and program, so you can, for example, correct an error you spot in the subscribed material.
Publish and Subscribe Secrets

What about the network?

One of Publish and Subscribe’s most useful applications is that its editions can be linked over a network. Ellen can publish the month’s sales figures onto her hard drive; whenever she’s got File Sharing turned on, Mike, Ted, and Joe can subscribe to those numbers from their own Macs.

So what happens if Ellen changes those numbers when they’re not on-line or when her File Sharing feature is turned off? System 7 intelligently socks away an internal memo to itself. When the guys finally turn on their Macs, or when she turns File Sharing back on, the subscribers’ files are updated automatically as soon as they open the documents in question.

Publish and Subscribe in Photoshop

We want to reiterate that every program’s Publish and Subscribe commands are slightly different. Take Photoshop, for example, which has only two commands: Create Publisher and Publisher Options (see Figure 16-17).

Furthermore, we said earlier that the Create Publisher command is dimmed unless you select some material. But in Photoshop, Create Publisher is dimmed if you have selected something! What’s going on?

Photoshop is, at its core, a painting program. By nature, its entire screen is one solid bitmapped graphic. It doesn’t have lots of discrete objects, like a drawing program (such as MacDraw) or a word processor. Therefore, you can only publish the entire document at once. (That’s why the Create Publisher command is dimmed if anything is selected.)
Since you can’t very well subscribe to text or object-oriented graphics (because they have to be treated as distinct objects in order to be individually updated), there’s no Subscribe command at all. Finally, since you can’t publish only part of a Photoshop document, the Publisher Options command is only available after you’ve published the entire image...whereupon the Create Publisher command is dimmed! In other words, of Photoshop’s two Publisher-related commands, at least one is always dimmed.

Give Photoshop credit, though; most painting programs have no Publish and Subscribe commands at all.

**Overlapping, nested, and embedded publishers**

Most programs let you get pretty fancy with selecting material for publishing. Suppose that you select a page in a ClarisWorks word processor document and publish it (save it as an edition file). Then you decide you also want to publish just the third paragraph. You can. Your document will fill up with those gray outline borders, but you can do it.

The word processors we checked even let you create *overlapping* publishers — that is, paragraphs 1–3 are one edition and paragraphs 2–4 are another. Graphics programs, too, can create either overlapping or nested publishers. (Some programs somewhere probably don’t let you get that elaborate; they’ll tell you “no” by dimming the Create Publisher command when you select something that overlaps or sits inside another publisher.)

Finally, you can publish material that *includes* subscribed material (see Figure 16-18).

*Figure 16-18:* Edition files can contain material that includes other edition files. In this example, a bitmapped Photoshop graphic is published as a PICT file. In Adobe Illustrator, the graphic is subscribed to, and fancy type is added. The whole bundle is now published again to PageMaker, where it’s incorporated into a finished brochure.
Changing subscribed text

Here's a handy Secret if you subscribe to some text created in the same program (that is, you've subscribed to a block of text from MacWrite Pro that was created in MacWrite Pro).

You can reformat the entire subscribed block of text at once: change its font or size; adjust the margins; change the line spacing; and move or delete the entire block.

Of course, you can't edit, delete, or format individual words or portions of the material. Nor can you make even those full-block editing activities to subscribed text from a different program.

How does it know?

If you work with Publish and Subscribe very much, you'll begin to notice a sweet but baffling feature. Each time you use the Subscribe To command, you'll discover that the Mac automatically finds the folder and even the edition file that you created most recently. You're spared the hassle of navigating your folders in search of that edition you just published (see Figure 16-19).

![Figure 16-19: Somehow it knows. The Subscribe To command automatically highlights the name of the last thing you published, wherever it may be on your Mac or on the network.](image)

Turns out that the Mac knows because it takes notes. To be accurate, unbeknownst to you, it creates an alias of the edition. It stores this alias in the Preferences folder inside your System folder (see Figure 16-20).

![Figure 16-20: The file you didn't know existed: an automatic alias of the most recent edition. We found this one lurking inside our Preferences folder.](image)

When you use a Subscribe To command, the Mac consults this alias, which points it to the correct edition file on your disk.

How Excel 4.0 does Publish and Subscribe

Excel 4.0 doesn't show those thick gray borders around material it has published or subscribed to. And it doesn't have Publisher Options or Subscriber Options commands in the Edit menu.
Instead, these options are offered in a place you'd never think to look — the Links command in the File menu. When you choose it, you get a list of all publishers in the document or, if you use the pop-up menu at the top, a list of all subscribers (see Figure 16-21).

Figure 16-21: Excel's Links command is your link to the Publish and Subscribe options.

What's neat is that you can double-click any publisher or subscriber in this list. The dialog box closes, and you're taken directly to the place in your spreadsheet containing the selected information.

Note, too, that this dialog box contains an Options button. This button displays the usual Publisher Options or Subscriber Options dialog box. You have the same old choices — Get Edition Now and so forth — they're just hidden away behind this button. Actually, you don't have to use this hidden-away version. You can also bring up the Publisher Options or Subscriber Options dialog box by double-clicking a published or subscribed area in the spreadsheet. (This doesn't work for charts you published. It does work for charts to which you subscribe, and it works for all other data types, both published and subscribed.)

Where else to look for Publisher Options or Subscriber Options

If a program doesn't have a Publisher Options or Subscriber Options command, it may have hidden them away. Try double-clicking within the gray borders in a document to see if the appropriate dialog box comes up. If not, try Option-double-clicking.

Same disk

After you create an edition file, you can rename it in the Finder without interfering with its links to other documents.

You can't, however, move it to a different disk. If you do that, the subscriber document won't be able to find it, and the link will be broken.

In Microsoft Word: linking entire documents, or not

You can publish all the text in a document, if you wish. Be careful what you select, though. If you use the Select All command to highlight the entire document including the final paragraph mark (see Figure 16-22), then you won't be able to add anything to the end of any new document you create that subscribes to the edition.
And this, in the end, was my final decision concerning that hideous skateboard.

Figure 16-22: In Word, turn on the Show ¶ command in the View menu. Now you can see the ¶ marking at the end of the text. If this marking is selected when you create the edition (top left), then you won't be able to add any text to the end of the subscriber document (bottom left). On the other hand, if you stop the selection just before the final paragraph mark, you'll be able to add more text to the end of the document (right).

Don't copy and paste publishers

You can do almost anything, editing-wise, to a publisher. You can move it, add to it, reformat it, whatever. Your changes automatically get made to the edition files.

However, it's probably better to avoid duplicating (or copying and pasting) the publisher. All these copies of the publisher are supposed to update the same edition file. So what happens if you edit different copies of the publisher in different ways? Suppose that you set one copy of the publisher in 10-point type and another in 40-point type; what's the edition file supposed to do?

The answer: probably nothing you can predict or want to risk.

QuarkXPress and Publish and Subscribe

QuarkXPress only subscribes — and only to pictures, not text. The only workaround is a third-party QuarkXTension called TextLinker, from N-Path.

Types, Creators, and Double-clicking

In previous incarnations of the personal computer — IBMs, for example — you didn't have any of this double-click-to-open business. In the world of DOS, you have to type the name of the program you want to open, a space, and then the exact name of the document you want to open with it. If you don't remember the name of the document, you're out of luck.

The Mac makes all of this much simpler. You don't have to remember the names of your programs; they're listed for you at all times. Better still, you don't have to remember which program created a certain document. You just double-click the document icon, and the program that created it — whatever or wherever it may be — opens automatically.
The mechanism that gives the Mac this intelligence is worth examining because it also accounts for a number of other Mac behaviors. That mechanism is type and creator codes.

**Creator codes**

The creator codes are generally hidden from you, the user. But every program ever written has its own customized four-letter code: the *creator code*. No two creator codes are alike. For FileMaker Pro, the creator code is **FMPR**. For Now Up-to-Date, it's **cal**; for Word 5, it's **WDBN**; for In Control, it's **flip**, and so on. (When it comes to type and creator codes, capitalization counts, as do spaces.)

Because every document you create is also stamped with this creator code, it always knows who its parent is. When you double-click a document icon whose behind-the-scenes creator code is FMPR, FileMaker Pro opens automatically.

**Type codes**

Every icon on your disk also has an invisible type code. This useful piece of information specifies which *kind* of file it is: text, graphic, and so on. For example, depending on the options you choose in Excel's Save As dialog box, this program can create text files (type code: **TEXT**), normal Excel files (XLS4), Lotus 1-2-3-exchangeable files (SYLK), Microsoft Works format (LWKS), and so on.

Every one of these documents has the same Excel creator code, however — **XCEL**. Therefore, regardless of what the icon looks like or what file type it is, if it's double-clicked, then it opens in Excel.

**Why you want to change type and creator codes**

Manipulating these codes can be useful in a number of ways. First, you must understand that these codes are the *sole* explanation for the famous "could not be opened because the application could not be found" message.
This error message appears all too frequently when you double-click an icon. It means that, in consulting the file’s creator code, the Mac didn’t find a match among the applications on your hard drive. If you double-click a document icon whose creator is SQGP, and there’s no application on your disk with such a code, then you get the error message.

Suppose that your SQGP file was sent to you by a friend from America Online. The message says, “Here’s a PICT file of me with my dog Terry.” Now you’re on to something. If you check the file’s type code using DiskTop (see below), you see that, indeed, the type for this document was PICT. (PICT is the four-letter type code for the standard Mac graphics file format.)

Dozens of programs can open PICT files: Photoshop, Word, ClarisWorks, you name it. But as long as the file’s creator code refers to a program you don’t own, then you’ll never be able to double-click it.

If you were to change the creator code to match an application you do own, then a simple double-click would open the PICT file. In fact, the file would even inherit the appropriate icon identifying it with that application; the Mac uses a file’s creator and type codes to assign icons for files in Finder windows.

### Changing type and creator codes

Apple, in the standard system software, doesn’t provide any way for you to change a file’s type or creator code. Heck, Apple doesn’t even provide a way for you to see type and creator codes.

You, however, are fortunate. Included on the disks with this book is DiskTop (see Chapter 33), one of whose talents is the capability to change type and creator codes with ease. Here’s how to do it.

First, launch DiskTop. You can see immediately that DiskTop shows every file’s codes (see Figure 16-23). (If you don’t see type and creator codes, then you’re not in Technical Mode. Choose Preferences from the DiskTop menu, and select Technical. Click OK.)

Highlight the file whose code you want to change.
Then, from the DiskTop menu, choose Get Info. The window shown in Figure 16-24 appears.

All you have to do is type a new type or creator into the text boxes at the upper right. Be careful: the code must be exactly four characters long. And capitalization counts; if you change a file's creator to Fmpr, it will not become a FileMaker Pro file. You must change the creator code to an all-capital FMPR.

When you're done changing the code, click Change. It's over.

**Figure 16-24:**
The Get Info window. The Type and Creator code boxes are in the upper right.

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**Type and Creator code Secrets**

**Creator codes for a safer business**

How's this for security? You can deliberately change a document's creator code to something nonsensical. No snooping passersby will be able to open it by double-clicking or even by using the original application's Open command.

When you want to open it yourself, just whip open DiskTop and restore the original codes. In the meantime, nobody will even know why they can't open the file. Yet you can still see the file, back it up, rename it, and so on.

**Change the codes of telecom log files for easier reading**

If you have a modem, and if you sometimes dial up on-line services like America Online or CompuServe, then you probably know how to save text from your on-line discussions. They're usually saved on your disk as text files (type code: TEXT) with the creator code of your telecom program (such as AOqc for America Online files).

Consider changing these creator codes of the log files to match your word processor. That way, when you double-click one such file, it opens up in a more user-friendly environment.
Telltale signs of creator and type code problems

As we mentioned earlier, a file’s icon is directly linked to its creator and type codes. When your Mac encounters a file and sees that its creator code is MSWD and its type is WDBN, it immediately throws an icon of a Microsoft Word document up on-screen to represent that file; the codes tell it which icon to use.

Which brings us to this Secret: If you try to open a file, and you get a message saying the application that created it can’t be found — and you know perfectly well that you do, in fact, have that application — take a look at the file’s icon. If it has turned into a “generic” document, it could be that the icon has simply forgotten its type and creator codes (see Figure 16-25). Without those codes, it loses its identity and forgets to which application it belongs. Restoring the proper codes with DiskTop or ResEdit usually solves the problem. Just type the right codes back in, using the method described earlier in this chapter, and the icon will take on its application-specific appearance and open right up.

In the Finder’s list views, there is yet another indicator that a file has lost its creator and type codes. Instead of being listed as a Microsoft Word document or a FileMaker Pro document, the file will be listed simply as a “document.” Once again, the coding that tells the Mac which application created the program has been obliterated (see Figure 16-25).

Figure 16-25:
When a file gets its type and creator codes zapped, its icon becomes generic and its kind in Finder list views defaults to “document.”

Easy Open and System 7 Pack: Make substitutions permanent

The procedure detailed in the preceding Secret is great if you want to convert one file at a time to a more convenient double-clickable format. But what if you want all such documents to be changed at once?
Here's where System 7 Pack comes in handy. We've included this program with the book (see the SECRETS disks). Among its other features, System 7 Pack lets you specify replacement creator codes for your documents (see Figure 16-26).

![Unregistered System 7 Pack! 3.3 - Call 800-368-5195 to Order!]

**Figure 16-26:** The Substitutions list (left side of this dialog box) shows type code/replacement type code pairings.

In the figure, you can see how System 7 Pack lets you set up substitute type codes for a more successful double-clicking experience. In this example, TEXT means a text file, PICT means a graphics file, and MACA is a MacWrite document. They've been told to auto-open as TeachText, Photoshop, and Word documents, respectively.

(The shareware version included with this book lets you specify up to three such pairings. If you register System 7 Pack, you'll get a password over the phone that "unlocks" the feature, giving you an unlimited number of application-substitution pairs.)

If you'd prefer a more flexible and official version of the same thing, you can buy Apple Easy Open (or get it with System 7.5, a Performa, and so on). This System 7 extension has even more intelligence. If you double-click a Finder icon whose parent application doesn't seem to be on the disk, you don't get the "application not found" message. Instead, you get a neat list of every program you own that can open the document. You can choose which program you want to open it.

If and when software companies make their programs Easy Open-compatible, this tool will become increasingly more useful. You'll be able to double-click a MacWrite file, for example, and choose from among several programs that have appropriate converters.
Chapter 17
Word Processing

In this chapter:

- Basic word processing power tricks
- The Mother of All Microsoft Word Sections
- Adding hundreds of words to the dictionary
- Tricks on other word processors
- Unleashing the raw power of TeachText (and SimpleText, too)
A Few Words about Word Processing

It's the Number One use of a Mac. It's the Number One use of any personal computer, actually. The lure of being able to rearrange text and replace pieces of it without involving eraser crumbs or white-out is enough to draw even card-carrying technophobes into the world of personal computing.

The Mac marketplace isn't as riddled with competing word processors as the IBM marketplace is. But there are more than enough choices, from the simple and easy (such as the program called Taste) to the mega-wordcrunchers like Word and WordPerfect. (We actually know one woman who runs her entire office using TeachText, for heaven's sake. She's in absolute heaven.)

We'll be honest here, though: most of the Secrets you'll find in this chapter apply to Microsoft Word. That's because it's far and away the bestselling word processor. It's also because it's what we—and everybody we deal with—use every day.

Universal Word Processing Secrets

Double-click/drag and much more

If this is old hat to you, by all means skip to the next Secret. But in the world of Macintosh, it takes two steps to edit anything: (1) Select what you want to change. (2) Use a menu command or a tool-palette click or a keyboard shortcut to make the change.

Far too many people focus on the second part of the task and ignore the first. You don't get the most out of the word processor until you know its text-selecting shortcuts. Dragging through text, letter by letter, is fine, but you have to be too precise. Our favorite text-selection Secret, therefore, is to double-click/drag, as shown in Figure 17-1.

Figure 17-1: The normal method of drag-selecting text (top) is too slow because you have to be letter-accurate when you drag. Here's a famous shortcut that lets you select one word by double-clicking (lower left). For extra efficiency, combine these two techniques into a double-click/drag (lower right).
You know, of course, that you can highlight a single word by double-clicking it. You probably know that you can drag to highlight a stretch of text.

But you can combine the best aspects of these two methods: point to the first word you want included in the selection. Double-click, but keep the button down on the second click. With the button still down, drag sideways (or diagonally) to select text in complete-word increments.

You should probably get used to this trick; in real life, you use it more often than you use simple dragging. After all, how many times are you trying to select only part of a word?

Every program has its own additional text-selecting shortcuts. In Word, you can triple-click a paragraph to select it. You can  selects a sentence to select it. Learn your word processor’s shortcuts and apply them!

High-speed Delete

How often do you really stop to think about the ergonomics and interface design aspects of your everyday work? Not as much as we interface nerds do, we bet.

It occurs to us that, on a Mac keyboard used by a right-handed person, the Delete (Backspace) key is in an incredibly dumb place! Think about it for a minute: it’s at the upper-right corner of the keyboard. And where, nine times out of ten, is your right hand located just before pressing the Delete key? It’s on the mouse. (At least it is if you’re editing previous work.) That means that your right hand is traveling back, forth, back, forth, mouse, Delete, mouse, Delete — and your left hand sits there twiddling its thumb, so to speak.

Our suggestion is to install a Delete key on the other side of your keyboard. No, this doesn’t require a soldering iron. You already have a key there that you rarely use—a couple of them — the tilde key (-) and Esc.

Teach your Esc key to be the Delete key. We guarantee that you’ll love this the minute you start editing a document. For the first time, you’ll be two-handed: mouse with one hand, position the cursor, delete with your left hand. It’s sheer joy.

If you use Microsoft Word, teaching this key to be Delete (in addition to your regular Delete key, of course) is easy. Open the Commands command (Tools menu). Select Backspace and assign it to any additional keys you wish. (See our Word Secrets, later in this chapter, for full instructions.)

If your word processor doesn’t let you retrain your keys, then get QuicKeys, or use the trial version included with this book (see Macintosh SECRETS disks). Teach it to “press” the Delete key when you hit Esc or tilde.

Comparing manuscripts

Suppose that you have a printout of some report. An editor has marked it up with corrections, additions, and deletions. You are supposed to compare it to the copy that you have on the screen, updating the electronic copy to match the edited printout.

If you proceed from page one, as your instinct tells you, then you’ll have a harder and harder time finding a spot in the on-screen document that corresponds to the
As soon as you add some material to page one, for example, then no phrase in the entire following 10-page document will be in the same visual spot on-screen as it is on the printout.

Here's the solution: edit backwards, from the last page. As you work toward the front, the changes your editing makes to the layout of the text won't matter because only the part you already covered actually changes. This system makes it much easier to find on the screen what you see on the printout — they'll always be at exactly the same spot.

**Master fractional character widths**

If you want to look good in print, learn about *fractional character widths*.

The Macintosh screen, regardless of the make or model, uses 72 dots (pixels) for every actual-size inch. As it turns out, a $\frac{1}{72}$ inch is a large enough distance to be visible, especially in a beautiful laser printout.

The problem is that on the screen, the position of every character is rounded off to the nearest $\frac{1}{72}$ inch (because that's the closest the Macintosh can come to putting it where it really belongs). For a year or two in Macintosh history, the world was filled with awkwardly (loosely) spaced words in laser printouts, as every character's position was nudged into $\frac{1}{72}$ inch slots.

Finally, one program after another introduced the Fractional Character Widths option. When text is laser printed (or printed on any high-resolution printer, such as the StyleWriter) using fractional character widths, the printer is allowed to place each character at its typographically correct position, which isn't necessarily in a multiple of $\frac{1}{72}$ inch. The second letter of a word may be, for example, $\frac{1}{100}$ inch closer to the first letter than it would have been allowed. As a result, the printout is slightly tighter, looks much more professional, and no longer has those funny extra-wide spaces between words.

Each program has its fractional character widths on/off switch in a different place. In Word and WriteNow, the checkbox is in the Page Setup dialog box. In MacWrite Pro and ClarisWorks, it's a checkbox in the Preferences dialog box (see Figure 17-2).

![Figure 17-2: The Fractional Character Widths option is buried in different spots. It's usually in Preferences (left) or the Page Setup box (right), depending on your word processor.](image)
So why doesn't everyone leave the fractional character widths feature turned on all the time? Because when it's on, the Mac struggles to display on the screen exactly what you get when you print out. That's good, in a way, because a document using fractional character widths ends each line of text (and, therefore, each page) in a completely different place than one that's not. (Generally, a document using fractional character widths is shorter than one that's not.)

The screen display, limited as it is to \(\frac{1}{2}\) inch increments, suffers when fractional character widths is on. The Mac has no choice but to overlap the characters, which makes them harder to read (see Figure 17-3). As a result, many people do their editing with this feature off, and then they turn it on just before printing. (You could easily create a QuicKeys or Tempo macro to do this for you; see Chapter 22.)

We didn't have much to go on: only his memory of where each road led. The sky, as my grandfather naturally observed, was "the durnedest blue I ever did see."

Figure 17-3: This is the trouble with fractional character widths: they make text look harder to read on the screen. Some people, therefore, do their word processing with fractional widths off (left). They turn it on for printing (right) so that the printer will give the pages that nicely typeset look.

Microsoft Word

Welcome to the Mother of all Word chapters.

Oh, yes, we know this section is hugely out of proportion to our coverage of other programs. But we figure if you do any serious writing at all on your Macintosh, chances are you do it with Microsoft Word. It's by far the most popular and widely used Mac word processor. Though the basics are easy enough to learn without even cracking the hefty manual, Word is obviously designed with the power user in mind. It's crammed with higher-level word processing features, shortcuts that streamline work, and built-in tools for customizing the program to your own preferences.

Our purpose here isn't to provide a primer on Word. We're going to focus on the good stuff — some of Word's most powerful but lesser known features. First, we'll run through some of the program's best tools and how to use them. We'll show you how you can take a 13-step, mouse-intensive task and reduce it to a single keystroke. We'll top it all off with a generous selection of hidden tricks and, frankly, amazing shortcuts.

Incidentally, you won't see Word 5.1's Toolbar in any of the illustrations to follow. That's because we turn ours off. We've never yet been able to remember what those little icons mean, and the darned thing takes up too much screen space. We've adopted this same philosophy for Word 6.0; we find the program's 10 toolbars visually overwhelming and, frankly, we prefer firing off commands from the keyboard rather than clicking teeny buttons scattered all over the place. In short, we purposely configure the program so that it looks and works more like Word 5.0 for fast, clean, uncluttered word processing.
Customizing menus

Using Word straight out of the box without modifications is like buying an expensive suit straight off the rack and then refusing the free alterations provided by the shop's tailor.

Word is made to be customized. You can assign a keyboard shortcut to virtually any Word command, option, or feature. You can also doctor up the menus however you please. For example, you can

- Arrange menu commands in whichever order is most logical to you. You can even add or delete separator lines between any group of commands to keep them organized.
- Add any options or commands you think should be on the menus.
- Eliminate any menu items you don't use.
- Add a keyboard equivalent to any command, regardless of whether or not it appears on a menu.
- Reassign the keyboard shortcuts associated with any command.
- In Word 6.0, turn any menu command into a button on a toolbar or create completely new menus containing whatever commands you want on them.

Adding an item to a Word menu

To add a command to a Word menu, first bring onto the screen the particular option you want to add. If the option is on the ruler — centered text, for example — make sure the ruler is visible. If the option appears in a dialog box, open the dialog box.

Then activate the Add to Menu command by pressing ⌘-Option-plus sign (the plus sign on the keyboard, not the numeric keypad). The pointer changes into a boldface plus sign (see Figure 17-4).

After the Add to Menu plus sign appears, all you have to do is click the option you want to install on a menu. The plus sign changes back to the standard pointer, and the item is added to the menu that Word thinks is the most logical for that command (see Figure 17-5). If you watch closely, you'll see which menu the new item is located on; the menu title flashes momentarily.

If you want a command to appear on some other menu, you can put it wherever you like, using the Commands dialog box (we'll get to it later).
You can turn any of the Ruler's formatting options into a menu command. Activate the Add to Menu command by pressing Option-plus sign. Then click the option you want to add — in this case, the Paragraph Aligned Right option — with the boldface plus sign. The option instantly appears at the bottom of the Format menu as a new command.

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CASE HISTORY

Word menus of the rich and famous

We know a very, very famous movie actor who's writing a book. (He's a client, so we're not going to name him. But trust us: His name-in-People-magazine quotient is among the top ten in the nation.)

He's a little bit intimidated by computers. When we told him about the Remove From Menu command we're discussing in this section, he asked for us to trim down the superfluous options from his Word menus.

Open Mail and Send Mail, of course, were the first to go (why on earth does Microsoft insist on putting them there by default?). Our client said he'd be writing a manuscript to turn in to a publisher — so out went Table of Contents, Index, Hyphenation, and all the page-layout commands. Insulted, he also had us take out the spelling checker, grammar checker, and thesaurus.

Before long, we were in a frenzy of menu-shortening. Down the hatch went Character, Paragraph, Section, Document, and other fancy formatting commands. Renumber, Calculate, Repaginate Now — "If I don't even know what that means," we were told, "I certainly won't ever use it."

Then we came to Find and Replace. We explained why one might like controls like these: "Suppose you misspelled somebody's name all the way through your manuscript —" we began. We should have known. "I won't misspell any names. Take it out," he said.

When we were finished cleaning the useless and extraneous commands out of our client's Word menus, there were exactly three commands left he considered worth having: Bold, Save, and Print.

Hey, what do we know? Maybe there's an untapped market here.
Removing an item from a Word menu

Why keep your Word menus cluttered up with commands you never use? Removing items from menus is even easier than adding them. After you zap unneeded items from view, you're left with shorter menus containing only those commands you want. This means less time spent fishing through menus for commands you want and less chance of accidentally selecting the wrong command.

To delete commands from menus, press ⇧-Option-minus sign (again, use the minus sign on the main keyboard and not the numeric keypad). This activates the Remove From Menu command. The pointer becomes a boldface minus sign. When you select a command, the menu bar flashes, and the item you selected disappears from the list (see Figure 17-6).

Removing commands from menus doesn't delete them from Word. To restore a command you've removed from a menu, you can reinstall it by using the Add to Menu command described earlier or by using the Commands dialog box explained in the following.

Adding keyboard shortcuts

Many of the frequently used Word commands already have keyboard equivalents, but plenty don't.

MACINTOSH SECRET

Removing more than one menu item at a time

You can remove multiple menu items without having to repeatedly press ⇧-Option-minus sign. The trick is to hold down the Shift key as you remove each item; this will keep you in Remove From Menu mode so you can continue to select items for removal.

To make this work, you have to press the Shift key after the fat minus sign appears but before you pull down a menu to select the first item to remove.

By the way, if you activate either the Add to Menu or Remove From Menu command and then change your mind, you can escape by pressing ⇧-. (period).
On a standard Apple keyboard, for example, you have a key combination for the Save command (⌘-S), but none for Save As. If a keyboard shortcut is lacking for a Word option you use a lot, you can create your own key assignment for it by using the Assign to Key command.

Adding a new key assignment is similar to adding a menu command. Again, you press ⌘-Option-plus sign. But this time use the plus sign on the numeric keypad and not on the keyboard. The pointer changes into a boldface Command symbol, as shown in Figure 17-7.

After the ⌘ symbol appears, use the pointer to select the menu item or other option to which you want to add a keyboard equivalent. In versions 5.1 and earlier, a dialog box appears, asking you to strike the keys you want to assign (see Figure 17-8). In Word 6.0, the Customize dialog box opens. You simply click in the field called Press New Shortcut Key and press the key combination you want assigned to the command.

What happens if you choose a key combination that’s already used by another Word command? Word presents a dialog box like the one in Figure 17-9, giving you the option of replacing the existing command or canceling the request and trying another keystroke.

Obviously, you can’t have two commands linked to a single keystroke. However, you can create more than one keyboard shortcut for a single command.
**ANSWER MAN**

**The Unpastables**

*Q:* What's going on? I'm typing in Word, I take a screen shot with Flash-It, I try to paste it into Word — nothing. Or maybe it pastes in whatever I used to have on the Clipboard. But when I open the Scrapbook, my screen shot pastes just fine!

*A:* Word, to the annoyance of thousands, has its own private Clipboard, separate from the usual Mac Clipboard. Every now and then, Word correctly converts the real Clipboard to its internal format. But not, as you've discovered, when you haven't ever left Word.

The solution is to force Word to acknowledge the new material on the real Clipboard. Just skip out of Word to another program for a moment. In System 7, we just click the desktop to bring the Finder forward; then we jump right back into Word. Presto: we can now paste what we wanted to paste.

If you're not using System 7 or our Finder trick doesn't work, open the Scrapbook. Paste into, and copy right back out of, it. That's more trouble, but it's guaranteed to work.

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**Styles and style sheets**

A *style* is a set of specific character and paragraph formatting characteristics — font, size, margins, line spacing, justification, borders, and so on — all saved together under one name.

Suppose you're formatting a business report. You decide to set the first section subhead in 18-point Helvetica bold italic, centered on the page, with a one-point border. After you format the text the way you want it, you can save all those settings as one style, called, say, Subhead. Subsequently, any paragraph assigned the Subhead style will automatically change font, size, margins, and so on, to match your style definition.

Here are two key advantages to formatting paragraphs in Word by using styles:

- **Consistency:** After you have defined a style, every paragraph to which it is applied will be formatted identically. Because you can transfer styles from one file to another, you can also assure consistency between documents. (This paragraph, for example, is set in our *Indent 1* style. It's used anywhere in this book where there's a bulleted, indented block like this.)

- **Speed:** As you'll see, applying styles is much, much faster than individually applying each formatting option to a paragraph. By using a style sheet, you can change numerous paragraphs in a single bound.

Sad to say, we actually know people who completely ignore Word's style features. They painstakingly format each paragraph in a long document from scratch, mousing all over creation, pulling down menus left and right, and wading through layers of dialog boxes — when all they had to do was create a handful of styles that would have reduced the formatting to a few keystrokes.

*Here's the fastest way to create a style — by example:* Format a paragraph the way you want it. Click within the paragraph and then click once in the style box in the Ruler (see Figure 17-10) or, in Word 6.0, on the Formatting toolbar. The current style name will be highlighted. Type in a name for the new style and press Return.
First, click once in the paragraph with the format you wish to define as a new style.

Then click once in the Ruler's style box and type the new style name.

In Word 5.1 or earlier, a dialog box appears (see Figure 17-11). Press Return again and the new style is saved.

Applying a style: If you want to apply a saved style to one paragraph, click within the paragraph. If you want to apply the style to more than one paragraph, select all the paragraphs you want formatted. Then use the style box pop-up menu on the Ruler (or Formatting toolbar, in Word 6.0) to pick the style you want (see Figure 17-12).

The Style dialog box

What happens if you need to change some characteristics of a style you've created? How do you rename or delete a style? For this purpose, you use the Style dialog box. The Style dialog box also lets you transfer a document's complete set of styles — called a style sheet — to another document.
You open the Style dialog box by choosing Style from the Format menu. If you’re using a version of Word prior to 6.0, there’s a shortcut: double-click the style name in the status bar at the bottom of a document’s window (see Figure 17-13).

**Figure 17-13:**
Double-click the style name displayed at the bottom of the window to open the Styles dialog box.

- **To rename a style.** In the Style dialog box list, select the style you want to rename. Then click in the style name field to edit the name. Press F2-D (or click the Define button); you’re asked if you want to rename the style. Click OK or press Return. In Word 6.0, click the Organizer button, select the style you want to rename from the list of styles on the left; then click the Rename button and type the new name.

  **STRANGE but True**

- **To delete a style.** Believe it or not, the keyboard command (F2-D) that you use to rename a style (Define) is the same keystroke you use to delete it. In the Style dialog box (see Figure 17-14), select the style you want to delete. Here’s the difference: don’t click in the style name field. Press F2-D (or click the Delete button). You’re asked if you want to delete the style. Click OK or press Return. (To make matters worse, F2-D performs still another function when you’re not in the Style dialog box — it’s the keyboard shortcut that brings up the Character dialog box. That’s right, folks — one program uses the same key combination for three radically different commands.)

**Figure 17-14:**
The Style dialog box, where you can define, rename, and delete styles.

---

**Style sheets**

A style sheet isn’t really a sheet; it’s the full collection of styles that you define for use in a particular document.
If you want a number of different documents to share the same custom styles, you can transfer the style sheet of one document to another, using one of these methods:

- Copy and paste the contents of an existing document into a new document. When you do so, the entire style sheet of the first document is carried to the new one. Even if you immediately delete all the pasted text, the styles from the original document remain. You can then format your new document, using those styles.

- You can merge a style sheet from one document into another. Here’s how: Open the document to which you want to add styles and then open the Style dialog box. With the Style dialog box still open, choose the Open command from the File menu. A dialog box appears, asking you to select a style sheet document (see Figure 17-15). Open the document with the styles you want to import.

- In Word 6.0, you can use the Organizer to poke into any existing file and pull any (or all) styles from it directly into your current document.

If the incoming styles have the same names as styles in the open document, the new styles replace the old.

### Keyboard control in dialog boxes

Almost every button in Word’s Spell Checker and Thesaurus can be triggered with keystrokes. In many Word dialog boxes and windows, such as the Word Count (in versions prior to 6.0) and Save As dialogs, you can use keyboard shortcuts to select and deselect checkboxes and other options (see Figure 17-16).
In most dialog boxes that don’t contain a text field, you can trigger buttons by pressing only the first letter of the button’s name — without any modifier keys. For example, in Yes/No dialog boxes, instead of clicking the Yes, No, or Cancel buttons, type a Y, N, or C (see Figure 17-17). (This is a great shortcut! When you quit Word, don’t even wait for the “Save changes before closing?” box. Type a bunch of Y’s or N’s in rapid succession, without even waiting to be asked.)

Figure 17-17:
Look, Ma, no 3€. In many of Word’s dialog box shortcuts, you simply type a single letter to activate a button.

In dialog boxes that do contain a text field, you generally have to press 3€ as well as the first letter of the button’s name (see Figure 17-18) so that Word won’t think you are trying to type into the blank.

Figure 17-18:
Most buttons in Word’s spell checker can be keyboard-activated.

One more trick: when a dialog box is on the screen, you can cycle through the various buttons, pop-up menus, and text fields by pressing 3€-Tab (or Shift-3€-Tab to move backward through them). Word indicates that you’ve “selected” one of these elements by drawing a strange flashing underline beneath it. To select the one you’ve just flashed — to put an X in the checkbox, for example, or to choose an item in a pop-up menu you’ve opened — press the zero key on the numeric keypad (Num Lock must be off).

The Glossary

In versions of Word prior to 6.0, you can store frequently used words, phrases, graphics, table formats, and graphics in the Glossary — and then retrieve them with a couple of keystrokes. The Glossary is one of Word’s great built-in, labor-saving devices, but it’s one that is all too often ignored by users of the program.
In Word 6.0, the Glossary command has been renamed AutoText. It works a little bit differently, but the idea is the same: You can store chunks of text and have Word retrieve them for you on command.

Suppose that you're a newspaper reporter (as Joe, one of your cheerful authors, was for years). Putting together crime stories, you routinely write that an individual “was arrested and charged with” some crime. You can save that 29-character phrase as a glossary entry and give it a short simple name, like ar. In the future, all you have to do is hit the glossary command, type ar, and hit Return (or just click the AutoText button in Word 6.0). Word will type the phrase into your document automatically. But wait, it gets better: Assign this same glossary entry its own keyboard shortcut using the Commands command (in Word versions 3 through 5) or the Customize command (version 6.0), and you've reduced 29 keystrokes to one! (See the section called “The Commands command and Customize” in this chapter for more on assigning custom keystrokes.)

Here's another example: If you have a graphic you often use as a logo or letterhead, you can save the graphic as a glossary entry called "logo." To add the graphic to a document, you simply use the glossary command and type logo.

Word also has preloaded glossary entries that automatically type in the date, time, file name, author, or other basic information. You can scroll through these standard entries in the Glossary window.

**Creating a new glossary entry**

Here’s how you define a new glossary entry in versions prior to 6.0:

1. Select the text, graphic, or anything else you want to store in the glossary. A glossary entry can be any length — even pages long.
2. Choose Glossary from the Edit menu or press **K**. The Glossary window appears (see Figure 17-19). Type in an easy-to-remember name in the empty name field. Glossary entry names can be up to 31 characters long, but, obviously, a long glossary name defeats the whole point of this feature (retrieving a chunk of text with as few keystrokes as possible).
3. Click Define or press **D**.
4. Close the dialog box.
If you're using Word 6.0, you define new AutoText entries by selecting the text you want stored, choosing the AutoText command from the Edit menu, typing in the name of the entry, and clicking the Add button.

**Inserting a glossary entry into a document**

You can insert glossary entries into a document by choosing them in the Glossary window and using the Insert button, but that takes entirely too long. Use one of the methods below:

- **The fast way to insert glossary entries.** Press ⌘-Delete. The status bar at the lower-left corner of the document window becomes highlighted and the word Name appears. Type the name of the glossary entry you want to retrieve. Then press Return or Enter. The glossary entry is inserted into the document at the insertion point (see Figure 17-20). Don't try this in Word 6.0 — the ⌘-Delete key combination now performs the Delete Previous Word command! Instead, type the name of the AutoText entry right into the document and click the AutoText button (or press ⌘-Option-V).

![Figure 17-20: To insert a glossary entry, type its name in the highlighted portion of the status bar at the bottom of the document window and press Return.](image)

- **The really fast way to insert glossary entries.** Use the Add to Keys command described below to create a keyboard command for the glossary entry. You'll bypass having to enter the name of the entry at all. In Word 6.0, open the Customize dialog box, select AutoText from the list of categories, and then select the entry you want from the list of available AutoText entries. You can then assign this AutoText entry its own keystroke or place it on a menu or a toolbar button.

Remember, you can store just about anything in the Glossary — a preformatted table, large graphics, even an entire form letter. Cumulatively, this feature can save you thousands of keystrokes, especially when combined with the Add to Menu and Add to Keys features.

**Saving a glossary**

This is one of Word’s dirtiest, not-so-little secrets. Ever stop to think about how you save all the changes you make to your glossary?

With the Glossary window open, choose Save from the File menu. Or you can wait until Word asks you if you want to save it (when you quit the program). In either case, you’re supposed to save your glossary as Standard Glossary, right into the folder that already contains the Standard Glossary. Inevitably, you get asked “Replace existing ‘Standard Glossary’?”

We like to think that this “Replace existing?” message is a last-chance warning that the Mac gives. It’s supposed to mean you’re about to make a mistake.

**But in Word, this is what you’re supposed to do to save changes to your Glossary!**

We can't think of a more poorly designed feature.
Chapter 17: Word Processing

MACINTOSH SECRET

To format or not to format

As you create glossary entries, keep in mind that in some cases you want to preserve an entry’s format and in some cases you don’t. If you save your letterhead in the glossary, for example, you want to keep the formatting intact so that the letterhead looks the same every time you insert it. But for entries consisting of boilerplate text — words or phrases you insert into a variety of documents — you want the entries to match the format of whatever paragraph they are inserted into.

Here’s the secret: If you want formatting preserved with an entry, select the paragraph mark (the gray ¶ symbol that appears at the end of each paragraph when you choose Show ¶ from the View menu) along with the text when you create the glossary entry.

If you want glossary entries to take on the style and formatting of the paragraphs into which they are inserted, don’t select the paragraph mark following the text when you add the entry to the glossary. (In Word 6.0, you also have the option of saving AutoText entries as plain text or with formatting attached.)

Oh, and incidentally: if, when quitting Word, you click any of the three No or Cancel buttons you encounter, thus electing not to replace the existing Glossary, then all your new Glossary entries are gone forever.

Fortunately, Microsoft cleared up this goofy scheme in Word 6.0. AutoText entries get saved into your default document configuration automatically.

The Work menu

When you use the Add to Menu command on styles, glossary entries, or document names, those items are added to an entirely new menu, called the Work menu. The Work menu doesn’t appear until you add something to it. Then it shows up on the far right side of the menu bar (see Figure 17-21).

Word 6.0 takes all of this one step further. Using the Customize command, you can do much more than add a Work menu — you can pop in as many new menus as you want, name them whatever you please, and fill them with any of the commands available in the program.

Figure 17-21: The Work menu, where you can list styles, glossary entries, or files you access frequently.

One of the handiest uses of the Work menu is to list files you open frequently (see Figure 17-22). To add a file to the Work menu, press ⌘-Option-plus sign (on the main keyboard, not the numeric keypad) to activate the Add to Menu command. After the pointer changes to a boldface plus sign, choose Open from the File menu to select the file you want to add to the menu. When you make the selection, the menu bar flashes, and the file you picked is listed in the Work menu. To open that file next time, just select it from the menu.
Using the Commands dialog box, you can move virtually any menu items you want to the Work menu. Conversely, you can shift items that normally appear on the Work menu to any menu you prefer.

The Commands command

To view the complete selection of Word commands in versions prior to 6.0 and to move items from one Word menu to another, you must use the Commands dialog box. (see Figure 17-23). You open it by choosing Commands from the Tools menu, as shown in Figure 17-23, or by pressing ⌘-Option-Shift-C. (In Word 6.0, you use the Customize command to load up, remove, or relocate commands.)

The Commands dialog box (see Figure 17-24) shows a scrollable list of every Word command, whether or not it currently appears in a menu. A short description of each command is displayed in the Description field. By selecting a command and clicking Do It, you can perform any of the commands in the list.

More importantly, by selecting a command and clicking one of the Add buttons, you add the command to the menu of your choice, select a keyboard shortcut for the command, or both.

To add a command to a menu, select the command you want to add. Then use the Menu pop-up menu to specify which menu the command should appear in. Use the Add Below pop-up menu to determine where on the selected menu the item should appear.

You can even use this feature to move commands from one menu to another. So if you think Page Preview command really belongs in the View menu instead of File, you can do it. Or if you'd rather have the Word Count command at the top of the Tools list instead of further down, you can move it up.
To move commands around, first select a command from the list in the Commands dialog box. Then click Remove. Use the pop-up menus to select the new location of the item. Finally, click Add.

Here are a few commands worth adding to your menus:

- **Allow Fast Saves**: See our “Deflating bloated files” Secret, later in this chapter.
- **Fractional Character Widths**: See “Master fractional character widths,” earlier.
- **Show Heading 5**: If you use the outliner, you’ll discover that Word’s one-click level-collapsing buttons only go up to 4! There’s no way to see additional levels unless you add Show Heading commands to your menus.
- **Sentence Case**: It’s invaluable when you get an e-mail or other document that’s been typed in all capital letters. This command converts text to normal upper/lowercase instantly.
- **Small Caps**: This is a priceless, good-looking style variation for subheads and titles.
- **Redefine Style from Selection**: If you use Word’s Styles feature, described earlier, you’ll love this. Add this command to the menu, and you can change every occurrence of a style in one step. (The alternative is to use the Style pop-up menu on the ruler, which involves several steps.)

**ANSWER MAN**

**Sine qua non**

Q. Oh, great. I was so impressed with your earlier section on using the Remove From Menu command to remove unneeded items from my menus that I got carried away and removed the Commands command itself. Now what do I do? I can’t open the Commands dialog box to put the Commands command back on the menu!

A. Yes, you can. Even if you delete the Commands command from the Tools menu, you can still open the Commands dialog box by using the keyboard command ⌘-Option-Shift-C.
Settings files

Okay, so you’ve read and digested all of these Word-customizing features. You added keyboard shortcuts to your favorite styles and glossary entries. You created a Work menu that lists the files you use most. You wreaked havoc with your menus, adding, subtracting, and rearranging commands until nobody but you can possibly use the program.

If you’re using Word 5.1 or earlier, all of these changes, it turns out, are stored in a Word Settings file in your System folder (within the Preferences folder, in System 7). Each time you launch Word, it consults the settings file and configures the menus and keyboard commands accordingly.

This is a critically important file! It’s just as worthy of backing up and treating carefully as any document you put time into because it represents a considerable amount of cumulative effort on your part.

Using the Commands dialog box, you can create multiple settings files, each with its own menu and keyboard command configurations. By loading the appropriate settings file when you use Word, you can have menus and keyboard commands instantly customized for a specific task. You can create one configuration of menus for general word processing, for example. Then, at any time while you’re working, you can open a Page Layout settings file that adds all of Word’s kerning and paragraph formatting options to the menus!

To create a settings file, first click Save As in the Commands dialog box (see Figure 17-25). Name the settings file and click Save. Then adjust the commands according to your preferences. (We use these italics because this seems backwards from the usual way you save a file. But Word continually saves your changes to the menus and commands, so you have to switch to your new Settings file before making the changes.)

To open a stored settings file, click the Open button in the Commands dialog box. Then select the settings file you want.

**MACINTOSH SECRET**

**Settings file shortcut**

If you use different settings files for different tasks, here’s a quick way to start Word with the settings you want already loaded: Launch Word by double-clicking the particular settings file you want (or by double-clicking an alias of it). This will launch Word and load the settings file at the same time.
Incidentally, here's another reason Word Settings files are useful: You can instantly customize copies of Word on any other Mac — all the Macs at the office, for example — simply by replacing their Word Settings files with the one you create.

Of course, all of this has changed with Word 6.0. Your customized menus, toolbars, and so on are all now linked to a specific template document. You use the Customize command to choose which template will store your modifications to the program.

**Microsoft Word Secrets**

**Deletion secrets**

It's certainly no secret that you can delete one character at a time by pressing the Delete key and backspacing over your typing. But here are some of Word's less-known deletion commands:

<table>
<thead>
<tr>
<th>To delete this:</th>
<th>Press these keys:</th>
</tr>
</thead>
<tbody>
<tr>
<td>The character after the insertion point</td>
<td>⌘-Option-F (Word 5.1 or earlier)</td>
</tr>
<tr>
<td>The entire word after the insertion point</td>
<td>⌘-Option-G</td>
</tr>
<tr>
<td>The entire word before the insertion point</td>
<td>⌘-Option-Delete (⌫-Delete in Word 6.0)</td>
</tr>
</tbody>
</table>

Of course, you're welcome to change these keystrokes to anything you please. (One of your cheerful authors uses these commands constantly. He's got Control-left arrow and Control-right arrow set up to delete the previous and next word, respectively.)

**Fast font selection (Word 5.1 or earlier)**

You can choose a new font from the keyboard by pressing ⌘-Shift-E (see Figure 17-26). When you issue this command, the word *Font* appears highlighted in the lower-left corner of the document window. Type in the name of the font you want and press Enter.

You only have to type enough of the font name for Word to recognize it. For example, you can type just *pa* to select Palatino, provided, of course, that there are no other fonts in your system that begin with the letters *pa*.

(No wonder nobody changes fonts from the keyboard. Who on earth can remember ⌘-Shift-E? Here again, we encourage you to use the feature, but trash the keystroke. Replace it with a much more user-friendly keystroke, such as Control-F for *font*, or even with one of the 15 function keys on your extended keyboard.)
Changing font sizes from the keyboard

Word provides two different sets of commands that allow you to change the size of selected text from the keyboard. These commands are particularly helpful if you use Word for page-layout tasks that require you to fit titles into a certain space.

Pressing `00-1` increases the size of selected text by one point size. Pressing `00-` decreases the size of selected text by one point size.

To change the point size in larger leaps than one point at a time, press `00-Shift->` (greater than) and `00-Shift<-` (less than). These commands jump from one point size to another as they are listed in the Font menu (9, 10, 12, 14, 18, and so on).

Add custom point sizes to the Font menu

Having read the previous Secret, the truly obsessive mind is racing at this point. "Wait a minute! The `00-Shift->` shortcut goes from one menu-listed point size to another — yet I control what point sizes are listed there!"

And that's true indeed. In Word 5.1 or earlier, you can add any bizarre point sizes you want to the Font menu. Just open up the Character dialog box (`00-D`). Type a point size into the Size box. Then press `00-Shift`-plus sign, the Add to Menu keystroke, and click squarely on the number you typed (see Figure 17-27).

![Figure 17-27: Adding an unusual point size to the Font menu.](image)

When you're finished adding sizes, click Cancel. Then look at your Font menu (see Figure 17-28).

![Figure 17-28: The sizes listed in the Font menu are up to you.](image)

Quick access to Symbol font

Every now and then you need to insert a special symbol into a Word document — something like a ⚫ or a ↘. That's just what the Symbol font is for; it's a whole collection of special symbols that can be typed right into a document.

But changing fonts in the middle of your work to type a single symbol character is a hassle. Fortunately, Word is equipped with a special feature that allows you to jump right into the Symbol font temporarily. Pressing `00-Shift-Q` switches to the Symbol font for the next typed character. After you type it, Word automatically returns to your previous font.
**Styles can have more than one name**

You can give a style two different names. You might create one that adequately describes the use of the style, such as *Chapter Subheading 3*, and another abbreviated name to use when changing styles from the keyboard (using the `Alt`-Shift-S command described below), such as 3.

To double-name a style, either as you're creating it or later, type both names into the name field of the Style dialog box, separating them with a comma, as shown in Figure 17-29.

![Figure 17-29: Giving a style a second name, or even more names, is easy if you separate the names with commas.](image)

**Overriding the Next Style option (Word 5.1 or earlier)**

Word's Next Style feature lets you specify the style that's automatically applied when you start a new paragraph. (You teach one style to follow another in the Styles dialog box.)

But to override the automatic style change and continue typing in the same style as your current paragraph, press `Alt`-Return at the end of the paragraph (instead of a return by itself).

**Changing typewriter quotes to typographer's quotes**

Here's a one-step method for changing typewriter quotes into typographer's (curly) quotes in a finished document. First, select the Smart Quotes option in the Preferences dialog box. Then use the Replace command (`Alt-H`) to find and replace each quotation mark with another seemingly identical quotation mark (see Figure 17-30). As the Replace command inserts the new quotation marks, they're changed into typographer's quotes.

![Figure 17-30: This may feel silly: it looks like you're just replacing a quotation mark with itself. But if Smart Quotes is turned on, all the straight quotes turn curly after you click Replace All. This works with apostrophes, too. And it also works in reverse: if you turn Smart Quotes off, then the setup in this figure will render all quotes non-curly.](image)
P.S. — Using the Add to Menu command we discussed earlier, here's a great quote tip: Put the Smart Quotes command in your menu! Then, whenever you need to type a " or ' mark (for inches or feet), which aren't supposed to be curly, you can just turn off the curliness, type the marks, and then turn curliness back on again!

**Word help, or not**


In either case, the pointer changes into a question mark. Move the question mark to whatever feature or command you want explained and click once. The appropriate help entry will be opened.

On the other hand, your cheerful authors, at times, have had quite enough of Word's Help window popping up. You see, the Help key (which we rarely use) is right next to the Delete key (which we use often) on the extended keyboard. Miss by half an inch, and you bring up the Help window instead of deleting a character.

You can solve this one by using the Commands command (or Customize, in Word 6.0). In the scrolling list of commands, you'll find "Help (context sensitive)." Click it. At the right side of the box, you see its keyboard equivalents. Click Help (meaning the Help key) and click Remove. In Word 6.0, select the word Help in the Current Keys field of the Customize dialog box and then click Remove.

**Window zooming**

To zoom windows in Word, you don't have to click the Zoom box; double-clicking anywhere on the title bar accomplishes the same thing.

**Split-screen shortcut**

Word gives you three different ways to split a window in half horizontally, providing two independent views of the same document.

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**Dialogue**

**How low can you go?**

**JS:** Hey, David. I've figured out how I can change to a new Word style sheet without even lifting my fingers from the keyboard.

**DP:** Say, Joe, nice going. What's the secret?

**JS:** All you do is hit `Shift-T` to open the Styles dialog box. Then press the up-down arrow keys to highlight the name of the style you want, and press Return!

**DP:** Way too many keystrokes. I bet I can do it in only four keystrokes.

**JS:** How on earth?

**DP:** All you have to do is press `Shift-S`. The word **Style** shows up in the status bar at the bottom-left corner of the document window. Then I just type the first couple letters of the style name, press Enter or Return, and that's it.

**JS:** All right, big shot. I bet I can change styles without pressing any keys.

**DP:** This I gotta see.

**JS:** I can just choose a style's name from the ruler, like this!
DP: That’s cheating. You used the mouse.
JS: Okay, well, if I can’t use the mouse, then I bet I can change styles with only one keystroke.
DP: No way!
JS: Yes way. All you do is choose Commands from the Tools menu. Scroll till you see Apply Style Name. In the right side of the dialog box, choose the name of the style you want to switch to. In the lower-right corner of the box, click Add, and type the one key you want to use.
DP: Cute. Real cute. I guess the only thing left for me to do is point out how I switch to a certain style without typing any keys or using the mouse at all.
JS: What is this? You’re going to tell me you’ve got your Mac hooked up to some Casper voice-recognition system?
DP: No. What I did was I opened up the Styles dialog box (⌘-T). I clicked Normal, and I made all these changes to it. I like Palatino 12-point, 1.5-line spacing, with open paragraphs. So I changed my Normal style to that. Then, to boot, I clicked Use As Default, so every new Word document will, in effect, automatically switch to the style I prefer, without my having to lift a finger.
JS: Oh, yeah? Well, let’s see you balance as many pennies on your elbow as I can.

You can double-click the split box in the upper-right corner of the window (see Figure 17-31). You can move the pointer to the split box and then drag down to the point at which you want the window to split. Or, easiest of all, you can press ⌘-Option-S.

To return to a single window view, you can either double-click the split box again or press ⌘-Option-S again.

Figure 17-31: Split a window by double-clicking the split box, or just press ⌘-Option-S. Unsplit the window by double-clicking the small black split box.

In Word 6.0, there’s actually a fourth route to split-window mode. You can install a window-splitting button on a toolbar and click it to toggle the split on and off.

Whichever pane contains the cursor is the one that fills the window when it unsplits. That’s important to learn because if your cursor is on page 1 in the top pane and you’ve been editing page 100, you have a lot of scrolling to do after the window unsplits.

Changing Indents from the keyboard (Word 5.1 and earlier)

You can set indents without dragging indent marks on the Ruler. Instead, press ⌘-Shift-N (mnemonic: N for nested paragraph). The left indent will shift a half-inch to the right. To move the indent back a half-inch to the left, press ⌘-Shift-M.

You can also create hanging indents from the keyboard (see Figure 17-32). The shortcut is ⌘-Shift-T.

Crest has been shown to be an effective decay-preventive dentifrice that can be of significant value when used in a conscientiously applied program of oral hygiene and regular professional care.

Figure 17-32: The hanging indent. Do it from the keyboard.
**Selecting odd-shaped regions**

When you drag your cursor in Word, you're probably used to the highlighted part beginning at the first character and stretching through all the text to your current position (see Figure 17-33).

![Figure 17-33:](image)

If you drag normally (top), you only succeed in selecting everything. But if you Option-drag (bottom), you can select text in any rectangular area — such as a column of text.

If you Option-drag, however, you select a region that only includes text in the diagonal line from your initial click. This is a great shortcut for italicizing one column of text (in a play program, for example). It's also great for removing those annoying little squares that sometimes appear at the left margin of a document that was created on an IBM computer. Just Option-drag vertically to select them and then press Delete.

**Adding hundreds of words to the dictionary at once**

Here's a tip worth at least $150. This is how you can quickly and easily add a huge number of new words to Word's spelling dictionaries.

Create a Word document and type into it all the words you want to add to Word's dictionary. Type one word per line and save it.

Then use DiskTop (on the Macintosh SECRETS disks included with this book) to change its type code to WDCD. (See Chapter 16 for details on type and creator codes.)

Back in Word, choose Preferences from the Tools menu. Click the Spelling icon and click Open. Open your new dictionary. You're done!

Where does the $150 come from? We read somewhere that that's how much Microsoft charges for its custom dictionary-building program!

**Picking the paragraph**

You can select the invisible, nonprinting paragraph mark (¶) at the end of a Word paragraph quickly — and without having to turn on the Show ¶ command — by pointing to the end of the paragraph and double-clicking in the white space right after the last word of the paragraph (see Figure 17-34).
Why bother? Here's one good reason: Word stores each paragraph's formatting — style, margins, font, and so on — in that little paragraph mark. By copying a paragraph mark and pasting it at the end of another paragraph, you transfer all of the first paragraph's formatting to any other part of a document.

Figure 17-34: Double-click the space right after a paragraph to select the Paragraph mark.

There are two horses living near the cabin.

The horses are named Jake and Wampus. We don't know what Wampus means, but we suspect that it is derived from an ancient Anglo-Saxon word meaning "He Who Eats Alfalfa." The horses are quite tame and are becoming more familiar with us every day.

The art of paragraph splitting

Suppose you want to split a paragraph into two separate paragraphs. Generally, you do this by positioning the insertion point at the split and pressing Return to insert a new paragraph mark. That works, but it moves the insertion point to the beginning of the new paragraph. If you have anything else to add to the previous paragraph, you must navigate back.

Versions of Word prior to 6.0 have a special paragraph-splitting command, Option-Return, which makes this a little easier. This command divides the paragraph as described, but it places the insertion point at the end of the first paragraph so that you can add more to it.

The Screen Test screen saver

You do know about Word's built-in screen saver, yes? It comes on whenever you choose Screen Test from your menu.

Of course, it helps if you put it in your menu first. Use the Commands command, scroll to Screen Test, and click the Add button. It appears in the Tools menu (see Figure 17-35).

Figure 17-35: The screen saver nobody knows.
This After Dark-like (well, not that good) screen saver darkens your screen and draws dazzling designs ostensibly to protect your monitor's phosphor, until you click the mouse. (When you do click it, you get a dialog box listing the many different, fascinating, and colorful settings for this SpiroGraph-like screen dimmer.) For Screen Test to run, you must have at least one Word document open.

Alas, Screen Test isn't included in Word 6.0.

**The Go Back command**

The Go Back command is one of Word's handiest navigational tools. You trigger the command by pressing either ⌘-Option-Z or, if you're using Word 5.1 or earlier, by just pressing 0 (zero) on the numeric keypad. (This feature doesn't work if you're in number-typing [NUM LOCK] mode, which you switch in and out of by pressing the Clear key.)

No matter where you are in a document, the Go Back command scrolls you back (or forward) to the last spot in which you did any editing. This command will even jump you back to another document, if that document is open and it contains the location of your most recent editing action. Hit the command repeatedly and you can find up to the last three spots where you were editing.

(PowerBook owners: you don't have a zero key because you don't have a numeric keypad. Use the Commands command, as described above, and train Control-G to trigger the Go Back command instead.)

**Returning to Normal Style (Word 5.1 or earlier)**

After you've tried formatting a paragraph in right-justified 18-point Monaco Bold Shadow, you'll probably want to change your mind and return to Normal style. You can undo all that formatting in one fell swoop by selecting the paragraph and pressing ⌘-Shift-P. No matter which formatting options were applied, this always returns the text to the style you defined as Normal.

This isn't quite the same thing as Revert to Style (⌘-Shift-spacebar). Revert to Style strips out all local formatting you did and restores the text to whatever the style is supposed to be (not necessarily the Normal style).

**Gray text**

Word's text colors can be used to print halftoned text on a laser printer (if you have Version 6.0 or later of the LaserWriter driver). Yellow, cyan, and green create lighter gray text, while magenta, red, and blue print darker grays.

**Tracking and kerning**

Word offers two methods of adjusting the space between characters. The Character dialog box (or, in Word 6.0, the Font dialog box) lets you finely adjust the overall tightness of letter spacing. And Word's code-like formula typesetting command lets you do actual kerning. (See Chapter 24 for more on tracking and kerning.)
Tracking: In the Character dialog box, you can expand or condense selected text in 0.1 point increments, using the Spacing commands. In versions of Word prior to 6.0, you're limited to .25-point increments and you can expand character spacing only up to 14 points or condense spacing up to 1.75 points (see Figure 17-36).

**Figure 17-36:**
The Spacing controls in the Character dialog box allow you to expand or condense character spacing in 0.25 point increments.

![Spacing Controls](image)

Granted, using the Character or Font dialog box isn't the most convenient way to tighten text. But remember, you can add these commands to a menu (as shown in Figure 15-37) or assign them keyboard shortcuts to speed up formatting. (Try ⌘-left arrow for tighter spacing, for example, or use whatever keystroke matches the kerning command in your favorite page layout program.)

**Figure 17-37:**
Add whatever kerning commands you want to the Format menu.

<table>
<thead>
<tr>
<th>Format</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table Cells...</td>
</tr>
<tr>
<td>Table Layout...</td>
</tr>
<tr>
<td>Merge Cells</td>
</tr>
<tr>
<td>Style...</td>
</tr>
<tr>
<td>Revert To Style ⌘-Z</td>
</tr>
<tr>
<td>Change Case...</td>
</tr>
<tr>
<td>Plain Text ⌘-Z</td>
</tr>
<tr>
<td>Bold ⌘-B</td>
</tr>
<tr>
<td>Italic ⌘-I</td>
</tr>
<tr>
<td>Underline ⌘-U</td>
</tr>
<tr>
<td>Condensed 1.5 pt</td>
</tr>
<tr>
<td>Condensed 1.25 pt</td>
</tr>
<tr>
<td>Condensed 1 pt</td>
</tr>
<tr>
<td>Condensed 0.75 pt</td>
</tr>
<tr>
<td>Condensed 0.5 pt</td>
</tr>
<tr>
<td>Condensed 0.25 pt</td>
</tr>
</tbody>
</table>

Kerning: This method of kerning isn't nearly as convenient or as flexible as it is in page layout programs. You can only move characters closer together or farther apart in one-point increments. And you have to use Word's typesetting formula commands — in this case, the Displace command. Furthermore, this technique doesn't work in Word 6.0.

To use the formula typesetting approach, it helps to pick Show ¶ from the View menu (or press ⌘-J).

To tighten the space between two characters, position the insertion point between them and press ⌘-Option-\ to begin the formula. Next, type the letter d, which stands for the Displace command.
Then press ⌘-Option-\ again, and follow this with the letters ba. The ba stands for backwards, telling Word you want to move the characters closer together. Type the number of points you want to move the characters (a whole point value; no fractional amounts) and close the formula with empty parentheses ()

If you wanted to kern letters closer together by two points, therefore, the formula would look like this:

```
\d\ba20
```

When you choose Hide ¶, the formula disappears and the effects of the kerning become visible.

To move characters farther apart, follow the same formula, but replace the ba with fo, the abbreviation for forward spacing. To move two characters apart by one point, then, you type the formula: \d\fo1() exactly as it appears here.

Obviously, all this formula typing is tedious. The best strategy is to save the finished formulas as Glossary entries, add them to your Work or Format menu, and assign them keyboard shortcuts (see Figure 17-38).

Figure 17-38: You can save yourself the hassle of repeatedly typing Word’s formula typesetting commands by saving them as Glossary entries, adding them to a menu, and assigning them key combinations. In this example, the \d\ba1() command, which moves characters together by one point, is saved as an entry named Kern-1 and assigned the keystroke ⌘-Control-K.

A word of caution about using these typesetting formulas: After you insert a formula into a word, it effectively splits the word in two, even though the word appears unbroken. Double-clicking a word bisected by a Displace command only selects half the word. And the Word Count command considers a word containing a kern formula as two separate words!
Copy formatting

You can copy the format of one selected portion of text and apply it to another selection without copying the text itself. To do so in versions of Word prior to 6.0, select the text with the format you want to copy and press the Option-V. In the lower-left corner of the document window, you see the words “Format to” (see Figure 17-39). Then select the text to which you want to apply the formatting. The selection appears with dotted underlining. Press Return or Enter; the format characteristics of the first selection are applied to the second.

Figure 17-39:
You see a “Format to” message in the status bar at the bottom of document window when transferring formatting from one selection to another.

Alternatively, you can transfer formatting using this method: Press Option-V without selecting text. Once again, you see the “Format to” message in the window. Select the text with the format you want to copy and press Enter or Return. Then place the insertion point wherever you want and start typing; the format attributes you copied will be applied to anything you type.

Here’s the thing to remember: The formatting you copy using the Format to command depends on what you select. If you select an entire paragraph, the command will copy the paragraph-level formatting; if you select a string of text within a paragraph, then the command copies the character-level formatting.

In Word 6.0, all of this is much easier. All you have to do is use the Copy Format and Paste Format commands to transfer formatting. (If these commands don’t appear in your Edit menu, you can put them there using the Customize command.)

Customized spacing

Word doesn’t contain any tools for precisely adjusting the spacing between individual words. But you can rig up some custom-sized spaces using the following method: select a character with the width of the custom space you want to create. Then, using the Color pop-up menu in the Character dialog box, pick White as the color of the character.

The character becomes invisible and can be used as a space. Use large characters to make wide spaces; use tiny characters, such as punctuation marks, to make narrow spaces.

To make the whited-out characters readily available for spacing, save them as Glossary entries, add them to your Work menu, and assign them keyboard equivalents. When you save the spacing characters in the Glossary, all the formatting, including the White color, are preserved.

Alternatively, you can add White as an option in the Format menu. You can also create a keyboard shortcut for applying White, using the Add to Menu or Add to Key commands.
Line spacing with superscripts or subscripts

Adding superscripts or subscripts to a line in Word automatically increases the spacing between adjacent lines, making a paragraph look irregularly spaced — and ugly. Inserting characters from symbol or music fonts, or using two different fonts within the same line, also can throw off spacing (see Figure 17-40).

Some environmentalists argue fervently that large infusions of sodium sulfate, used heavily in the manufacture of detergents and also known as Na₂SO₄, is having a devastating effect on the population of Pacific sockeye salmon. Nevertheless, the evidence shows that allow large amounts of this sulfate have been consumed by laboratory rats without producing any adverse effects.

Figure 17-40: Superscript and subscript characters can throw off a paragraph’s line spacing, as the example on the left shows. In the paragraph on the right, the line spacing in the Paragraph dialog box has been changed from Auto to Exactly 13.75 points between each line.

To keep spacing uniform in such situations, open the Paragraph dialog box. Under the Line options, choose Exactly from the pop-up menu. Enter a spacing measurement, in points, in the field next to the pop-up menu (see Figure 17-41). In Word 6.0, click the Indents and Spacing tab after opening the Paragraph dialog box and change the Line option to Exactly.

This forces the paragraph’s lines to be spaced evenly regardless of superscripts, subscripts, or any other odd-sized characters.

Creating vertical lines in Word

Here’s a Word feature that’s often overlooked: You can insert vertical lines down a page to separate columns of text. To do this, select a paragraph and click the vertical line button on the ruler (see Figure 17-42). Then click the spot on the ruler where you want the vertical line to appear. (In Word 6.0, of course, you have full-fledged drawing and page layout tools that let you insert vertical lines anywhere you want them.)
Merging graphics into a Word document

Most people use Word’s Print Merge feature to merge text data from other programs, such as databases, into Word documents. But you can also merge a Word table into a document, with the table serving as your data document. Because Word table cells hold graphics as well as text, this lets you merge graphics into a document.

You place your letterhead, for example, in a table cell and then merge that table into a regular document to automatically insert your letterhead. You’ll save disk space—you only have to create your letterhead once, in the original data document.

Creating inverted text

Inverted text — white lettering against a black background — gives titles and headings a bold, dramatic look. Here’s how to create the reversed lettering in Word.

1. Select some centered text to invert. Choose White as the text color (from the Color pop-up menu in the Character or Font dialog box). The text becomes invisible; don’t worry, it’s still there. Don’t deselect the text yet.

2. Choose Paragraph from the Format menu. Click Border in the Paragraph dialog box. Select 100 percent from the Shading pop-up window (see Figure 17-43).
3. While still in the Border dialog box, pick Box from the Preset Border options. In the From Text box, specify how many points away from the text you want the black part’s perimeter to be. We used five points in this example:

A New Chapter Heading

4. To tighten the border around the title, use the ruler. Drag the margins in toward the center until the title is framed the way you want:

A New Chapter Heading

5. With the text still selected, choose the Style command. Save the inverted format as a new style. This way, you can apply the reversed-text style again whenever you need it without going through all the formatting steps again.

You can create a host of other slick effects using some slight variations. Try using a different level of border shading, say 50 percent, instead of 100 percent. Use a different text color background. Try aligning the text to the right margin or changing the spacing between the text and the border.

If you’re using Word 6, you follow the same general steps, but you set the font color in the Font dialog box and choose Borders & Shading from the Format menu.

Transferring headers and footers to a new document

You can copy the headers and footers from one Word document to another by copying and pasting a single character — the paragraph mark at the end of the last paragraph in the document (see Figure 17-44).

The final paragraph mark, which appears as a grayed-out ¶ symbol when you choose the Show ¶ command, contains all the document’s header and footer information. When that mark is pasted into a new document, the document inherits the headers and footers of the source document.

Figure 17-44:
An easy way to copy headers and footers into another document: copy and paste the final paragraph mark.

The amazing thing is that after you paste the paragraph mark into the new document, you can go ahead and delete it; the header and footer information remains in place.
Mail merge made easy

Creating a mail merge with each piece of data in a separate field — name, address, city, state, and so on — can get time consuming. This is especially true in Word, which requires any fields containing punctuation to be enclosed in quotation marks.

However, if you don’t need to sort your data by field, you can simplify this process. Put each whole address in one cell of a Word table, complete with punctuation, carriage returns, and other formatting. Then, when it’s time to do the mail merge, you only have to work with a single address field.

Solving the space-before-paragraph dilemma

When defining a Word style, you can specify the amount of blank space you want to appear before each paragraph. This gives you consistent spacing throughout a document. Trouble is, if a paragraph formatted with leading space appears on the top of the page, the space preceding the paragraph creates the appearance of an overly wide top margin.

How can you get rid of the extra space at the top of the page? Here are two solutions:

*The laborious method:* Select the paragraph at the top of the page. Open the Paragraph dialog box (§§-M). Change the number in the Spacing Before box to zero. Click OK.

*The easier way:* Define a second version of the paragraph’s style, identical to the first style in every way, except that it includes no space before the beginning of the paragraph. If, after repaginating your document, you find a paragraph with extra space at the top of a page, apply the secondary style to eliminate the extra space.

Document security

Here’s one of our absolute favorites. Everybody has text that’s best kept private. Yet whose Mac is completely free from casual inspection by other family members or coworkers?

Here’s a sneaky trick to keep your prose protected. Select the text you want to hide. Open the Character dialog box (or Font dialog box, in Word 6). From the Color pop-up menu, choose White and click OK.

Your text appears to have disappeared (see Figure 17-45).

Now, for an added sneakiness, install Flash-It (on the disks included with this book). Take a screen shot of the thick “end of document” bar at the end of your text and paste it at the beginning of your document (again, see Figure 17-45). You have now removed the only clue a savvy Word user has that there’s already some text in place.

Caution: Spell-checking the document or doing a word count will reveal the presence of the hidden text. Also, if you turn on the Show ¶ command, your white text reappears. If this concerns you, remove the Show ¶ command from the menu (as described above) and change its keyboard equivalent (using the Commands command). Now there’s no chance that somebody can turn on Show ¶ by accident.
I don't think Jenkins has any business running the Marketing division, frankly. The guy has absolutely no idea what he's doing. Who ever hired him to begin with?

He's really making a mess of things. How to undermine him?

Ideas:

• Sabotage his next marketing initiative
• Have an affair with his wife

---

**Figure 17-45:** The awesome invisible-text trick. Highlight the text you'd rather keep private (top). Change its color to White (bottom left). To convince people that there's really nothing there, paste in a phony end-of-document mark (bottom right).

---

**Adding a new row to a table**

Here's the absolute easiest way to add a new row to a Word table, without messing with the Table Layout command: Click in the last cell of the last row and press the Tab key once. Word will automatically insert a new row at the bottom of the table.

And if you wanted the new row in the *middle* of the table and not the end? Easy. Click at the far left edge to highlight the entire new row. Then drag-and-drop it to wherever in the table you want it to go!

---

**Editing large tables**

Unless you have a very large monitor, editing big tables can be exasperating. You have to continually scroll back to read row headings in cells that are no longer in view.
Here's a trick to make it easier. Open the table in a second window and keep that window scrolled to the row headings. Line the window up with the first window, and you can read the row headings and the cells all the way across the page — at the same time (see Figure 17-46).

Figure 17-46: Reading large tables can be easier. Open two windows — one to view the row headings and another to scroll through the data cells.

---

Exporting Word tables

Got a table in Word? If you try to export it to a graphics or page layout program using the standard Copy command, you'll be in trouble. When you paste the table into the new program, you lose the table's formatting, gridlines, and cell spacing.

To export tables successfully, use the Copy as Picture command (⌘-Option-D). That copies the entire table as one graphic, as a PICT file with all the formatting intact.

Here's a really neat twist: If you paste a Word table into an object-oriented drawing program after copying it with the Copy as Picture command, you can still edit it. Each element of the table — including all the text entries and the individual grid lines — becomes a separate object that can be moved, deleted, or altered independently. Fonts can be changed, text can be retyped, gridlines can be thickened, and the whole table can be stretched, resized, or distorted.

Making tables scroll faster

The Copy as Picture command described in the previous Secret (⌘-Option-D) can speed up scrolling in Word itself. Use the Copy as Picture command (it's called Copy Picture in Word 6) to copy a whole table. Then paste it back into the same document, replacing the original table with a graphic — a PICT file — of the table. (You might have to exit to the Finder and then return to Word in order for Word's clipboard to convert the copied table into a PICT image.)

The advantage of this system is that Word scrolls through a picture of a table much faster than it can scroll through the table itself. You completely bypass that painful row-by-row appearance of a table. For even more scrolling speed, choose the Picture Placeholders option in the Preferences dialog (or Options, in Word 6) to temporarily hide all the graphics in a file.

Of course, replacing a table with a picture of a table means you no longer can tab through the table, adjust the size of its cells, or edit the text as you can on a regular table. (See the next Secret.)
Making tables scroll faster II

So what happens if you replace your tables with uneditable PICT graphics, as described in the previous Secret — and then you discover you need to make a change in the table?

No sweat. Just double-click the graphic. This opens a picture of the table in Word's Edit Picture window. In the editing window, you can select each element of the table graphic as a separate object and move, delete, or edit it (see Figure 17-47). So if you decide you want to change the font used in the table headings, just select all the headings and choose a new font from the Font menu. Using the editing tools in the window, you can edit the text, change the color of any table element, and delete data if necessary.

Figure 17-47: Using the Edit Picture window to make changes on a Word table that has been transformed into a graphic object. In this example, all the elements of the table have been selected for editing using the Select All command.

Creating custom borders

This Secret isn't for everyone; it's slightly more adventurous because it involves typing PostScript code directly into Word to precisely set the widths of borders in tables. This works only if you are using a PostScript printer (or PostScript emulation software, such as Freedom of Press, that can interpret the code for a QuickDraw printer).

To set the width of a cell border to 1.5 points, for example, you type the following code into the cell:

```
.cell.1.5 setlinewidth
wp$box stroke
```

After you enter and highlight, your next step is to apply the PostScript style to it. Press the Shift key; from the Styles pop-up menu on the Ruler, select PostScript (a style you may not have seen before). The code is formatted as hidden text and disappears (unless you have the Show Hidden Text option selected in the View menu). The results of the code are visible only when you print to a PostScript printer.
That darned Summary box and more

Q: Is there a way to delete the Summary box? I find it useless and annoying. It pops up every time I save a new document.

A: Yes, it's annoying. And yes, you can turn it off. Choose Preferences from the Tools menu (or Options in Word 6). Click Open And Save. Turn off Prompt for Summary Info.

Q: Okay, how about this one? Every time I open a text file — just a text file, for heavens' sake! — Word gives me some stupid dialog box asking if I mean a text file, or Text With Layout, whatever that is.

A: Yes, you can shut this one up, too. Go to the Finder and open your Word folder. In the Word Commands folder, you find the Text With Layout converter. Throw it away. Then you won't be asked about it every time you open a text file — and you'll never miss it.

The fastest way to create a Word backup file

Suppose you want to keep a backup version of a Word file tucked away on your hard drive. You could create the backup by using the Save As command and saving your file under a new name. But there's a faster way: Return to the Finder and copy the file using the Duplicate command. On large documents, the Finder creates a duplicate in half the time it takes Word to save a document under a new name.

Deflating bloated files

When you enable Word's Allow Fast Saves option, Word keeps track of your changes by appending them to the end of the file. This speeds up saving a large document, but it bloats the file. Each time you use the Save command, the file grows larger as Word tacks on the latest set of changes.

The solution: Periodically disable the Fast Saves option or use the Save As command to save the file under a new name. In either case, Word then performs a full save, shrinking the file back down to its actual size.

And definitely turn off Fast Saves the last time you save your document before trying to import it into Quark or PageMaker. You'll have far fewer problems with the importing process.

And definitely turn off Fast Saves the last time you save your document before trying to import it into Quark or PageMaker. You'll have far fewer problems with the importing process.

(Our suggestion: Using the Commands command [or Customize, if you're using Word 6], add the Allow Fast Saves command to your menu! Then switching it on and off is simply a matter of selecting it.)

The WordTemp files Old Wives' Tale

If you've worked with Word for any length of time, you've probably seen some mysterious files lurking around your system with the name WordTemp, followed by a number — WordTemp-1, WordTemp-2, and so on (see Figure 17-48).
What exactly are these files and what are you supposed to do with them?

WordTemps are temporary files that Word uses to store unsaved data while you work. When you save your files and quit the program, Word automatically purges the system of these temporary files, which are no longer needed. Under ideal circumstances you never encounter a WordTemp file — because you always exit Word the right way, using the Quit command.

But, more realistically, you'll trip over the power cord, or your system will crash, and you'll unwillingly abandon Word with files still open and unsaved. In such cases, the WordTemp files remain. You can throw them away without a second thought. Or, if a few Mac gurus-in-print are to be believed, you can use them to recover work that you lost in the crash.

Here's the recovery process: Move the WordTemp files out of the System folder (sometimes they show up in the Trash) and give them new names. Launch Word and choose the Open command. In the List Files of Type pop-up menu, select All Files, navigate to the renamed command, and open one.

Some of your lost work may be in the temporary document. In that case, copy the text into a new file.

But don't count on such happy endings. Cumulatively, your not-so-cheerful authors have weathered hundreds of Word crashes. Only once have we been able to salvage anything we really needed from a WordTemp file. (We even called Microsoft on this topic; they conceded that the recovering-data-from-temp-files trick is essentially bogus.)

**Shortcut to Paragraph dialog box**

You don't have to choose the Paragraph command from the Format menu to open the Paragraph dialog box. Instead, just double-click the left or right indent marker on the ruler (see Figure 17-49).

![Figure 17-49: Double-clicking the indent markers on the ruler open the Paragraph dialog box.](image)

**Justification on the last line of a paragraph**

The last line of a justified paragraph normally remains left-aligned — and that's the way it usually looks best. But if you want that last line to be justified, too, press Shift-Return at the end of the last line of text (see Figure 17-50).

![Figure 17-50: Even the last line of this paragraph is fully justified. It may not look great, but it can be done.](image)

But now the mouse cursor froze, immovable, on the screen. There was a flickering of the screen pixels around the perimeter of the screen for two seconds, followed by an error message that only half appeared. He could barely make out the wildly flickering words "Sorry, a system error has occurred."
**Copying section formatting**

Word stores all the formatting for a section in the *section mark*, the double dotted line that runs across the screen at the end of a section. You can copy the formatting — fonts, line spacing, margins, and so on — for an entire section by simply copying the section mark. When you paste the mark at a new location, all the text preceding it takes on the formatting stored in the mark.

Incidentally, you can double-click any section mark to open the Section dialog box. (In Word 6, this opens the Page Layout dialog box.)

**Speedier spell-checking**

Unless you begin spell-checking with the insertion point placed at the very beginning of the document, you inevitably get a “Continue checking from beginning of document?” message. To avoid this, use the Select All command to select all text first and then activate the spell checker. (That is, get into the habit of pressing ⌘-A, ⌘-L in rapid succession.) Regardless of where the insertion point is in the document, every word gets checked, without any additional dialog boxes appearing.

**Key combination reminder (Word 5.1 or earlier)**

If you forget which command is associated with a particular key combination, you can find out using the Commands dialog box. Open the Commands dialog box by choosing Commands from the Tools menu (or press ⌘-Shift-Option-C). Then press the key combination in question. The Commands list will instantly scroll to the command that corresponds to the key combination you pressed.

**Roll credits (Word 5 only)**

To see Word’s programming credits, press ⌘-Shift while selecting the Preferences command. When the Preferences window opens, a new icon called Credits appears at the bottom of the scrollable list of preference icons. (It appears just above the Toolbar icon, if you have one.) Click the icon to see the credits (see Figure 17-51).

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**Figure 17-51:**
Find out who’s who in the world of Word programming. Press the right keys and a Credits icon appears in the Preferences window.
ANSWER MAN

Maximum document dilemma

Q. I've been told you can have as many as 30 different documents open when using Word 5. Well, I just tried to open my 19th document and the program isn't letting me open it. So, what's going on?
A. Most likely, you do have 30 files open.
Q. What do you mean?
A. We're willing to bet that some of your open documents contain headers or footers or footnotes...
Q. Well, yes. Three documents have headers and footers and two documents have headers, footers, and footnotes. So?
A. Word considers each header, footer, and footnote window a separate document. Currently, you have 18 regular documents open, plus five header documents, plus five footer documents, plus two footnote documents. That's 30 files altogether — Word's absolute limit.

WordPerfect

The first Mac edition of this popular IBM word processor had a lot to be desired — a Mac interface, for starters. But with version 3, WordPerfect Corp. had a mean, lean, Microsoft Word killer that was the Number Two word processor in the Mac marketplace.

Here's a handful of insightful tidbits.

WordPerfect Secrets

Kerning from the keyboard

You can, if you want, perform kerning numerically, by typing numbers into the Line dialog box (Layout menu). It's faster (if less precise) to do it by eye, though.
Just click between the letters you want to kern and press Shift-F1 (to move the letters one point closer) or Shift-F2 (farther apart). Of course, this trick requires an extended keyboard.

Setting up your default style

If you're a power user, you know this. If you're sick of having to reselect Palatino 10-point and .75-inch margins every darned time you start a new document, you'll appreciate this. It's the instructions for changing the default (Normal) style.
Make sure the Layout ruler is visible (we're talking about version 3 here). Click the Styles button and then the Edit button. Scroll so that you can see the Normal style name. Double-click it.
Use the regular menus to specify a type size, font, column setup, and so on. You'll see WordPerfect storing this information in the styles-editing window at the bottom of the screen.
Startup macros

WordPerfect is one of the only two Mac word processors that have macro languages — sets of commands you string together to perform powerful text-manipulation stunts. For example, one such macro may sweep through the document, changing all your straight quotes to curly ones, eliminating double spaces after periods, and turning double hyphens into em dashes.

If you create a macro called OnStartUp and (using the Librarian feature) stick it into your USA Private Library, it runs every time you launch the program. Or, if a macro is called OnOpenDocument and saved with a particular document, it runs each time you open that document. (It does if you use WordPerfect’s Open command, any-way — not if you double-click the file’s icon in the Finder to open it.)

To crop a graphic

Press the Option key as you drag the handle of a graphics box. The frame chops off (or reveals more of) your graphic, depending on which way you drag.

Search backward

If you press Shift while clicking the Find button in WordPerfect’s Find/Change dialog box, WordPerfect will search your document in the direction opposite what’s indicated.

Nisus

We don’t use this high-horsepower, multiple-Undo, programming-languaged word processor much. Here are a few Secrets worth passing on, however.

Nisus Secrets

Quick access to dumb quotes

As we discussed earlier, curly quotes go a long way toward making documents look typeset. But they’re just wrong when used to indicate feet, inches, and minutes.

In Nisus, you turn on smart quotes in the Editing Preferences dialog box. What’s nice is that, to override that setting for just one inch mark (for example), you just press the $% key while typing the quote mark. It comes out uncurly.

(As a matter of fact, this works in reverse. If the Editing Preferences are set not to display curly quotes, the $% key will produce one.)

Jump between windows

The window title bars in Nisus work just like the Finder’s! If you press the $% key and click a window’s title, a submenu appears, listing all open windows. From it, you can jump to any other window by choosing a window name.
Window zooming
Double-click a window's title bar to make it zoom to its full size. Double-click a second time to restore the window to its original size.

WriteNow
WriteNow is a great little word processor with a size that belies its power. The program itself takes up a ludicrously tiny 276K on your hard drive and requires less than 600K of RAM to run — yet it's full-featured and fast, with easy-to-use formatting tools and good keyboard shortcuts.

Here are a few of our favorite tricks for getting the most out of the program.

WriteNow Secrets
Using character styles
One of WriteNow's best features is its support of character-level styles. This lets you save a set of formatting characteristics — font, size, or style, for instance — and apply them all at once to some selected text without actually changing any paragraph styles.

This can be extremely useful if, for example, you're writing a play script and you want dialogue to appear in one font, but parenthetical stage directions to appear another, italic font.

If you created a separate paragraph style for each (as you might in Microsoft Word), the stage directions and dialogue would have to appear in separate paragraphs. But, by creating two character-level styles — one for dialogue and one for stage directions — the two styles are combined within a single paragraph:

MS. PAPAYA: (adamantly) You heard what he said. Now, do it!

DOUG: (gasping, suddenly) I guess there's nothing more to discuss. (He begins scribbling notes furiously.)

MS. PAPAYA: (shaking her head) From the bottom of my heart, I pity you.

And because these are actual styles, you can subsequently change their look, everywhere in the document, in one step.

You can assign a keyboard command to a character style, as explained in the next tip.
Keyboard shortcuts for character and paragraph styles

WriteNow allows you to assign a keyboard shortcut to any paragraph or character style when you create it (but you’re limited to 11 available κ-key combinations).

When setting up a new style in the Paragraph Style (or Character Style) dialog box, just pick a κ-key combination from the Command-Key pop-up menu. The key command will automatically be linked to the style (see Figure 17-52). WriteNow automatically grays out key combinations that are already linked to other commands.

Pop-up menus for paragraph and character styles.

Instead of choosing paragraph or character styles from the Custom menu, you can use the status bar at the bottom of the document window (see Figure 17-53). The pop-up menu on the left gives you access to all currently saved paragraph styles, and the pop-up menu on the right lists all saved character styles. (These pop-up menus don’t appear until you save at least one custom style.)

Transparent styles

Generally, applying a character style produces text in a specific font, size, and style. But with WriteNow, you also create transparent styles — styles that change only the font, only the size, or only the style when applied — without affecting any other formatting.
You can create a bold, double-underlined transparent style, for example. When you apply the style to text in any paragraph, the font and size of the text remain unchanged, but boldface and underlining are added.

You create a transparent style by selecting and deselecting checkboxes in the Character Style dialog box. In Figure 17-54, only style and color are checked, so the new style changes the style and color of text to which it is applied, but it doesn't affect font, size, and superscript/subscript formatting.

![Character Style dialog box]

**Fast page navigation**

To move to another page of a WriteNow document quickly, double-click the page number box in the lower-left corner of the document window. A dialog box appears. Type in the number of the page you want to view. Click OK or press Return.

**Copying character formats**

You can quickly copy the font, size, and style of a selected block of text — without copying the text itself — and transfer that formatting to another block of text.

First, select the text that has the format you want to copy. Use the Copy Font-Size-Style command — or just press ⌘-3. Then select the text you want to inherit the style and press ⌘-4, the Paste Font-Size-Style Command.

**Global formatting changes**

There's a variation on the Copy Font-Size-Style command that lets you change the format of all text in a document sharing identical attributes. In other words, you can change every occurrence of 10-point New York bold to 12-point Helvetica italic — without affecting any other text in the document.

First, change the font, size, or style of the first chunk of selected text according to your preference. Press ⌘-3 or select the Copy Font-Size-Style command.

Select all the remaining text in the entire document. Then hold down the Shift key while choosing the Paste Font-Size-Style. All the text that was formatted identically to the original selection takes on the new style attributes.
Copying ruler settings
To quickly transfer the margins, spacing, alignment, and tabs of one paragraph to another, use the Copy Ruler command. First, select the paragraph containing the ruler settings you want and press ⌘-1. Then select the paragraph or paragraphs to which you want to transfer the formatting and press ⌘-2 (the keyboard shortcut for the Paste Ruler command). Fonts, size, and style aren't affected — only margins, spacing, alignment, and tabs.

Superscript and subscript shortcuts
You can change the vertical position of any selected characters to create subscripts and superscripts from the keyboard. Pressing ⌘-H (which stands for “higher”) pushes the selection up in one-point increments. Pressing ⌘-L (“lower”) moves the selection down in one-point increments.

Interestingly, this works with pasted-in graphics, too. After you paste in a picture, you adjust its vertical positioning by using the same two commands.

Saving compactly
Though you may not realize it, WriteNow always stores two copies of a document on disk — the version you most recently saved using the standard Save command and another version of the document as it existed before you last saved it. (The two versions are stored within one file; that’s why you never notice this.) The Revert to Backup command is your safety net; it retrieves the version of the document as it was before your last save.

However, keeping that second backup version of a document takes up space; it bloats the size of the document file. If you want to eliminate the backup, press the Option key when you choose Save from the File menu. The Save command changes to Save Compact. WriteNow saves a slimmed-down version of the file, minus the backup. Of course, this means you won't be able to use the Revert to Backup command on that document.

Roll credits
To view WriteNow’s cleverly animated programmer’s credits, choose About WriteNow from the Apple menu to open the credits box. Click anywhere in the box while holding down the Option key.

An army of tiny people come running in, grabbing the letters in the programmers’ names, and rearranging them to spell out the names of other individuals who helped with the program. Meanwhile, a bulldozer cruises through from the right and plows over the copyright notice.

TeachText... and SimpleText, too
Don’t give us grief: It’s a word processor, and it was probably the first Mac word processor you ever used. It comes with every Mac — heck, it comes with every program you can buy. It’s called TeachText because its primary purpose is to let you read Read Me files (text files containing last-minute information about a piece of software), which, we gather, are meant to teach you a few critical lessons.
TeachText only shows one font: Geneva 12. It can only open one document at a time. But it only takes up 39K on the disk, it can print, and you can actually word process in it. (Remember that, PowerBook fans, when you’re up against the memory wall en route to Cincinnati.)

There are two very different versions of TeachText: the one that’s come with Mac since the beginning of time (version 1.2), and the one that comes with System 7.0 and later (version 7.0).

And then there’s SimpleText, heir to TeachText. This new program, which comes with all recent Macs, serves the same purpose as TeachText. However, it’s been substantially enhanced (and doubled in size). In SimpleText, multiple fonts and sizes can appear in the same document; you can open more than one document at once; the program obeys spoken commands (if you have an AV-style Mac); and you can record (and store) one sound with each document, if you have a microphone.

Unless we state otherwise, all of the following tricks apply to SimpleText as well as to TeachText.

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**TeachText/SimpleText Secrets**

**Graphics? In TeachText!?**

Yes, indeed! Of course, you can't paste anything into a TeachText document. (A beep is all you get.) It takes a few extra steps, but you can embed graphics into a TeachText document. (This works with SimpleText, too; we'll use the term TeachText in these steps, though, to keep things simple.) Keep this in mind when you decide to become your own software company.

1. Type up your TeachText text. At each point where you want a graphic to appear, type an Option-space. Save the file when you're finished.

2. Create your graphics. Paste them into the Scrapbook.

3. Launch ResEdit (included with this book; see Chapter 21). Open your TeachText document. You may be asked if you want to create a resource fork for the document (Figure 17-55); click OK.

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*Figure 17-55:*

ResEdit has to create a new area of the text file in which it can store graphics.
4. Open the Scrapbook (from the Apple menu). Copy the first graphic you want to put into the TeachText file. Click the TeachText file's window and paste your graphic (see Figure 17-56). A new icon appears in the TeachText window, called PICT. Double-click this PICT icon.

5. From the Scrapbook, copy the next graphic. Paste it, too, into the "PICTs from..." window — repeat until you’ve transferred all your graphics (see Figure 17-57).

6. Click, once, the graphic in the "PICTs from..." window that will be the first one to appear in the Read Me file. From the Resource menu, choose Get Resource Info (⌘-I). Type 1000 and close the Get Info window.

7. Repeat step 6 for each remaining graphic — but increase the ID number each time. The second graphic should be 1001; the third, 1002; and so on.

8. Choose Save from the File menu. Quit ResEdit. Open your doctored TeachText file. You'll see that the graphics are piled right on top of the text (Figure 17-58).

Figure 17-56: (A) Copy each graphic out of the Scrapbook. Then double-click the PICT-resource icon from the TeachText document (B) and paste the copied graphic into the "PICTs from" window (C).
Figure 17-57: Paste each of your graphics into the TeachText file's "PICTs from..." window.

Figure 17-58: Now you have to make space for the graphic manually by pressing Return a number of times.

9. Push the text that's after the graphic (that is, that came just after your Option-space) downward by pressing Return enough times to make room (Figure 15-59).

Figure 17-59: Making vertical room for your graphic the low-tech way.

10. Save your TeachText document. You did it!
Edit the uneditable documents

Ever noticed this? When you double-click TeachText, it opens a new blank document and lets you word process as though it's a very mini-Word, or something. You can drag through text, cut, copy, paste, and so on.

But when you open a Read Me file that comes with a program you buy, you're usually not allowed to edit it or copy from it! You can only read or print it.

The Secret lies in the four-letter type code for the document (see Chapter 16). There are two kinds of TeachText documents: one that can't be edited and one that can. Here's how to change one to the other.

Start by opening DiskTop (included with this book). Choose Preferences from the DiskTop menu and make sure it's set to Technical. (Close the Preferences dialog box.)

Highlight the name of the TeachText or SimpleText document you want to make editable (or uneditable). From the DiskTop menu, choose Get Info.

In the upper-right corner (see Figure 17-60), you see the type code. Change it to ttro (to make an uneditable document) or TEXT (to make it editable).

![Figure 17-60: Make a TeachText document editable, or not, by changing the codes in the upper-right corner.](image)

Click the Change button. You did it. When you return to the Finder, you see that your document has a new icon (see Figure 17-61).

![Figure 17-61: On the left: the familiar Read Me-style "Extra!" newspaper icon. This is a file whose type has been changed to ttro. (Stands for TeachText, read-only, get it?) On the right: a normal TeachText document, like one you'd create yourself. This one you can edit. Its type is TEXT.](image)

Cropping graphics in TeachText

The best way to take screen shots (PICT graphics files of the things you see on the screen) is to use Flash-It, included with this book.

You can take screen shots using Apple's own System 7 software, as long as you don't want to capture pictures of menus being pulled down. Get the screen the way you want it and then press Option-Shift-3. On your hard drive, you now find a file called Picture 1.

If you double-click this file, you open the image in TeachText (or SimpleText), of all things (unless the file is very large, in which case you'll see a message telling you the file is too big for TeachText or SimpleText to open it). Here's the trick: drag across
the picture with the cursor. You create a dotted selection rectangle. If you now choose Copy from the Edit menu, you place only the selected piece of the graphic on the Clipboard, ready for pasting into a word processor or any other program (see Figure 17-62).

![Figure 17-62: After you're in TeachText, drag across a portion of the graphic and then copy it.](image)

**Open the unopenable documents (TeachText only)**

The largest a TeachText document can be is 32K. If it's any larger, you get an error message and you can't read the document.

That circumstance is easy to get around, however. First, you can use DiskTop to change the file's type code and creator codes to match the documents created by your word processor. If you change a TeachText document's creator code to MSWD, for example, then a double-click on the document opens it in Microsoft Word. (See the previous Secret for advice on changing these type and creator codes.)

If it's a TeachText file that doesn't have the newspaper-style icon (see the previous Secret), then you can avoid even that bother. Just launch your word processor and open the TeachText file, using the word processor's Open command. (If you use Word, you can open the other kind of TeachText document, too — the read-only kind — by pressing Shift while choosing Word's Open command.)

**Roll credits! (TeachText only)**

While pressing ⌘ and Option, choose About TeachText from the Apple menu. You get to see some additional credits.

**MacWrite Pro**

This most recent entry in the Mac word processor marketplace is marked by Claris Corp.'s usual elegant, clean design. It's not nearly as overwhelming as Word or WordPerfect — nor as big, nor as memory-hungry — yet it has many of the same features. For example, it has a spelling checker that can even check while you type; a thesaurus; automatic hyphenation; a table feature like Word's; and a powerful frame feature that, among other things, lets you wrap text around irregularly shaped graphics.
MacWrite Pro Secrets

The importance of Page Setup

In any word processor, your choice of printer (in the Chooser) makes a big difference in the layout of your document. Switching from ImageWriter to LaserWriter, in particular, can completely change the way line breaks and page breaks fall in your document.

In MacWrite Pro, selecting the correct printer is especially important because the program resizes its frames when you change your Page Setup or Chooser selection. Therefore, be sure to choose the correct printer driver and Page Setup options before you create a document. Otherwise, when you change drivers, all frames will change size. You'll have to spend some time fussing with the document to restore it to its previous look.

A shorter ruler

When you're working on a PowerBook, a Classic, or any compact Mac model, you may want to collapse the ruler during your major inspiration bouts. With a smaller ruler, you can see more of your typing.

To collapse or uncollapse the ruler, double-click the bottom half of it.

Of course, you can hide the ruler completely, if you wish, by pressing ⌘-H.

Double-click tricks

Double-click the top half of the ruler to see the Document dialog box, where you can change the margins and page-numbering system.

Double-click a tab stop on the ruler to open the Tab dialog box, where you can specify detailed information about tab stops (and specify that the selected paragraph shouldn't be separated from the next one over a page break).

Option-double-click the page number indicator (lower-left corner of the screen) to open the Preferences dialog box.

Open an existing document directly on startup

Under normal circumstances, when you double-click the MacWrite Pro application icon, you get a new blank document. Instead, if you want to open an existing document on your disk, press ⌘ as the program is launching. You are presented with the usual Open File box, from which you can select the existing document you want to open.

Change the margin visually

Option-drag a margin guide, a column guide, or a frame edge to move it (the cursor changes to a little grabber arrow). As you drag one of these nonprinting guidelines, you see its measurements in the lower-left corner of the window. Without the Option key, you can't budge these light gray lines (see Figure 17-63).
Quick zooming back and forth

One of MacWrite Pro's most unique features is that you can enlarge or reduce the display of your document and still have full editing capabilities.

Double-click the Percentage box (in the lower-left corner of the window) to type in a new zoom level (for example, type 200% to see the text twice as big).

After you zoom to a different level, you can single-click the Percentage indicator to switch back and forth between actual size and the zoomed in (or out) size.

PowerBook scrolling keys

MacWrite Pro makes good use of the Page Up, Page Down, Home, and End keys found on an extended keyboard. But that's not of much help to PowerBook users, or anybody whose keyboard doesn't have this extended set of keys.

Fortunately, there are equivalent shortcuts for non-extended keyboards. They are:

- Control-K and Control-L (to scroll up or down by a screenful)
- Shift-Control-K and Shift-Control-L (to scroll up or down by a page)
- Control-D and Control-A (to jump to the end or beginning of the document)

Cursor manipulation keys

Here, for your reference, are the key combos for making the cursor jump around:

- Jump by one word: Option-arrow key
- Jump to the start or end of the line: $\uparrow$-arrow key
- Jump up or down a paragraph: Option-arrow key (left or right)
- Jump to the beginning or end of the document: Option-arrow key (up or down)

Add the Shift key to any of these combos to select the text as you move the cursor.

Selection shortcut guide

Here are the MacWrite Pro click-tricks for selecting text quickly:

- Double-click...to select a word.
- Triple-click...to select a line.
- Quadruple-click...to select a paragraph.
- Quintuple-click...to select the entire document (except headers and footers).
Search-and-replace Secrets

When you use the Find/Change dialog box, you can use wildcard searches. Use \? to represent a character you don't want to specify, and \* to specify any number of unknown characters.

Suppose that you search for B\?G. Your Find command locates words like bag, beg, big, bog, and bug — but not being or bowing. To find being or bowing (because they have several unspecified characters in between), you search for B\*G (see Figure 17-64).

Figure 17-64: Use the backslash and asterisk to search for an unspecified bunch of letters. For example, this setup replaces every occurrence of Mr. Stein and Mr. Stien and Mr. Styn.

Also, keep in mind that you can paste into the Find/Change box. If you receive a file from an IBM user, for example, and it's full of strange boxlike characters, you can search for them and replace them all with nothing. Just paste one of the little boxes into the Find box (and leave the Change box empty).

Resize a graphic

To resize a graphic by some fixed numerical percentage, click to select its frame and then double-click the illustration itself. A dialog box appears, in which you can specify an exact new size.

On the other hand, you may have more fun by Option-dragging a graphics frame's handle. That resizes the graphic visually and doesn't preserve the original graphic's proportions. Which, in some cases, is just what you want (see Figure 17-65).

Figure 17-65: Option-drag to resize a graphic. If you drag a frame's handles without the Option key, you simply resize the frame and not the graphic within it.
Creating a table and selecting cells in it

Claris, as far as we can tell, borrowed Microsoft Word's fantastic Table feature. This feature prevents the kind of formatting hell that usually results from trying to use tabs to line up pieces of text that don't fit in an allotted space. Figure 17-66 makes this syndrome all too clear.

<table>
<thead>
<tr>
<th>Panico, Alison</th>
<th>Executive producer</th>
<th>Will be there</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anderson, Beth</td>
<td>Account manager</td>
<td>Out of town until the 28th</td>
</tr>
<tr>
<td>Elfenbein, Andrew</td>
<td>Sales rep</td>
<td>Won't make it</td>
</tr>
</tbody>
</table>

Figure 17-66: This is a job for Tables. If you try to create a table using tabs, this sort of misalignment is almost inevitable. See how the second line wraps inappropriately to the first column? See how the name in the third line is too long, so it pushes past the tab stop and gets everything out of whack?

If you use a table, however, you won't have this problem (see Figure 17-67).

<table>
<thead>
<tr>
<th>Panico, Alison</th>
<th>Executive producer</th>
<th>Will be there</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anderson, Beth</td>
<td>Account manager</td>
<td>Out of town until the 28th of next month</td>
</tr>
<tr>
<td>Elfenbein, Andrew</td>
<td>Sales rep</td>
<td>Won't make it</td>
</tr>
</tbody>
</table>

Figure 17-67: Use MacWrite Pro's table feature to keep everything in line. Each piece of text now wraps only within its particular cell.

Use the Insert Table command (Frame menu) to pop a table into your document. After you've done so, you can highlight various portions of the table as follows:

- ⌘-click a cell to select it.
- Drag across to select multiple cells or click the first one. Shift-click the last one.
- ⌘-click to select nonadjacent cells.
- ⌘-drag to resize a table column without changing the width of other columns.
Actually, page-layout programs and word processors aren't as drastically different as they once were. Word processors can easily field the kinds of tasks that once demanded a PageMaker-type program: wrapping text around a graphic on the page, laying out text in multiple columns, creating reverse type (white lettering on black), and so on.

But as word processors have grown up, so have the page-layout programs: PageMaker and QuarkXPress, the most popular pair, as well as high-end, multiple-platform powerhouses like FrameMaker. Anyone who wants to design and publish professional magazines, books, advertising materials, and other documents on the Mac still needs one of these page-design workhorses. Every week we hear of another famous publication finally embracing the Mac and scrapping its age-old, page-makeup routines — pasting wax-backed, column-width, vinyl strips onto page-sized cardboard sheets, on which the designers' blue pencil lines indicate where each slab of type is to go.

Since much of page layout involves typography (and good editing), we encourage you to read ahead to "The Non-Typographer's Guide to Type" in Chapter 24.

Those Chapter 24 guidelines (kerning, type tips, hyphenation, and so on) should carry just as much weight in page layout. More, really. As for page design, here are some additional hints that can go a long way toward ensuring that your documents look good.
Page-Layout Principles

Two font families, three at most

With 10,000 fonts at your disposal in the Macintosh world, we can understand the temptation to go type-crazy. But the best page designs rein in those madcap font instincts. One possible guideline: Choose one serif typeface for the main body text, and one sans serif font for headlines, captions, and pull quotes.

A serif font, like the one you're reading, has tiny ledges at the edges of the letters; Times, Palatino, and New York are some examples. A sans serif font, as shown in Figure 18-1, has no such serifs, as they're called. Helvetica and Avant Garde are sans serif fonts.

This doesn't mean that you can't use variations. For example, if you choose Futura (a great-looking sans serif face) as one of your two families, you may find that Futura Extra Bold looks good as a headline and Futura Light is perfect for little captions. That's all within the realm of good taste.

The point is that a little consistency gives your self-published documents the appearance — well, even the illusion — of having been thoughtfully designed and having some thematic tie-ins in its look.

Page grid

Look at a newspaper or a magazine. You'll discover that behind the articles on every page, almost every publication has an invisible set of columns that determine where text flows (see Figure 18-2).

But if a magazine has a page grid of five very thin, invisible columns, that doesn't mean that every page will have text in five thin columns. The
JS: Wrong, wrong, and wrong. Got news for you: PageMaker 5.0 nuked all of those old drawbacks. And it's still easier to use.

DP: Well, Quark’s got Xtensions. Little plug-in mini-programs that add some pretty incredible features.

JS: PageMaker’s got Additions. Same thing, but they’re free. You don’t have to fork over hundreds or even thousands of bucks for them.

DP: They’re not the same thing. Xtensions add qualitative, brand-new features; PageMaker’s things are just macros. Furthermore, Quark is light years better for high-end color work; it’s much better than PageMaker for separations and trapping. I know a service bureau that’s actually had to convert clients’ PageMaker files into Quark so they can have its precision color prepress features.

JS: Good thing he doesn’t have to swap files with IBM people. PageMaker’s on both Mac and IBM, and you can swap the files back and forth with ease.

DP: Same with Quark.

JS: Not quite. Quark’s available for the PC, but nobody’s using it. And converting Quark files only goes one way: from Mac to PC.

DP: Big whoop.

JS: I can’t believe we’re discussing these minute differences. Basically, these programs have become almost identical. Whatever Quark had, PageMaker 5 now has: numerical designer is allowed to combine column widths and still remain within a tasteful framework. An editorial page may have two columns, for example: one that’s two invisible columns wide, and another that’s three invisible columns wide. A Letters to the Editor section, on the other hand, may flow its text in all five thin columns per page.

In any Mac page-layout program, you create these invisible background columns using nonprinting guide lines. Generally, you place these guide lines on a master page — a special electronic page whose elements underlie the contents of every actual page in your document (see Figure 18-2).

Figure 18-2: In PageMaker, you can add guides to the master page by dragging them “out of” the rulers at the edges of the screen. They form the basis of the underlying page grid; in this example, the four underlying columns are combined in different ways to create different page effects without losing a feeling of consistency.

Break up the text

Our definition of a boring page design is one where, if you squint at it, the page seems to be a wash of unbroken gray. Do what you can to break up the vast dull stretches of body text. Use headlines. Use pull quotes (the large-type, striking quotations from the actual text that’s often set in its own box in the middle of the page, like you see in every magazine article in history). In the text itself, use headings or subheadings. As a matter of fact, you may check out this very book for some examples. We’ve done our best to keep the pages looking interesting by using sidebars, graphics, and headings — like the one that follows this sentence.
Use rules

A rule, in this case, doesn't mean a law: it means a straight line. Every page-layout program lets you draw lines on your electronic pages: thick, thin, horizontal, vertical, even in parallel sets.

Here again, look at the Sunday magazine section of your city's newspaper. You'll see how a horizontal rule is used to set the masthead apart from the articles; another may be used between columns of an article; a fat one may separate the title of the article from the body (see Figure 18-3).

Figure 18-3: Judicious use of horizontal or vertical rules help break up a page and make certain elements stand out.

Not every publication needs to have rules. But there's no question that rules are one of the page designer's most fundamental design elements.

Reverse type

Okay, maybe reverse type (white lettering on black) has been a little overused recently. But we still run across striking uses, and it's almost always a refreshing break from whatever normal type surrounds it.

In most programs, setting up reverse type is a two-step process: first you make the text itself white. Then you have to draw a black box behind it.

Here's a useful trick: in both PageMaker and Quark, you can set up a very fat rule for use as the black box. Set the rule to be very fat — 40 points, for example — and to be drawn above the paragraph. (In PageMaker versions before 5.0, your thickest rule can only be 12 points, so you may have to define rules both above and below the text, each set to the maximum.) Then define the whole thing as a style that you can apply to any headline with a single click (see Figure 18-4).
Figure 18-4:  
Set up a style that automatically reverses text. Instead of having to draw a black box by hand, let the program create fat rules for you.

A word about dpi

You’ve probably heard the term dpi, meaning dot per inch, used primarily in conjunction with print quality. That’s because, for years, the Mac’s monitor resolution (the number of pixels per

Widows and orphans

A widow is a line of text all by itself, separated from the rest of its paragraph. On the other hand, an orphan is a line of text all by itself, separated from the rest of its paragraph.

If it sounds like there’s some confusion among terms, you’re right. We looked up these terms in several prominent style and typography books, and guess what? The authors can’t even agree on how they disagree! Several use the terms synonymously. Several think that a widow is a solo line of type at the top of the page, separated from the previous page; several think that’s an orphan. On the other hand, some people call an orphan a lone last line on the page, split apart from the remainder of the paragraph at the top of the next page.

We vote for the following distinction (which nonetheless doesn’t make it right): a widow is a stray line of type at the top of a column or a page — the last line of a preceding paragraph. It’s best avoided, either by editing the text before it or by manipulating the type or line spacing.

An orphan, on the other hand, is a single word on a line by itself. (We mean on the same page; if it were on a different page, it would also be a widow!) An orphan, by this definition, isn’t necessarily objectionable. Still, some layout pros try to avoid orphans if they are very short or only the last syllable of a hyphenated word. (Figure 18-5 makes this clearer, or maybe not.)

Figure 18-5:  
A widow (A) and an orphan (B). Or quite possibly, vice-versa.

Indents

Now that you’ve graduated beyond the manual typewriter, using five space bar-clacks to represent a first-line paragraph indent doesn’t quite cut it. First of all, as you’ll find out in Chapter 24, the space bar does a terrible job of lining up text (it looks fine on the screen, but never works in the printout). Second, five spaces isn’t even an appropriate amount of space.
Most people we know are in the habit of using the Tab key to indent the first line of a paragraph. And that's fine, although we find the half-inch default tab stops in most word processors to be a tad large. It's better to use your word processor or page-layout program's automatic first-line indent feature. (Actually, most people we know are in the habit of using open spacing — see the next item — and don't indent at all.)

Actual publishers measure the first-line indent based on a unit of measurement called the em space (the horizontal width of a capital M in the font and size you're using). They may set the indent, for example, to be one em space.

How to start a paragraph

This pointer has less to do with page layout than it does with basic business-writing protocol. You have essentially two choices when you type a business letter (or a Macintosh computer book): you can either begin each paragraph with an indented first line, or you can skip a blank line. This latter system is called open spacing (see Figure 18-6).

Our suggestion here: if you decide to use open spacing, use your word processor's built-in feature for this. (It may be hiding in a paragraph-formatting command, called Space Before, or something.) It's so much easier to edit a document where the program automatically inserts space between paragraphs — that weren't created with an extra press of the Return key — than to have to deal with ten million double-Returns.

Keep your eyes open

For additional lessons in page layout and typography, we refer you to the world of printed materials all around you. Most of this stuff was designed by the pros (maybe you, O reader, are a pro, in which case we aren't addressing you) and can probably suggest some interesting ideas to you.

PageMaker

PageMaker was the first significant page-layout program for the Mac. In conjunction with the Apple LaserWriter, it took the world by storm and put the Macintosh on the map. For the first time, designers who had always pasted up their pages manually could have an electronic pasteboard, striking, immediate printouts, and much greater design flexibility.
For a year or two, Aldus reigned. Meanwhile, a rival upstart, QuarkXPress, appeared on the horizon and started gobbling away at Aldus's market share. Recently, however, startled into action, PageMaker's creators have brought it back up to par with Quark.

Here are a few of our favorite PageMaker Secrets. As far as we know, they work with any version from 4.2 onward.

**PageMaker Secrets**

*Create evenly spaced duplicates of an object*

Using the Multiple Paste command in the Edit menu, it's easy to create several evenly spaced copies of something. But you have to know the exact horizontal and vertical distances by which you want to space the copies.

If you prefer to specify the amount of separation by eye instead, try this: copy the object you want to duplicate (a horizontal rule, for example). Press Option and then choose Paste from the Edit menu. (Option-Paste puts a duplicate directly on top of the original.) Drag the new copy where you want it.

Then, each time you Option-Paste again, another copy appears, the same distance from the previous one as the first copy is from the original.

*Make notes to yourself*

Sometimes it's handy to leave notes to yourself: revision dates, client feedback, whatever. It's easy to do. Define a style for this text called, say, Reminder. Any time you want to create a note to yourself, assign it to this style. Define a point size large enough that you can still read it when you zoom out to Fit in Window view.

Then, before printing, simply change the color of the style to Paper — that is, invisible — so that it doesn't print. (In PageMaker 4.2, choose Define Styles from the Type menu; double-click the style name; click Type; and then choose paper from the Color pop-up menu.)

*Old versions of PageMaker*

PageMaker is notorious for making life difficult for your existing documents when you upgrade to a new version of the program. You can't open a 2.0 document with Version 4, and you can't open a 3.0 document with Version 5. The point is: you can't skip a generation.

To open a 2.0 document with Version 4.2, you must first open it in the intervening version — 3.0 — and save it under a different name.

Furthermore, after you save a document from a newer version of PageMaker, its format is permanently converted. If you ever want to open it in its original version of the program, open the original that's still in the older format.

*Default page setup*

If you're working on a number of documents that have a similar nonstandard page setup, you can save yourself a lot of time by teaching PageMaker what its default page setup should be.
Close all documents and then choose Page Setup from the File menu. In the Page Setup dialog box, specify your preferred page size, orientation, and so on. Click OK. From now on, each time you create a new document, its page setup matches your preferences.

**Jumping views**

Here's an incredibly useful tip that saves all kinds of trips to the menu.

If you ⌘-Option-click the page window, you jump to actual size. Then you can ⌘-Option-click a second time to zoom into Fit in Window view. (Add shift to the mix to jump to 500 percent.)

Using this shortcut, you can stay in Fit in Window mode as necessary to get an overview of your document. Whenever you want to read some actual text, you can instantly zoom any page to actual size.

Speaking of Fit in Window, here's a quick-click shortcut for doing just that. Point to the page icon (at the bottom of the window) of the page that you want and Shift-click. You'll jump to that page in Fit in Window view (even if it's the one you're on).

**Keyboard tool shortcuts**

Here's how you can switch PageMaker tools without having to use the mouse. (You need a keyboard with function keys for these.)

- **Pointer Tool**: Control-Shift-F1. (Then again, ⌘-Space bar also selects the pointer, and it's certainly easier to remember.)
- **Line Tool**: Control-Shift-F2.
- **Horizontal/Vertical Line Tool**: Control-Shift-F3.
- **Text Tool**: Control-Shift-F4.
- **Rectangle Tool**: Control-Shift-F5.
- **Ellipse Tool**: Control-Shift-F7.
- **Cropping Tool**: Control-Shift-F8.

**Set the default font**

Before you begin working on a new document, you can set the default font and paragraph information for all new text blocks you create.

With the Pointer Tool selected, choose Type Specs from the Type menu. Change the settings in the dialog box to your tastes and click OK. Then choose Paragraph (also in the Type menu) to preset your preferred paragraph settings.

**Keyboard navigation keys**

Don't bother with that mouse! Try these page-navigation shortcuts: ⌘-Tab moves to the next page and ⌘-Shift-Tab moves back a page.

To slide the page around without having to use the scroll bars, press Option. When you hold down the mouse button, the cursor changes to the ninth tool on
PageMaker's palette: the hand grabber. Drag it across the page window to shift the page on your screen.

**Drag the object, not the outline**

Normally, when you drag a graphic or text block, PageMaker shows you only the outline of the block while you drag. If you prefer, you can see the actual text or the actual detailed graphic: after you first click the box, hold the mouse button down, still, until the screen blinks. That's your cue that you can now move the object, whose detail will be visible as you drag.

**Auto-positioning from the Scrapbook**

When you `Option-Paste` a page element from the Scrapbook back into a PageMaker document, the object jumps exactly into the original position from which it was copied or cut to begin with.

Keep this in mind whenever you cut or copy text or graphics for pasting into the Scrapbook for later use. If the item is correctly positioned when you cut or copy it, it will be correctly positioned when you `Option-Paste` it.

**Quick style selection**

When you name your most frequently used styles, precede the name with a bullet (•, which you produce by pressing Option-8). That bullet character will force the style names to the end of the style list, where they're easy to find. (Example: •Body Times 10, or •Futura 18 Heading.)

You can also force a style name to the top of the list if you precede it with an Option-space (type a space while pressing Option).

**World View for spotting expensive mistakes**

Before you send your finished document file off to be printed on an expensive Linotronic, here's a good way to get an overview (and to spot potential problems).

First, switch to World View. This is a special magnification level that's not listed in the menu; you just have to know its secret key combination, `Option-zero`. Then, with the Pointer Tool selected, press `Option-A` to see all the page elements at once.

In this condition, you can easily spot remaining blocks of white text, which appear as empty text blocks; empty text lines, which show up as gray blocks; and any other wayward and unnecessary Pasteboard clutter. Every object takes time to image when printing day comes, so the less extraneous stuff there is, the smoother printing will go.

**Graphics information panels**

When you create your graphics, use a basic font like Courier to add some information at the bottom edge. For example, include the name and figure number of the graphic; its date, perhaps; and the name of the program that created it.

Then, when placing it into PageMaker, simply trim off this information from the bottom of the graphic using the Cropping Tool (see Figure 18-7).
When confusion over figure numbers arises or when a graphic needs to be revised, it’s a simple matter to peek at this helpful information, saving you a good deal of otherwise complicated record-keeping.

**Instant empty space, vertically or horizontally**

Purists will snort at this technique. But then again, we suspect more people under deadline are pragmatists than purists.

PageMaker does something immensely clever if you’ve defined a paragraph style to leave blank space above it. If that paragraph appears at the top of a column, PageMaker omits the blank space. Usually, that’s what you want (and it’s one reason to use a page-layout program instead of word processors, which dumbly put the white space above the paragraph even if it’s at the top of a page). But suppose that you want a little white space there. Or suppose that you want to pop a little white space anywhere, maybe above or below a photo. Create a paper-colored rectangle. Copy it with the Pointer Tool, switch to the Text Tool, position it in a text block on an empty line, and paste it.

The rectangle will push down the text that follows it. To adjust it, set its leading to Auto (either in the Story Editor or by choosing Type Specs). Then, using the Pointer Tool, drag the rectangle’s handle and size it as you like.

**Notes on entering and exiting the Story Editor**

You can open the Story Editor by pressing `Ctrl-E`, of course, but it might be faster to triple-click anywhere in your document.

To exit the Story Editor, you have two ways to go back to your layout. If you press `Ctrl-E` again, you’re teleported to the page that corresponds to your cursor’s last location in the Story Editor.

But what if you want to remain where you were before you ever entered the Story Editor? In that case, just close the Story Editor window. You’ll be back where you started, even if you scrolled in the Story Editor.

**Grab an object that’s underneath another**

It’s frustrating to try to grab a rule, for example, that’s covered up by a graphic object. At least it is until you know the Secret for selecting overlapping objects: `Ctrl-click`. Each time you `Ctrl-click`, you select the object another layer down.
The fabulous automatic scrolling trick

Here's a great trick for getting an overview of a document.

While pressing Shift, choose Go to Page from the Page menu. The program begins to flash through your pages, one after another. When it gets to the end, it begins again with page one. To stop the slide show, click the mouse.

Bonus hint: You may want to change all the pages to Fit in Window view before you begin (see the next Secret).

Change the zoom levels of all pages at once

PageMaker has this famous quirk: when you zoom in or zoom out, you're only changing the size of the current page or spread. If you move on to the next page, you have to change its degree of magnification all over again.

But if you press Option as you choose the new zoom level from the Page menu, you do, in fact, change the magnification levels of all the pages at once.

Unfortunately, you can't combine this trick with our World View trick (the unknown #0-zero keyboard shortcut). At first glance, you may think you still have to change every page manually to World View.

But here's yet another juicy Secret: If you rapidly advance through your pages using the #0-Tab shortcut we mentioned earlier, PageMaker doesn't redraw each page as it goes by! Therefore, you can effectively change all pages' zoom levels to World View by doing this:

Leave one finger on the #0 key. Then, fast, alternately, press Tab and the zero key. Tab 0 tab 0 tab 0 tab 0, like that, for as many pages as you have in the document. When you're finished, and PageMaker finally redraws the page, you will have successfully placed every page in World View without ever having to wait for the screen to be repainted.

Define styles by example

One nice aspect of Word and other word processors is that you can format a paragraph first and then define it as a style simply by giving it a name. Afterwards, you can apply all of that formatting to any paragraph just by calling up that style name.

You can accomplish the same fast-and easy-style-creation in PageMaker. Select the text you want to format. Then format the heck out of it: font, tracking, paragraph specs, whatever. When it's all ready to go, open the Style palette ( #0-Y) and then #0-click the words No Style.

Instantly PageMaker displays a dialog box in which you can name the new style (see Figure 18-8). All the type and formatting characteristics you set up are already entered for you.

Figure 18-8:
Define a style by example. This is where you're finally asked to give the new style a name of its own.
Avoid losing your manual font changes

When you change a paragraph’s Style assignment, PageMaker is fairly intelligent: it doesn’t nuke any character variations, such as bold and italic, that you applied to individual pieces of text in that paragraph.

It does, however, wipe out any font variations. If you placed a character or two from a symbol font, for example, or used the Chicago font to create symbols like ≠ or ‹, the font changes to that of the rest of the paragraph when you reapply a style.

There’s a trick, though: press Shift as you double-click the new style’s name on the Style palette. Then PageMaker applies the new style, but won’t disturb any font changes you made by hand.

Super-nudge keys

When an object or text block is selected, you can press the arrow keys to nudge it one pixel at a time in any direction.

But you knew that. Our Secret here is that if you press Shift while nudging, you nudge faster (five pixels at a time).

Automatic TIFF compression

Here’s a great way to reduce the size of PageMaker files containing large TIFF images: You can automatically compress the TIFF files as you import them into PageMaker 5.0. To trigger the compression, import the TIFF files using the standard Place command, but press the Shift and Option keys while clicking the OK button in the Place dialog box. For an even higher level of compression, hold down Shift while importing the TIFF files.

QuarkXPress

We’re not exactly sure why, but everybody calls this program Quark. That’s the company name, not the product name, actually.

Quark is about precision. It’s also about the capability to design text boxes and links without having to actually have any text to play with. In other words, you can design a newsletter’s fundamental shape in an empty Quark document. Then, as the stories come in each month or each week, you can just import them directly into the waiting text-box chains. That’s something that PageMaker still can’t handle.

Measurements palette

One of the interface elements that first put Quark on the map (and that was soon imitated by PageMaker’s programmers) is its floating palettes. The Measurements palette is a good example: with a couple of clicks, you can change the size, position, rotation angle, leading, or type style of any selected object.
You don’t have to use the mouse to select anything on the Measurements palette. You can, for example, press ⌘-Option-M (for Measurements) to highlight the first field (the horizontal size measurement) in the palette (see Figure 18-9).

Figure 18-9: One keystroke takes you to the first field on the Measurements palette. Add the Shift key to the mix, and you jump directly to the font name.

From there, you can press Tab to highlight successive fields in the palette or Shift-Tab to go backwards.

Our favorite, though, is to throw the Shift key in with the ⌘-Option-M keystroke. If you do that, you jump directly to the font name field. When you’re there, you can change the font of the selected text by typing only a letter or two of the new font name. (Quark automatically expands what you typed; if you type He, the program will finish luetica for you.)

We hit upon this keystroke after much consternation; we were trying to teach a QuicKeys macro how to change a selection to a certain font automatically. Trouble was, QuicKeys can never find the Measurements palette. If the palette is moved, QuicKeys clicks blindly and futilely where it used to be.

Then we taught QuicKeys how to type Shift-⌘-Option-M, plus the first letters of the desired font name. It was smooth sailing after that.

In fact, the Measurement palette is a natural for QuicKeys; any setting you make more than once — for example, rotating a certain kind of text block 30 degrees — is something that’s much more easily and quickly typed by a macro than by you.

**Document palette**

Another of Quark’s floating palettes is the handy Document palette, where each page of your publication is represented by a page icon (see Figure 18-10).

Figure 18-10:
The Document palette gives you a constant overview of the pages in your document. The Master Pages are indicated by icons at the top.
MACINTOSH SECRET

Typing measurements into the Measurements palette

When you’re changing an item’s size or position by typing new numbers into the Measurements palette, you don’t have to type out inches. You can’t exactly go wild with abbreviations and expect Quark to know what you mean, either.

Here’s a table of exactly what Quark understands, measurement-wise:

<table>
<thead>
<tr>
<th>You can type:</th>
<th>and Quark will know you mean:</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;</td>
<td>Inches</td>
</tr>
<tr>
<td>p</td>
<td>Picas</td>
</tr>
<tr>
<td>pt</td>
<td>Points</td>
</tr>
<tr>
<td>cm</td>
<td>Centimeters</td>
</tr>
<tr>
<td>mm</td>
<td>Millimeters</td>
</tr>
<tr>
<td>c</td>
<td>Ciceros</td>
</tr>
</tbody>
</table>

You’re not allowed to type in for inches or pts for points, however.

One more note: you can (and should) combine points and picas in the same measurement. To indicate 10 picas and 4 points, you can type 10p4. (Remember: twelve points in a pica and six picas per inch.)

Here are a few things you can do with this palette:

- Double-click a page icon to make the document window jump to that page.
- Drag a page icon into a new position to rearrange your pages.
- Double-click a Master Page icon to edit that Master Page.
- Drag a blank page (top left of the palette) or a Master Page icon in between two existing document-page icons to insert a new page.
- Option-drag a page or master page into place to insert multiple new pages. The Insert Pages dialog box appears, where you can specify how many you want.
- Select any master or document page and click the Delete button to delete it.

QuarkXPress Secrets

Take one text box out of the chain

Linked text boxes can be tricky if you’re not familiar with Quark’s quirks. Suppose that you want to take one page’s text block out of the chain, for instance. If you do what you’d expect — click that text block with the Unlinking Tool — then you destroy the entire chain for the rest of the document (see Figure 18-11). And there’s no Undo.
To take just one text block out of the chain, Shift-click it with the Unlinking Tool. The rest of the chain will remain — it just will leave out the text block you clicked.

**Multiple clicks to select text**

As in any program, a double-click in text highlights one word. As in some word processors, Quark lets you *triple*-click to highlight a line.

There's more: a *quadruple* click highlights an entire paragraph, and five clicks selects the entire story.

**Change the first page number**

If you're using QuarkXPress 3.1 or earlier and you don't want to start numbering your document's pages with 1, here's a quick way to access the Section dialog box to change this setting:

Click the page in the Document Layout palette whose numbering you want to change. Then click the words “Page 3” (or whatever it says) at the top of the Document Layout palette, as shown in Figure 18-12.

*Figure 18-11:* Here's a document set up with linked text boxes. If you want to take page 3 out of the chain (figure A), you may think to click the page with the Unlinking Tool (marked by the X). But what you'll get is figure B: a broken fragment of a chain. If you use our Secret, though, you'll get figure C, which is what you wanted all along.

To take just one text block out of the chain, Shift-click it with the Unlinking Tool. The rest of the chain will remain — it just will leave out the text block you clicked.

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*Figure 18-12:* After a page is selected, you can change its starting page number by clicking in the strip indicated in this figure.
Drag the object, not the outline
Like PageMaker, Quark shows you the actual graphic or actual text inside a box that you're dragging (as opposed to just the box outline, which it usually shows). As in PageMaker, the trick is to hold the mouse button down, stationary, for a moment after you first click the box. You'll see the screen blink; that's your cue that you can now move the object, and you'll see all the detail inside as you drag.

How to keep a tool selected
We know you've wished for a way to do this! (We sure did, until we learned the Secret.) Normally, every time you use a tool that creates, links, or unlinks something, Quark switches you back to the Item Tool the instant your finger is off the mouse button. But if you Option-click a tool, it stays selected until you click another tool.

Instant switch to the Item Tool
Regardless of which tool is selected, pressing ⌘ switches to the Item Tool for as long as you press the key. That's a handy shortcut when you just imported a graphic, for example, and now want to move it slightly.

Automatic “Continued on page 4” notices
Quark lets you create this kind of jump line automatically. It's smart, too. If the continuation of the article is moved to a different continuation page, the jump line that refers to it is updated automatically.

To create a jump line at the end of a column or page, create a new text block that overlaps the main text of a story. Type Continued on page, and then press ⌘-4. Quark automatically fills in the correct page number (if you have, indeed, linked the story to a text block on another page).

On that continuation page, you can easily create a “Continued from” notice. Again, create a small text block overlapping the main story. But this time, type Continued from page, and then press ⌘-2 (see Figure 18-13).

Figure 18-13:
Let Quark fill in the page numbers automatically. Type the text you want at the end of one column (top) into a separate little text box. Do the same thing where the story continues (bottom).

name was Tia. She told me that her father had been a prominent televangelist in the 70s, but she wouldn't say who it was.

Not that I cared; it was enough just to be around this vision of beauty, gossamer, and

Continued on page 3

feeling. She was a fragile creature, really. A thing of absolute
One-shot Symbol-character typing
Quark has a handy keyboard shortcut (only one keystroke) that switches you to the Symbol font for one moment, which is ideal for popping in a single character in that font. It's ⌘-Shift-Q. The next character you type will be from the Symbol font. The next character after that will be your original font.

You can switch from one character to the Zapf Dingbats font, too. That keystroke is ⌘-Shift-Z.

How the heck to turn off Facing Pages
It's easy to turn a single-sided document into one with two-page spreads: open the Document Setup dialog box (File menu) and turn on Facing Pages.

To turn off Facing Pages after you turned it on, however, is trickier: Quark dims the checkbox so that you can't get to it. The solution is to delete all the facing master pages first. Then you can turn off the checkbox.

Quick access to reverse type
Exactly as we pointed out in our general page-layout Secrets, the easiest way to create white-on-black (reverse) type is to define a style. In Quark's case, however, you have even more control over the result. We thought we'd spell out the process here.

Start by choosing the type style you want for the text. Now choose Rules from the Style menu. Click the Rule Above checkbox in the resulting dialog box. The box expands to look like Figure 18-14. Choose an appropriate Width (they actually mean height for the rule).

Figure 18-14:
The first step to creating easy reverse type in Quark.

If you leave the Offset at zero, you get the baseline-hugging effect shown in Figure 18-15. (An Offset of, say, −2 points centers this text in the rule better.) Click OK.

Then open the Color palette (View menu). Click the Text icon (the little A in a box) and click White. The text is white on the dark rule (see Figure 18-15).
Finally, to define this setup as a style, just choose Style Sheets from the Edit menu. Click New, give the style a name, and click Save. Next time you need this nice-looking reverse-type effect, just select the paragraph and select the style you defined from the Styles palette.

**Finer nudging**

Exactly as in PageMaker and other graphics programs, pressing an arrow key moves any selected object one pixel in the corresponding direction. In Quark, however, pressing Option and the arrow key makes the movement much finer — tenths of a point. (The Item Tool must be selected, of course.)

**Page navigation from the keyboard**

This is a great trick. You probably already know that you can press the Page Up and Page Down keys on your keyboard (if yours has these keys) to jump one screenful backward or forward in your document.

But if you press Shift, too, you move by pages. That is, Shift-Page Up shows you the top of the previous page. Shift-Page Down jumps to the top of the next page. These are excellent shortcuts for skimming through your document (when you're looking for the beginning of a new section, for example).

**Grab an object that's underneath another**

We mentioned this one in our PageMaker Secrets, too, but the keystroke is different here. This is the trick to select an object that's covered up by other objects. The Secret: hold down ⌘, Shift, and Option as you click. With each click, you select the object another layer down.

**Notes on dialog boxes . . . and Apply**

Most of Quark's dialog boxes aren't actually dialog boxes — they're windows! They have title bars, which means you can move them anywhere on the screen by dragging the title bar.

The buttons in these dialog boxes are special, too. You can usually hit them without using the mouse: press ⌘-A for Apply, for example.

This keyboard button-pressing isn't nearly as full-fledged a feature as it is in the Microsoft programs; you can't activate radio buttons or checkboxes from the keyboard, for example. It only works with actual buttons.
In fact, ⌘-A is a particularly useful tool to learn. In the Formats dialog box, you can make a change, and then "click" the Apply button to see its effect on the document before committing to it. When you press Option and click Apply, you enter "continuous apply" mode. That means that every time you change a number in the dialog box, you see its effect on the text in the document immediately. You don't even have to click Apply.

Oh, and one more thing: you can hit ⌘-Z while a dialog box is still open to undo all the changes you've made since opening the box. Now that's something they should do in all programs!

**Secret message**
Here's the smallest Quark Secret of all: open the Quark Help window. Turn on Balloon Help and point to the word Quark.
You find out that it's "a fundamental particle."

**Buried treasures**
QuarkXPress 3.2: press Option while accessing any Delete command (such as ⌘-K). Now a spaceman does the deleting — explosion included!
QuarkXPress 3.3: The spaceman appears only when you delete items using the Option-Shift-Delete key combination.
Also, press Option and choose About QuarkXPress from the Apple menu. Then ⌘-Option-Shift-click the window. Presto: a picture of the programmers!

**Instant paragraph format copying**
After you format a paragraph, you can instantly transfer that same formatting to any other paragraph with one click.
First, select the unformatted paragraphs. Then Option-Shift-click a paragraph that has been formatted. That's it!

**Keep your page numbers straight**
When you're designing a document that will ultimately be folded into shape, keeping track of the page numbers can be a mathematical nightmare.
It's much easier if you create tiny annotative text blocks, each showing what the page number really is, and pop them out on the pasteboard. Figure 18-16, we hope, makes this trick clearer.

**Figure 18-16:**
Put floating text blocks out on the pasteboard. They help you figure out which page will be which when the document is finally printed and folded.
Zoom to your satisfaction

You don't have to make do with the standard degrees of magnification. With this shortcut, you can specify a region of the display to fill your screen, regardless of what amount of magnification is required.

Press the Control key. (This switches you to the Magnifying Glass, regardless of which tool is currently selected.) Then just drag diagonally across the area you want to see more clearly. When you release the mouse, the area you selected will fill your monitor.

Faster EPS drawings

This is a neat Secret. An EPS (encapsulated PostScript) graphic has two parts. First, there's the invisible part, which consists of complex PostScript-language instructions to the printer. And, for the benefit of us humans, there's a PICT file (a graphic image) that appears on the screen.

The reason EPS graphics take so long to draw in Quark is that the program is attempting to interpret the PostScript instructions for the most accurate possible display. Here's a trick: use the Measurements palette to rotate each EPS graphic some minuscule amount — .01 percent, for example. Quark is forced to display the PICT file instead of worrying about the EPS instructions. The graphic will always redraw much more quickly — especially if it's a complex one.

You can, of course, rotate the graphics back into position when you're ready to print. But we're not convinced anybody — even you — would really notice a one-hundredth degree rotation.
In this chapter:

- Spreadsheet design fundamentals
- Secrets of Excel
- Secrets of Quicken
- Secrets of FileMaker Pro and ClarisWorks

By this chapter title, we mean two things: spreadsheets and databases. More specifically, we pretty much mean Excel and FileMaker. For over 95 percent of spreadsheet buyers, Excel is the choice. As for databases, FileMaker is not only the bestseller, but it's one we, frankly, can understand. For information on programmable relational databases like Fourth Dimension, Helix, and Omnis, we merrily refer you back to your bookstore's Mac book section.
Spreadsheet Basics

We won't waste pages showing you the basics of setting up a spreadsheet. We assume you already know that you let the program do the math for you. Click in any cell in the spreadsheet; type either a number or a formula that adds up numbers in other cells.

You probably already know the value of the Sum button in Excel, which saves hours of picky typing. Adding a column or a row of numbers is as easy as one click, as shown in Figure 19-1.

![Figure 19-1: You no longer add up figures by typing \=SUM(). Excel does this for you now. Click the cell at the bottom of a column and click the Sum button (left). Excel proposes adding up the entire column (middle). If it inadvertently selects the column head, as shown in the middle here, you have to drag through the numbers you do want added (right) and then press Enter.](image)

We're going to trust that you already know that when you copy and paste selected cells, Excel does a weird thing. Even after you paste, the shimmering outline still runs around the selected cells. It can be a little unnerving if you're used to Mac programs in which selected material gets deselected as soon as you click elsewhere. The point is, we suppose, to indicate that you can paste this same material again elsewhere. But as you probably know, you can't get rid of that shimmering selection outline until you press `period.

Naturally, you know how to create a chart: highlight some cells; then click the Chart Wizard button. Then drag diagonally across the spreadsheet to indicate where you want the new chart to appear. The Chart Wizard dialog boxes will appear.

If you want to customize the chart, keep clicking the Next button in the resulting dialog box. If you need something quick and dirty, and don't need to fuss with all the options, click the >> button. Excel fast-forwards through all those options and plods the finished chart into your spreadsheet.

The last thing we're sure you already know is how to enter a batch of numbers into specific cells in an efficient manner. Highlight them first. Then, after you enter each number, press Enter, and Excel will select the next cell in the selection for editing, whether it's to the right of or below the first one. (If you don't preselect the cells, then pressing Enter leaves the first cell selected instead of advancing to the next.)
Memory

What you may not know, though, is how rapidly a complex spreadsheet can gulp down memory. Excel thinks in rows, not in columns. Therefore, if it's all the same to you, expand your spreadsheet downward instead of across.

It's also worth knowing that each additional cell you tweak or format takes up a little more memory. Don't bother to include blank cells when you format (when you apply fonts, sizes, and number formatting, for example). Don't get into the habit of clicking a row header to select the entire row for formatting; instead, drag-select only the 30 cells (or whatever) that actually contain data.

Along the same lines, if you need more white space between areas of numbers, consider widening a row or column instead of adding blank lines. Those blank lines take up extra memory.

Excel Secrets

Instant completion of a row or column

The latest Excel is exceptionally bright about doing your typing for you. If you have any kind of sequence — Jan, Feb, Mar; 1960, 1965, 1970; 1, 3, 5, 7, 9 — you only need to put in the first two and let the program do the rest.

Here's how it works. First, type the beginning entry of the series (Jan., for example), as shown in Figure 19-2.

Select these one or two cells. Then grab the tiny square handle at the lower-right corner of the selection rectangle. Drag it downward or rightward into new empty cells. Excel automatically fills in the logical next values!

If you enter 1:00 p.m. and 1:30 p.m., Excel will generate 2:00 p.m., 2:30 p.m., 3:00 p.m., and so on. If you enter 1st Street and 2nd Street, Excel will fill in 3rd Street, 4th Street, and so on. Type in Apartment 3 and Apartment 6, and you'll get Apartment 9, Apartment 12, and Apartment 15. This is one smart program.

3-D in System 6

In System 7, Excel's toolbar icons use shading to give a three-dimensional look.

You can get this nice visual aid in System 6, too, by holding down the Shift, 3, and D keys while Excel is launching.
The two personalities of the arrow keys

Spreadsheet-software designers have always faced a tough decision. When you press a left or right arrow key, what should happen? Should the insertion point walk through the different characters in a cell, exactly as it does in a word processor? Or should it leap from cell to cell, so that you can navigate through the spreadsheet?

Excel gives it to you both ways. It starts up in the latter mode (Enter mode), where the arrow keys select adjacent cells. If you press $\text{Esc}$-$\text{U}$, however, you're in Edit mode. In this mode, the arrow keys move the cursor from side to side within one cell.

Keep in mind, though, that you don't stay in Edit mode; as soon as you edit another cell, you're back in Enter mode again.

In fact, here's another tip: When you're in Edit mode (where the arrow keys move the cursor one character at a time within a cell), press $\text{Esc}$-arrow to make the insertion point jump one word per keypress instead of one letter.

How to set up startup documents

When you install Excel, its Installer puts a folder called Excel Startup into your System folder. You can put almost any kind of Excel document into this folder: chart, macro sheet, add-in, and so on (anything except a Template). When you next run Excel, these items will open automatically.

TRUE FACT

Introducing Mr. Spreadsheet

Ever wonder why Excel appears in the Application menu as Microsoft Excel?

It's the law, that's why.

Back in 1985, Microsoft personnel were strongly divided over what to call the new Macintosh spreadsheet program they had under development. The working name was Odyssey. But several other names were also under consideration, including Microsoft Plansheet, Number Buddy, and — believe it or not — Mr. Spreadsheet.

When the program was finally rolled out in May 1985 (at a press conference in Central Park's Tavern on the Green), it bore an altogether different name, one dreamed up by a Microsoft district manager: Excel.

This almost immediately resulted in a lawsuit. Manufacturers Hanover Trust operated an automated banking service also called Excel. Microsoft was accused of stealing the name. The outcome of the case: the program's official name had to be changed from Excel to Microsoft Excel.

And so, in harmony with that decision, the Application menu lists the program by its full name: Microsoft Excel.
Several lines of type in one cell

Here's something we bet you didn't know you can do: type multiple lines of text into one cell (see Figure 19-3).

Figure 19-3: The latest version of Excel lets you wrap text within a single cell!

<table>
<thead>
<tr>
<th></th>
<th>Citibank CD (matures 2/96)</th>
<th>Citizen stock purchase, 12/90</th>
<th>Dad's pension plan benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>2123</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>12</td>
<td>2145</td>
<td>102</td>
<td>0</td>
</tr>
<tr>
<td>13</td>
<td>2166</td>
<td>105</td>
<td>0</td>
</tr>
</tbody>
</table>

Here's the Secret. Select the cells in which you'll want text to wrap. From the Format menu, choose Alignment. A dialog box appears. Select Wrap Text and click OK. Now you can type into those cells; when you press Enter, the row height will change to accommodate the new text as necessary. (If you want to force a line break, press Option-Return.)

That's almost all there is to it. Almost, because there's a caveat: if you change the type style, the row height won't increase or decrease to accommodate the different font or size. You have to cue it to do so. Do that by double-clicking the line below the row heading, as shown in Figure 19-4.

Figure 19-4: If you change the size of text, the row height won't change. To fix the situation, place the cursor on the line below the row heading (at left, just below row 12) and double-click. The row height changes as needed (right).

A word about curly quotes

Our advice on curly quotes in a spreadsheet: don't use 'em. Even super-advanced spreadsheets like Excel aren't smart enough to recognize typographically correct "smart quotes" in formulas. Any time you use quotes in a cell (to designate a text entry instead of numbers, for example), Excel will choke on them.

But suppose that you have a program like QuicKeys that's set to convert regular uses of the quote key into curly quotes in every program (in QuicKeys's Universal keyset). You'll just have to define two QuicKeys within Excel (in its keyset) that reverse the effects of the Universal keyset.

Use an Alias-type QuicKey. Define a single quote to type a single quote, as shown in Figure 19-5. Define a double quote to type a double quote. QuicKeys will try to warn you that you're contradicting the Universal keyset; that's okay. That's the whole idea, in fact.
Part III: Application Secrets

![QuicKeys Alias Window](image)

**Figure 19-5:** This is the QuicKeys window where you define a QuicKeys Alias. It looks pretty silly here — you’re asking it to type just what you’ve typed — but it’s the right way to undo curly quotes within a single program.

Afterwards, you have just what you want: curly quotes in most programs, but straight ones in Excel only. (If you use SmartKeys, included with this book, you can simply click the control panel’s application button to exclude Excel from the “quotification” feature.)

**Auto-size columns for a better fit**

This is a great feature, but it’s hidden, so we wanted to call your attention to it. If you double-click a column header line at the top of the window, the column will neatly snap to the exact size to contain the longest entry in the column (see Figure 19-6).

![Auto-size Columns Example](image)

**Figure 19-6:** A double-click on the right-hand column header line (left) automatically resizes the column so that it just fits the text in it (right).

Here’s a remarkable feature: if you’ve selected multiple columns, double-click any one of their header lines. Excel will resize all the columns to exactly contain their contents.

**How to see where the page will be cut off**

Unfortunately, under normal circumstances, you can’t see where your spreadsheet’s page breaks will be. You may be the victim of a rude surprise when you print out a large sheet and find that the last column didn’t fit onto page one.

But here’s a quick solution: choose Display from the Options menu. Click Automatic Page Breaks and click OK. Then the page breaks will appear as dotted lines.

**Paste only the values**

Here’s an old chestnut that bears repeating. Normally, when you copy and paste cells, you simply create a new copy of the originals — formulas and all.

It’s often handy to ditch the formulas and just keep the results. To divorce the two, copy the cells and click where you want to paste them. Instead of choosing Paste from the Edit menu, choose Paste Special. In the resulting dialog box, click Values and click OK.
**Instantly convert to values**

Instead of using the Paste technique in the previous Secret, you can also instantly convert cells so that they contain only the result of the formulas they contain (and the formula is wiped out).

Select the cells and then click in the formula bar (or press F9). Then press your F9 key (if you have an extended keyboard) or press equal sign (=) does the trick.

**Prevent Excel from turning 3-12 into March 12**

Excel, in an effort to be helpful, automatically turns anything you type into a cell that can possibly be construed as a date as a date. If you type 3-12 into a cell, as soon as you press Enter, Excel displays 12-Mar. That’s all fine, until the day comes when you really want the cell to say 3-12.

The solution: enter it as a text string. Do that by creating a formula. Click the cell, type an equal sign, and then put the text you want in quotation marks. The 3-12 example, then, would be “3-12”.

**Excel and fractions: some nontrivial trivia**

Here’s an extension of the previous Secret. If you type 2/3 into a cell, Excel immediately reformats it as 3-Feb because it thinks you intended to type a date. Unless, of course, what you type can’t be a date, such as 18/3; in that case, Excel leaves 18/3 in the cell as a text string.

But if you type a zero and a space in front (example: 0 2/3), then Excel realizes that you really mean a fraction. If you type 0 18/3, therefore, Excel puts a 6 in the cell.

**Select nonadjacent cells**

You may already know that you can press the Shift key to select physically separate (noncontiguous) cells. This is great when you want to format a bunch of different columns at once — make them all bold, for example (see 19-7).

![Figure 19-7: Select nonadjacent cells.](image-url)
The real secret, though, is that you can use this feature to create charts that only use certain lines of data. Remember, the Chart Wizard only bothers to plot the points whose cells you have selected.

**Instant access to the invisible menu bar**

If you press `\` and Option and click a cell or selected region, you get a powerful, handy, pop-up version of the Edit menu springing out of your cursor (see Figure 19-8). Depending on what you click (a chart, a line, and so on), a different magical menu appears, listing appropriate editing commands.

![Figure 19-8: The Edit menu that springs out of nowhere.](image)

In fact, we prefer these hidden menus to the actual menu-bar menus. First, one of these menus can appear anywhere you click, which is a godsend when you're editing a huge spreadsheet, and you're miles from the top of the screen. Second, this isn't really the Edit menu. Its commands are gathered from several different menus, all the most useful commands stacked together into one handy place.

**Save time: don't bother finishing the parentheses!**

Excel automatically adds a closing parenthesis if you've typed an open parenthesis as part of a formula. All you have to do is press Enter and Excel does the rest.

**Use the F8 key for selecting regions**

By F8, we mean function-key 8 at the top of an extended Mac keyboard. (If you have a keyboard without function keys, such as the one on the PowerBook, you'll have to skip these shortcuts.)

When you press F8, you'll see the word EXT appear in the right half of the status bar. This means you're in Extend mode. Wherever you click the mouse or however you use the arrow keys (or navigation keys like Home or End), Excel will behave as though you're pressing the Shift key. What *that* means is that you're now selecting everything between the originally selected cell and the cell to which you're moving.
If you press Shift-F8, on the other hand, the word ADD appears in the status bar. Then you can drag across various regions of your spreadsheet. With each drag, you add new, noncontiguous regions to the selection, exactly as though you were pressing the $& key.

**Lotus stomping (version 3.0 only)**

In a new spreadsheet, press $&-right arrow and then $&-down arrow; you’ll jump to the very last cell in the immense spreadsheet. Use the scroll bars to scroll down and rightward until only a single cell is showing. Using the Row Height and Column Width commands, set the last cell’s height and width to zero.

Finally, click the tiny square that remains. You get a brief display of anti-Lotus Corp. propaganda, and then you’ll see a list of the Excel design team. To end the display, just use the scroll bars.

Our only regret is that this trick doesn’t work in Excel 4.0 or later.

**Page-numbering tricks**

Excel’s method of numbering pages has never been a model of intuitiveness. You choose Page Setup from the File menu and then click Header. Then you click in the right, center, or left text boxes. Then you click the page-number icon (with the # symbol on it). The notation $&p appears in the text box. This represents the page number.

If you add a plus or minus symbol and an additional number (such as +2 in Figure 19-9), then you can create a page number offset. That means you can force Excel to start numbering the pages with a number other than 1. (That’s handy if you need to print out an insert for an existing report, for example.)

![Insertion point in text box](image)

**Figure 19-9:** The circled notation means: “Start numbering my pages with the number 3, even though it’s the first page.”

Whichever number you type here gets added to 1. So to start numbering with page 5, you put $&P+4 in this box. To start numbering with zero, use $&P-1.
More page-numbering tricks

In the latest version of Excel, you have far less reason to type out the arcane codes needed for time-stamping, date-stamping, or page-numbering your printout. As we discussed in the previous Secret, you can just click one of the little icons in the Header or Footer dialog box to insert the correct code into the text box.

Usually you precede a code with the ampersand (&) symbol. For example, &L, &C, and &R make the text that follows the code left-justified, centered, or right-aligned, respectively. Then there’s &D, &T, and &F, which print the date, time, and file name.

But what if you really want to print an ampersand symbol? They think of everything: that code is &&.

Edit just one graph bar

To edit a chart, you double-click it. You can edit just one bar or slice of a chart, too, if you double-click it. That way you can change its color or its border style without affecting the rest of the chart.

Fill up, fill left

The Fill Right and Fill Down commands (Edit menu) have been classic time-savers. They let you copy the same number or formula into all the cells to the right, or below, the selected one.

If you press Shift while choosing these commands, they change to read Fill Up and Fill Left. They do what they say.

Show the formula in the cell

After you have typed a formula into a cell and pressed Enter, you normally see only the result in the cell. If you’d rather have your entire spreadsheet display the formulas themselves, press ~-tilde (~). In a blink, every cell will show the actual formula instead of the result (see Figure 19-10).

Figure 19-10: With one keystroke, you can make your spreadsheet show the formulas in their cells instead of the results.
Don't be alarmed: Excel widens the columns substantially to make room for viewing the longer formulas. Press the same keystroke again to restore your spreadsheet to its usual state.

**Insert rows and columns**

You may already know the Option-key trick for adding a row or a column: just Option-click the row or column header to introduce a new blank row or column (see Figure 19-11).

![Figure 19-11: If you Option-click the header of column D, you insert a new blank column. All existing columns get shoved off to the right.](image)

You can extrapolate this trick to perform some very useful stunts. The key is that Excel will insert a blank region identical to any group of selected cells. To insert a square of four cells, select a square of four cells while pressing Option. The four you select will be pushed to the right to accommodate the four new ones.

**Select in Microsoft dialog boxes**

Microsoft dialog boxes are especially handy because you don't have to use the mouse. You can usually type the letter — you don't even have to use the key — that begins the choice you want (see Figure 19-12).

![Figure 19-12: Type one letter of a button or box to activate it.](image)

In the dialog box pictured in Figure 19-12, for example, you can see why T activates Tiled. But why is O the trigger for Horizontal? Because H is tied up by the Help button, of course!
Going on: V is Vertical, N is None. In the next case, we give up on the logic: the A turns on Windows of Active Document and they haven't used up W yet!

So, they’re not always perfectly logical. But for the true power user who encounters the same old dialog boxes frequently, these one-key shortcuts, after you’ve learned them, can be a handy time-saver.

One corollary: In dialog boxes that have fields where you can type information in, such as the Print dialog box, you can’t just type the individual keys. In those dialog boxes, you have to use the $ key, too ($-O for Options, $-C for Cancel, and so on).

**Instant window resize**
As in all Microsoft programs, you can double-click the title bar of a window to make it fit neatly on your monitor. That’s a lucky shortcut if you’ve just opened a spreadsheet that was created on a much bigger screen.

**Stop Excel from stopping leading zeros**
If you type a number that begins with a zero, Excel automatically lops it off. Type in ZIP code 06520 (New Haven, CT), and Excel stubbornly displays it as 6,520.

Here’s the solution. Select the row or column containing these numbers. From the Format menu, choose Number. In the text box, type 00000 (all zeros) and click OK. You’ve just forced Excel to display a minimum of five digits for every number in the selected row or column. (Alternatively, you can format these cells as text.)

**Drag-and-drop**
One of Excel’s neatest features (version 4 and later) is that you can drag a selected block of cells, either to copy them or simply to move them. (You may recognize this feature from its invaluable counterpart in Word.)

Two obstacles may stand in the way of your making this work. First, choose Workspace from the Options menu and make sure Cell Drag and Drop is selected.

Second, you have to know where to drag. You can’t just click in the center of some selected cells. Instead, carefully position the cursor at the edge of the outline of the selected cells and drag that.

To copy the cells instead of moving them, press Option as you drag.

**Use the formula bar from the keyboard**
As all power users know, the less you have to use the mouse, the more efficient you can be. In Excel’s case, you almost never have to use the mouse.

One seemingly prominent exception: To edit a formula, you have to click on the formula bar, right? Nope. Use the handy shortcut $-U to jump up there. Then use the arrow keys to tiptoe through individual characters, or use the $-arrow key to jump through words or cell names. Press Shift as you use the arrow keys to highlight text and then press Enter when you’re finished editing.
Turn Excel into Excel for Windows

We think this is one of the wildest Excel Secrets of all time: Press the slash key (/) with an Excel 4.0 spreadsheet open and suddenly, without warning, you're catapulted into — Windows!

More precisely, the program switches to Windows-style menus and dialog boxes with keyboard shortcuts indicated by a single underscored letter in the name of each menu and command. Instead of using the mouse, you can open a menu by typing the appropriate one-letter shortcut, à la Windows. Each command on each menu also has a one-letter shortcut (see Figure 19-13). The Windows emulation disappears as soon as you actually perform a command.

By the way, you don't have to use the slash key to jump into this Windows mode. The slash is Excel's default setting, but you can change it; just choose Workspace from the Options menu. In the resulting dialog box, type a new key into the Alternate Menu Key field.

Figure 19-13:
What's this? Excel for Windows? No. It's Excel 4.0 after you've popped it into Alternate Menu mode.

Quicken

We'll make no bones about it: we love Quicken. This is one of the fastest, slickest, best-designed programs we've ever seen — and it's only about $35 from any overnight mail-order company like Mac Connection.

It's a phenomenal checkbook/finance program, of course. And its supercharged report facilities are critical at tax time. With one command, you get an exportable or printable list of every expenditure you made in any particular category (home repair, auto expenses, and so on). When your monthly statement comes from the bank, you're one cool cucumber: Type in the new balance, click off the checks you see reported, and Quicken practically reconciles your checkbook for you. You do absolutely no math.
Quicken Secrets

Make your own keyboard shortcuts

Is there a Quicken command that doesn’t have a keyboard shortcut? While pressing the % key, choose that command from its menu. You get the little dialog box in Figure 19-14, in which you can specify a keyboard shortcut of your own choosing.

What’s even handier is that you can use the same trick to change the keyboard equivalent for a command that does have one preassigned or even delete the keyboard equivalent altogether!

Scroll bar indicator

When you’re hunting for a transaction by its date, don’t waste time scrolling through all your transactions and scanning the date blank. Instead, drag the box in the vertical scroll bar at the right side of the window. You’ll see a little pop-out date indicator that rapidly changes as you slide up the scroll bar. It’s a much quicker way to hone in on a certain date (see Figure 19-15).
**Type to select**

The various Quicken lists work just like lists of files in the Finder. That is, if you type the first letter or letters of the items you’re looking for, the window scrolls directly to it. Try it, for example, in the Category, Memorized Transaction, or Account lists.

**One-key Category-window splitting**

Quicken versions starting with 3.0 let you subdivide a particular transaction into any number of categories. For example, in one credit card payment, you may want to record payments for office supplies, work-related publications, and a medical expense.

Trouble is, to see your categories, you have to click the Split button at the bottom of the screen. The same goes with collapsing the category list, too — again, you have to click the Split button. That’s a lot of mousing.

But not if you realize that there’s a keyboard shortcut for clicking the Split button. It’s ⌘+E.

**Let Quicken finish your transfer typing for you**

To indicate a transfer of funds from one account to another, you’re supposed to put the name of the other account in the first one’s Category blank in [brackets].

If you’ve only got two different accounts (or not very many, anyway), you can get by with just one left bracket and the first letter or two of the other account’s name.

If you’re transferring $100 from Savings into the Checking account that’s open on the screen, for example, you put 100 in the Deposit blank. Then, in the Category blank, just type ⌥ and Quicken will expand it to the full /Savings/.

**Fast incrementing**

Here’s the feature that shows how much the Quicken programmers pay attention to details. When you click in a field to type the date or the check number, press the + or − key (either on your numeric keypad or the regular keyboard) to increase or decrease the number that’s already there. If you hold down the + or − key, the number starts to increase or decrease more rapidly the longer you hold the key.

When you learn how naturally and conveniently Quicken increases the speed of number-changing, you should be able to home in on a date that’s several months away in only a few seconds.

**Date entry shortcuts**

Quicken has some of the cleverest data entry shortcuts we’ve ever seen. To enter the current date in any date field, you can type (T for Today). To enter the first or last day of a month, type M or H (MontH, get it?). Years work the same way — pressing Y enters the first day of the year, and R enters the last day of the year.

Using these shortcuts, the appropriate dates are filled in instantly; you don’t even have to press Return or Tab.
FileMaker and ClarisWorks

Now we move on to data crunching. FileMaker is the leading Mac database program. It strikes the ultimate balance between flexibility and simplicity. Its built-in MacDraw-like mode lets you design elaborate graphic front ends for your data screens. Its lookup feature lets one file consult another file (one that’s not even open) to retrieve a piece of information. You can even share a file among computers on a network, even if some are Macs and some are PCs.

The classic, magnificent aspect of FileMaker, however, is its layouts. You can rearrange the same information into as many different graphic arrangements as you want. Figure 19-16, for example, shows three different ways to organize the same set of mailing information. Yet the list was only typed in once. And you can flip instantly between any of the three views.

Here are our favorite FileMaker Secrets. We trust you know that a field is one blank for information (such as First Name) and that a record is a complete "card" of information (such as the entire mailing address).

Oh, and by the way, if you’ve ever used ClarisWorks, you know that its database mode is modeled very much on FileMaker. (Same company, same interface ... no wonder!) Therefore, plenty of these tips apply equally well to both FileMaker and ClarisWorks. We’ve marked the ones that work with ClarisWorks, too.

FileMaker/ClarisWorks Secrets

Keep records permanently sorted (ClarisWorks, too)

One frustrating aspect of FileMaker has remained through infinite incarnations of the program, right down to its present-day FileMaker Pro form: its maddening refusal to keep records sorted!
You can sort records in any number of ways. But if you re-open a file, or you return to a layout, chances are good that the records have all sprung back into their original out-of-order order. You can use the Sort command over again, but that’s time consuming.

Here’s how to freeze your records into their sorted order. First, sort the file. Choose “Save a Copy as” from the File menu. Choose “clone (no records)” from the pop-up menu at the bottom of the Save File dialog box. Name the new, empty file something — Sorted List, for example.

Next, open that empty file you just created. From the File menu, choose Input/Export; from the submenu, choose Import Records. Select the original file. A dialog box appears, listing all the field names; just click OK.

You end up with an identical file, in which the fields are finally sorted for good. As you add new records, of course, they’ll get out of order again (unless you read the pertinent Secret below). But this cloning business is so quick that you can afford to repeat it every so often to keep things in shape.

**How to make records go into sorted position**

Of course, another way to keep records in sorted order is to add them in sorted order. The New Record command always inserts the new blank record immediately below the currently selected record. Suppose that you have three records called Cat, Dog, and Frog. If you want to insert a record called Elephant, click the Dog record to select it. Then choose New Record. The blank new record appears in its correct alphabetical position and will always remain there until you sort the file some other way.

**How to prevent a field from being left blank (ClarisWorks, too)**

Choose Define Fields from the Select menu and double-click the field’s name. On the right side of the dialog box, select “not empty” (see Figure 19-17).

Click OK and then click Done.

**How to find completely empty records**

Choose Find from the Select menu. Type an equal sign into every field. (You’re searching for a match in which every field is equal to nothing.) Click Find. Only completely empty records will appear.
Sort a value list

FileMaker helps speed data entry along by letting you set up a value list for a particular field: a list of possible entries. For a state field, for example, the value list might show all 50 states, so a double-click enters the state name and no typing is required.

FileMaker gives you no way to sort the entries in a value list, however. Here’s our suggestion: copy them into a word processor that has a Sort command, such as Microsoft Word. Sort them and then paste them back into the Define Fields dialog box's Options box.

Index tips

FileMaker’s speed is due in large part to its indexing system. Internally, the program keeps a high-speed list of the contents of each field: an index.

To see the index for a certain field, select it in Browse mode and press Shift-I. A list window appears, showing every value you ever entered for this field (see Figure 19-18).

Figure 19-18:
The Index for a field.
You can slap any one of these items into the current field by double-clicking it or selecting it and then clicking Paste.

The index, however, is composed of only the first word (in this field) in every record. That means that in a list of city names, you’ll see New instead of New York, Las instead of Las Vegas, and so on.

But if you take care, when entering this information, to put an Option-space between words, then the index will correctly show the entire two-word “word.”

Avoid the “Are you sure?” message when deleting (ClarisWorks, too)

Here’s a handy trick that works in most Claris products (FileMaker, ClarisWorks, and so on).

Whenever you do something that throws away data — such as deleting some records — FileMaker displays a warning message. You physically have to click OK (you can’t just press Return or Enter) before proceeding. But if you’re deleting dozens of records from a file, one by one, those warning messages can get plenty annoying.
The trick: Press Option as you choose the Delete command (or in addition to the keyboard equivalent of Delete). You’ll get no confirmation message.

Remember, though, that FileMaker is one of the Mac universe’s few auto-saving programs. It has no Save command at all. If you delete a record, therefore, nothing will bring it back. Undo does not work after you delete records, and you can’t revert to an unsaved version of the file, as you can with most other programs.

**Extra screen space (ClarisWorks, too)**

If you’re working on a Plus, SE model, or Classic of any ilk, screen space is at a premium. Get into the habit of hiding the entire panel at the left side of the screen (see Figure 19-19).

The control for hiding and revealing FileMaker’s left-side panel is the tiny icon at the bottom-left of the window (to the right of the zoom controls). Click once to hide the panel. Click again to make it reappear.

**Make files smaller**

As your database gets huge, consider taking a moment to save it as a compressed form. You can sometimes shave a sizable percentage off the file’s size on disk using this procedure.
Just choose Save a Copy As from the File menu. From the pop-up menu at the bottom of the Save File dialog box, choose “compressed (smaller).” Give the compressed version of your file a new name and then click Save.

This process can take time, but you can bring a different program to the front and let FileMaker run in the background. The result is a copy of your file that’s often much smaller.

**Invisible buttons**

In Layout mode, you can create a button whose fill and outline are both transparent. Using the Define Button command (Scripts menu), you can define this invisible button to do any number of things: sort the file, print it, and so on.

One of the most useful possibilities is to superimpose your invisible button on top of a field. When you click the field, you can have the layout change to a help screen, for example (another layout, in other words).

The disadvantage to that approach is that a field that’s been covered by an invisible button can’t be clicked for editing purposes (although it can be tabbed into). Instead, consider laying the invisible help button on top of the field’s name.

**Look up only one record**

You can set up a field in a FileMaker database that gets filled in automatically by consulting another FileMaker file. This is the famous lookup function.

When you type a customer ID number into an order blank, for example, FileMaker consults your master customer name-and-address file and automatically fills the name and address into the order blank.

But this lookup function is one way, one time. If you change the spelling of someone’s name in your customer list, the change doesn’t ripple through to the order blank.

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**TRUE FACT**

**FileMaker’s very new math**

Here’s one of the odder bugs we’ve spotted in a major best selling program. If you set up a serial number for your records, keep it under 10 digits. Here’s what FileMaker does if you establish a ten-digit serial number and tell it to increase the number by 1 with each new field:

<table>
<thead>
<tr>
<th>Serial</th>
<th>In fact, any number over 2111111111 or so will come out garbled when FileMaker tries to increment it automatically.</th>
</tr>
</thead>
<tbody>
<tr>
<td>3456789999</td>
<td>838177296</td>
</tr>
<tr>
<td>Serial</td>
<td>Serial</td>
</tr>
</tbody>
</table>
Of course, the Edit menu contains a Relookup command. With that order-blank file open, you can choose Relookup; FileMaker consults the customer file, compares those ID numbers again, and pastes the updated address information into the order blank.

Here's the tip, though. Instead of waiting while FileMaker scans every single record in the file, looking for records to update, you can force it to look up only one record. To do so, just edit some tiny aspect of it. Type a letter, for example, and then immediately delete it. Press Enter and FileMaker will look up only the record you just changed.

**Change a field's identity without disturbing its format**

When you're designing a layout, you may find it tedious to repeatedly use the font, size, and style submenus to customize the formatting for each field. You can cut down on the amount of field-formatting if you keep the following three tricks in mind.

First, format one field to the hilt. Then Control-click it. From now on, any new fields you place on the layout will share the formatting of the first.

Second, remember that you can Option-drag a field that's already been formatted. When you release the mouse, a list box appears, in which you can choose a new field identity for the formatted copy you created.

Finally, if you Option-double-click an existing field, the same little list box appears, from which you can select a field to replace the one you clicked. The replacement field remains exactly where the old one was, and it retains exactly the same formatting; only its identity changes.

**Ignore the grid**

In an earlier chapter, we pointed out that you can drag icons in the Finder so that they snap to an invisible grid if you press the Control key while dragging (if the grid, in the Views control panel, is not turned on). If the grid is on, then Control-dragging has the opposite effect — it lets your icon dragging ignore the grid.

In FileMaker's Layout window, it's the same story. Press Control as you drag an object or a field; you can position it freely, without being affected by the grid or the T-square lines.

**On-line chatter over the network**

A FileMaker file can be shared over a network. You can use this feature to clever advantage by setting up an on-screen two-way (or more-way) CB radio.

Create a new FileMaker file. Create one field, called something like Two-Way. Make sure the file is shared on the network.

That's all there is to it! Type a message to your coworkers into this field and press Enter. Instantly, the message appears on all their screens. They can respond either by deleting what you typed there — or adding to it (see Figure 19-20).
Move parts over each other or get rid of a part

In the Layout view, you can get rid of a Part completely. (How often do you really use the Footer Part?) To do so, drag it straight up to the top of the window... and off.

But how are you supposed to get rid of the Footer if you can't drag it past any other Part, fields, or graphics? It's easy: hold down Option. The Option key lets you drag any Part past any other.

Design a layout for the Classic-sized screen (ClarisWorks, too)

Suppose that you have a nice big monitor, and you're trying to design a layout that will work equally well on compact Macs like the SE and Classic. It's hard to guess exactly how big to make the layout.

But Claris has done the work for you! Choose Help from the Apple menu. The Help screen is exactly the correct size for the compact Macs. Use this window as a model for sizing your own layout.

See the fonts without their faces (ClarisWorks, too)

When FileMaker Pro shows you its font menu, each font is displayed in its own typeface. That's usually useful — except when you're trying to distinguish among more than one all-symbol font, such as Zapf Dingbats or Symbol.

To see the font list in good old Chicago 12-point, press $6 as you pull down the menu. (This may not work if you're using Suitcase II.)

Define a default font and style

If you consider the order of events in creating a FileMaker database, it may appear that there's no way to establish a default font for the fields as you create them. After all, you first go to the Define Fields dialog box, where you type their names, and then click Done. Only then are you allowed to go to the Layout mode where the Font commands are located. But by then it's too late; FileMaker has already assigned them a default font.
Here's the trick: when the Define Fields dialog box first appears, click Cancel. Then go to the Layout view. Of course, it's completely empty. Use the Format menu to choose a type size and style — with nothing selected.

Then after you choose Define Fields from the Select menu, create your fields and click Done. Your new fields will be born with your favorite typeface, all ready to go to work for you.

**Avoiding and eliminating duplicate names**

Using FileMaker's calculation powers, you can set up your mailing-list database with the same duplicate-avoidance scheme used by magazines and mail-order companies worldwide.

Set up a *match code* field. Define it to be a calculation field. The calculation looks like this:

\[
\text{Match Code} = \text{Left(Last Name,3)} \& \text{Left(Street,3)} \& \text{Zipcode(Text Result)}
\]

The match code produced for an address like Alison Panico, Box 2234, Chesterton, NY 10299 would be *Panibox10299*. The chances of there being another address that produces this exact match code are infinitesimal.

When the day comes that you want to ferret out duplicate names, use the Find command and type a ! into the Match Code field. FileMaker will immediately display all duplicated records. Sort them and start weeding out the ones you don't want. (If you'd set up FileMaker to auto-enter each record's date of creation, by the way, figuring out which address version to keep could be easier.)

Incidentally, match codes aren't foolproof. You can certainly tell that by the fact that, despite them, you do get duplicate junk mail. Still, they're a great way to get a running start on controlling duplicate records.

**Locking and toggling tools in Layout view**

If you've ever had to draw a series of objects on a form in Layout view, you know how irritating it can be that your tool selection keeps defaulting back to the arrow tool after you draw each object. If you want to draw a series of boxes, for example, you have to keep reselecting the rectangle tool after you draw each box.

There's an easy way to avoid this: Choose Preferences from the File menu and select the "Always lock layout tools" option (see Figure 19-21). Then any tool you have selected will stay selected until you click another tool. If you do want to switch back to the arrow tool temporarily, just press the Enter key. And to switch back to your originally selected tool after that, press Enter again.
Incidentally, if you don't have the tool lock option turned on, you can still use the Enter key to toggle between tools in Layout view. Pressing Enter while the arrow tool is selected will switch you back to the last tool you had selected.

*Figure 19-21:* After a tool is selected, it stays selected if you turn on the tool lock option.

**Escaping from the Define Fields dialog box**

When you're setting up fields in the Define Fields dialog box, it may seem natural to select the Enter key to dismiss the dialog box when you're done — but that doesn't work. Instead of closing the window (as it does in the dialog boxes for setting up entry options, values lists, and lookups), the Enter key opens the Options dialog box. There is, however, a keyboard shortcut that will dismiss the Define Fields dialog box — press the Esc key.
Chapter 20
Graphics

In this chapter

- The three kinds of Mac graphics programs
- Painting, drawing, and PostScript-graphics tricks
- Insights on ClarisWorks, Photoshop, MacDraw, and Canvas
- Tricks for FreeHand and Illustrator
- PICT, TIFF, EPS, GIF, and startup screens

Macintosh graphics — that's almost redundant. Yes, Macintosh is graphics. Images put the Mac on the map. And with every passing day, more of the artwork that you see around you — ads, posters, album covers, product packages in the grocery store, book covers (including ours) — all are being designed on the Macintosh. Furthermore, with the recent explosion of cheap color printers, more and more homemade art will look even more professional.
Types of Macintosh Graphics Programs

There are three kinds of Macintosh graphics programs: painting, drawing, and PostScript graphics. Each graphics program is designed to create exactly one of these types of art. Normally, you can copy and paste pieces of art between the different kinds of programs, although you may sacrifice flexibility (we'll get to this later).

Painting

Remember, the three different art types have to do with how the computer thinks of your art. In the case of painting programs, the Mac thinks in one-pixel units. (A pixel is one screen dot.) Therefore, to display a beautiful zebra in MacPaint, the Mac memorizes the exact status — black or white — of each of 472,320 pixels. (That's how many are in an eight-by-ten painting, which is MacPaint's maximum "canvas size").

In other words, the Mac stores what amounts to a map of your screen. It remembers the precise locations of all the black dots. Painting programs, it's therefore said, generate bitmapped graphics.

When you lay down some "paint," you turn white pixels black. You can erase them, but you can't change the original shape you painted — a circle, say, or a letter of the alphabet — because the Mac no longer thinks of them as a circle or a letter of the alphabet. On the other hand, you have control over each individual dot. You also have special pixel-manipulation tools like the Spray Can and the Lasso (see Figure 20-1).

Figure 20-1:
Here are two graphics that can be created in a painting program. First, the crack in the left figure is drawn with a Pencil tool, which turns individual pixels black. On the right, a chunk of the painting is being pulled away after having been selected by the Lasso tool. Drawing programs don't have a Lasso tool.

Most painting programs have the word paint in the title: MacPaint, SuperPaint, UltraPaint, Amazing Paint, and so on. HyperCard's art tools are also painting tools. ClarisWorks versions 2.0 and later have a painting window. Believe it or not, the most expensive and powerful graphics program of all, Adobe Photoshop, is a painting program too — actually a very, very, very sophisticated version of MacPaint.

Painting pointers

We can't honestly claim that any of the following are secrets anymore. Paint programs have been around for so long, and they're essentially so simple, that not much in the way of unpublicized features remain.
But here, for reference, are the eight key paint-program tips, in case you don't know them. These work in any program whose name ends with 'Paint, in HyperCard, and in the bitmapped modes of UltraPaint, Canvas, and ClarisWorks.

- Option-drag a selected region to peel off a copy.

- If your Paint-bucket Tool unexpectedly fills in the entire screen with your selected pattern, immediately choose Undo. Zoom in on the outline of what you're trying to fill in, find the gap in the outline (through which the "paint" is spilling), and close it up before trying again (see Figure 20-2).

![Figure 20-2:](image)

- Choose a pattern and line thickness (from the corresponding palettes or menus) before you paint a new shape. You can't change your mind after drawing the new element unless you Undo the whole thing.

- In some paint programs, you can double-click an object with the Lasso tool to select just that object (if it's distinct from the rest of artwork).

- Press the Shift key as you drag across the painting area to constrain your mouse movement to a perfect horizontal or vertical line.

- In most paint programs, you can double-click the Paintbrush tool icon to access a palette of brush shapes.

- Most paint programs have a quick shortcut for erasing the entire window: double-click the Eraser.

- Look for a built-in shortcut to enlarge the entire painting window: either double-click the Pencil tool (ClarisWorks, for example) or, with the Pencil selected, ⌘-click the artwork (MacPaint, for example).
Editing high-resolution bitmaps

As a general rule, our statement that paintings suffer from low resolution — the same 72 dpi of the screen — holds true. Some programs, though, such as ClarisWorks, Canvas, Color It (which comes with this book), and Photoshop, are not confined to the usual 72 dots-per-inch resolution. You can change the painting to any resolution. If you set your painting to 300 dpi, for example, you can actually edit every dot your standard laser printer is capable of putting on the page.

High-resolution paintings take up many megabytes of memory and disk space, however. (Remember, a bitmap is nothing more than a database of the pixels on the page and a record of the color of each. The more dots the Mac has to track, the larger the memory requirement.) For example, a six-inch, 256-color, 300-dpi ClarisWorks painting requires 13 MB of memory.

MACINTOSH SECRET

That cool embossed text look

This clever Secret works in any kind of graphics program — painting, drawing, or PostScript. The only requirement is a choice of colors or grays, and some text that you want to make classier.

Create the text block. Make two copies, so that there are three in all: one dark, one light, and one the color the background will ultimately be.

The tricky part is positioning these three blocks of text in three dimensions simultaneously. The blocks are staggered diagonally from left to right — but they're not stacked back-to-front as you may think. Instead, the center text (the background color) is in front of the others, even though it's not the rightmost block. The figure below, we hope, clarifies the situation.

Darkest type: at back, and leftmost

Background type: front layer, but in centered side-to-side

Light type: Sandwiched (layer-wise), but rightmost

You're Invited

The background-colored type should overlap the others — it's on top — but it's not the lower-rightmost text block. After you figure out this situation, drag them closer and closer to each other until they are separated by only a pixel or two.

You're Invited

When the three text blocks are nearly superimposed, group them, and then put them against the colored background (which matches the center text), and you're done.

When you put this text sandwich on top of a background color that matches the center (frontmost) text, you have that embossed look that makes the lettering seem to pop right out of the screen.
ClarisWorks

Starting with Version 2.0, this integrated program includes a pretty decent, built-in paint program. It actually handles color, grays, and resolutions up to 360 dpi. With that much power, it could almost be called a cousin of photo-retouching powerhouses like Photoshop.

A word about memory, however. The size of a ClarisWorks painting is determined by the amount of memory available to the program. Weirdly enough, when you first install it, the program's default memory allotment isn't even enough for you to create a letter-sized painting. (When you open a paint document, ClarisWorks beeps and displays a message, letting you know that you'll get only a shrunken painting area because of the memory shortage.) Use the Get Info command (as directed in Chapter 8) to increase the ClarisWorks memory size. (We found that ClarisWorks 2.0 needs a memory size of 1600K to open a full-page painting document without complaining.)

ClarisWorks paint Secrets

Secret selection powers of the Lasso and Marquee
If you either double-click the Lasso or ⌘-double-click the selection rectangle tool, you select all dark areas of your painting at once.

Instant Eyedropper selection
The Eyedropper tool is used for color matching. If you've already used a color in a painting, and you want to use it again, click the painted color with the Eyedropper. The fill-color palette changes to match the color you click.

Since you use this tool often in color painting work, ClarisWorks has a keyboard shortcut: press Tab. (Press it again to switch back to your previous tool.)

Multiple magnifications at once
You can use ClarisWorks' New View command (View menu) to open a duplicate window of your work. You zoom in or out in this new window independently of your original window. It's also useful for doing detail work (at 400 percent, say) and keeping your eye on the piece as a whole at the same time. Using this technique in conjunction with the Tile Windows command, you can actually view your work at more than two levels of magnification at once, if it helps you.

Adobe Photoshop

This program is a huge, expensive ($900), professional-level masterpiece of a color paint program. It's a fantastic accompaniment to a scanner; it lets you retouch a photo, combine elements of different photos, or forget about photos and simply use it as a potent electronic illustration canvas.
With all of its heavy-duty image processing capabilities, Photoshop can make tremendous demands on the Mac. Even on a faster Macintosh, applying some of the program's image processing filters can mean lots of waiting. Fortunately, Photoshop was one of the first programs to be upgraded for optimal performance on a Power Macintosh; the program's main components have been rewritten to run in the Power Mac's native mode. The upgrade means a quantum leap in the speed with which Photoshop can manipulate high-resolution images. (Not every one of Photoshop's various plug-in filters are optimized for the PowerPC chip, however. Certain components that perform specific visual effects — the Spherize and Twirl filters, for example — still run in emulation mode. See Chapter 13 for more on running the Power Mac in native vs. emulation mode.)

Photoshop Secrets

24-bit color on an 8-bit monitor

If you read Chapter 11, you know that the title of this Secret is an impossibility. After all, an 8-bit monitor — the kind the vast majority of Mac owners have — can only show 256 colors at a time. If you try to open up something you scanned in 24-bit color, or a 24-bit PICT file, it will show up looking dithered (the Mac tries to re-create colors it can't show by alternating dots of colors it can show).

Still, you can convert any 24-bit color image to a dazzling 8-bit one, for those times when a photo has to look as good as possible. Just choose Indexed Color from the Mode menu and click OK. As Figure 20-3 shows, the result is pretty close to looking like full-fledged 24-bit color, even on an 8-bit monitor!

![Figure 20-3: Is it live or is it fake 8-bit color? The first gray-scale image is what you see if you open up a 24-bit picture when using an 8-bit monitor. The rightmost image is genuine 24-bit gray scale. The middle image — which looks very similar to 24-bit — is the same 8-bit monitor, but uses Photoshop's Indexed Color mode. (We used gray scale here, but the principle is the same for color.)](image)

Crosshair cursors

Each painting tool has its own icon: the Pencil is a pencil, the Paintbrush is a brush, and so on. Press the Caps Lock key to turn the cursor into a crosshair, if it helps you work with more precision. (Press it again to restore the original cursor.)
Multiple windows for extra flexibility
Use the New Window command from the Window menu to create a duplicate window on your artwork. Each window can be zoomed independently. You can change the view of each in other ways, too: view different combinations of channel information, for example.

Quick before-and-after views in dialog boxes
Here’s one of the simplest but least-known Secrets: Whenever you make some adjustments in a dialog box — the Curves or Levels dialog boxes, for example — you can compare the new setting with the original by holding the mouse down on the window’s title bar. When you release the mouse button, the image snaps back to the new setting you made in the dialog box.

Zooming shortcuts
You can zoom in or out of the artwork even if there’s a dialog box open on the screen! Press §§-space bar and click on whichever portion of the illustration you can see. (Press Option-space bar and click to zoom out.) On the other hand, if you press §§-plus or minus to zoom in or out, the window gets resized, too, which is often more convenient.

Those shortcuts also work when a dialog box isn’t on the screen, by the way. Shortcuts are especially handy because the Zoom tool doesn’t have to be selected.

Double-click the Hand-grabber tool to make the illustration fill the window. (It’s the equivalent of PageMaker’s Fit in Window command.)

Double-click the Zoom tool, on the other hand, to make the artwork jump to actual size, whatever that may be.

Selection Secrets
To an extent, Photoshop’s Lasso and Rectangular-selection tools work as they do in any other painting program, but you can do much more with these. After you select something, for example, you can §§-drag inside the selection to deselect a portion of it.

If you Shift-drag, you can add more selected material, even if it’s in a different part of the window.

After you select a region (or several), drag inside the selected region to move the region. But if you §§-Option-drag, you can move just the selection outline (the shimmering border) and not disturb the artwork.

Change opacity while painting
This Secret’s title says it all. After the Brush tool is selected, you can change its degree of opacity without having to use the Brushes palette — just press a number key on your keyboard, from 0 (solid black) to 1 (barely perceivable — 10 percent black).
The greatest paint program of all?

Ask any grizzled, tanned Mac veteran to name the five greatest Mac programs of them all. If this person knows his or her salt, one of the five is bound to be...Kid Pix.

Kid Pix? Yes. This $30 kids' color paint program from Broderbund is one of the most inspired and perfectly executed Mac programs ever written. Each painting tool makes a sound — once when you click it, and continuously while you paint with it. The Kid Pix canvas fills your screen, so you can't accidentally lurch back into the Finder because of a wayward click outside the document window. Even the menu commands have little icons to indicate their functions. Did we mention the Tree Tool? One click and you have a fabulous fractal-generated tree — different every time.

Comet trails

Here's a really cool trick from John Knoll, one of the original Photoshop programmers.

Double-click the Brush tool and set the Fadeout to, say, 40. Click OK. Then click to create a comet head; Shift-click a few inches away to mark the tail point. Photoshop draws a terrific comet. Repeat the process with a lighter color inside the first comet to give a fiery look (see Figure 20-4).

Hide the palettes

Press Tab to hide all the on-screen palettes for a better view of your work. Press Tab again to bring them back.
Secret Text lasso and kerning

In Photoshop, as in any bitmapped program, text isn't really text; it's just a collection of pixels arranged to represent text. That fact makes editing text difficult. (That's why Adobe promotes using Photoshop in conjunction with Illustrator, which has astounding text-manipulation features, and which can export to Photoshop.)

Photoshop has a couple of tricks, though, to make working with text easier. After you create some text, but with the text tool still selected, you can press $€$ to turn the cursor into a lasso (see Figure 20-5).

![Figure 20-5: The secret lasso: use it to kern.](image)

Using this text lasso, you can deselect any of the letters in the text. Then use the arrow keys (or the mouse) to push the remaining letters closer to, or farther from, the ones you just deselected. This is kerning, folks. (See Chapter 24 for more on kerning.)

Power selecting

Newcomers to Photoshop may feel dismayed that the Lasso tool doesn't shrink to enclose what's inside it, as the Lasso tool does in any other painting program. Furthermore, there doesn't seem to be any way to make polygonal selections. (Even SuperPaint lets you make polygonal selections!)

Actually, both features are at your command. For the shrinking lasso, first select the general region containing the object you want (see Figure 20-6), using the Lasso or Marquee tool.

![Figure 20-6: The snapping-lasso trick, adapted to Photoshop.](image)

Then select the Magic-wand tool. Place it inside the selected region. It turns into an ordinary arrow cursor, which doesn't do you much good — unless you press the $€$ key! Then it turns back into a magic wand. Click the background (still inside the original selection). You just selected the solid objects inside the original selection, exactly as though you had lassoed them.

As for the straight-sided lasso trick we mentioned: it's easy. Just press Option as you click at the corners of the polygonal area you want to grab (see Figure 20-7).
You may have to look closely at this image to see the straight-sided marquee being created by the lasso. By pressing Option, you can create any kind of straight-sided selection, no matter how odd-looking.

**Two hidden information screens**

The little file-size indicator at the lower-left corner of the screen conceals two different panels full of useful information (see Figure 20-8).

If you click on this indicator and hold the button down, you get the Page Preview (see Figure 20-9). If you Option-click here, you get a panel showing the dimensions, resolution, and number of channels for the active window.

With all its power and might, Photoshop may not seem as though it has any features in common with the lowly MacPaint. But here's one:

When the eraser is selected, Option-dragging it across the image doesn't erase it; instead, it reverts the dragged-over portion to the way it was the last time you saved the document.
Faster filling

Much of the time, you use the Edit menu's Fill command simply to fill in the selected region with the foreground color. Instead of using the menu for this purpose—including OK'ing a dialog box—just press Option-Delete. That fills the selected region with 100 percent of the foreground color.

Roll credits...twice

Adobe may think it owns Photoshop. But if you press Option while choosing About Photoshop from the Apple menu, you'll find out what the programmers really think. Furthermore, if (in Version 2.5) you press ⌘ while choosing About Photoshop, you get to see the "Double-secret About box!"

Drawing

Painting programs create bitmapped graphics. Drawing programs, on the other hand, create what are called object-oriented graphics. When you draw a circle in one of these programs, the Mac doesn't store it as a map of black dots. It remembers that you drew a circle of a fixed shading and size. That means that you can never speckle it, and you can certainly never erase (or remove) a chunk of it.

Drawing program advantages

But there are two powerful advantages to drawing programs. First, objects remain objects. After you draw a circle, you can return to it later and move it by dragging it. You can overlap another object on top of it—and later change your mind. You can change a circle's shading long after you drew it. Or, as shown in Figure 20-10, you can tug a shape's handles to stretch it.

Figure 20-10: In an object-oriented (drawing) program, objects remain distinct after you draw them. You can bring one object in front of another (note how the circle has been sent behind the rectangle in the second figure), and you can reshape or resize objects.

The other gigantic advantage of drawing programs over painting programs is the printouts. As you probably know, the resolution (number of dots per inch, and therefore clarity) of every Mac printer sold today is greater than what you see on the screen. So every printout looks smoother and sharper than its on-screen counterpart.
ANSWER MAN

Color lookup tables

Q: What's a CLUT? Why do my title bars, menu bar, and desktop patterns go wacky when I open a color file in Photoshop?
A: If you have an 8-bit monitor (see Chapter 10), your screen can only show a total of 256 different colors. Your Mac starts out life with a certain specific rainbow set of 256 colors. These are the colors used in your icons, in the colored Apple menu apple, and in the Label menu. These factory-set colors are called the system palette. (Want to see them all at once? Open your Monitors control panel. There they are, displayed in the lower-left corner.)

But what if there's a picture you scanned of a stunning sunset? If that file had its choice of which 256 colors to use, it would use 256 variations of red and orange. It wouldn't waste one single one of its precious 256 colors on useless hues like blue and green.

Thus, this one image has its own private set of 256 colors — a color lookup table for the Mac's benefit. (Color lookup table: CLUT.) When Photoshop or some other paint programs first open a document with its own CLUT, the paint program has to jettison the system palette — your Mac's basic set of 256 rainbow colors — from its little head. For one fleeting moment, you see the system palette (the colors used in your menu bar and desktop) being purged by the influx of new colors.

Every one, that is, except bitmapped artwork. A printout from a painting program looks every bit as jagged on paper as it did on the screen. But when the Mac prints from a drawing program, it doesn't tell the printer "three black dots, then a white one...". Instead, it says: "A square, one inch tall." The printer can now put on the page a square, one inch tall, at its (the printer's) much higher image quality. Figure 20-11 shows the identical artwork. One piece was drawn in ClarisWorks' painting window, and the other was done in its drawing window.

Figure 20-11: The identical graphic, done as a bitmap (top) and as object-oriented art (bottom).

Selecting and grouping multiple objects

In the Finder, after you click one icon, you can select additional icons by Shift-clicking them. It works the same way in drawing programs: click to select one object, Shift-click to select others.
After you have selected several objects, you can **group** them — combine them into a single new object — using the Group command. You can even group groups. Of course, you can **ungroup** a group, or even ungroup a grouped group of groups. Drawing programs ungroup objects in the reverse order from which they were grouped.

Another advantage of groups: when you stretch the handles of a grouped object, the entire thing stretches together (except for text, in most programs).

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**Universal drawing-program Secrets**

**Publish and subscribe to yourself**

Don’t scoff at this title; we’re mighty proud of this trick.

We refer, of course, to using the publish-and-subscribe feature (see Chapter 16) to create intelligently linked copies within the same document. A classic case is the business card. Design one in the upper-left corner of your document. Then publish it, and subscribe to it 11 times, enough to fill a letter-sized page. Then, if you have to make a change, you just change the first one, and all the copies change, too. Try it with tickets, invitations, houses in a development, and so on.

MacDraw, ClarisWorks, Canvas, and most other modern drawing programs have Publish and Subscribe features.

**What the Shift and Option keys do**

Press the Shift key when you drag something to keep your mouse movements confined to perfectly horizontal, vertical, or (sometimes) diagonal lines. That’s handy when you draw a line (keep it flat), or make a copy of something (keep it aligned with the original), or draw a geometrical figure (keep it perfectly square or circular).

We noticed one inconsistency among drawing programs: in some, you must press Shift before you begin the mouse movement. In others, you have to press Shift after clicking but before starting to move.

Oh, then there’s the Option key: in most (non-Claris) drawing programs, pressing the Option key as you draw a circle, square, or regular polygon draws it from the center instead of the edge (see Figure 20-12).

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*Figure 20-12:* Normally, you create an enclosed geometrical figure by dragging from diagonal corner to corner (left). But with the Option key pressed (right), you start drawing from the center and the shape billows outward from there.
Add an arrowhead to anything

Here's a classic cheat. Some drawing programs have an option that lets you finish any straight line you draw with an arrowhead.

Unfortunately, you can't add an arrowhead to a line that's not straight. Our workaround is shown in Figure 20-13.

**Figure 20-13:**
Suppose that you want to add an arrowhead to a curvy line, as shown at top. First, zoom way in; blow the detail up to, say, 800 percent. Draw a very short straight line (bottom left). Tell the drawing program to put an arrowhead on the line (bottom middle). Then drag the arrowhead onto the end of the curved line and group them together (bottom right).

Stretchy text

All those wild, super-skinny and super-fat text effects you see in Macintosh magazine ads are easy to do — if you know the Secret. Type up the text in a drawing program. Copy the text block and paste it into your word processor or page-layout program. Then you can grab its handles and stretch it in any direction (see Figure 20-14).

*Figure 20-14:* Pop a text block into your word processor and it becomes like putty in your hands.
Canvas (Deneba Software) is one of the most comprehensive and richly conceived drawing programs in the world. Among the many time-saving touches: when you double-click on a text block, the program immediately (and correctly) assumes that you mean to edit that text. Accordingly, it switches to the text tool, regardless of which tool was previously selected. You have no idea how simple, logical, and useful this idea is until you try it! We’re pleased to note that this concept is catching on: the draw module in ClarisWorks offers this feature, too.

Selecting tiny objects
Here’s an oldie but goodie: when you’re trying, with no success, to move some tiny object in your drawing, draw a nice fat line. Select both it and the small object, and use the line as a handle to move the smaller one. Deselect and delete the line after the move is over.

EPS file safety
One of the most useful and powerful Mac graphics file formats is encapsulated PostScript, or EPS. Like a PICT file or a text file, an EPS file can be created by any of dozens of programs. But after it’s a file sitting on your disk, you can’t double-click it to open it; you must launch a program capable of opening it first, and then use the Open command to select the EPS file.

Unlike a PICT file or a text file, an EPS file generally can’t be edited after it’s been created. You can import it into another document (most commonly into a page-layout document, for example), and you can resize it or stretch it or crop it. But you can’t edit it.

For this reason, you should definitely save any document from which you create an EPS file separately in its own file format. For example, if you create a technical diagram in Canvas and save it as an EPS file, save the Canvas document, too. If you ever need to change or edit that EPS file, you can open the Canvas document, make the change, and re-export the graphic.

MacDraw Pro, ClarisDraw, and ClarisWorks
Why are we lumping these together? Because they come from the same company, look and work almost exactly alike, and are modeled on each other.

The discontinued MacDraw Pro (reissued as ClarisDraw) is, of course, the more powerful of the two — drawing is all it does. But many of these shortcuts apply equally well to both of these polished, easy-to-learn programs. We’ve indicated which tips apply to both. When we mention ClarisWorks, of course, we mean its drawing module.
MacDraw Secrets

Enclose touched objects with the Marquee

Under normal circumstances, you can only select objects you completely enclose with the selection marquee (as you drag the Arrow tool). But if you ⌘-drag, you select everything even partially enclosed by the marquee (much as just as you do selecting icons in the System 7 Finder).

Layer Secrets (MacDraw only)

The Option key is your key to objects lying on other MacDraw layers. For example, you can Option-click an object in an inactive layer to select it. You can Option-drag a selection rectangle to select all enclosed objects in all layers.

Drag more than just the outline

If you drag a selected object, you usually see only its outline during the drag. But if you ⌘-drag it, you get to see the complete image as it's being moved (see Figure 20-15).

CASE HISTORY

What happened to SuperPaint?

We'll be honest. There are three reasons we left SuperPaint out of this discussion.

Reason 1: We didn't really. All of our general painting tips apply to SuperPaint's paint layer, and all of our universal drawing tips apply to its drawing layer.

Reason 2: SuperPaint has been eclipsed by the other programs. Canvas and ClarisWorks are each far superior bargains and far superior programs in the paint-and-draw field.

Reason 3: SuperPaint is slow. We absolutely can't stand the way when you zoom in, the actual-size view takes up half your screen. And when you're zoomed in, everything in the draw layer is just as crude and jaggy-looking as art in the paint layer.

Sorry, SuperPaint fans — we just couldn't see ourselves promoting this program's cause in our own pages.
Incidentally, the ⌘ key performs this function when you're rotating or scaling an object, too.

**Lock in that tool**

Normally, a MacDraw tool doesn't remain selected after you draw something (the arrow tool gets automatically reselected). If you double-click the Drawing tool to begin with, however, it turns black, and thus remains selected even after you draw. Or, if the Arrow tool does reselect itself, you can just press Enter to reselect the most recent Drawing tool you used.

**Selecting type with clicks**

With the Text tool selected, double-click to select a word; triple-click to select a line; quadruple-click to select a paragraph; and quintuple-click (or press ⌘-A) to select all the text inside the block.

(All but the quintuple-click business works in ClarisWorks, too.)

**Power keystrokes (MacDraw only)**

- ⌘-Option-A selects all objects in all layers.
- ⌘-Option-C copies one frame of a QuickTime movie to the clipboard.
- ⌘-Option-G switches between two modes of displaying gradient (blended) fills: the faster, cruder-looking one, and the higher-quality, slower-to-draw one.
- ⌘-Option-I flips you into and out of image-greeking mode. When greeking is on, all imported images and QuickTime movies appear on the screen as an empty box with an X through it. (That saves redrawing and recalculating time.)
- ⌘-Option-M changes the zoom level to actual size. (⌘-left and right arrows halve and double the magnification level with each key press.)
- ⌘-Option-P prints your document directly (one copy), without subjecting you to the Print dialog box.
- ⌘-Option-S switches the "Typing activates shortcuts" feature on and off. (MacDraw wants to know what you're doing when you start typing. Are you typing the initial of a tool you want to switch to? Are you beginning a new text block? If you want the former, turn on "Typing activates shortcuts").
- ⌘-Option-V pastes whatever is on the clipboard into the new scale of your document (if you changed it). (By scale, we mean 1 inch = one foot, for example.)
- ⌘-Shift-W brings the next window to the front (if you have more than one open).
- Page Up and Page Down scroll one screenful up or down. Option-Page Up and Page Down scroll one screenful right or left.

**See the hidden keyboard shortcuts (MacDraw only)**

Press and hold the ⌘ key when a dialog box is open on the screen. In small lettering, you see the keyboard shortcuts available in that dialog box, displayed right beside the commands they activate (see Figure 20-16).
We quite enjoy this last trick, by the way. We wouldn’t mind if more programs adopted it, since it’s a quick and natural way to learn which keyboard shortcuts are available in one of these boxes. (Then again, we’re not quite so zealous as to claim that all programs already do have this feature, as we recently read in a certain rival Macintosh book!)

Figure 20-16: The hidden shortcuts are no longer hidden. Most MacDraw dialog boxes have this feature.

Canvas

Deneba’s Canvas program continues to get more densely packed with powerful features with every version. It’s a tough program to describe. It’s primarily a drawing program, but it has a nice set of painting tools so that you can paint on any object you draw. There’s even a set of PostScript drawing tools, too, giving you three bangs for three hundred bucks.

We don’t claim that Canvas is easy to use. On the other hand, we’ve almost never been run up against a brick wall in something we were trying to achieve. As such a feature-rich piece of software, it’s absolutely ripe with secrets.

Canvas Secrets

Save memory and loading time

Canvas’s modular construction means you can leave out pieces that you won’t need; each tool you omit saves memory and loading time. To select which features will load, hold down the Space bar just after you double-click the Canvas program icon. The Tool Picker will appear, showing a list of the plug-in tools you can double-click to switch on or off. Here are a few suggestions:

If you’re not exchanging files with IBM’s, turn off CGM I/O, DXF I/O, IGES I/O.
If you're not exporting or importing graphics from other programs, turn off Canvas 1.0 I/O, Canvas 2.0 I/O, Illustrator I/O, MacDraw I/O, MacPaint I/O, StartupScreen I/O, UltraPaint I/O.

If you're running in black-and-white, turn off Dropper, Pantone Colors, RGB Color Manager, Separations.

If your graphic doesn't contain text, turn off Bézier Text, Search & Replace, Spelling, Text Ruler, Text Utilities.

Conversely, if a feature isn't working, you probably didn't load the tool. You may discover that sometimes even a major menu command is dimmed: Align, for instance. Your first instinct should be to make sure you haven't turned it off with the Tool Picker.

Keep the tool locked in
Exactly as with MacDraw, Canvas switches back to the Arrow tool after each object you draw. To switch back to the tool you just used, press + and start drawing. To permanently switch the auto-arrow selection feature off, choose Preferences from the File menu, click General, and select Retain Selected Tool. Now Canvas won't change tools unbidden.

Move a guide line and everything it touches
Adding and moving guide lines in Canvas works much as it does in page-layout programs. And you bring them onto your screen the same way: by clicking in the ruler and dragging into the drawing area.

Our Secret: Option-drag the guide, and any objects touching it will move along with it.

Converting text to outlines
Here's a classic feature of Canvas. It's golden for logo designing, by the way (see Figure 20-17).

Here's the drill. Type your text. (You have to use a TrueType font or a PostScript font with Adobe Type Manager installed. None of this Venice 14-point stuff.) Select the text block. From the Type menu, choose Convert to Béziers; choose Filled from the submenu.

Suddenly, your text is gone. In its place is a perfect clone, composed of hollow outlines that you can reshape as you will. Start by ungrouping the result. (You also have to ungroup any letters with hollow spaces, like D, R, or O.)

To edit a letter, double-click it. It turns hollow, like the final E in the figure above. Drag the little handles. When you're finished reshaping a letter, press Enter.
Converting text to outlines has some advantages, by the way. First, you can send your file to friends without worrying that they don't have the same fonts you do. Second, your document prints faster because it doesn't have to download any fonts!

**Quick removal and replacement of objects**

If you're in some complex tangle of objects, and some are getting in your way, here's a quick way to toss them aside momentarily. Group them. Press ⌘-right arrow three times; each time, the selected group will jump 10 pixels to the right. After they are out of the way, you can work on the remaining objects unencumbered.

When you're ready to put the offending object group back in place, select it and press ⌘-left arrow three times. Not only do they jump back precisely to their original positions, but even their position in the front-to-back lineup remains intact. (If you press Option instead of ⌘, the selected object jumps 50 pixels at a time instead of 10.)

**Neat positioning of duplicates**

That ⌘-arrow trick is also useful after you duplicate an object. The Duplicate command puts the copy in front of the original, 10 pixels down and 10 to the right. If you want to pop it squarely back on top of the original, press ⌘-up arrow and ⌘-left arrow. Because the ⌘-arrow trick moves a selection by 10 pixels every time, your duplicate will now be perfectly superimposed on the original.

Note that you can *change* the distance an object jumps when you press ⌘-arrow (using the Preferences command). You can also change how far away a duplicate is placed from the original (using the Duplication command). In other words, these last two Secrets only work if you haven't changed Canvas's default settings.

**Keyboard shortcuts**

Here are the Canvas tools you can switch to without using the mouse:

<table>
<thead>
<tr>
<th>To switch temporarily to this tool...</th>
<th>...hold down these keys:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dropper tool</td>
<td>Option and Tilde (-)</td>
</tr>
<tr>
<td>Hand tool</td>
<td>Space bar</td>
</tr>
<tr>
<td>Zoom tool (magnifying glass)</td>
<td>⌘-Shift-Option</td>
</tr>
<tr>
<td>Text tool</td>
<td>⌘-Option-T</td>
</tr>
</tbody>
</table>

**Quick window jumping**

If you have more than one window open, you usually switch from one to another by choosing its name from the Window menu. Here's a shortcut that can save you at least an inch or two of mouse motion: press Option and click the title bar of any window. You get a pop-up menu listing the Canvas windows and palettes; choose the name of the one you want.

**Pasting scaled screen shots**

Wow, did we learn this the hard way!
Writing a book like this involves taking a number of screen shots (PICT files of the Macintosh screen). We reduce each screen shot to 60 percent of its actual size, so it won't look ridiculously huge on a page.

Sometimes, though, we want to add an element to the image: an arrow or a caption, for example. We thought Canvas was a natural for this because its Text and Line tools are so good.

But whenever we pasted in a reduced-size graphic to Canvas, it wound up looking terrible (see Figure 20-18).

![Figure 20-18: If you paste a reduced-sized screen shot into Canvas, you get a blotchy mess (left). Unless you use our Secret (right).](image)

Turns out the Secret is not to use the Paste command at all. Instead, use the Paste Picture Object command (in the Edit Special submenu).

**Hidden palettes**

You probably haven't even seen all of Canvas's pop-out palettes. The Text tool, for example, has four. You control which pops out by holding down a particular key.

Normally, if you hold the mouse down on the Text tool, a list of text styles pops out. If you ⌘-click the tool icon, you see a list of your fonts. Shift-click it for a list of type sizes. And ⌘-Option-click the icon to see a list of fonts displayed in their actual type faces.

**PostScript Drawing Programs**

PostScript drawing programs, like FreeHand and Illustrator, are high-end, expensive, and tough to learn. But their astonishing output shows some of the most striking work the Mac can do. This is the kind of work you see in package designs, line art, album covers, and technical drawings.
Paths and wireframes

In these programs, you work with lines on the screen called paths (see Figure 20-19). As in object-oriented drawing programs, you manipulate objects in a PostScript drawing program after they are drawn. But unlike in a drawing program, you do most of your work in a wireframe mode, where none of your objects are opaque, and lines have neither thickness nor color. You see only their outlines. An editable Preview mode (available in both FreeHand and Illustrator) shows you what your objects and text will look like when printed — with opacity and color — but it’s slower than working in wireframe mode.

Because PostScript line drawings of this type are so striking when printed on laser printers and (in particular) imagesetters (professional publishing equipment), other kinds of graphics programs have begun adopting features from PostScript programs. ClarisWorks, Canvas, and other drawing programs now include a “freehand tool” of some kind (in other words, one that works like the pen tool in FreeHand or Illustrator).

Faster, more reliable printing

Delays, out-of-memory messages, and PostScript errors are almost inevitable when you print complex PostScript documents. Here are some tricks for not overwhelming your printer (both the machine and the person).

- Where possible, use blends instead of graduated fills. The effect is similar: a smooth, gradual change in shading from one side of an object to another. Graduated fills tax a printer much more than a blend (which is actually a series of adjacent copies of the object, each a different shade). As an added bonus, blends also give you more control over the rate of shading change and look better on the screen.

- Don’t make your page size any larger than it has to be. Even if the extra space is completely blank, it still uses up some of the printer’s memory.

- Every line (path) you draw has an associated flatness, a PostScript accuracy setting. You can edit this setting; in FreeHand, for example, you select the path and open the Element Info dialog box (§-I). By setting this PostScript variable to, say, 3 instead of 0, you can speed up printing by up to four times and save precious printer memory, without sacrificing image quality, even on very high-dpi printers.
- Eliminate superfluous points from your paths. Especially troublesome are complex paths that result from autotracing images; when the number of points defining a path approach 100, it's time to simplify the path or split it.
- Be aware that imported EPS files drastically increase the printing time of a FreeHand or Illustrator document.

### Universal PostScript drawing Secrets

#### Better behaved EPS files in page-layout programs

If you import an EPS file that contains type into a page-layout program, you're practically asking for trouble printing. EPS files that contain downloadable-font information can give PageMaker or Quark fits.

We suggest converting the text into outlines (in FreeHand, it's the Convert to Paths command). That step eliminates downloadable fonts from the file altogether, resulting in faster and smoother printing.

#### Pasting into your word processor

Ever try to paste FreeHand graphics into Word (or any other program)? The Mac just beeps at you.

Here's the Secret: When you're still in FreeHand or Illustrator, select the object and press *Option* as you choose Cut or Copy from the Edit menu. You create a PICT "front end" for the invisible PostScript coding, which your word processor can accept as pasted material.

#### Convert text to outlines

FreeHand and Illustrator let you convert type into editable outlines, just as Canvas does. In FreeHand, you select the text block and choose Convert to Paths from the Type menu.

In both cases, however, the resultant paths are bound in such a way that you can't immediately start to edit them. In FreeHand, you have to choose Split Elements from the Element menu *twice*: once to separate the characters of the text block, and again to make the individual paths editable. In Illustrator, you choose Release Compound from the Paint menu.

#### Text on a path

There are two ways in which FreeHand's and Illustrator's capability to bind text to a path are useful. First, it's handy to be able to do it at all (see Figure 20-20).

*Figure 20-20: Binding text to a path gives you a few unique possibilities.*
Second, you can create interesting borders this way. Use a symbol font like Zapf Dingbats to create the type. When you bind that type around, say, a rectangle, you have a decorative border that looks like it took much more effort than it did!

In FreeHand, to bind text to a path, select both the text and the path and then choose Join Elements from the Element menu. In Illustrator, draw the path first. Then Choose the text-on-a-path icon from the Text tool’s pop-out palette (see Figure 20-21). Finally, click the path you drew and start typing!

![Figure 20-21: To type text on an Illustrator path, select the proper variant of the text tool.](image)

One more note: In FreeHand, you have to group the text to its path if you want the text to get resized when you resize the path.

**The Auto-trace feature**

FreeHand, Illustrator, and Canvas all offer auto-trace features. You open a bitmapped image (PICT or TIFF, for example). The program automatically draws a PostScript path — a series of Bézier curves — along every edge where white meets black in the image. When you’re done, you delete the original bitmapped image, and you’re left with a smooth, high-resolution, sharp-printing PostScript graphic.

The best auto-traces come from images where there are clear changes from black to white. If your original is a gray-scale scanned image, therefore, coax it toward being a black-and-white image before tracing. Use the program’s contrast controls, for example, to blanch the whites and darken the grays. Or save the image as black-and-white, and then reopen it before tracing.

**FreeHand/Illustrator default file**

You can customize your FreeHand or Illustrator working environment and avoid having to re-establish all your favorite settings each time you start a new document. This is particularly handy in Illustrator, where (at least in version 3) you have to add each font to the program’s menu one at a time in each new document!

Begin with a new document. Make all your menu settings, choices of line weights, fills, shades, measurement unit selections, and so on. (In Illustrator, add the fonts to the menu and format one character in each font, or the font-menu changes won’t “take.”)

Then save the document. If it’s FreeHand, call it Aldus FreeHand Defaults and save it into your FreeHand Folder. If it’s Illustrator, call it Adobe Illustrator Startup. From now on, each new document will adopt these settings.

**Bizarre FreeHand snakes**

Here’s a strange little buried treasure: choose About FreeHand from FreeHand’s Apple menu. Each time you Option-click the graphic, another colorful snake is born to zoom around your screen (up to 16 of them).
FreeHand Secrets

Selecting through overlapping objects
If you're trying to select an object that's lying behind something else, remember that pressing the Control key while you click lets you select right through whatever's on top. A similar trick: If you group a bunch of objects, you don't have to ungroup them just to change or move one part. Just Option-click to select something without removing it from its group. (By the way, you can combine these techniques: Control-Option-click selects one item in a group that's hidden by other objects.)

The unknown Cropping tool
You can crop imported TIFF files (or any other graphics) just as easily as you can in PageMaker, after you know how to access FreeHand's secret cropping tool. Draw a rectangle (or an ellipse, or text outlines, or any other enclosed shape) around the part of the TIFF image you want. Select the image and cut it to the clipboard; now select the rectangle and choose Paste Inside from the Edit menu. To adjust the cropping, drag the handles of the rectangle (see Figure 20-22).

Figure 20-22:
You can fill an outline with a TIFF graphic using the Paste Inside command.

Use Option for greater precision
When you want to scale, rotate, or skew an object, most people are in the habit of using the mouse and making the adjustment by eye.

If you prefer making the change with more precision, Option-click the object. A dialog box appears, in which you can specify the exact amount by which you want to skew, rotate, or scale the object you clicked.

Power keys
You can change tools on the palette by pressing the number keys on your keyboard. They are numbered numerically from 1 to 0, starting with (1) the rectangle tool, (2) the rounded-rectangle tool, and so on.

What's handy, especially on small-screen Macs, is that these shortcuts work even if you hide the tool palette to reclaim more screen space.

Illustrator Secrets

Bypass the "Open template" dialog box
If you're not somebody who uses Illustrator to trace scanned images much, then the "Please open a template or click None" dialog box (which appears every single time you start a new document) can get tiresome fast.
To bypass it, press the Option key while you choose New from the File menu (or while you press ⌘-N).

**Adjustable nudge keys**
As in most graphics programs, you can nudge a selected Illustrator object a small distance (one point) at a time by pressing the arrow keys on your keyboard. Unlike most programs, though, you can change the effect an arrow key has on the object's movement: make it move 2 points, for example, or 10. Make the change in the Preferences dialog box (in the Cursor Key Distance blank).

**Zooming shortcuts**
Double-click the Zoom (magnifying glass) tool to double the magnification; Option-double-click to halve it.

Press ⌘-space bar to activate the Zoom tool, regardless of which tool is currently selected. (Press Option-⌘-space bar to activate the tool in “zoom out” mode.)

If you keep the mouse button pressed after clicking the screen with the magnifying-glass cursor, it instantly changes to the hand grabber, so that you can conveniently slide the image area in any direction without having to change tools.

Here are a couple more Secrets: double-click the Hand-grabber tool to resize the entire document so that it fits on your monitor. Option-double-click the same tool to zoom to actual size.

**Movable, manipulable guide lines**
Guide lines in Illustrator work much like guide lines in a page-layout program: they're nonprinting rules that help you align and position objects and text columns.

To move a guide, Control-Shift-drag it. Here's a handy side effect: After the guide line is selected (albeit invisibly), you can use Illustrator’s tools to rotate or skew it.

**Multiple buried treasures**
In Illustrator 5.0, if you click the status-line bar, you get a pop-up menu listing several practical data. But if you press Option while doing so, you get a choice of seven extremely hilarious displays: shopping days left to Christmas, the current national debt, and more!

**File Formats**
In the Mac universe, the most common graphics formats are TIFF, PICT, and EPS. As you'll see, each file type came into being for a reason, and each has its limitations. Fortunately, most graphics programs can open and save more than one kind of graphics format.
PICT files

A PICT file is the one you're most accustomed to using. Mac file icons are little PICT files. So are the snapshots you take by pressing ⌘-Shift-3 in System 7. At one time, PICT was also the native format for most drawing programs, because a PICT file stores all the relationships between grouped objects. Open a MacDraw-saved PICT file in Canvas, for example, and you can ungroup it and continue to work on the art without missing a beat. (The original PICT format was black-and-white, like the Mac itself. When the Mac went color, the color version was called PICT2. Today, not many programs make the distinction. PICT is PICT, no matter what color it is.)

The only significant problem with PICT files is that their precision isn't great. A PICT file may know that a line is supposed to be very thin, for example. But it will round that line off to its nearest approximation of its original width value — half a point, for instance. As a result of the PICT format's lack of precision, you may find slight misalignments and changed line thicknesses when you transfer a PICT file to another program.

The really unfortunate fact is that PICT is the Clipboard's natural graphics mode. If you draw a nice precise diagram in Canvas and then copy it, your fine hairlines and careful alignments are already gone before they're even pasted into the Scrapbook.

If your work requires the kind of accuracy that the PICT format can't deliver, there's only one way out: save the graphic as another format. Our suggestion: EPS (see following).

TIFF files

The TIFF file format, originally developed by Microsoft and Aldus, is something like a very high-density bitmap (painting). (TIFF stands for tagged-image file format; the "tags" are encoded "hints" that accompany the graphic data to enhance its appearance.) Most TIFF files start out life as the product of a scanner. Like any bitmap, a TIFF file takes up a lot of disk space.

Unfortunately, some programmers endowed their graphics software with various TIFF compression schemes and other digital baggage in an effort to reduce the size of their files. As a result, today's TIFF files are notoriously troublesome to exchange between programs. The standard has been corrupted so often that it's no longer a standard.

Program A may still recognize a TIFF file from program B as being a TIFF file. Only when it attempts to display the image does it choke on program B's special riff on the TIFF theme. You get a beep, a stopwatch cursor — and a blank screen.

Here again, if your goal is to transfer the graphic to another program, your only resort is to try saving into another format. (For what it's worth, we found Photoshop capable of opening virtually anything.)
**ANSWER MAN**

**What's JPEG?**

Q: Yeah. What is JPEG?

As you probably know, graphics files get pretty big. One letter-sized, full-color image can take several megabytes of disk space. A bunch of computer-graphics experts, calling themselves the Joint Photographic Experts Group, sat around a few years ago and tried to come up with some formula for compressing graphics files so they took less disk space. (The files would also take less time to send over the modem, which was probably the more pressing concern for these Experts at the Photographic Joint, whose job it probably was to send photos back to *Time* Magazine via modem.)

They came up with a scheme that succeeded impressively at reducing the size of graphics files. They named it JPEG compression. When a computer stores one of your files this way, it actually discards much of the color information (that's what makes the file smaller). If it throws away too much, you get a crummy-looking, computery-looking picture when you open the file back up. Even so, it turns out you can throw out more than half of the color information from a typical photo and, upon reopening it, not notice that anything is different.

The JPEG compression format is different from any other Mac file format because of this information-discarding aspect. They call this lossy compression because there's some data loss; thus you can't pass through a JPEG compressor more than once. Other compression schemes—like those used by DiskDoubler and StuffIt, for example—are lossless, because when you decompress a file, it's an exact, data-full duplicate of the original.

We think the computer world, so good at coming up with terminology, really wimped out on this one. Lossy? We suppose this word was someone's attempt to come up with a cute antonym to lossless. But that's like saying the opposite of clueless is cluey, or that the opposite of hopeless is hopi.

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**EPS files**

The Encapsulated PostScript file format, developed by Adobe, is so called because it contains Post-Script-language image-description codes. PostScript is the language your Mac speaks to PostScript laser printers (and high-end Linotronic printers).

In other words, when your Mac prints an EPS file, it's speaking your printer's language. The program containing the EPS file doesn't say to the printer: "Pixel number 1 is dark. Pixel number 2 is white." Instead, it sends a stream of mathematical descriptions: "Draw a .33-inch-thick line starting halfway across the page" and so on. EPS printouts, therefore, are among the highest quality the Mac can produce.

Because printing EPS files involves this transmission of computer code, the potential for foul-ups is much greater. Documents that contain EPS files are among the most likely to give you printing problems. As we noted earlier, an EPS file may contain references to fonts that are no longer in the Mac. An EPS file's instructions may fill up (and overwhelm) the printer's memory. See Chapter 25 for more about printing. In the meantime, remember that EPS files look great when printed — if they print.

One more note about EPS files: they come in two parts. The critical part, actually, is invisible to you. It's a stream of PostScript instructions (see Chapter 25 for a primer on PostScript language codes). These are for the printer's benefit.

For your benefit, most EPS files include a second component: our friend, the PICT file. This is the on-screen stand-in for the printer instructions.

Where things get odd is that the PICT-file portion of an EPS file is actually optional. In the course of your computing days, you may run across an EPS file that's represented on-screen simply by a big X in a box — but which prints out beautifully. (That's why, when you save an Illustrator file as EPS, you're given the option of including a PICT Preview.)
Chapter 20: Graphics

MACINTOSH SECRET
Opening a TIFF file from an IBM
Despite the different strains of TIFF files circulating in the Mac world, there's one more variety that ought to be openable by a typical Mac graphics program: TIFFs from the DOS world.
Use Apple File Exchange, as described in Chapter 4, or PC Exchange, included with many Mac models, to bring the TIFF file onto the Mac. You still won't be able to open it, however, until you change its type code (see Chapter 16 for more on type codes).
Using DiskTop, included with this book, change the file's type code from .TIF to TIFF. Now you can open the file with Photoshop, MacDraw Pro, or other Mac graphics programs.

GIF files
GIF stands for graphics interchange format. It began — and is still used primarily — on online services like CompuServe, as a means of making graphics available to users of any computer model. A GIF file can have a maximum of 256 colors — no photorealism here.

If you don't do much modem-roaming to America Online, CompuServe, and other online services, you'll probably never encounter a GIF file. If you do visit those services, however, you'll find thousands of these graphics images. And you'll wonder why none of your graphics programs can open them!

Because GIF files have such a specialized purpose, you generally have to get a program devoted to opening them on the Mac. GIFConverter and GIF Watcher are two GIF-opening shareware programs. Photoshop can also open them.

Of course, as the owner of this book, you already have a top-flight GIF-opening program called Color It. The program is included on the disks with this book.

Startup screens
We saved one of our favorite formats for last.

A startup screen is essentially a PICT file that's been doctored using ResEdit (included on the disks with this book). Thus prepared, the Mac displays this PICT file when it starts up, in lieu of the usual "Welcome to Macintosh" message. Some programs, such as Canvas, can convert any image into startup screen format.

If you're going to create your own startup screen, there are three requirements. First, you have to change the image's resource number, as explained in Chapter 21. Second, you have to name the file StartupScreen, exactly as you see it here (but capitalization doesn't matter).

Finally, you have to put the file loose in your System folder. Next time you start up the Mac, this image will greet you.
In this chapter:

- What ResEdit is
- Fundamentals of using ResEdit
- Customizing menus, buttons, and dialog boxes
- Customizing everything else
- Ten great ResEdit pranks

This book could not live up to its name without a chapter on ResEdit. ResEdit isn’t just another application; it’s the key that unlocks some of the Mac’s strangest and most elusive secrets.

And we’re talking real secrets here — not just undocumented features, obscure ⌘-key combinations, or cute hidden messages. We’re talking about the nuts-and-bolts stuff of which programs are made, stuff that’s completely invisible to the average user.

In fact, ResEdit is such an indispensable part of delving into the secrets of your Mac that we decided you couldn’t live without it. We’ve licensed it from Apple to include on the SECRETS disks that come with this book. ResEdit lets you poke into any application’s resources, its most basic components, and rebuild them the way you want. If you don’t like the name of a menu command, you can change it. If you’re running short on hard drive space, you can rip unneeded sounds and pictures right out of your applications. You can totally redesign menus, dialog boxes, icons — all without knowing the first thing about programming.
What is ResEdit?

Every recognizable Mac element of a program — icons, menus, dialog boxes, cursors, background patterns, sounds, graphics — are called resources. ResEdit stands for resource editor, and that’s just what it is: Apple’s own utility for changing a file’s resources. Apple created ResEdit early in the Mac’s history so that programmers could easily manipulate the basic elements of the Macintosh interface. Over the years, successive versions of ResEdit have become safer and more user-friendly. Today, it’s accessible enough even for an advanced beginner to use.

ResEdit contains many different kinds of resources. System 7’s System file alone contains 123 different types. Some are easier to edit than others. To work with icons, for example, ResEdit provides basic painting tools. For windows and dialog boxes, there are tools for changing the color, size, and arrangement of the window elements; these tools closely resemble those you might find in a drawing program.

Other types of resources aren’t quite so easy to handle. If you try to edit a resource for which ResEdit has no special editing tools, the program opens the resource in a hex editor. A hex editor is a window that displays the resource’s code in raw hexadecimal form.

The first time you open a hex editor (see Figure 21-1), you may momentarily think you’re working with something very foreign and incomprehensible — like DOS.

Nonetheless, you can edit a resource using a hex editor; you just have to know which part of the code to change. Several of the Secrets described in this section require you to work with a hex editor. But don’t worry, we’ll tell you precisely which part of the code to select and how to change it. All in all, it’s pretty painless.

**Figure 21-1:**
The unfriendly-looking hex editor displays a resource’s code in hexadecimal form.

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**ANSWER MAN**

**It don’t work!**

Q: I tried one of your ResEdit hacks, and it didn’t work!

Hey. We tried. We tested every trick on almost every System version we could find, but there are some incarnations of the Mac’s System software we simply couldn’t get our hands on. We are sorry if something doesn’t work on your system, but, frankly, this is hacking; you do your deed and then see if it flits.
ANSWER MAN

A hex on both your houses

Q: Not so fast there, Answer Men. You’re not going to lob a term like hexadecimal at us without defining it, are you?

A: No. Because it’s a binary machine, the Mac has 16 “fingers” to count on instead of 10, like humans. Therefore, it has to count beyond 9 before advancing into two-digit numbers.

As a consequence, we humans have invented a bizarre numbering system called hexadecimal, in which you can count all the way up to 15 with a single digit. You count in hex like this: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F. The next number, in our notation, would be 16. In hex, the next number is written 10!

Here are some basic equations in hexadecimal notation: 2 + 2 = 4. Next, we have 4 + 4 = 8. But 8 + 7 = F. And F + 1, as we’ve said, is 10 (in hex).

Get it? (We admit that this sort of plays with your head.)

How To Use ResEdit

If you’re using System 7, editing a resource is simple: drop the icon of the file you want to examine or edit onto the ResEdit icon.

In System 6, launch ResEdit. An Open File dialog box presents itself; open the file you want to change.

You can open any kind of file: applications, control panels, system extensions, or any other file. (Most documents don’t have resources, however.) Doing so reveals a window filled with icons representing all the different types of resources used in the file, as shown in Figure 21-2.

Figure 21-2:
The TeachText application as seen through the eyes of ResEdit. Each resource type is represented by an icon.
As you can see, each resource type is identified not only by an icon, but by a four-character code, such as FOND, DLOG or STR#.. (Some resource names like “snd” or “STR” appear to be only three characters long, but they actually consist of three characters and one space.) Often these codes hint at their contents. The ICON resource is where you can change the shape of your icons (the real icons, not the kind you can paste into the Get Info box in System 7); the DLOG is how you change a dialog box; and CURS is where the cursor shape lives.

Look for the type of resource you want to edit. Then open its icon by double-clicking. This introduces a new window listing all the individual resources of that particular type (for example, all the sounds in a program). Each resource is tagged with an ID number. Double-click the resource you want to modify and the appropriate editing window will open. (We'll walk you through all this, step by step, in the following Secrets.)

Occasionally, when you try to open resources in the System file, you'll encounter a dialog box warning you that the resource is compressed and asking if you want to edit it anyway. Click Yes and the resource will automatically be decompressed.

That's really all you need to know to pull off any of the tricks listed in this section. But before you go hacking away at your System file, we need to discuss the Peril Factor.

**The Peril Factor**

Articles and books on ResEdit are generally introduced with a morose warning about how perilous this program can be. We've heard people describe ResEdit as if it were some kind of poisonous snake, difficult to handle and potentially hazardous.

Actually, ResEdit is neither intimidating nor dangerous. In fact, we're confident that using it will never result in any kind of fatal computing disaster if you follow these sensible guidelines:

- **Make sure you have a backup, somewhere, of whichever file you try to edit with ResEdit.** (You can't edit the active Finder — only a copy of it.) Generally, you won't need the backups; the procedures included here are all tried and tested. But if, through some slip-up, you end up with a System file that behaves oddly, the backups make it easy to recover.
  
  Insider tip: To make a quick backup of your System file, Option-drag it out of your System folder. Make your ResEdit changes to this copy. After saving your changes, put the still-virginal System file (until now, still in the System folder) into a safety folder of its own, and put the one you modified into the System folder. You've just swapped them. Now restart. (Keep your still-virginal copy around for handy replacing access.)

- **You can poke around a file with ResEdit all you want and try anything you want with virtually no danger of ruining it — just don't save your changes before quitting.**

- **After you've made one change to a program with ResEdit, save your work, quit and examine the results before making the next change. This way, if something does go wrong, it'll be much easier to hunt down the problem.**
A primer in customizing menus

ResEdit is the Mac’s premiere menu-customizing tool. Not only can you use it to add a key equivalent to any command on any menu in any program, you can also rename menus and the items on them. You can even change the color and style of menu items, enabling you, for example, to make your most frequently used commands stand out in bright red italics. You can assign a color to the menu background and to each of the separator lines that appear between menu items. And perhaps wildest of all, you can add your own icons to any menu command!

To add a keyboard command to a menu item:

Open the application you wish to customize with ResEdit. Then, with a double-click, open its MENU resource icon (see Figure 21-3). (You won’t find a MENU resource in Finder 7. Instead, you have to open and edit the fmnu resource; we’ll get to that in the next section.)

When you open the MENU resource, you see each of the program’s menus displayed in a separate box within a window. For example, if you opened TeachText’s MENU resource, you’d see the window shown in Figure 21-4. Scroll to the particular menu you wish to edit and double-click it to open up the menu editing window (see Figure 21-4).

Suppose that you want to add a keyboard equivalent for the Clear command on TeachText’s Edit menu. Just select the command (or press Return to cycle through the menu items one by one) and then press Tab twice. This selects the key field in the lower-right portion of the window. Type in the letter you want for the command (in this example, we chose D), and it’s automatically added to the menu (see Figure 21-5). Save the changes using the Save command before quitting ResEdit.
To change the names, colors, and styles of menu items

Select a menu item (or the menu title itself). Its name appears in the Text field. You can rename the command or title by pressing Tab (to select the text field) and then typing in a new name. To change the style of the text — adding italics or underlining, for example — use the Style menu on ResEdit’s menu bar. Figure 21-6 shows how TeachText’s Clear command has been renamed Delete and set in italics.

When the menu title is selected, the three color pop-up palettes allow you to pick a custom color for the title of the menu, the menu background, and the default color of all text in the menu commands. When a menu command is selected, the same three palettes let you choose new colors for the text of the selected command, its associated Æ-key, and any mark or symbol selected to appear next to the command.

Renaming a menu or menu item can make it easier to locate an obscure-but-needed command. For example, when using the telecommunications program MicroPhone II, we can never remember which Settings-menu command you’re supposed to use to change the baud rate. Is it the Communications or Terminal command? We ended the confusion by changing the name of the Communications command to Baud Rate. We’ve never opened the wrong menu item since.
Adding icons to menu commands

After opening a MENU resource, select the menu command to which you'd like to add an icon and choose the Choose Icon command from ResEdit's Menu menu (see Figure 21-7).

In the Choose Icon window, select one of the three size options: Normal, Reduced, or Small. (The smallest icon size can't be used if you've added a Command-key shortcut to the selected command, too.) Now, click the New button. You'll see a simple icon-editing window. All you have to do is paste in a graphic from another program or draw one from scratch. (To doctor up an existing icon, select it and click the Edit button.) When you're done, close the editing window and double-click your new icon to apply it (see Figure 21-8).
Customizing separator lines

You can select any separator line that appears in a menu and, using the pop-up color palette, change its color. To completely eliminate a separator, select it and click the Text radio button without typing anything in the text field.

Here’s another neat variation: Select a separator line, click the Text radio button, then type in a string of characters — dashes, bullets, asterisks, or whatever — to make a custom separator. You can assign these characters a color and style to create some interesting effects, as shown in Figure 21-9. In this example, a standard separator line was replaced with a string of tiny circular degree characters (produced by pressing Option-Shift-8). The condensed font style and a custom color were applied to give the separator its unique look. (Type a left parenthesis somewhere in the string, however, if you want to make this command unselectable.)

Combining all these techniques, you can also create some wild-looking reversed-color menus, as shown in Figure 21-10. Choose a dark color, or black, for the background, and set the menu text to white or a light color.
Adding a keyboard equivalent in Finder 7

Finder 7 doesn't have a MENU resource. Instead, information about menu items is stored in the fmnu resource, which is a bit harder to edit. Nevertheless, you can still add keyboard commands to Finder menus by inserting information into the fmnu resources. Here are some tricks worth trying:

Add a Make Alias keyboard equivalent

In System 7.1.1 and later, there's a handy keyboard shortcut for the Make Alias command — ⌘-M. If you're using an earlier version of System 7, you can create the same shortcut for yourself. Open a copy of the Finder (again, not the one in the active System folder) using ResEdit. Double-click the fmnu resource icon. You see a long list of numbered resources. Near the top of the window, the resources numbered 1252 though 1256 contain information about the contents of the Finder menus, according to the following scheme:

<table>
<thead>
<tr>
<th>Resource ID number</th>
<th>Finder Menu</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1252</td>
<td>File</td>
</tr>
<tr>
<td>#1253</td>
<td>Edit</td>
</tr>
<tr>
<td>#1254</td>
<td>View</td>
</tr>
<tr>
<td>#1255</td>
<td>Special</td>
</tr>
<tr>
<td>#1256</td>
<td>Labels</td>
</tr>
</tbody>
</table>

Open the resource corresponding to the menu you want to edit — in this case, 1252 for the File menu. Use the Find ASCII command (⌘-G), type Make Alias, and press Return to find that text in the narrow column of text on the right side of the window. Or you can just scroll down until you find the words Make Alias in the column (it's split over two lines).

On the line just above the beginning of the phrase Make Alias, you see a line with four boxlike characters (which we've heard called both hex bits and nybbles). Select the second-to-last hex bit character on the line, exactly as shown in Figure 21-11, and change it to whichever letter you want to use as the ⌘-key shortcut (M, for Make Alias, is the logical choice and the one used in System 7.5).
When you insert the M character as shown, choose Save, and quit ResEdit. Now drag the Finder you just modified into the System folder, so that it replaces the active Finder. When you restart the Mac, you'll see that ⌘-M has been added next to the Make Alias command on the File menu (see Figure 21-12).

Using this same method, you can add a keyboard equivalent to almost any Finder command that doesn't already have one. Always add the character in the third space before the name of the command, replacing the hex bit character that appears in that spot. To illustrate: A Restart shortcut has been added in Figure 21-13 by opening Resource 1255 and inserting a ] (right-bracket) character in the third space before the word Restart.
Adding a Shut Down shortcut

The method described above doesn't apply to the Shut Down command in the Special menu. To add a Shut Down keyboard command, open resource 1255 and find the word shut (not Shut Down) in the second-to-last line of the right-most column. Change the third character after the word shut to an S, or any other character you want to use, to add the keyboard equivalent (see Figure 21-14).

Customizing dialog boxes

You can customize dialog and alert boxes in any program by editing the program's DLOG, ALRT, and DITL resources. Opening a DLOG or ALRT resource enables you to change the size, window type, position, and color of a dialog or alert box. The DITL resources contain the actual contents of the dialog boxes — buttons, text, and icons, all of which can be edited or replaced.
Suppose you want to customize the dialog box that appears when you create a new folder from within a Save File dialog box in System 7, as shown in Figure 21-15. This involves resizing the dialog box as well as resizing, moving, and renaming the two buttons.

![Figure 21-15: A typical dialog box, before and after ResEdit hacking.](image)

Open a copy of the System file using ResEdit. Double-click the DLOG resource icon; then double-click resource number -6046. You see the dialog editing window (see Figure 21-16), which displays a shrunken-down version of the “create new folder” dialog box against a mini-Mac screen.

![Figure 21-16: The DLOG editing window.](image)

Here’s a guide to the dialog editing controls that appear in this window:

A Click one of the icons across the top to change the window type. You can put the dialog box in a window with or without a zoom box, resize box, title bar, drop shadow, and so on. To preview your choice, use the Show Dialog at Full Size command from the DLOG menu.

B To change the color of a dialog box, select the Custom radio button, and then use the pop-up color palettes to pick a new color for the title, text, frame, and highlighting.
C Drag the whole dialog box across the miniscreen to change the location where it will appear on the real screen. (You can see how the dialog will look on the actual screen by using the Show Dialog at Full Size command from the DLOG menu.) Double-clicking anywhere on the minidialog box automatically opens the corresponding DITL resource, which contains information about each button, text string, field, and icon in the dialog box.

D Resize the dialog box as you would any window, by dragging the handle at the lower-right corner.

**Editing individual dialog-box elements**

After you adjust the size, color, and type of the dialog box, double-click it to open DITL resource -6046. The DITL resource allows you to edit any element within the dialog box.

To move a button, text string or icon, simply drag it to a new location within the dialog box window. To resize a button, select it and then drag the handle in the lower-right corner (see Figure 21-17).

![Figure 21-17: Drag the resize handle of a button to change its size.](image)

To give the button a new name, or to change the static (unchanging) text that appears in the dialog box, double-click the text or button. Then type in a new name or text string in the text field that appears (see Figure 21-18).

![Figure 21-18: Editing text in the DITL editing window.](image)

After you edit the DLOG and DITL resources, choose the Save command, quit ResEdit, and restart your Mac using the modified System Folder.

Now then: the Secrets. We’ve tried all of these in various incarnations of System 7; some may not work in System 6.
ResEdit Secrets

Getting rid of the jack-in-the-box once and for all

We guarantee the first thing you'll want to do after you start using ResEdit is get rid of its irritating splash screen, which features an insipid jack-in-the-box. Fortunately, this doesn’t require any hacking. Choose Preferences from ResEdit’s File menu and deselect the checkbox next to Show Splash Screen. You’ll be glad you did.

ResEdit navigation shortcuts

You can use a number of keyboard shortcuts to locate resources quickly in ResEdit, rather than scrolling through lengthy windows to find a particular item. Many ResEdit hacks can be accomplished without a single mouse-click. Here’s the rundown:

- As in Finder windows, you can jump to any resource icon by simply typing its name, or just the first letter of its name. If you open the System file and want to select the ppat resource, for example, type pp.
- Use the arrow keys to highlight any resource icon in a window.
- Pressing the Tab key always moves you to the first resource icon at the top of a window.
- Instead of double-clicking a selected resource icon, you can open it by pressing Return or Enter.
- After you open a resource icon, you can navigate through the various resources listed using the up and down arrow keys. Open a numbered resource by again pressing Return.
- If you’re editing a resource with a positive ID number, you can jump directly to that resource by typing the number.
- Pressing $00-up arrow or $00-down arrow jumps you to the top or bottom the window.

Quicker window picker-upper

As you’ll no doubt soon discover, working in ResEdit means poking through a series of windows within windows. Fortunately, you needn’t spend the rest of your adult years chasing down successive close boxes. Just close the outermost window; all windows you’ve opened from it close automatically.

ResEdit painting shortcuts

There’s a hidden Change Color command in ResEdit’s painting tools, which appear whenever you edit an icon or a pattern (such as the desktop or scroll bar patterns). Press $5F and select a color from the colors palette. Instantly all pixels of the current foreground (or background) color change to match the color you just selected.

Eliminating the “alias” suffix

When you make an alias of a file, System 7 automatically appends the word alias to the end of the file’s name — and most normal people promptly hack it off. You can teach the Finder to stop adding the suffix in the first place.
Chapter 21: The ResEdit Chapter

After opening a copy of the Finder with ResEdit, find the STR# resource icon. Open it, and then open resource number 20500. This resource window contains a series of fields filled with pieces of text (text strings) used by the Finder (see Figure 21-19).

Figure 21-19:
Get rid of the "alias" suffix on newly created aliases by editing the first text string in STR# resource 20500.

The first field contains the text string that gets added to alias file names: the word alias itself. All you have to do is replace the word alias with a single blank space, close the resource, save the change, and quit ResEdit.

Restart your Mac using the modified Finder. Now, when you create a new alias, only the one blank space is added to the file's name — not the word alias.

Rebuild the System 6 Desktop and preserve comments
Much as this Secret's name appears to be an oxymoron, it's true. You can rebuild your invisible Desktop file (see Chapter 1) without losing all the comments you've typed into the Get Info boxes of your files. (This trick, alas, works only on System 6.)

Launch ResEdit. Open the Desktop File (at the outer level of your hard drive). Save a copy of it with a different name. Then rebuild the desktop, as described in Chapter 1. Open the copy of the earlier Desktop File with ResEdit. Select the FCMT (Finder comments) resource, copy it, and paste it into the new Desktop File. Your comments are back!

Make a program Stationery-stupid
In Chapter 16, we mentioned that "stationery-savvy" programs can create stationery documents that, when double-clicked, produce an untitled document on the screen, a copy of the original.

We actually prefer the approach of non-savvy programs, whose stationery documents prompt you for a name and folder for the document copy. Here's how to make a program that does stationery the correct way behave as though it doesn't, so you'll always be prompted for a name and folder location when you double-click a stationery document.

Open the application in ResEdit. Open its SIZE resource, and double-click the item labeled 1. Scroll down until you see the Stationery Aware option. If the 1 radio button is selected, the program handles stationery "correctly" (that is, it doesn't ask you for a file name when you double-click a stationery document). Just click the 0 button. The program is now stationery-"unsavvy." Save and quit. (However, you can't make an older program stationery-aware by selecting 1 if the 0 button is selected when you first open it. That's up to its programmers.)
The built-in screen-font editor

ResEdit’s font editor doesn’t affect the printouts if you’re editing a TrueType or PostScript font. ResEdit only changes bitmapped fonts and the on-screen portion of outline fonts. For more serious font-editing work — and to edit the printer fonts too — you need more serious tools, such as Fontographer. (For an introduction to fonts, see Chapter 24.)

If you do a lot of manuscript reading on the screen, you may wish to touch up a certain punctuation mark or letter to make it easier to read. Here’s how you do it:

Launch ResEdit. Open the font file you want to edit. Double-click the NFNT resource. In the window that appears, double-click the specific style and size whose screen font you want to edit. You’re warned not to change the widths or heights or characters — only to change the look of the actual character. ResEdit’s font editor opens (see Figure 21-20).

To select a character to edit, just type it on the keyboard. You can also drag sideways through the displayed letters at lower-right. Then use the painting tools to change the look of the letters. Save your changes and quit ResEdit. Keep in mind that you have to edit each size of the font separately.

Actually, we draw your attention to this secret only half-heartedly. Fact is, ResEdit’s font editor has some problems, especially with System 7.1. For one thing, you have to turn 32-bit addressing off to use the ascent, descent, and character limit controls. Even then, the sample text window doesn’t always show the correct font. (Notice this weirdness reflected in our screen shot.)

Figure 21-20: ResEdit’s built-in screen-font editor.
Changing the system's default font

The Mac's default system font, 12-point Chicago, shows up just about everywhere you look in the Macintosh interface: menu titles, menu commands, title bars, dialog boxes, and so on. If you're not crazy about Chicago (or if you just feel it's time for a change), you can change this default to any other font in the system by following these steps.

If you're using System 7.0, open a copy of the System file with ResEdit. Open the FOND resource icon. In the FOND window, you see each of the fonts listed by name, size, and resource ID number (see Figure 21-21). In System 7.1 or later, you use ResEdit to open the suitcase of the actual font you want to turn into the default font. Double-click the FOND resource icon to see the list of fonts.

Your first task is to learn the Res ID number of the font you want to designate the new default system font. Scroll to your font of choice — let's use Palatino in this example — and open the resource. Scroll down a bit and you'll find a series of fields set off by asterisks, as shown in Figure 21-22.

These fields show the Res ID and style codes for each size of the font. In our example, we want to use 12-point Palatino, which has a Res ID number of 6339. Remember that number.
Then, close the Palatino FOND resource and open the Chicago FOND resource. Scroll down to the Font Size, Font Style, and Res ID fields, and find the Res ID number for 12-point Chicago.

As you can see in Figure 21-23, this number is 5476. Simply replace the 5476 with 6339 (Palatino’s Res ID number) and you’re done. Save the changes, quit ResEdit, and restart with the modified system.

![Figure 21-23: Replace the Chicago font’s Res ID number with that of another font to pick a new default system font.]

Your Mac may not take graciously to this kind of surgery at first. On restarting, you may be greeted with a blinking question mark or experience an immediate crash. Not to worry; just restart again and you’ll find the Mac has come to accept this fundamental change to its system (see Figure 21-24).

![Figure 21-24: A typical dialog box, after you’ve changed the default system font from Chicago to Palatino.]

Changing sample font text

By now you’ve probably learned you can view a sample of any TrueType font or screen font in System 7. You just double-click its icon in the System folder or Fonts folder and examine the odd sentence in the sample window: How razorback-jumping frogs can level six piqued gymnasts.
You can change the text to anything you want. In System 7.0, the sample text string is an STR resource, with the ID number 14512. Just open the STR resource icon, find number 14512, open it, and edit the text in the first field (see Figure 21-25).

Be aware that this resource was relocated and given a new ID number in System 7.1. It's now an STR# resource with the number 14516. After you open the appropriate STR# resource, you edit the sample text string the same way.

If you insist on replacing Apple's sentence with another that uses every letter of the alphabet, you'll have come up with a fitting alternative, such as We heard five obnoxious jet-black lizards quietly gulping milk.

**Change the Shut Down message**

Does the compact-or-LC-Mac message "It is now safe to switch off your Macintosh" strike you as stale, not to mention ungrammatical? Then replace it with a message of your choice, provided that the message is exactly 44 characters long.

Here's the method: Open a copy of the System file, find the DSAT resource icon, and open it up.

You'll find two resource files listed. Open the one with the ID of 2. Use the Find ASCII command (⌘-G) to search for safe in the narrow column of text on the right side. When you find it, close the Find ASCII window.

The Shut Down message appears twice in this column of text. You want the first occurrence of the message. Drag over the message to select it and then type in the message you want to replace it with (see Figure 21-26).
Figure 21-26: Drag carefully over the old message. Type in a more poetic replacement (right).

Your message must fill in the exact 44 spaces taken up by the old message. (You can always pad your message with spaces.) After you type in the full message, choose Save, quit ResEdit, and restart your Mac using the modified system. Your new message appears in place of the old message when you Shut Down.

**Rename the Trash**

If you ever tried assigning a new name to the Trash icon on the desktop, you probably noticed it doesn’t act like other icons; in fact, you can’t rename it by selecting it and typing in a new name.

You can rename the Trash, however, using ResEdit. Open a copy of the Finder; open its STR# resource icon. Open resource number 11750. In the first field in the resource window you see the word Trash (see Figure 21-27). Just replace that with a new name, save the change, and quit ResEdit.

Figure 21-27: Renaming the Trash.
Add garbage to the Trash

The Trash is represented on the desktop by two different icons. When you drag items into the Trash, the standard Trash icon is automatically switched to the bulging Trash icon.

Both Trash icons are stored as ICN# resources in the System file. We personally can't resist editing the bulging Trash icon so that when our Trash is full, it overflows with all kinds of hideous-looking garbage. We even added brown sludge streaming down the can and collecting in a puddle below.

We're confident that you'll want to do this too. So, here's how: Double-click the ICN# resource icon in the System file and open resource number -3984, the bulging Trash icon (see Figure 21-28). Use the editing tools provided in the window to draw in food scraps and other refuse of your choice.

![Figure 21-28: The new, improved Trash can icon.](image)

To the immediate right of the drawing area, you see eight icons. These are the icons the Mac uses in black-and-white, 16-color, and 256-color views; at the bottom is the mask, which is the "icon" used to lend opacity to the actual icon. Any area of the actual icon that's not "backed up" by some black portion of the mask won't show up on your desktop.

To the right of these icons are smaller versions of the same thing; these are the icons that appear, for example, if you list the Trash in your Apple menu or otherwise view it as a small icon.

Fortunately, you're not compelled to draw every one of these eight icons individually. Just draw one color one (or, on a black-and-white Mac, even skip that). Then you can transfer your work into another icon "slot" just by dragging one of these eight icons on top of another. For example, you can drag the full-color Trash icon on top of the Mask, and the Mask immediately takes the shape of the icon. Likewise, you can drag a large icon onto the smaller one, and ResEdit automatically generates the small icon for you.
Change the “Copying files” message, and more

Here’s an easy one. Open a copy of the Finder. Open the STR# resource. Scroll down to the one called 8750 and double-click it.

In the resulting window, you’ll find a number of pieces of text that you can change, such as the various messages the Finder displays when it’s copying files (Copying, Writing, Verifying, and so on). Change these to your heart’s content! Then put the Finder into the System folder and restart.

Beefing up your desktop patterns

Anyone familiar with the General Controls control panel knows how to change the color and pattern on the Mac’s desktop using the simple editing window provided. Fiddling with this control panel can be entertaining, but let’s face it: there’s only so much you can do with an 8-by-8-pixel pattern. Your creative options are certainly limited. Wouldn’t it be great if you could make the desktop patterns bigger — like 4,032 pixels bigger? (See Figure 21-29.)

Why edit the desktop like this...

...when you can do it like this?

You can. ResEdit includes its own souped-up desktop pattern editor. Here’s what you do: Open a copy of the System file using ResEdit, open the ppat resource and find resource number 16. When you open this resource, you see the pattern editor and three new menus appear: Transform, Color, and ppat (see Figure 21-30).
If you want to create a pattern larger than 8 by 8 pixels, choose Pattern Size from the ppat menu. A window opens, presenting you with a choice of 16 pattern sizes ranging from 8 by 8 to 64 by 64 pixels (see Figure 21-31). Select a pattern size and click the Resize button (or press Return).

Then you're ready to create your new jumbo pattern. Select a color palette from the Color menu; flip selected portions of your pattern horizontally and vertically using the Transform menu. You can also nudge a selected part of your pattern up, down, or sideways in one pixel increments by pressing the arrow keys or by using commands on the Transform menu. You can even paste in a picture from the Clipboard. (If it's too big, you'll only paste the upper-left corner. If you select the entire pattern area [press 36-A] before pasting, on the other hand, ResEdit will scale the pasted image to fit the selected area.)
You can preview how your new pattern will look on the actual Mac desktop by choosing Try Pattern from the ppat menu. To install the new pattern, choose Save and then quit ResEdit. Restart your Mac using your newly modified System file. (This trick messes up the pattern editors in your General Controls panel, which can't handle large patterns. To restore, it reinstall a clean copy of your System file.)

This whole business of editing jumbo desktop patterns is much less complicated in System 7.5. All you have to do is open the Desktop Patterns application (which lives in your Control Panels folder) with ResEdit, double-click the ppat icon, and there are dozens of jumbo icons, all ready for editing.

**Change the boring Alert icon**

All the icons displayed in the Mac's standard dialog and alert boxes are stored in the System file as ICON resources. You can edit or replace these icons to spice up run-of-the mill alert messages. For example, you can replace the plain triangular-framed exclamation point that typically adorns an alert box with something more eye-grabbing, like the wild rabbit icon hidden in the AppleShare PDS file (see Figure 21-32).

To make such a switch, use ResEdit to open the a copy of the System file. Open its ICON resource. Select the icon you want to change and open it up to reveal the editing window. Then either doctor it up with the painting tools or paste in a graphic you copied from another program.

**Figure 21-32:**
A dialog box in which the standard alert icon has been replaced.

The Trash contains 1 item. It uses 1K of disk space. Are you sure you want to permanently remove it?

**Cancel OK**

**Making a StartupScreen**

Making a custom startup screen for your Mac normally involves using a graphics program that saves a file in a special StartupScreen format. But with ResEdit, you can transform any PICT image into a startup screen. Here's how.

Create the artwork you want to use as a startup screen. (You can use a graphics or painting program, or the painting tools in HyperCard, or the drawing tools in Word, or some clip art.) Copy it to the Clipboard.

Then launch ResEdit. Choose New from the File menu. You're asked for a title; call it StartupScreen (no spaces), and save it into the System folder.

Next, choose Create New Resource from the Resource menu. The Select New Type window appears, in which you must indicate the type of resource you want to add to the file. Double-click PICT from the scrolling menu or just type PICT into the text field and press Return (see Figure 21-33).
There's a new, empty window on the screen. Choose paste (⌘-V) from the Edit menu to place your copied graphic into the window. If it's a large image, you won't see all of it; that's okay.

Now, choose Get Resource Info from the Resource menu. In the window that appears, change the ID number from 128 to 0 (see Figure 21-34). Save the change and quit ResEdit.

When you next start up your Mac, you'll see your customized graphic in place of the "Welcome to Macintosh" message!

Opening and playing sound resources

If you use ResEdit to open any program containing digitized sounds — including the System file — you'll find the program's sound resources by opening the snd icon.

When you select a sound resource, a new menu appears in ResEdit's menu bar — the snd menu (see Figure 21-35). To listen to a sound, select the sound (don't actually open it) and choose the Try Sound command, or just press ⌘-T. The sound will play once. The Try Sound with Scale command lets you hear the sound played on each of the different pitches in a C Major scale. The Try as HyperCard Sound command lets you hear how the sound would play if converted into HyperCard's sound format.
If you find a sound you like, you can select it and copy it using the standard Copy command. You can then paste the sound into the Sound control panel (and make it the default alert sound for your Mac) or paste it into the Scrapbook for future use.

To illustrate: The Puzzle desk accessory contains one digitized sound, a metallic, deadpan “Ta-da,” which plays only when you successfully complete the puzzle. Suppose you want to grab this “Ta-Da” and make it your system beep. Here’s what you do. Open the Puzzle using ResEdit and open the snd resource icon. You see one sound, ID number -16000, listed in the window as shown in Figure 21-36.

With this sound’s ID number and Size still selected, press $C-C or use the Copy command in the Edit window. Then close the Puzzle and quit ResEdit. Open the Sound control panel and choose Paste. A dialog appears, asking you to name the sound. After giving the sound a name, click OK and the sound from the Puzzle is added to your collection of system sounds.

Replacing a sound resource by pasting

Anyone who’s ever logged on to America Online is familiar with the hearty “Welcome” you hear when you connect successfully. But suppose you want to replace that “Welcome” with something a little more dramatic, maybe a musical fanfare trumpeting your presence on-line. You can easily alter that sound, or almost any other sound in any program, with ResEdit.

Actually, there are two ways to replace a sound resource in an application. You can paste a sound in from another source using standard cut and paste commands. Or you can record a new sound using ResEdit’s built-in recording features.

Copy a sound from the Scrapbook or another application using the method described in the previous Secret. Then use ResEdit to open the application containing the sound you want to replace. After opening the application’s snd resource icon, choose the Paste command. Your new sound is installed into the application.

The next step is to figure out which of the application’s sounds you want to replace. Use the Try Sound command to determine which sound is which. When you find the one you want to replace, make note of its ID number listed in the window. Then delete the sound by choosing the Clear command (unless you think you’ll want to restore the sound someday, in which case you should copy it to the Scrapbook before deleting it.)

Then select the new sound you just pasted in and choose Get Resource Info from the Resource menu (or press $I-I). In the ID field, type in the exact ID number of the sound you just deleted and click OK. Choose Save and quit ResEdit.

The application now plays your pasted-in sound in place of the one you deleted.
Replace a sound by recording directly into ResEdit

If your Mac has a built-in microphone, or if it came with a microphone, you can record new sounds directly into an application.

Suppose you want to replace America Online's “Welcome” announcement with a digitized recording of your own voice, saying “I'm back!” In this case, the snd resource you want isn't in the America Online program itself; it's in the Online Sounds file, which is kept in the Online Files folder (within your America Online folder).

Open Online Sounds. It has two resource types; double-click its snd resource. You see the list of the familiar America Online sounds, such as “You've got mail!” and “Goodbye!”

Choose Record New Sound from the snd menu. A recording control panel appears, as shown in Figure 21-37. Record your new sound using the controls provided.

Figure 21-37:
ResEdit has its own recording controls for
adding new sounds to an application.

Then follow the same steps outlined in the previous Secret. That is, note the ID of the sound you want to replace (the “Welcome!” message is number 256). Delete the old sound, and assign its ID number (256) to the sound you just recorded.

Now, whenever America Online has the impulse to shout “Welcome!”, you'll hear your own voice instead.

Eliminating the snapshot sound

When you shoot a screen shot under System 7 by pressing Shift-3, you hear the digitized sound of a camera click as the picture is taken and the file is stored. You can use the preceding Secrets to eliminate the sound so that you can capture screen shots in silence. The resource is ID number -16504 in the snd resource icon. Just delete it, or paste it into your Sound control panel or Scrapbook for future use.

Is it 32-bit clean?

If you read Chapter 8, you know that some programs can run with 32-bit addressing turned on, and others can't. (32-bit addressing lets your Mac use more than eight megabytes of memory.) But how can you tell, short of risking a system crash by trying it?

Easily. Open the application you want to examine. Open the SIZE resource icon; then double-click the -1 item. Scroll down until you see the “32-bit compatible” item (see Figure 21-38). If it's set to 1, then you're okay. If it's set to zero, that program may not be 32-bit clean. (It won't necessarily crash in 32-bit addressing; it's just that nobody's yet confirmed its 32-bit cleanliness.) And no, you can't make a program 32-bit compatible by changing this indicator from a zero to a 1!
Creating a minicalculator

Virtually everyone we know operates the Calculator desk accessory using the numeric keypad and not by clicking the on-screen buttons. So we figured: why not just eliminate the buttons — and the title bar and close box, for that matter — to create a tiny, but fully functional calculator that takes up much less space on your monitor?

Here's how we did it: Open the Calculator using ResEdit and open the WIND icon. This contains only one resource, number 16000. Open it and you see a window like the one in Figure 21-39. This controls the size and type of the Calculator window and its location on the screen.

*Figure 21-39: The Calculator’s WIND resource.*
After this window is open, you can change the appearance of the calculator window. Change the window type by clicking one of the icons across the top of the window. In this example, we picked the plain rectangular shadowed window that lacks a close box and title bar.

Then, by dragging the handle at the bottom right of the window that appears on the miniscreen, resize the calculator window. It takes a little trial and error to size the window properly, so that the readout screen is visible but the buttons aren’t. Move the entire window to the location on the screen that you want the Calculator to appear whenever you open it (see Figure 21-40).

Choose Save and close all the windows. Before quitting ResEdit, try opening the calculator. If you sized the window properly, it should look as it does in Figure 21-40. If you haven’t framed the Calculator properly, it’s no problem; ResEdit is still running. Just Quit the Calculator, open it again using ResEdit, and make whatever adjustments are necessary, saving the results each time.

Your new minicalculator will work just as it did at full size. You can still perform all four standard mathematical functions by pressing the /, *, + and – keys on the numeric keypad, and you can still clear the display using the Clear button. And you can still copy and paste to and from the Calculator.
Color Calculator

If stripping down your Calculator seems a bit radical, consider just colorizing it. Just open the Calculator using ResEdit and open the ppat icon. Open the only resource listed, number -15999. Using the basic editing tools provided, change the color and pattern that appear as the background (see Figure 21-41).

Figure 21-41:
Editing the Calculator's background.

Building a better Alarm Clock

Let's face it: the Alarm Clock is a drab desk accessory. With a little ResEditing, you can make it a lot prettier.

Open the Alarm Clock with ResEdit. Open the WIND resource. Double-click the only resource contained within (number -16000). Select a new window type. The bordered window without a title bar looks great.

While you're at it, select the Custom radio button and add a new border color and content color. The content color will appear as a thin frame of color just inside the window border. If you feel ambitious, copy the solitary PICT resource into a paint program and colorize the clock, alarm, and date icons; then paste them back in. You end up with a flashy-looking alarm clock that works just as it did — but is much more attractive on the desktop (see Figure 21-42).

Figure 21-42:
The Alarm Clock, before and after a session with ResEdit.

Changing the creator of system snapshots

When you take screen snapshots using System 7's ⌘-Shift-3 keystroke, the resulting graphic files are saved on disk as TeachText documents. If you make a practice of editing these screen shots, it gets annoying that you can't simply double-click one to edit it. (A double-click launches TeachText or SimpleText.)
It's much more convenient if you teach the System to save the files automatically in the format of your graphics program instead. This way, when you double-click a Picture0 or Picture1 file, it opens your graphics program (Canvas or ClarisWorks, for example) and you're ready to edit. ResEdit makes this easy.

The first thing you need to do is find out the four-letter creator code of your graphics program. To do this, open the graphics application file with ResEdit and choose Get Info from ResEdit's File menu. In the Creator field, note the four-letter code. In the example shown in Figure 21-43, the application is Canvas 3.0 and the code is DAD2. (Codes are case-sensitive, by the way; you must use DAD2 and not dad2.) To be sure you use the proper code, select the four characters in the Creator field and copy them using ⌘-C.

Then, open a copy of the System file. Open the FKEY resource icon. It contains only one resource (with the number 3). Open this resource. You see a dialog box informing you that this is a compressed file and asking if you want to open it anyway. Click Yes (or just type Y).

To find the string you need to edit in this window, press ⌘-G to bring up the Find ASCII window. Type PICT into the text field and hit Return. Then close the Find ASCII window. On the line just below the word PICT (which will be selected as a result of the Find command), you see the four-letter code for TeachText — ttxt.

Select these four characters and replace them with the creator code for your graphics program, either by typing the code or by pasting it in (if you copied the code from the creator field). So, in our example, ttxt becomes DAD2 (see Figure 21-44).

Then use the Save command to save the changes and quit ResEdit. After you restart, using the modified System file, your ⌘-Shift-3 screen shots will always be saved in the format of Canvas (in this example) — and not TeachText documents.
Changing modification and creation dates

Here's a fascinating, though somewhat disturbing, ResEdit hack: you can easily change the creation and modification dates of any file! What's more, you can post date the creation of a file. That's right: you can create a Word memo and change its creation date to some time next week.

To do this, launch ResEdit. Choose Get File/Folder Info from the File menu and select the file whose dates you want to change. In the Info window that appears, you see the creation and modification dates (see Figure 21-45). Edit the dates (and times) as you please, and then choose the Save command before closing the Info window. The new dates are reflected in the Finder.

With this knowledge, you know how to turn in a report late, but can point to the last modification date and prove that you actually finished the work on time. Of course, you should realize that a computer's time stamp will never hold up in court or even in a debate. Your ability to tinker with the time/space continuum in this way is actually a bit sobering.
A hidden message
Open the System file using ResEdit and double-click the STR# resource icon. Open the resource with the ID number -16415 and you’ll see that Apple’s programmers really do have your best interests at heart (see Figure 21-46). Sad to say, this hidden benediction is not a part of System 7.5.

Figure 21-46:
One of the little surprises you’ll find when poking around the System file with ResEdit.

Meet Randy and Maura
Three Finder menus have icons instead of names: the Apple menu, Help menu, and Application menu. But the latter two menus actually do have names, as you can see by opening them in ResEdit; they’re just not displayed in the Finder. The Help menu is called rANdY and the Application menu is named Maura, as seen in Figure 21-47.

Figure 21-47:
The hidden names of graphic menus.
We don’t know Maura personally, but she’s certainly popular. If you open the About TeachText box while holding down the Option key, you’ll see her name there as well.

**Remapping your keyboard**

The System’s KCHR resource controls *keyboard mapping* — in other words, it determines which key on the keyboard produces which character on the screen.

For the most part, you want to keep your keyboard mapped as originally programmed — so that pressing the A key produces an A on screen, pressing B produces a B, and so on.

But there are some cases in which remapping the keys makes great sense. Here’s a classic example: In its default configuration, the Mac’s keyboard produces the > and < characters on screen when you press the period and comma keys with the Shift key down. This often results in typos like P-O>Box 1568 or 3:45 P-M>, with the > inserted where a period was intended. (We’ll pretend, for the moment, that you don’t have SmartKeys, included with this book, which solves that problem much more easily.)

You can head off such problems by remapping the keyboard. You can make the period and comma keys produce periods and commas whether the Shift key is pressed or not.

Open a copy of the System file using ResEdit. Find the KCHR resource icon and open it. If you’re like most Mac users, you’ll only see one resource inside, the standard U.S. keyboard layout. Open this resource to open the full keyboard display.

The bottom portion of the keyboard display window represents the actual keyboard; press any of the modifier keys, such as Shift or Option, and you’ll see the characters on the keys change accordingly. The upper portion of the window is a palette of every character that can be displayed on screen. You can map keys to characters by dragging a character from the palette on top to a key on the bottom (see Figure 21-48).

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**Figure 21-48:** The KCHR display window. The lower portion represents the keyboard, while the upper portion provides a palette of all available characters.
To change the > to a period, press Shift to display the > character on the keyboard display. Then drag the period character from the top portion of the window down and drop it on the > key, as shown in Figure 21-49.

Follow the same procedure to replace the < with the comma; drag the comma character down and drop it on the < sign.

When you've replaced the characters, choose Save and quit ResEdit. You'll have to restart your Mac with the modified System file to see the results of the remapping.

Using this same method, consider remapping your little- or never-used bracket keys, [ and ], to create parentheses or curly quotes.

**Ripping out stuff you don’t really need**

ResEdit is a great tool for stripping applications of unnecessary heft so that they take up less room on your hard drive. Many programs include elaborate graphics or sound effects that are completely dispensable — so why not get rid of them?

A good example is the Finder itself, which contains several PICT resources you don’t really need (see Figure 21-50). You know all those Finder Shortcut screens you can access from the Balloon Help window in System 7.0 through 7.1? Each one is a separate PICT resource. You can find them by opening the Finder with ResEdit and opening the PICT resource icon. To clean the unneeded PICT resources out, select each one and choose Clear from the Edit menu. When you’re through, you’ll have a Finder that’s leaner — by 12K.

Okay, that isn’t much of a savings, but if you’re stuck with a 40MB PowerBook hard drive, and you trim down every application that can be trimmed, the savings can add up.

Here’s another reason to master this PICT-removal technique: Ever use an application that has a really irritating splash screen, one that your forced to stare at every
time you launch the program? Chances are, that splash screen is a PICT resource. Rip it out and you’ll never have to look at it again! We’ll let you in on a little secret: There just may be some programs on the disks that came with this book that are rigged with promotional splash screens. Well, you now have the knowledge to eliminate such built-in sales pitches forever. Enough said.

Create a secret, personalized help screen

We just had a great idea: you can use the information from the last Secret to replace the Finder help screens.

Go to your favorite graphics program. Create a screen of your own that contains, for example, your long-distance phone card, credit-card, and frequent-phone numbers. (Nobody would ever think to look under the Help menu for this information!)

Then open a copy of the Finder. Double-click the PICT resource. Scroll down to the one with ID number 2778 (that’s the first of the Finder help screens). Double-click it. The window opens up. Paste the copied new graphic into the window (see Figure 21-51).
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Put the modified Finder back into the System folder to replace the old one and restart. To see your handiwork, choose Finder Shortcuts from the Help (question-mark) menu.

On second thought, perhaps the more secure method of storing your credit-card numbers is to replace the About the Finder PICT graphic, as described in the next Secret. That way, nobody can stumble onto those numbers of yours, because you have to press the Option key when you choose the first command in the Apple menu to get the About the Finder command.

**Change the About the Finder Picture**

By now, you’ve probably discovered the famous About the Finder command hidden in the Apple Menu; it appears if you hold down the Option key while pulling down the Apple menu.

Not surprisingly, you can replace that mountain landscape with any picture you want. Open a copy of the Finder with ResEdit and then open the PICT resource icon. Scroll down until you find the About the Finder mountain picture — it’s PICT resource number 5066 (see Figure 21-52). To replace it with another graphic, select the picture, and then choose the Paste command to paste in any picture you copied to the Clipboard.

If you want to edit the picture — add colors to it or draw a house on the mountaintop — select the picture and copy-and-paste it into a graphics program. Then, when you’re done editing, paste it back in right over the original picture.

While you’re at it, you may want to change the name of the About the Finder menu command to match your picture. For example, if you replaced the mountain picture with a scanned photo of your mother-in-law, you can rename the menu command My Mother-in-Law. To do this, open the Finder’s STR# resource icon; then open resource number 5000, where you’ll find the two fields (numbered 56 and 57) containing the text strings for the About this Macintosh and About the Finder menu items. Type in new command names and save your results.

**Changing the scroll bar pattern**

Yes, you can change the scroll bar pattern that appears in every window on your Mac’s screen by probing into the System’s PAT resources. Don’t these Secrets just make life worth living?
Open a copy of the System file using ResEdit. After opening the PAT resource icon, find the resource with ID number 17 and open it (see Figure 21-53).

After you open resource 17, you can use the basic painting tools to change the scroll bar pattern. When you come up with a pattern you like, choose Save and quit ResEdit.

As always, replace the old System folder with your modified one, and then restart the Mac.

**System 7.1: turn sounds and Fkeys into fonts**

Under System 7.1 and later, fonts live in the Fonts folder within the System Folder. The surprising news is that you can install Fkeys and sounds the same way. Turning a sound or an FKey into a pseudo-font has several advantages. First, you can merrily reinstall your System at any time, without worrying that you’ll lose your custom sounds and Fkeys. Second, you can use the Finder’s Find command to search for these items (which you couldn’t do if they were buried in the System file). Finally, you can install them by dropping their icons onto the System folder, exactly as though they were fonts.

To do this, open the FKey or sound file using ResEdit. Choose the Get Resource Info command from the File menu. In the four-letter Type field, replace FKEY, snd, or sfil with the letters FFIL.

Then choose Save from the File menu and quit. Your sound or FKey now looks and acts, for most practical purposes, exactly like a font (it has a suitcase icon now). When you drop it into the System folder icon, you’ll be asked if you want it to be stored in the Fonts folder; you do.

Yet now, if you open your Sound control panel, that sound shows up among your other sounds and works perfectly well as a sound. Similarly, you can now trigger whichever FKey you just installed, even though it’s stored in an unusual place.

**Changing date formats**

Some folks get annoyed that under System 7.0 and 7.0.1, the Finder’s list views use a full version of the creation and modification dates for your files. You don’t see 2/5/94; you see Saturday, February 5, 1993, 9:47 A.M.
Chapter 21: The ResEdit Chapter

Not only is that more information than most people need, but it crowds up list-view windows. Fortunately, you can fix all this with ResEdit. In fact, you can transform the date info displayed in the Finder into just about any format you prefer. (In essence, you can do with ResEdit what the Date & Time control panel does for System 7.1.)

Open a copy of the System file with ResEdit and open the itll resource icon. (Watch closely; there are also itl2, itl3 and itl4 icons.) It contains a single resource, called "U.S.," with an ID of 0. Open it.

Now adjust the settings in the window to reformat the date. You can suppress any element of the date, such as the day of the week or the year, by checking the appropriate checkboxes (see Figure 21-54). You can use the pop-up menus to shift the order of the elements (changing day-month-date-year to day-date-month-year, for example). You can also change the punctuation that appears between each element (you can separate the month and date with a dash instead of a comma). You can even change the names of the days and months, if you are so inclined.

When you've made the needed adjustments, save the changes before quitting ResEdit. Any program that has a date-stamp feature, such as Word, will use your new date format. And, of course, the Finder will, too (see Figure 21-55).
Eliminating the rename delay

When you click on the name of an icon, System 7 pauses momentarily before activating the name’s selection box so that you can edit it. The rename delay is there supposedly to prevent you from accidentally renaming an icon you meant to open.

As we mentioned in Chapter 1, you can change this renaming-delay by adjusting the double-click setting in the Mouse control panel. At least you could until System 7.1 came along.

This version of the system requires ResEdit to change the rename delay. (In fairness, System 7 Pack, included with this book, does this trick with much more efficiency; see Chapter 33.)

It’s easy to eliminate this delay. (This little hack, however, doesn’t work with System 7.5.) Open a copy of the Finder with ResEdit. Open the CODE resource icon and find the resource with ID number 11. Open this resource and choose the Find Hex command in the Find menu.

In the Find Hex field, type 5DC0. In the Change To field, type 50C0, exactly as shown in Figure 21-56. (Those are all zeros, not letter Os.) Then click the Change All button.

You can perform this same change by searching for the 5DC0 hex string, selecting it, and manually typing in the new code, as shown in Figure 21-57. However you do it, save the change when you’re done. Restart your Mac with the modified Finder installed to see the results.

Fatten the Powerbook cursor

The Mac’s narrow I-beam cursor can be hard to see — especially on a PowerBook. So why not fatten it up a bit with ResEdit?

Open a copy of the System file using ResEdit and open the CURS resource. You’ll see a window displaying the various cursor shapes used by the System. Double-click the I-beam to open an editing window, as shown in Figure 21-58. Now, just use the drawing tools to thicken up the vertical beam, adding an extra column of pixels on each side. When you’re done, close the window.
Next, open the ROv# resource and open ID 1600. Scroll to the very bottom of the window and click in the last item — a row of five asterisks. Choose Insert New Field(s) from Resource menu. This adds two new fields in the window — Type and ID. In Type field, enter CURS and in ID field, enter 1, exactly as shown in Figure 21-59.

When you restart your Mac with the edited System, you'll have a chunky and easy-to-spot cursor.

**Changing the default number of copies**

When you use the Print command, your printer driver always plugs a "1" into the copies field of the Print dialog box, assuming you want only one copy of what you are about to print. You can, of course, type any number into this field to output multiple copies of your print job. But suppose you always want your jobs printed in triplicate. You can change this default, so that the Print dialog box always comes up with a "3" in the copies field.
Here's how: Use ResEdit to open a copy of your printer driver. This is the file in your Extensions folder that bears the name of the icon you select when choosing a printer in the Chooser (LaserWriter, StyleWriter II, and so on). Open the DITL icon and then open resource -8191, which contains the Print dialog box layout (see Figure 21-60). (This is true for LaserWriter 7.1.2 and StyleWriter II version 1.2. You may have to poke around for the right DITL resource in other versions.)

Double-click on the Copies field. This will open a window in which you can edit the number that appears in that field (See Figure 21-61). Just type in a 3 — or any number you want to use as a default. Then close it all up and save the file.

**Put your mouse on steroids**

If the fastest mouse-tracking setting in the Mouse control panel doesn't move the mouse fast enough for your taste, you can turbo-charge your mouse's tracking speed with a simple ResEdit hack:

Open a copy of the System file using ResEdit and then open the mcky resource. Find the mcky resource with ID 6 and open it up. Now change the eight Threshold fields to 1, 2, 3, 4, 5, 6, 7, 15. (These numbers correspond to the seven Control Panel speed settings: they control how far and fast you have to move the mouse before it starts speeding up.) Now save your work and restart your Mac with your newly-edited System file installed. Bump your mouse tracking up to the highest setting and see what you think. If the speed doesn't feel right, you'll have to do some experimentation. Repeat the steps outlined above, but try different numbers in the Threshold fields.

**Putting ResEdit in pig-mode**

Those wacky ResEdit programmers have buried a wonderful, off-beat little surprise for you in the About ResEdit dialog box.
To uncover the surprise, hold down the ⌘, Option, and Shift keys while selecting About ResEdit from the Apple menu. Your Mac will start oinking — yes, oinking — and you'll see a dialog box asking if you want to “start pig-mode.” If you click OK and try this again, you'll once again hear the oink and see the dialog box shown in Figure 21-62.

Figure 21-62: The dialog boxes that signal the starting and stopping of pig-mode in ResEdit.

Pig-mode, as it turns out, actually does have a function. It puts ResEdit into a special mode in which it constantly purges memory and compacts resources. However, it makes the program run slower and is designed primarily for programmers who are testing custom editors. So we recommend keeping ResEdit in its no-Oink mode at all times.

The oink, however, is delightful, and we heartily recommend using ResEdit on itself to copy this sound out of the program so you can add it to your collection of system alert sounds. (See “Opening and playing sound resources” earlier in this chapter for instructions.)

**Top Ten ResEdit Pranks**

You can't spend more than a few minutes working with ResEdit without at least thinking about the havoc you can wreak by editing program resources in sick, twisted ways. At least we can't.

Of course, we are in no way suggesting that you actually pull any of the pranks listed below — but we won't tell anyone if you do.

1. Switch the empty and bulging Trash icons, so that the Trash looks empty when it contains files and bulges when empty.

2. Edit the Balloon Help text strings (most of them are in easy-to-access STR# resources) so that pointing to a window's Close box produces a help balloon that says “Clicking this box will cause irreparable damage to the motherboard.”

3. Edit the MENU resource to turn a separator line in a menu into an alluring new menu command (like “Double Processing Speed”) that doesn't work.
4. Alter dialog boxes (using the DITL resource editor) so that the Cancel and OK buttons in a standard dialog box instead say Purge Data and Erase Hard Disk (see Figure 21-63).

Figure 21-63: Imagine your coworker's expression when he tries to empty the Trash and see this dialog box.

The gamma correction on your monitor has created an irreversible memory problem.

Purge Data  Erase Hard Disk

5. Use ResEdit's MENU editor to change all text in menus to white, rendering the commands completely invisible. (They will still work, if you can find them.)

6. Replace the standard alert box icon with the System Bomb icon.

7. Remap the keyboard so that pressing any key produces a semi-colon.

8. Change the names of an application's menus so that the File menu contains the Format commands and vice-versa.

9. Install a desktop pattern consisting entirely of Trash can icons.

10. Create a startup screen that features a realistic System bomb message, urging the user to restart the Mac immediately.
In this chapter:

- Hard-disk repair and utility software
- Tempo and QuicKeys macros
- AppleScript
- Screen savers, screen grabbers
- File-compression software
- Finder and file utilities

Instead of modifying *documents*, like most software, a utility program is designed to modify your *computing environment*. It affects what you see on the screen, how your hard disk handles data, and other aspects of the computer itself. Utilities aren't work processors, in other words: they're *Mac* processors.

We are, we'll confess, utility junkies. Maybe it's part of that male technology thing, that we love tinkering with our computer almost as much as we love using it. In the Mac world, there's a funny little unspoken social hierarchy: the person who's got the most little startup icons appearing across the bottom of the screen is the coolest.
The Mac has hundreds of utilities. Many are sold by established software companies; many more are shareware and some are free. (See Chapter 33 for more on shareware.) Here are a few of the major utility categories:

- Hard disk defragmenters and file-recovery programs
- Anti-virus software
- Macro software
- Screen savers
- File management utilities
- File-compression programs
- Font/DA managers
- Screen-capture programs
- Colorizer/customizers

Once you've got all this stuff going, there's one more utility you'll need — an extension manager, just to manage all your other utilities!

Boy, are you in luck: believe it or not, we included an example of almost every one of these utilities on the disks with this book (see Chapter 33).

**Hard Disk Repair and Recovery Software**

Let's get this straight: much better than any hard-drive repair or file-recovery software is **preventive action** on your part. Check out our complete preventive-maintenance schedule in Chapter 7, which we guarantee will reduce the likelihood of disaster. Chapter 7 also contains our thoughts on hard disk **formatting,** **defragmenting,** and **partitioning** software.

What we haven't yet discussed is what to do when your drive crashes. In that event, get a hard-drive recovery program like Central Point MacTools or Norton Utilities, each of which is represented on the SECRETS disks. These programs typically include an extension that, if you were smart, you installed when you got the program. If this software watchdog was installed at the time of the crash (and if it **survived** the crash), recovering files is a cinch; you have a very good chance of getting most of your data back intact by clicking a single button.

If you didn’t install the extension (for example, if you bought the program because your hard disk crashed), then you can try recovering files by their **file headers** (using one of these disk-recover programs). In this method, the program scours the disk looking for specific programs' "footprints."

If the file type method fails, you can try File-Recovery Method Number Three: a complete scan of the hard disk surface in search of anything that looks like a file. After a long time, you see a list of hundreds of files.
Now you’re in for an emotional roller-coaster ride. You’ll discover that not every listed file is marked “recoverable.” Sometimes unimportant files are recoverable, but your vital ones aren’t. Worse, sometimes you recover a “recoverable” file, only to find out that, when opened, it contains a screenful of gibberish.

Still, having hard-drive health software on hand is a terrific thing.

We’ll even go so far as to rate Norton or MacTools as among the most important five programs you should own.

## Disk Utility Secrets

### The best floppy-saving program in the world

We’re about to reveal what we consider one of the truly best-kept secrets in the Mac industry. (We’re not being paid by any of these companies, by the way.) This is a program that can salvage the files from almost any bad floppy disk. It’s an aging, underpublicized piece of software. But we’ve used it hundreds of times on disks that the Mac insisted were “unreadable.” Old disks, new disks, 400K disks, high-density: this program can save almost all of them.

It’s called 1st Aid HFS (not to be confused with Apple’s Disk First Aid). Unfortunately, because it’s such a well-kept secret, it got rolled into a package called 911 Utilities, which included Virex, the anti-virus program. And then that got rolled into a package called SuperSet, which includes still other programs (like the Citadel security program). The company that made the program has been similarly gulped up a couple of times by other companies.

At this writing, anyway, the company responsible is now called Datawatch, and the package is called SuperSet — and buried deep, deep inside it is the Number One floppy-disk recovery program in the world.

### The dancing Norton programmers

There’s a dancing programming staff hiding in the Norton Utilities application’s About box. Click in all the obvious places. You’ll find it.

### When 1400k isn’t enough

Ever try to use one of those disk-recovery programs (Norton, et al.) on a System 7.1 Macs and discover that you can’t create an “emergency floppy” from which to operate on your dead hard drive? Even the tiniest System folder and your Mac’s enabler and the recovery program won’t all fit onto even a high-density floppy. The enormous System 7.5, needless to say, represents ten times the problem.

We’ve heard several solutions to this problem. Sure, you can write to the disk-utility company and get them to send you a specially tinkered emergency disk for your model. That’s not much fun when you’re on the road and in a hurry.
You can also get by without the Finder on your startup floppy. Use the System 7.1 Installer to create a Minimum Installation high-density floppy. Replace the Finder file with your disk-utility program — but rename the disk-utility icon Finder. The Mac will launch it when starting up.

Here’s the sure-fire solution. If your Mac runs at all, create a RAM disk. Because you can make the RAM disk any size you wish, make it large enough to hold the System folder and the recovery program — and start up from that! (See Chapters 8 and 12 for instructions.)

**Virus Protection**

We’ll be straight with you here: we don’t use virus protection. Oh, we’ve got Disinfectant on hand to check things out when things get suspicious.

But we can count the number of people we know who have actually lost data to a virus on zero fingers. Oh, sure — we know people who’ve had computer viruses. According to a *Macworld* poll, about eight percent of Mac users have had infections. There have been about ten widespread Mac viruses. But almost all of these have been harmless, just gumming up the works without destroying data.

**Where viruses live**

You may not have realized it, but you *can’t get a virus from a document.* Except for a couple of benign HyperCard viruses, all viruses only do their dirty work by infecting an application — and can’t spread unless you launch that program.

And guess what else? A disk can’t be infected if it’s locked. No way, no how. That’s nice to remember when you’re taking a floppy disk to somebody else’s Mac to give them a file from your Mac: if your floppy is locked, the other person can copy stuff off of it, but no virus can invade your floppy.

You don’t have to be concerned about files you download over the modem from America Online or CompuServe. Every single file is meticulously checked for viruses before it’s posted for your use. Nor should you worry about being infected by a commercial program. Ever since Aldus discovered a virus aboard its shipping FreeHand disks in 1989, software companies have become duly paranoid about viruses, and have scrubbed their disks clean before sending them to be duplicated.

Therefore, there are only a couple of ways left a virus can travel to your Mac:

- Aboard a floppy disk or cartridge brought to you by a friend
- From a local, noncommercial electronic bulletin board
Software protection

The numerous commercial packages, such as Virex and Symantec Anti-Virus for Macintosh (SAM), have three functions. First, they can tell if your disk is infected by any known virus. If you type in the correct numbers you get from a phone hotline, they can detect any new viruses that appear. Second, they can cure your disk of most of these viruses, putting you back in business with no side effects. And third, Virex and SAM can be told to scan every floppy disk you insert, so that you’re essentially protected against getting viruses through the floppy drive. (Man, do we find that incessant floppy-disk scanning annoying.)

But guess what? John Norstad’s superlative Disinfector does all of that, too (except for the phone hotline part). It’s free. It has a virus-watchdog INIT and a seek-and-destroy application, just like Virex or SAM. And you already own it (it’s on the SECRETS disks). See Chapter 33 for instructions.

For much more detailed and superbly written information on viruses, read the online instructions that come with Disinfector.

Virus-protection Secrets

Kill the WDEF virus

One of the most frequent virus attacks (if such attacks can even be called frequent) is that of the WDEF virus. It’s as easy to kill as they come: just rebuild the desktop, as described in Chapter 1. Furthermore, System 7 is immune to this virus.

The classic Disinfector hidden surprise

Disinfector, the terrific anti-virus program, has one of the most entertaining hidden surprises of all. Just choose About Disinfector from the Apple menu and wait.

Bonus Secret: If you’d like to hear the entire song, without being rudely interrupted by the foot, keep the mouse button pressed in the menu bar.

QuicKeys and Tempo

Now we’re talking. We consider a macro program absolutely essential on the Mac!

QuicKeys and Tempo II are two System 7-savvy macro programs. (For your information, MacroMaker, which Apple included on System 6 system disks, and AutoMac, which came, for a time, with Microsoft products, are relegated to the dustbin of software history.)

Macros let you be lazy. By performing tedious, repetitive, boring tasks you usually have to do yourself, a macro lets you kick back and relax while it types the date, sorts your database, or backs up your hard disk. This puts some workload back where it belongs: in the hands of your expensive computer. All you have to do is press a keystroke of your choice, and the macro program takes over. If you’re not already using macros, you’ll be amazed at how much effort you can save.
Here, for example, are 75 of the tasks for which we have macros. Remember, we press one key to trigger each of the following.

1. Apply a certain System 7 label to every file modified in the last week
2. Arrange Quark palettes the way we like them
3. Back up hard disk (to tape or hard disk)
4. Change printers via Chooser
5. Change the margins to a certain preference
6. Change tools (PageMaker, Fontographer, Canvas…)
7. Check InBox for new mail; save it
8. Choose common font/size combinations
9. Click dialog-box buttons without using the mouse
10. Convert all straight quotes to curly (existing file)
11. Convert all straight quotes to curly (while typing)
12. Convert database formats ("Smith, J." to "J. Smith")
13. Convert folder full of MacPaint files to PICT files
14. Copy an address to an envelope template, and print it
15. Dial, log on, type password (America Online, CompuServe…)
16. Dim the PowerBook backlight
17. Drag top application window to bottom of screen
18. Eject a floppy disk
19. Eliminate extra spaces between the sentences of a document
20. Fetch a specific image from the Scrapbook and paste it
21. Flip into 24-bit color when Photoshop opens, and back to black-and-white for WordPerfect
22. Go to end of a word-processing file
23. Hide all other application windows
24. Hide the frontmost application
25. Initialize a blank floppy
26. Invisify the icon of a selected file
27. Italicize all occurrences of something in Word
28. Jump to a specified folder when we Open or Save
29. Launch Excel
30. Log phone calls into text file
31. Make Shift-period and Shift-comma type . and , (instead of < and >)
32. Make the Esc key work like a left-handed Delete key
33. Make the PowerBook’s hard drive stop spinning
34. Mount an AppleShare volume (disk)
35. Open a PMS color file (Illustrator)
36. Open a specific folder and highlight an icon in it (in the Finder)
37. Open any control panel
38. Open each file in a folder of PageMaker documents, save each under a different name (for smaller file size)
39. Open every file in one folder, save it into another
40. Paste an EPS file of a signature into a letter
41. Perform a sequence of Photoshop menu commands
42. Print only page 1 of something
43. Put a half-width space before and after every en dash (May 4 – 6)
44. Put the PowerBook to sleep
45. Redraw an object identically in MacPaint
46. Rename a folder full of files to IBM-compatible names (8 letters max)
47. Replay all steps up to a crash (while programming)
48. Restart the Mac
49. Save every ten minutes
50. Select “Larger print area” (an option on laser printers)
51. Select a specific style sheet (word processor or page layout)
52. Select from here-to-end (word processing, music)
53. Select next window
54. Select Text Offset for a graphic (PageMaker)
55. Separate the area codes of phone numbers into two database fields
56. Set clock to Daylight Savings Time
57. Set up Performer editing windows to fill the screen
58. Shut down the Mac
59. Shut down the Mac in the middle of the night (after downloading, say)
60. Strip linefeeds and funny characters from downloaded text
61. Switch startup disk settings
62. Switch the color monitor to B&W (and back)
63. Switch the last two letters we just mistyped
64. Tile four open windows
65. Train someone, using automated real-time sessions
66. Transpose up an octave (music programs)
67. Trigger an AppleEvent
68. Turn File Sharing off to eject a SyQuest cartridge
69. Turn off AutoGrid when launching ClarisWorks
70. Turn off the Mac’s sound
71. Type “SUM( )” in Excel and put the cursor between the ( )’s
72. Type out a standard passage of boilerplate text
73. Type out today’s date
74. Type an e-mail signature (“David Pogue, contributing editor”)
75. Unstuff a StuffIt archive

The key to using a macro is this: whenever you find yourself doing anything for the second or third time, and you anticipate doing it a few more times, make a macro to do it. You’ve certainly got enough keys to go around; when you consider that Shift, Option, Control, and % can be mixed in any combination with any keys, that gives you just about 2000 possible keystrokes that can trigger macros — per application!
Intro to QuicKeys

There are, in essence, three kinds of QuicKeys. There's a one-shot QuicKey: pull down a menu, click a button, and open a file. Then there are real-time macros, which re-create exactly a series of steps you take, including hesitations, false starts, and so on. Finally, there's the kind you probably use most of all, the multistep sequence. In a sequence, the macro program performs each step of the macro — launch Word, set margins, paste logo, type today's date, hit Return a couple of times — at extremely high speed. (If you've never seen a macro in action, you're in for an amazing and even unsettling sight. You'll think your Mac's been taken over by a poltergeist on caffeine.)

You can create sequences in one of two ways: either by composing them manually in the Sequence Editor or by doing whatever it is as QuicKeys watches. Usually, you do a combination of the two. You record a sequence as QuicKeys watches, and then you edit it to fix any bugs.

Debugging 1: When circumstances change

Oh, yes, you'll always have bugs to work out. Asking a macro to do some of your work is like asking somebody who's brand new at the office to take over for you. Sometimes they're too dumb to get it, even when you're the essence of clarity. To be a successful macro user, you have to do just the tiniest bit of problem solving.

When a QuicKey goes wrong, it's usually because (a) circumstances have changed since you recorded it (such as the position of an icon or menu command), or (b) the QuicKey goes too fast for the Mac. By the way: Don Brown, the author of QuicKeys, pronounces it "quickies" not Quick Keys.

We have power secrets for each situation. Here's an example of the first: you write a macro to close one document and open another. Performer, for example, is a MIDI music recording program. It's one of those applications that can only open one document at a time. It has no keyboard shortcut for close; instead, its Close command always includes the name of the open file. It may say Close "Overture" or Close "If I Were a Rich Man." If you teach QuicKeys to choose a particular menu item by name, which is its default, then guess what? Your new Close Document QuicKey won't work (except on the file you used to teach it).

The solution: teach QuicKeys to hunt for that menu command by its position in the menu, instead of by its wording. Open the QuicKeys window and double-click the Menu QuicKey name to open the Sequence Editor (see Figure 22-1).
Now it’s a simple matter of clicking “by Position” and then clicking OK.

**Debugging II: Fixing a Click**

Along the same lines, you can also get into trouble when you use a QuicKey to click something on the screen. Sometimes the programmers of the application you’re using have defined what’s called a *control area* in a dialog box: an invisible region that contains user controls (like buttons). Trouble is, this region may be larger than the button itself (or whatever you want the macro to click). If your QuicKey doesn’t seem to be successful clicking a button, open the QuicKey window for that click. As shown in Figure 22-2, you see a Control Area button in the Click editing window.

![Figure 22-2: Name: Click](image)

The Control Area option can occasionally confuse a macro.

```
Name: Click

Click: From:(415,49) from top-left corner
To:(2,1) from current location

Window: Window #1 from front

Control area: Control #2 from front
```

Just click the Control Area button and set it to None. Then your QuicKey should work more smoothly.

While we’re talking about the Click editing options: CE Software told us that a simple adjustment in this Click Options dialog box can often make the difference between a macro that works and one that doesn’t. If you click the Click button, for example, you see that you can specify how QuicKeys measures the *position* of this mouse click: a certain distance from the corner of the screen, from the corner of the window, and so on — and from which corner. Experiment with these controls until you find the setting that works every time.

**Debugging III: When the QuicKey runs too fast**

It’s not that the macro runs too fast, actually. More often, a multistep macro doesn’t work because, at *one spot* in the process, it needs to wait for the Mac to catch up.

You can introduce a pause into your macro, of course. When you edit your sequence, choose the User Timed Pause command (from the Define menu). This is how you create a pause that stops the macro for a *fixed* period of time, however. In most cases, you want something a little more intelligent.

Here’s a perfect example: when writing this book, we created a number of illustrations and screen shots. Each had to be pasted into the Word manuscript. Then the style for the picture had to be changed to Graphic style. Then we had to press Return (to go to the next line) and type the caption. But the caption always begins with the figure number (“Figure 22-1,” for example). So we wanted a macro that pasted the graphic, changed the style to Graphic, hit Return, and typed “Figure 22-.”

But we ran into a problem. If your clipboard contains a *large* graphic, Word takes awhile to paste it. But without teaching QuicKeys to wait for this process, it does the rest of the macro — changing the style, pressing Return, typing the figure number — blindly, futilely, while the Mac isn’t even paying attention!
Here's the solution: Use one of QuicKeys's various intelligent waiting commands (see Figure 22-3).

Figure 22-3:
A few creative ways to make your QuickKey pause intelligently. Wait until Cursor Action can pause the macro until the cursor resumes its normal pointer shape. Wait until Menu Action pauses until a particular menu command becomes available (or checked, or unchecked). Wait until Window Action suspends the macro until a particular window is (or isn't) on the screen.

For us, the solution was to choose the Window Wait option. (In QuicKeys 3, you get to this by choosing Extensions from the Define menu; then choosing Sequence Tools from that submenu; then Wait... from that submenu.) See Figure 22-4 for an annotated explanation.

Figure 22-4:
By inserting a Wait Extension set to "Not dialog" (meaning: "Wait until there's no dialog box on the screen before proceeding"), we made the macro intelligent.

Debugging IV: Mark your place with a beep
In most cases, this kind of minor tweaking is all that's required to make your QuickKeys run smoothly. Here's one other tip: If you're having trouble figuring out where a macro is going wrong, you can mark each step of the sequence by inserting a Sound extension — in other words, get your QuickKey to beep as it proceeds. As you watch the macro run, you can judge where the problem occurs by seeing if it takes place before or after the beep you inserted.
Batch processing

Batch processing means performing the same steps on dozens or hundreds of files, one after another.

For years, QuicKeys couldn't do batch processing at all, because there was no way to make a macro repeat itself. With the Repeat Extension, though, you can set QuicKeys up to ask you how many times it should repeat.

Suppose that you have a folder full of 100 Photoshop files. And, because Photoshop transformations aren't exactly lightning-fast, you'd like to set this macro in motion, and then go home for the night. During the night, you want the macro to open one file after another, reducing each image to 50 percent of its original size, saving it, and opening the next file.

We can tell you where the process breaks down: in the Open File box. QuicKeys can certainly open the first file, process it, save it, close it, and then choose Open from the File menu to get the next file. But then the Open File box appears (see Figure 22-5). How can you prevent QuicKeys from opening the first file again? How can you ensure that it opens the second file?

![Figure 22-5: The Batch-Processing Conundrum: How do you make QuicKeys advance to the next file? How can it know that it's already processed some files in the list?](image)

If only the Mac would, upon opening this Open File box, remember which file you last opened, and have it highlighted. (Then the macro could press the down-arrow key just once, and it would highlight the next file.) Instead, the Mac always highlights the first file in the list.

But you can get the Mac to highlight the last file you opened. Super Boomerang, part of the Now Utilities package, does exactly that. (We've provided a discount coupon for Now Utilities in the back of this book.)

With Super Boomerang installed, then, a batch-processing QuicKey sequence looks something like Figure 22-6.

You can make great use of the Location Extension when batch processing, by the way. Instead of saving each doctored file, for example, you may prefer to save a copy of it into a different folder. Just insert two Location Extension QuicKeys into your sequence: one to make the Save File box jump to the new folder, and one to make the Open File box jump back to the original one.
CASE HISTORY
QuicKeys for Mac virgins
You may think that QuicKeys and Tempo are the domain of advanced users. Technically, you're right.
But they're also great for absolute wide-eyed beginners, because macros can reduce the number of steps you have to remember.
One woman we know is a book author who's absolutely stricken whenever she contemplates using a computer.
Yet, at her publisher's urging, she got herself a PowerBook Duo and a floppy drive. We set up a macro for her: when she presses Control-S, the macro saves her work, automatically copies her manuscript folder onto the floppy disk (which lives, permanently, inside the floppy drive), and then puts the Duo to sleep.
Her data is safe, and she doesn't even know it.

File Edit Define

<table>
<thead>
<tr>
<th>Action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Begin Repeat</td>
<td>Asks you how many times to go through this</td>
</tr>
<tr>
<td>⌘-O</td>
<td>Chooses Open from the File menu</td>
</tr>
<tr>
<td>⌘-Enter</td>
<td>Highlights the next file in the list</td>
</tr>
<tr>
<td>Select All</td>
<td>Clicks the Open button (by pressing Enter)</td>
</tr>
<tr>
<td>Sentence case</td>
<td>Selects all the text in the document</td>
</tr>
<tr>
<td>⌘-S</td>
<td>Capitalizes the first word of every sentence</td>
</tr>
<tr>
<td>Save</td>
<td>Saves the file</td>
</tr>
<tr>
<td>Close</td>
<td>Closes the file — then starts all over again</td>
</tr>
</tbody>
</table>

Figure 22-6: Here's an example of a batch-processing QuickKey. Suppose that you have a folder full of downloaded modem messages. But they've been typed in ALL CAPS, all of them. This macro opens each one of them in Word, converts them to upper-and-lowercase text, and saves. It only works if Super Boomerang is around to remember the macro's place in the Open File list box.

QuicKeys Secrets
The concept of Universal vs. local (Tempo, too)
You have one set of macros that work no matter which program you are in. They constitute the Universal keyset. These are the macros that shut the Mac down, that convert your straight quotes to curly ones, and that type out today's date.
You have another set of macros in each individual application. It's worth noting that these "local" macros override any Universal ones that you have assigned to the same keystrokes. When you define an application-specific keystroke, macros warns you that you're using the same key combination as a Universal macro. You can just click OK and continue on your way.
This override feature can be useful in a number of instances. The primary example is smart quotes. Use Universal macros (the predefined QuicKeys called QuickQuotes and Double QuickQuotes) to give you curly quotes everywhere you can type: in file names, in your Note pad, everywhere.

But there are some programs where you don’t want those QuickQuotes macros to do their thing. You don’t want curly quotes at all when you’re sending e-mail, because curly quotes get converted to U’s and R’s when they are received by non-Mac computers (including the mainframes that run CompuServe, GEnie, and the like). You also don’t want QuicKeys to do your curly quotes in Word, because Word’s own smart quotes are smarter than the QuicKeys quotes. (See “Curly quotes” in Chapter 24 for our logic.)

**Hide-application macros**

Here are a couple of our favorite QuicKeys. Define one key to hide the frontmost program by choosing Hide HyperCard (or whatever) from the application menu. Define another one to choose Hide Others from the same menu. It works like a charm!

QuicKeys also has predefined macros (in the Extension called Process Swap) that can shuffle between multiple running System 7 programs. With one keystroke, for example, you can jump back to the last program you were in, or to the next program in the list — and you have the option to auto-hide the program you’re switching out of!

**Use your program-launch macro to make a program active**

You can launch any program on your hard drive by pressing its macro key. But that key’s usefulness doesn’t stop there. When you’re running several programs at once, pressing that same key will also bring forward the program it originally launched. This works in Tempo, too.

**The hidden bunny movie**

Open the QuicKeys window. Click the large QuicKeys logo at the bottom-left corner of the window. Sit there patiently for nearly a minute. Your reward will be a very minor but amusing little animated display.

Make sure the sound isn’t turned off on your Mac speaker, or you won’t hear the drum beats.

**Instant Fax/Modem switching**

Most of the software that comes with today’s fax/modems works like this: when you want to fax the document that’s on the screen, you press Option or the 3C key while pulling down the File menu. Everywhere it usually says Print, it now says Fax (Fax Setup, for example).

Some of the less elegant fax/modems (and network modems), on the other hand, come with software that requires you to open the Chooser and click the fax/modem icon to send a fax. That’s a lot of trouble — and QuicKeys can take care of it.

Use the Choosy extension, which comes on the QuicKeys disks. It has one purpose in life: to switch Chooser-selectable drivers (icons) at the touch of a key. You don’t even have to open up the Chooser to do it. (Set up a second macro to switch back to your regular printer after you’re done faxing.)
**Auto-empty the Trash**

If you, as a System 7 user, miss the days of System 6, whereby the Trash gets emptied automatically, QuicKeys can take care of you.

Go to the Finder and open the QuicKeys window. From the Define menu, choose Menu/DA. Then choose Empty Trash from the Special menu. In the Menu/DA dialog box, click the Timer Options button. When the Timer dialog box appears, indicate that you want the macro to run, say, one second after the Macintosh starts. That’s all it takes to creating a self-emptying Trash can.

**What to do with your existing QuicKeys when upgrading**

Suppose that you have dozens of great QuicKeys set up for PageMaker 4.2. When you install PageMaker 5.0, your macros won’t work anymore.

To carry all your existing macros into the new program, you probably think that you have to open the keyset for the older program, copy them, and paste them into the keyset for the new program (all within the main QuicKeys window).

Actually, it’s much simpler. Go to the Finder. Inside your System folder, inside your Preferences folder, inside your QuicKeys folder, and inside your Keysets folder, you’ll find the keyset named for the outgoing program. Just rename it so that it exactly matches the name of the new program (but leave the word *keyset* on it).

(We use this same technique when we take the silly, paranoia™ symbol off of our application names. Suddenly any QuicKeys we defined don’t work because the program name no longer matches the QuicKeys.)

**How to make Delete, Enter, Tab, or Return do something**

When you define a keystroke, you can type almost any crazy key combination in the world. Figure 22-7 shows one particularly zany combination.

![Keystroke: Alt/tabsr ctrl-Z](image)

**Figure 22-7:** Almost any keystroke you can (or can’t) remember can be a QuicKeys trigger.

But you can’t use the Return, Enter, Tab, or Delete keys as QuicKeys keystrokes. Well, not unless you know the Secret.

Hold down the mouse button *first*, and *then* press one of these forbidden keys. QuicKeys dutifully assigns that key to the macro. (We suspect they make it so difficult because you can wreak havoc if you *accidentally* assign one of these critical keys to a complicated macro!)

**Get around the 255-character typing limit**

The Text QuicKey type is handy because it can type out any predefined bunch of text at the touch of a key. But its handiness is limited by its 255-characters. You won’t get very far if you want the macro to type a boilerplate contract; there are more than that many characters in this paragraph alone!

What you can do, though, is string multiple Text macros together into a Sequence! Voilà: no more limit.
Open a cranky control panel

There are a couple of ways to open a control panel's panel directly without the bother of choosing Control Panels from the Apple menu and double-clicking an icon. First, you can define a File QuicKey to open it directly. Second, you can use the Panels Extension to do the same thing.

But these macros may not always work. You may run into trouble trying to open a file over a network using one of these macros. The surefire solution is to use a Finder Events macro (one of the Extensions). Use its Open option to specify a control panel (or any file at all) that you want to open.

Quick transposed-letters fix

When inspiration is flowing, and you're typing madly, you may inadvertently transpose two typed letters, resulting in a word like adn instead of and. A macro program is ideal for fixing such a goof.

Put the insertion point just after the scrambled pair. Start QuicKeys recording the following sequence: Shift-left arrow (to select the second letter) and ⌘-X (to cut it). Use the left arrow (to move insertion point before the first letter) and ⌘-V (to paste it). Then use right arrow, space (to be ready for subsequent typing).

When you fire off this QuicKey, fixing those transposed-letter typos becomes second nature.

Tempo II

Tempo II Plus does almost everything QuickKeys does, with two dramatic differences: it's smarter and it's more complex. The most famous features of Tempo II Plus are its conditional branching capabilities. That means you can teach it to choose between two courses of action, depending on the circumstances: make some text boldface if it's preceded by an asterisk; otherwise, italicize it. If it's past midnight, automatically sign onto CompuServe; otherwise, wait another half hour, and so on.

Our favorite is the BitMatch feature, in which Tempo actually looks at the screen and acts according to what it sees there. It's something like QuickKeys's WindowDecision Extension, which checks to see which kind of window is on the screen — but Tempo can check for the presence of an icon, or a program's menus, or some text, and so on.

You can make Tempo II do absolutely incredible things: reformat databases containing thousands of records, download, format, save and print your e-mail in the middle of the night, and so on. It can even take a set of data through an exhaustive conversion process involving several programs and lots of copying and pasting.

We've included, with this book, an especially easy-to-use version of Tempo, called TempoEZ. On one hand, it doesn't have quite as much of the programmable smarts of the full-fledged Tempo II Plus. On the other hand, it's much easier to use; it still does the intelligent branching stuff; it comes loaded with some useful macros already (you've got to see the included Photoshop macros to believe them); and we've made it super-cheap to order the full version (see the coupons at the back of the book). See Chapter 33 for instructions.
Here are a few Tempo-specific Secrets. You may want to read the QuicKeys section for some additional ideas, since Tempo can perform most of the same tricks.

**Tempo II Secrets**

*Don't print without spell checking first*

We're touch typists who stare right at the words on the screen as we type. Yet even though we read over our work before we turn it in, our spelling checker still finds typos, almost every single time, that our eyes missed.

Of course, it's easy to create a macro that spell-checks a document and then prints. Much better, though, to set one up to ask you whether you want to check the spelling. Therefore, set up Tempo to present a simple dialog box whenever you press `§-P. You get a message like the one in Figure 22-8.

![Figure 22-8: Tempo can ask you, at print time, whether or not you want to check spelling.](image)

If you hit Return, the macro starts the spelling checker and then prints the document. If you click No, the document gets printed immediately.

You can create the check-spelling macro (let's call it Spell Check) and the print-now macro (called Print) easily, using the standard macro-recording sequence. Here's how you create the dialog box macro: use a Tempo II Plus Button external. Set it up to look like this:

```
Button(Spell-check it?,Yes=Spell Check then Print,No/N=Print)
```

If you click the Yes button, the "Spell check then Print" macro runs the spell-checker, and then pauses until you tell it to resume. Then it runs the Print macro. If you click the "No" button, it simply plays the Print macro directly.

**Automatic document building**

Tempo makes batch processing (of a whole folderful of files, one after another) easy. You don't even need Super Boomerang. But what if you have to batch process a folderful of Photoshop files, but not all in exactly the same way? Suppose that some of the images have to be lightened by 25 percent, while others have to be scaled to half their size, and so on.

Idea 1: Have Tempo examine each file's name and make a decision based on it. You can name the files that need lightening `Flower.dark`, `House.dark`, `Fish.dark`, and so on. To do so, use the external called Right, and have it examine the last four characters of each file's name. Direct it to branch to the appropriate macro based on that suffix.
Idea 2: Type up a list of the files' names in a word processor. (Better still, copy them by highlighting their icons in the Finder, pressing ⌃-C, and pasting them into the word processor.) Then teach Tempo to read each name in the word processor list to decide how to manipulate each image.

Log on once a day only

There are some automatic tasks, such as checking your e-mail, that you probably want to take place only once each day. Of course, it's easy to create a macro that runs each time you turn on the Mac; even QuicKeys can do that. But if you turn on your Mac several times in a day, such a macro fires itself too many times. This trick lets you trigger a macro just once each day, regardless of how many times the Mac is subsequently restarted.

The solution is to set a "flag" for itself that says "Today, I have performed this task." Each time the Mac starts, a macro checks to see if the flag has been set. If it hasn't, it runs the macro and sets the flag.

Assign the macro you want to be run only once per day — we'll call it E-mail Check — to a Tempo Autoboot, which you put into your System 7 Startup Items folder. (Under System 6, select the Autoboot icon, then choose Set Startup in the Finder's Special menu, and set the Mac to run the Tempo Autoboot when it starts up.)

On startup, the first thing E-mail Check does is branch to a macro called Eval(checked yet?=date). If the answer is no, which means that the variable called checked yet? doesn't contain today's date, then Tempo branches to your "Log on and download E-Mail" macro. Then Tempo branches to one more macro, called "checked yet?=Eval(date)". This sets the value of checked yet? to today's date.

If the Macintosh restarts during the current day, the same thing happens again. But this time, the value of checked yet? does indeed equal the value of "date," so Tempo doesn't run the "Log on and download E-Mail" macro.

Tempo can actually make further tests as part of this macro. If you want the logon macro to run only on weekdays, for example, Tempo can also test to see if today's day of week starts with an S. If it does, that means it's a Saturday or Sunday, and your macro gets the day off.

AppleScript

AppleScript is a new Apple technology that lets you automate your Mac activities in much more powerful and flexible ways than standard macro software. AppleScript is a system extension (or several) and a program called, appropriately enough, Script Editor (see Figure 22-9.) AppleScript comes with System 7.5; you can buy it for any other version of System 7.
Like QuickKeys and Tempo, AppleScript can record your actions and play them back later. But AppleScript can also do something more — scripting.

Scripting and recording

A *script* is a series of text lines containing instructions for the Mac to perform. As with programming, you, the script author, can't assume anything; every little detail must be spelled out (see Figure 22-10).

![Figure 22-9: The contents of the AppleScript installer disk: the AppleScript extension, a special extension to make AppleScript work with Apple Events, the Script Editor, and a sample AppleScript-capable application.](image)

*Dialogue*

**Screen burn-in syndrome**

DP: You're not actually going to propagate that old myth, are you?

JS: Which myth would that be?

DP: That old saw about your screen getting burned in if you leave the Mac on too long.

JS: It happens to be a fact. If you’re not using your Mac, whatever image you left on the screen — the Finder windows, for example — will just sit there, static. The phosphor on the inside of your monitor glass gets bombarded with electrons for hours upon hours, in an unchanging pattern, until finally a ghost of that Finder image is permanently etched into the phosphorus. There's no recovering. You have to throw out your monitor.

DP: That is the biggest slab of baloney ever foisted. Have you ever known anyone to buy a new monitor because of screen burn-in?

JS: Well, no.

DP: Have you ever known any screen even to get this burn-in?

JS: Yes. Cash machines.

DP: Oh, come on. That's a completely different story. A cash machine only has one image to show: “Welcome to Chemical Bank” or whatever. And it's on 24
hours a day. Nobody uses a Mac like that. Except maybe file-servers.
JS: I know a guy who leaves his Mac on all the time, and it's got screen burn-in.
DP: You saw this?
JS: He's got an old, old Mac Plus, and it's got the Finder menu bar faintly, permanently visible at all times.
DP: Well, it's hardly an imminent threat. If you turn off your Mac at night, you certainly don't need a screen saver.
JS: I think I can settle this right now. Loud and clear, for all of America to hear, I want you to answer this one question.
DP: Go ahead, worrywart.
JS: Does your Mac have a screen saver program?
DP: Oh, that's not releva —
JS: Well, sure, but only because —
DP: Okay then.
JS: But not because of burn-in. I use it 'cause it's fun, 'cause it's cool —
JS: — and because, somewhere deep down, there's a niggling fear that one day you might run out and come back a week later to find permanent burn-in. Right?
DP: —
JS: Hmm? Right?
DP: Oh, I guess.

If you use the auto-recording feature, AppleScript writes the script for you (you can even see the lines of instructions appearing in the Script Editor as you perform the steps). You can edit the recorded script when you stop the recording function. When you then execute the script, your Macintosh performs your recorded actions automatically. You can save the scripts either as documents to edit later, or as double-clickable, self-running applications (called applets).

A script is much more powerful than a standard macro, because (once programs are upgraded to offer AppleScript features) it can be much more specific. A certain script can grab specific text from a specific field of a database, or highlight and chart a specific range of database cells, and so on — automatically.

Apple Events

AppleScript works only with Mac applications that were written with AppleScript in mind. When Apple released System 7, they described the necessary changes that programmers would need to make if they wanted their applications to understand behind-the-scenes, program-to-program signals called Apple Events. Apple dictated a minimum set of instructions — Open, Print, Quit, and Run — called the Required Suite. Applications that understand the Required Suite of Apple Events can be launched, and minimally manipulated, by AppleScript.

You'll see the real power of AppleScript when applications implement additional program functions into the Apple Events suite. AppleScript can control Stufflt Deluxe, for example, to the extent that you don't actually have to use your mouse or keyboard.

What to do with Apple Events

Using the Program Linking features of System 7, you can tell other Macs on your network to run Stufflt, or any Apple Events aware applications, thus freeing your computer for other uses. Since you're essentially running a program on some other Mac, and since your Mac is only sending short instruction sequences to the remote machines, you get the time back you would have otherwise spent waiting for your Mac.
You can also use AppleScript to combine features of application programs. For example, a script may use the calculation capabilities of a spreadsheet and the formatting capabilities of a word processor to assemble an invoice.

AppleScript is not for everyone; beginner Mac users might find the scripting concept intimidating. (All right, we confess — we found it intimidating!) The recording features are good for setting up the automation of routine tasks, but customizing those tasks to operate on different files, or with other applications than those originally recorded, means editing the script.

**What it's good for now**

Unfortunately, only a few programs are scriptable and AppleScript-aware — QuarkXPress, FileMaker Pro, MacProject, and Think C are among them (though many are Apple Events aware). Fortunately, beginning with System 7.5, the Finder is an AppleScript-able program. In other words, you can easily automate sequences of Finder tasks — empty Trash, backup your Documents folder, and shut down, for example. And if you use the System 7.5 Installer to install AppleScript, you'll see a handful of useful scripts listed in your Apple menu (Get Info, Put Alias in Apple Menu, and so on).

Another easy way to get into AppleScripting is to get QuicKeys, version 3.0 or later, which has built-in features for manipulating AppleScript scripts. For example, QuicKeys offers some general abilities to manipulate the Finder and files, and to insert text in several ways.

AppleScript has great potential, but you have to do a lot of learning before the scripting becomes easier than the task it was meant to automate.

**Screen Savers and Screen Grabbers**

**Screen savers**

A screen saver protects your Mac monitor from phosphor burn-in by blanking the screen after a few minutes of inactivity on your part. To signal you that the computer is still on, however, a screen saver must bounce some moving image around the screen. The programmers of these utilities figure: if you've got to display some "I'm still on!" signal on the monitor, you may as well make it entertaining. That's why After Dark, Sunset, Pyro, the shareware Darkside, and other programs let you choose from dozens of different displays: fireworks, random patterns, swirling lines, and, in Alter Dark, the now famous Flying Toasters.

We've taken the liberty of giving you a terrific commercial screen saver on the disks with this book. It's Sunset, part of the QuickTools utilities from Advanced Software. (See Chapter 33 for instructions and details.)
Screen grabbers

In the early days, ⌘-Shift-3 was one of those hidden surprises built into the Mac by crafty Apple engineers. It took a snapshot of whatever was on the screen. You tried this so-called F-key, and sure enough, a MacPaint document called Screen 0 suddenly appeared on your disk. This kind of graphic is known as a screen dump, or, more pleasantly, a screen shot. As magazine and Mac book writers, we live and breathe screen shots.

But that magic keystroke didn’t work in color, or on big screens, or across multiple monitors. And you couldn’t use it to capture menus being pulled down.

Fortunately, System 7’s designers gave new life to the built-in screen grabber. Instead of the limited 8 x 10, black-and-white MacPaint format, the new improved ⌘-Shift-3 generates full-color, full-sized, right-side-up PICT files. It even makes a satisfying cameralike kachunk sound.

But you still need a graphics program to edit the results; you still have to erase (or use either TeachText or SimpleText to crop out) unwanted parts of the image; and you still can’t use the key combination when a menu is pulled down.

That’s why, if you have the least interest in capturing what’s on your screen, we heartily recommend that you get an actual, specialized screen-grabber program. Our recommendations are Screenshot, Capture, Snipper (part of QuickTools), or Flash-It. (As a matter of fact, Flash-It is on the disks included with this book.)

They’re fast, slick, and simple. Press the key combo of your choice, and select a destination for the captured image — the printer, the Clipboard, a PICT file, or the Scrapbook. These programs let you capture the whole screen, just a window, just a menu (even with submenus), or a region you drag across.

Screen saver/grabber Secrets

More After Dark fun

You’re not confined to the set of canned After Dark modules that come with the program. The MultiModule makes things especially lively, because it lets you combine any set of other modules. A few of our favorites: Night Lines and String Theory superimposed (if you’re into straight lines); Nocturne and Rainstorm (see Figure 22-11); and super Zot.

This last one is a stormy multiple-dose of lightning. You make it by duplicating the Zot module in the After Dark Files folder — more than once, if you’re really up for it. Then, in the MultiModule editor, select them from the list on the left; adjust their display areas; make them transparent; and let ’er rip. Now that’s a dark and stormy night!
**Solving the mysterious After Dark crashes**

We didn’t know where else to file these particular bug reports. But we’ve never seen it in print, so we wanted the world to know.

Performer, the bestselling MIDI music recorder/editor, gives thousands of musicians the impression that it’s an incredibly buggy piece of work. It freezes every five minutes, on the dot.

Well, there’s a good reason for that: it conflicts with After Dark (which, of course, typically comes on about every five minutes). Actually, it only conflicts with After Dark’s sounds. So the solution isn’t too difficult: just turn off your screen saver’s sounds, all of them.

Furthermore, After Dark strikes many people as being incompatible with the Centris and Quadra models: in conjunction with Word, MacWrite Pro, and other programs, After Dark crashes. The solution is to call Berkeley Systems and get an upgrade to version 2.0.x or later. (The letter X should clue you in that new After Dark versions are introduced frequently. If you buy a new Mac, it pays to keep up.)

**Art of Darkness Secrets**

You can add modules to your collection of After Dark flavors in a number of ways. One module is More After Dark, from Berkeley Systems. Another is the book/disk combo Art of Darkness.

This latter book contains a module called Fractal Forest. Set it to Winter, set your Mac clock to December 25, and enjoy (see Figure 22-12).
Incidentally, Christmas trees that appear on December 25 are a time-honored Mac hidden-surprise tradition. The classic Mac games Airborne and Dark Castle also have special surprises in store when you play them on Christmas Day (and so does Maelstrom, the outstanding shareware space arcade game).

The "Please wake up!" message

For years, your cheerful authors have been baffled by messages that streamed across the top of an After Dark-darkened screen. There was a little application icon and the words "Please wake up!" What kind of application was so smart that it actually broke through After Dark's dusky domination of the screen to display this message? How could there be more than one such program? This seemed to happen when several different programs had been running.

We had it all wrong. It's not the applications saying "Please wake up." It's After Dark! Here's what happens. When a program (PrintMonitor, America Online, QuickMail, and so on) displays a dialog box or alert message on the screen, After Dark goes away, and your normal screen picture reappears. But if you're not paying attention to your Mac, then After Dark kicks in again after a few minutes. But to remind you that, behind After Dark's colorful display, there's a message waiting for you, the screen saver sends that wake-up message across the top of the screen.

Screen savers on PowerBooks

You don't need them. (Screen savers, that is, not PowerBooks.) A PowerBook LCD screen can't get burn-in syndrome like a regular CRT computer monitor (see Chapter 10 for more on monitors). If you do leave the backlighting on for more than 24 hours, you may get some faint persistence of the image, but it's temporary. It goes away again after the screen is dark for awhile.

But After Dark and Sunset are great on any monitor for their fun factor alone (especially on a PowerBook with an active-matrix color screen!). If it enhances your prestige on the flight to London, then run a screen saver by all means.

The world's most effective In/Out board

Our clients have absolutely loved this Secret, even though it's not very secret.

If your Mac is in a house or office where other people may come looking for you, use the Messages module of After Dark (or Chalkboard of Sunset). (Write a QuicKey macro to open it up for you.) Before you take off for lunch or errands, let people know what's become of you, as shown in Figure 22-13. Your message will scroll across (or bounce, at your option) the screen until you return.
For an even more Times Square-esque effect, try this: Make duplicate copies of the Message module, calling them Message copy, Message copy 2, or whatever. Then plug a different message into each module. Set up the screen saver to cycle through those modules. You’ll get a scrolling effect, with the message changing from one to the next automatically.

**Screen shots of screen shots**

We’re sure this next one will hit home with all of two people in the whole world. But it hit home with us: How do you take a picture of a screen-grabber program? For example, if you’ve got Screenshot’s floating palette on the screen in readiness for taking a screen shot, how do you take a picture of it?

No, you can’t use System 7’s 3€-Shift-3 to take the shot; it doesn’t operate when a screen grabber’s palette is on the screen. The only way to do it is to duplicate the screen-grabber control panel. Give them different names, and give them different trigger key combinations. Then, when one’s on the screen, invoke the other to capture it!

**A blue tint to Screenshot shots — or transparency**

Here’s a Secret for Screenshot, the screen-grabber program from Baseline Publishing. In the early years of Mac magazines, published screen shots had a faint bluish tint to them. You add this tint to any screen shot you take if you press Option while clicking any of the four capture buttons. (If you use the Selection button, hold Option until you finish dragging across the screen.)

Otherwise, white areas of the screen you’re capturing will be given a white color in the resulting PICT files. But if you press 3€ while capturing a screen image, the resulting image will turn what was white on the screen **transparent** in the captured image. Using this technique, you can paste the screen shot on top of a light tint of any color that you laid down in advance in a painting program.

**Cancel a Flash-It shot**

If you’re using Flash-It, the screen-capture program included with this book, you can change your mind in mid-snapshot. Just press the Esc key as you release the mouse (after dragging to select a region).
CASE HISTORY

Battle of the airborne appliances

Berkeley Systems made flying toasters famous. Or did it? Cut to 1994, when Delrina began selling a screensaver program of its own, based on the characters from the Outland cartoon strip. One of these modules featured everybody's favorite penguin, Opus, shooting with a rifle at — could it be? — flying toasters. Berkeley sued; Delrina gave in, changed the toasters to microwaves, and got a lot of free press.

Berkeley didn't have the last laugh, however; as a result of the publicity from the suit, they were sued, in turn, by the Jefferson Airplane rock group. The group's lawyers claimed that a 1971 album cover introduced the concept of airborne toasters.

This could go on forever. Let's see: did they have intellectual-rights lawyers in the Renaissance?

Stepping Out

This is among the cleverest and weirdest of the Mac screen utilities (from Berkeley Systems). It sets aside a large chunk of memory to use as a virtual screen. That is, it tricks your Mac into thinking that it's got a huge monitor. The actual glass of your real monitor becomes just a movable window onto the much larger virtual display. To pan around the virtual monitor, you push your cursor into the edges of your actual screen. The hidden area of the virtual screen scrolls into view. (This is a great advantage to the unfortunate owners of the Apple 12" monitor, upon which many games either won't run or lose important parts of their interface. With Stepping Out, the Mac thinks it has a bigger screen, and you can scroll the hidden portions into view.)

Here's the tip: If you find an application that's incompatible with Stepping Out, press Option while it's starting up. Stepping Out will disable itself. Use the Stepping Out control panel to turn the virtual screen back on.

Compression Software

You want to back up a file, but it's too big to fit on a floppy. Or you finally got a PowerBook, but you're out of space on the 40MB drive in a week. Or you have to send a file to someone on America Online, but you're afraid it will take forever.

What you need is a file-compression program. These are programs that toy with one of life's great equations: Time = Money. In other words, you trade away the time it takes for a compression program to encode your files into a more compact form. In return, your expensive hard drive now holds twice as much. You can postpone having to buy another drive.

Different files get smaller, when compressed, to different degrees. Graphics files (particularly paintings, such as TIFF and PICT files) are among the most compressible programs. A typical scanned TIFF file may take up 1000K before compression, but only 120K after compression. Word-processing documents also get much smaller.

Printer fonts and sounds are among the few kinds of files that don't compress much. They are already in an encoded form, so the compression programs can't find much redundancy to eliminate. (Screen fonts scrunce down just fine, however.)
MACINTOSH SECRET

All those names and suffixes

When you get a new compressed file from a friend or an online service, how are you supposed to know which program is required to unstuff it?

Here’s a rundown.

StuffIt: These archives may contain one or more files packed together. The suffix is .sit. To open it, you need any one of the following: the commercial StuffIt Deluxe, or the shareware StuffIt Lite, or StuffIt Expander (included with this book). (These programs can also expand Compact Pro and AppleLink package files.)

DiskDoubler: A DiskDoubled file usually has the suffix .dd, as in Calculator.dd. To open it, you need either the DiskDoubler extension, the DiskDoubler App (application program that comes with DiskDoubler), or the free DD Expand program. (DiskDoubler also opens old-format StuffIt 1.5.1 files.)

Compact Pro: Files compressed with this shareware program usually have the suffix .cpt. Compact Pro is known to be slow, but it compresses very tightly, sometimes reducing the size of files by 50 percent or more.

SuperDisk: This program is very rare. In fact, we’ve never seen a single file on an online service that was compressed by this program. Anyway, it creates files with the suffix .s — just the s by itself.

.sea: If a file’s name ends in .sea, it’s a self-extracting archive. It may have been created by any of the other compression programs. The .sea suffix tells you that you don’t even need to worry about which program created it. A simple double-click will automatically expand the file. (A self-extracting archive is always about 15K larger than a non-self-expanding compressed file. That extra bit of code is what turns a regular compressed file into a double-clickable program.)

Version after version of these miraculous programs have been flooding the market recently. They have ballooned into four categories of file-compressors:

- **One-at-a-time file compression programs.** DiskDoubler, Now Compress, and MagicMenu (part of the Stufflt Deluxe package) are examples. You highlight a folder or file icon in the Finder. You choose Compress from a new menu on the menu bar. The files get smaller. Then you just double-click to decompress and open any file.

- **Archive programs.** Stufflt, Compact Pro, and another Now Compress module are among them. You launch a special compression application. That’s less convenient than just choosing a command from a Finder menu. But the advantage is that you can compress a group of files into a single compressed archive file, and then add or remove files to it individually.

- **Background compression programs.** AutoDoubler, Stufflt SpaceSaver, and yet another Now Compress component are some examples. These control panels lurk in the background all day long, quietly compressing everything on your disk (except the System folder and other folders you designate as off-limits). They generally use a special method that takes a long time to compress a file, but very little time to expand it again. (A simple double-click expands them; no trip to a compression program is required.)

- **Disk driver-level compressors.** TimesTwo and Stacker are among these. These programs aren’t stand-alone programs. They replace or modify your invisible disk drivers (see Chapter 7 for details). As the Mac writes data onto the drive, everything is compressed without the System’s even knowing about it. As a result, your hard disk slows down, because of the delay involved in expanding and compressing information (50 percent or more in many cases). Finally, if something goes wrong at the driver level, you don’t just lose a file, you lose the entire disk.
File-compression Secrets

No-fuss unstuffing with StuffIt

If you have Stufflt (Lite or Deluxe) on your hard drive somewhere, here's a timesaver. Normally, unstuffing something involves several steps, including double-clicking the files you want to extract, naming (and choosing a folder for) them, clicking OK, and so on.

You can turbocharge the whole process by holding down the Shift key after you've double-clicked the archive icon in the Finder. (If you haven't yet registered your version of Stufflt Lite, then press Shift after you click the Not Yet button in the opening dialog box.)

Or, if you're already in the program, use the Open command, and then press Shift just after you double-click the name of the archive you want to open.

Your name in lights

Compact Pro is a shareware program. When you send in your money, you register your copy of the program. And that's not all: if you choose About Compact Pro from the Apple menu and wait a moment, you see your name scroll past, surrounded by diamonds.

Join and segment files

Compression programs like DiskDoubler and Stufflt solve an age-old (well, ten-year-old) dilemma: how do you give somebody a file that's too big to fit on a floppy disk?

Your first thought should be: "I know! I'll compress it!"

If, after being compressed, the file is still too big, you have to break the compressed file into floppy-disk-sized chunks. All of the compression programs we discussed have Segment and Join commands that do just that. The Segment commands break a large file up, so that the pieces will fit on separate floppies — and the Join commands sew them back together on the recipient's hard drive.

If you're asked to choose how large the individual chunks (segments) should be, though, be careful. Remember that an 800K floppy doesn't hold 800K, and a 1.4MB floppy doesn't hold 1.4MB. In fact, more realistic sizes for your segments are about 760K and 1350K for double-sided and high-density disks, respectively.
Part III: Application Secrets

Now Utilities

We're not devoting a section to Now Utilities just because you get part of Now Utilities on the disks with this book (see Chapter 33) and a discount coupon for ordering the rest. No, we're including it because this is the utility collection you're most likely to own. Plus they're a great value and have some nice secrets to them.

Super Boomerang

The crown jewel of Now Utilities (not the component that comes free with this book, obviously) is Super Boomerang.

Super Boomerang adds a menu bar to your Open File box, as shown in Figure 22-14. It offers File and Folder menus that list the last 30 or so files and folders you have opened. What's more, Super Boomerang doesn't automatically highlight the first file in the list, as the Mac does; instead, it highlights the file you opened most recently.

Finally, Super Boomerang gives every program's Open menu command a pop-up menu, listing the most recently opened files (see Figure 22-15).
ANSWER MAN

What's verify after writes?

Q: This guy at the office got into a big fight over which program does file compressions better. He kept saying that the faster program shouldn't really count, because it didn't verify after writes. What's he talking about?

A: File verification is a hot buzzword among file-compression nuts. When a compression program "verifies after writes," it essentially checks its work. It compares the compressed version of the file that it just "wrote" onto the disk with the original; technically, it uses a checksum. It checks to make sure that there were no errors in storing the compressed file (caused by a bad spot on the disk, for example).

As you can imagine, this double-checking process makes the overall compressing take longer (perhaps 20 percent longer). It's safer, though, especially if you're compressing the file onto a potentially flaky disk like a floppy or a removable cartridge.

The guy at the office was right, by the way. You can't compare the compression speeds of two programs if only one of them is verifying after writes.

The other utilities

The remaining utilities include WYSIWIG Menus (included on the disks with this book; see Chapter 33); Now Menus, which makes your Apple menu hierarchical, lets you assign a keystroke to any menu item in any program, adds a launch menu to your menu bar, and more; NowSave, which automatically saves your work at predefined intervals (and can create a backup text file containing everything you type); Startup Manager, an extensions-and-control-panels manager (see "Extension managers," below); Now Scrapbook, a replacement for your Apple menu Scrapbook with keywords, sorting, exporting to various graphics formats, and even some basic graphics-editing tools (crop and resize); and Now Profile, which reports on your Mac's model, configuration, and installed software.

Now Utilities Secrets

Hard drive in a menu

Now Menus lets your Apple menu become a hierarchical table of contents for any folder listed there. But why stop there? Put an alias of your hard drive into the Apple Menu Items folder (in the System folder). Now Menus shows you its entire contents, popping out as submenus and sub-submenus from the hard drive's name in the Apple menu.

Ferret out duplicate files and disconnected aliases

We're not sure how much anybody uses Now Profile. We didn't use it much, anyway, until we discovered this housecleaning trick.

Double-click the Now Profile icon. You get a Preferences screen, in which you can select which aspects of your Mac will be described in the report. Choose Omit for everything except Aliases and Duplicate Files. For these, choose Basic. Select "All local HFS volumes," so that the program will inspect all your drives (if you have more than one). Finally, click OK.
When the program is finished analyzing your system, it shows you a list of all aliases whose original items have been thrown away. These remaining aliases are doing you no good, and you should trash them.

Similarly, Now Profile lists all the duplicate files it found on your disks, and where the copies are located. This is a great way to get rid of the 47 copies of TeachText that, no doubt, are currently residing on your hard drive.

**Three stunts with the launch menu**

Now Menus’ launch menus appear at either end of your menu bar, in the farthest possible corners. They list recently opened applications and documents, making them easy to launch again.

Figure 22-16 shows three different on-the-fly techniques you can use to modify your launch menus.

![Figure 22-16: Make an item permanent (Space bar), take an item off the list (Delete key), or find out where something’s hiding (P key).](image)

If something appears in the list that you want to remove, highlight it and press the Delete key. A horizontal line appears, striking it out; next time you open the menu, that item is gone.

If there’s something in this list you want to be listed there permanently (instead of being eventually displaced by a more recently opened item), highlight it with the cursor and press the space bar. The item appears underlined, meaning that it’s permanent.

Finally, if you highlight an item and hold down the P key, a pop-up display appears. It shows you the path name of that item — that is, where it is on your disk. (The drive name appears first, then the outer folder, then the folder inside that, and so on.)

**Turn off a hierarchical Apple menu item**

Now Menus automatically adds a submenu to any folder or disk listed in the Apple menu, so that you can see its contents. It also adds one to any application listed there, so that you can launch any recently opened documents.
Sometimes, though, this submenu gets in the way. For example, when you launch ResEdit, you don't generally care about recently opened documents; you're only interested in whatever you're about to open.

To turn off the submenu for an individual item in the Apple menu, just highlight it with the cursor and press the Space bar. (Press Space again to make the submenu return.)

**Specify a default folder for each application**

Macintosh Performa owners, as we mentioned in Chapter 14, have a delightful feature built into their specialized system software: a Documents folder. Each time you use the Open or Save As command of a program, you're not lost. You're always looking at the same folder, and your usual set of documents is always there (see Figure 22-17). A similar feature is available on all Macs running System 7.5.

Super Boomerang adds a default folder feature to versions of System 7 that lack it. In fact, it lets you specify a default folder for each application on your disk, so you can have one Word Documents folder, one Photoshop Documents folder, and so on.

![Figure 22-17:](image) Each time you launch any program and use the Open or Save command, you're facing the same folder, so nothing's ever lost.

To designate a default folder, launch the program in question. Choose Open from the File menu. Pull down Super Boomerang's Folders menu, as shown in Figure 22-18. (If the default folder you want isn't already listed in this menu, navigate to it. Then choose Add Permanent Folder from Super Boomerang's Options menu. Then it appears in the Folder list.)

![Figure 22-18:](image) With one keystroke, you can specify a default folder for a certain program (Word, in this example).
Using the Folder menu, highlight the name of the folder you want to be this program’s default and press the D key. You see its name become bold. Then back out of the Open dialog box by clicking Cancel.

The next time you launch this program and choose Open or Save, this folder automatically opens for you.

**Font, Icon, Desktop, and Other Utilities**

The universe is crammed with utilities. We briefly considered writing a second volume to this book called *Macworld Utilities Secrets*, and then we realized that it would have to be a three-volume set. Here’s a rundown on some of the other categories.

**Font-management utilities**

Apple’s old Font/DA Mover was one of the most grave violations of the Mac’s “computer for the rest of us” ease of use. So programmer Steve Brecher wrote Suitcase, and the world has never been the same. System 6, in particular, isn’t complete without this program. It lets you install and remove fonts instantaneously. You don’t have to restart the Mac, and you certainly don’t have to use the Font/DA Mover.

System 7’s revamped font-installation scheme makes life with fonts much easier, and lessens the urgency of a font manager like Suitcase. We cover Suitcase and fonts in greater detail in Chapter 24.

**Desktop pattern editors**

1993 was the Year of the Desktop. The marketplace exploded with programs designed to fill your boring gray desktop with wild and amazing patterns, colors, and textures. And we’re not talking about the lame little eight-pixel-square, eight-color patterns you can make in the General Controls control panel, either. We’re talking serious, full-color, stunning, large, photorealistic textures (see Figure 22-19).

*Figure 22-19:*
Three glimpses of the shareware Desktop Textures. Filling your desktop with one of these patterns gives a completely different feeling to working on the Mac.
Chapter 22: Other Utilities

You can buy plenty of them (Wallpaper, Chameleon, the astounding Screenscapes), sure; but some of the best desktop pattern editors are shareware (Before Dark, Desktop Textures), as you can see from the figure. One of the best, Before Dark, comes with this book — and it comes with a special assortment of photographic textures from Pixar (see Chapter 33). You may never see gray again.

Extension managers

So now you've got your hard drive utilities, virus protectors, macro software, screen saver, file-launcher, file-compression utilities, font/DA manager, and customization software installed. Terrific! Now you need one more: a utility to manage those utilities! Enter the extension manager.

So why do you need a manager for these startup programs? Because, as is often the case with utilities, extensions and control panels can conflict. They may argue over the same piece of memory real estate, for example, and the result is almost always a system crash. You need a way to turn your various startup programs on and off, particularly when you try to ferret out what the conflict is.

The best extension managers let you specify sets of extensions and control panels. You may have a bare-minimum set to use when memory is at a premium and a full-fledged set for normal use.

With the permission of Apple programmer Ricardo Batista, we've included his Extensions Manager 2.0 on the disks with this book. It lets you turn on or off extensions, control panels, Apple menu items, Startup Items Folder items, and even (in System 7.1) fonts.

Extension manager Secrets

Extension manager time-saver

If you use Startup Manager, Extensions Manager, or Conflict Catcher, you probably change your extension/control panel lineup as the Mac is starting up. You know, you press the Space bar until the dialog box appears, make your choices, and click OK.

It's faster to make your selections before restarting the Mac. Just open the Startup Manager (or Extensions Manager, or Conflict Catcher) control panel. You see the same selection dialog box as you do when starting up. But if you switch your extensions and control panels while the Mac is still on, you won't have to wait for the dialog box to appear when you restart.

All on, all off with Startup Manager

Suppose that you want to change your startup-program configuration with Startup Manager. Suppose that you want to turn every one of your 83 extensions off except one.
Don’t waste time clicking off each extension. Just Option-click to the left of any extension’s name to remove the check marks from all of them. Then you can turn back on the one you wanted.

**Conflict Catcher: the politically correct startup manager**

Conflict Catcher II (Casady & Greene) is a remarkable startup manager, for several reasons. Unlike any other program, it *automatically* finds out which two (or several) of your extensions are conflicting with each other. It’s something to behold: you just sit there and restart your Mac over and over again, as Conflict Catcher experiments with mathematically selected combinations of extensions, until finally it figures out which ones are fighting. (We’ve included a discount coupon for Conflict Catcher in the back of this book.)

But Conflict Catcher II also has one of the most unusual hidden surprises we’ve ever seen. Open the control panel in the Finder.

Shift-Option-ª-click the title screen. You’ll find out how much the U.S. national debt has increased in the time it took your Mac to start up! (We’re not sure we’ll have the courage to try this trick in, say, Conflict Catcher 5.0...)

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**A few utilities you already own**

If you can believe it, all the utilities we’ve mentioned so far are only the tip of the iceberg. In fact, if you get yourself a modem and membership to America Online (about $3.50 per hour) or CompuServe ($12.80 per hour), you’ll have access to *thousands* more of these programs.

Of course, you may prefer to trust our judgment. We slogged through more than 50MB of commercial and shareware programs in the process of selecting the best possible stuff — and we packed them onto the disks with this book. Here are some of the outstanding Mac-enhancers we included:

- **SuperClock.** The classic menu-bar digital clock.
- **CP Undelete.** Hard drive file-recovery software from MacTools.
- **AppDisk.** An outstanding System 7 RAM disk. It’s safe, easy to use, and handy.
- **Color Coordinator.** From Casady & Greene. It automatically switches your monitor to black and white when you open your word processor, then back to 24-bit color when you’re in Photoshop, then into 16 colors for Kid Pix, and so on.
- **Speed Disk.** The classic hard-drive optimizer from Norton Utilities.
- **AppIcon.** As featured in *Macworld*: It’s a floating palette that leaps in front of all open windows at your command, ready to help you switch from one open program to another (see Figure 22-20).
These are just a few of our favorites — and they are programs we haven’t mentioned so far in the book. Now head for Chapter 33 to read about the other 40 you received with this book!
Chapter 23
Multimedia Unmasked

In this chapter:

- How to edit your own recorded sounds
- Sucking sounds out of other programs
- Making music with MIDI technology
- QuickTime movies: how to record, edit, and play them back
- Multimedia: tricks, tips, and techniques
- Putting the Mac on TV

For months and months, Apple hailed the Macintosh as the ultimate multimedia computer. For an equal number of months, columnists, pundits, and industry wags (especially the wags) exchanged baffled expressions. Other than a buzzword, exactly what is multimedia?

We're prepared to identify multimedia as any kind of audiovisual, computer-based, usually audience-navigated presentation. We think all of the following qualify as multimedia projects:

- Self-running trade show presentations
- Interactive shopping center kiosks
- Interactive CD-ROM discs (see Chapter 26)
- Interactive training software
- QuickTime movies
- Audio- or video-enhanced business presentations
- Games
- HyperCard stacks (gotta have sound, though, or else they're only monomedia)
By our definition, even a cash machine qualifies as a multimedia presentation. And why not? It’s audiovisual and interactive, isn’t it?

Anyway, this chapter peeks into those multimedia components we haven’t covered elsewhere: sound and movies. (See Chapter 17 for insights into word processing, Chapter 24 for typesetting info, and Chapter 20 for a discussion of graphics.)

**Digital Sound**

Apple’s been giving us mixed signals about sound. For a dozen Mac models in a row, a microphone came with every computer. It seemed like a great idea, especially when people started doing something meaningful with it. Microsoft added voice annotation to Word and Excel. CE Software added voice messaging to its QuickMail e-mail program. Somebody came up with a scheme to turn your PowerBook into an answering machine/speakerphone. Sound really seemed to be going somewhere.

But starting in 1993, Apple stopped including the microphone with most Mac models. We’re sure we don’t know the exact reason. Cost? Maybe. In truth, though, Apple probably discovered that most of its customers never used the microphone at all — and those who did used it only to record new error beeps.

Too bad, we say. The Sound control panels of your cheerful authors are creaking with sounds from the world around us: our nieces and daughters, our grandparents, subway sounds. By playing these recordings through the Mac speaker, we can, in a manner of speaking, introduce somebody to our entire family/friend circle in a matter of minutes.

**Microphones**

There are three kinds of Mac microphones: built-in, external Apple, and external non-Apple. The built-in microphone, like the one on the Color Classic and the recent PowerBooks, looks like a couple of tiny toothpick perforations in the case of the computer just above or below the screen. Unfortunately, there’s no real way to prevent it from picking up the computer’s own fan or hard drive noises, but at least you never lose it.

Most post-1989 Mac models, on the other hand, came with the classic Apple external microphone. It looks like a high-tech clam shell or a gigantic vitamin C tablet. You plug the end of its very thin cord into the jack on the back of the Mac that’s marked with a microphone icon. Its successor, the PlainTalk mike, costs about $20. It looks different — it’s light gray and no longer SweeTart-shaped — but it plugs into the same jack. Most newer Mac models work only with the PlainTalk mike and not the older Apple mikes.

If you have a Mac made before Apple started including a microphone (and a sound jack) on each model, you can buy a Mac Recorder. When Farallon made these things, they were inexpensive and wonderful. Now that Macromedia bought the rights to this microphone and tripled the price, they’re expensive and wonderful. In any case, this special microphone plugs into your modem port. What’s especially nice about the Mac Recorder is that it has a line input. In other words, you can plug things like your TV, VCR, or stereo into it, too, so that you can digitize sounds directly. The resulting sound quality is higher than it would be if, say, you held the Apple microphone up to your TV’s speaker. (The discontinued Voice Impact Pro, from Articulate Systems, was a similar device.)
Save $300 the easy way

No non-Apple microphone works on the Mac unless you install its driver: a small piece of software that goes into your System Folder (and into the Extensions folder on System 7). This driver comes with the device — or at least it does lately.

If you bought your Mac Recorder before, say, 1990, it didn't come with the driver. However, it's easy to get: the Mac Recorder driver is available from America Online and other on-line services. (You don't have to spring the $300 for the Sound Edit Pro software, which is what you are told if you call up the company.)

It may be called Mac Recorder Pro driver or Macromedia Sound System driver or somesuch, but you know what it is.

Speakers

Your Mac actually sounds a lot better than it sounds, if you'll pardon the expression. That is, the sound it records and plays back is seriously hampered by the relatively cheap speaker built into the Mac. You'll be duly impressed if you bypass the speaker and listen to the Mac's sounds on better equipment.

For example, plug Walkman-style headphones into the speaker jack in the back of the computer. (Turn the sound level down, though, in the Sound control panel, or you'll fry your eardrums.)

Hooking up the Mac to your stereo is also possible. From Radio Shack, get a cord with a male miniplug on one end (for the Mac's speaker jack) and a pair of male RCA plugs on the other end. Plug these into the line inputs of your stereo receiver, usually marked something like Aux or Tape. (Don't plug into the Mic or Phono inputs of the stereo; the sound distorts horribly.)

Perhaps the most convenient — but expensive — proposition is to buy a pair of speakers for your Mac. These aren't ordinary bookshelf speakers. They have to be shielded, powered speakers. Shielded means that their big electromagnets won't affect the Mac or the monitor; powered means they have a power plug and don't have to be hooked up to an amplifier.

What's wild about listening to a higher-fidelity sound source like headphones or speakers is that you hear all kinds of other Mac sounds. This computer is just full of busy little whirs and hums: when the floppy drive is in use, when the hard disk is accessed, and so on.

A Mac digitized-sound primer

Your Mac records sound by sampling the sound waves entering the microphone. Sampling is a technical term for taking thousands of tiny sound snapshots per second and converting each to a number. (That's why it's also called digitizing.) Most Mac sound-recording software (including recent versions of the Sound control panel) lets you specify how many of these samples you want to make per second: 11,000 or 22,000, for example. The more samples per second, the more realistic the playback is. Needless to say, 22KHz (short for kilohertz, meaning thousand samples) is the clearer of the two. Starting with the AV, Power Mac, and PowerBook 500 series, in fact, many Mac models can actually record at a crystal-clear 44KHz — compact-disc quality.
But no matter what the sampling rate, sound files are big. One second of 22KHz sound gobbles up 22K on your hard drive. You can do the math: a one-minute 22KHz sound, therefore, takes up 1320K on your disk — over a megabyte. (11KHz sounds are half as big.)

**Sound formats**

Mac user groups and on-line services such as America Online are positively awash in great sounds you can play on your Mac. Unfortunately, it took a long time before Apple officially endorsed a common sound format (the double-clickable System 7 sound format).

In this day and age, you’re most likely to run across two sound formats: FSSD and snd files. (As far as we know, you pronounce these by spelling out their initials.) Their icons, plus two other common formats, are shown in Figure 23-1.

![Figure 23-1: The icons of four common sound formats. On the left, snd or System 7 sound. If you double-click it, you hear it. To its right, an older FSSD sound. This doesn’t play unless you convert it or open it with Sound Edit. The SoundMover suitcase file can actually contain more than one sound; you can open the sounds and split them into separate System 7 sounds using ResEdit or SoundMover. The last file could be anything; it doesn’t remember what file created it. However, either ResEdit, SoundEdit, or SoundMover can definitely open it if it’s genuinely a sound.](image)

**System 7 sounds**

Of the two types, the snd file, also called simply a System 7 sound, is infinitely superior. For one thing, in System 7 it plays when you double-click it. For another, you can install it into your System file by simply dragging it on top of the System folder icon.

At that point, the sound’s name shows up in your Sound control panel. See Chapter 3 for instructions on using the Sound control panel for copying, deleting, renaming, and recording sounds. For now, just remember that after a sound is in your System file, you can do all kinds of things with it:

- **Trash it.** Double-click the System file icon, which opens into a window. Drag the sound to the Trash.
- **Rename it.** Double-click the System file icon, which opens into a window. Highlight the sound’s icon and rename it as you would any file.
- **Store it.** Open the Sound control panel. Highlight the name of the sound. Copy it. Open the Scrapbook and paste.
- **Play it as a scale.** Launch ResEdit (see Chapter 21). Open the file’s snd resource and choose Play as Scale from ResEdit’s snd menu. (See Chapter 21 for step by step instructions.)
- **Paste it into HyperCard.** After you select a sound from the Sound control panel or the Scrapbook, paste it directly into the editing window of HyperCard's sound palette. (See "How to edit your recorded sounds," later in this chapter, for instructions on opening the sound palette.)

- **Paste it into a QuickTime movie.** Naturally, you can paste sounds into QuickTime *editing* programs, such as Adobe Premiere. But if you press Option while choosing Paste, you can *mix* a copied sound into the existing sound of a QuickTime movie you're viewing in the Simple Player or Movie Player program (see "QuickTime" later in this chapter).

**FSSD sounds**

This kind of sound, featuring the little RCA/Victor logo dog, isn't as convenient as a System 7 sound; fortunately, most of the new sounds created these days are in System 7 (*snd*) format. You can play an FSSD file using SoundMaster (shareware), Sound Edit (the program that comes with Mac Recorder — you can use it to convert the sound), or SoundMover (shareware).

**SoundMover suitcases**

If you have SoundMover, the shareware program, great. If not, you can use ResEdit, included with this book, to open this suitcase.

After it's open, highlight the name of a sound in the list. From the Edit menu and choose Copy. Paste it into the Scrapbook or the Sound control panel, and it behaves just like any other System 7 sound.

**How to edit your recorded sounds**

If you bought a Mac Recorder, then you already own Sound Edit, the best sound-editing program there is. Curl up with its manual; you're on your own.

If you have a microphone that came with (or is built into) your Mac, however, you may think that you have no way to edit the sounds you record.

**Enter: HyperCard**

If you bought your Mac between 1990 and 1992, you probably got a copy of HyperCard. Note: This *doesn't* work with HyperCard Player, the program that comes with all Macs after September 1992.

Along with the full version of HyperCard (versions 2.1 and later) are two stacks that work wonderfully with sound: Appointments With Audio and Addresses With Audio. You can, of course, record new sounds directly into these stacks: "Lunch with Bill on Thursday," and so on. That's probably what these stacks were designed for.

But you can ignore the address and appointment features and still use HyperCard's powerful sound-editing window. Open any stack. Then choose Audio from the Edit menu. The floating palette shown in Figure 23-2 appears.
Figure 23-2: In the foreground, you see HyperCard's sound-recording palette.

The recording controls here work just as they do in the Sound control panel. However, here you have a choice of sound quality: Best (22KHz) or Good (11KHz). (For the record, the Sound control panel records at 22KHz.)

**Into the cutting room**

More importantly, you can click the Edit button in the upper-right corner. A terrific sound-wave-editing window appears (see Figure 23-3).
The blotch you see in this window is a graph of the sound wave over time. The taller the squiggle, the louder the sound. Drag across a portion of this graph and click Play, and you hear only that portion. Using this technique you can actually pick out specific words from the recording (see Figure 23-4). From a civil rights standpoint, this could actually be a dangerous feature!

Figure 23-4: Editing sounds is like editing reality, if you're in that kind of mood.

Have a look at Figure 23-5 for a moment. You see that there are two graphs — one big, one small — and a strange kind of rectangle.

You can zoom in for more detail by making the view rectangle smaller (just drag it from one end). You can zoom out — all the way, if you want, so that both graphs actually show the same thing — by dragging the view rectangle boundaries outward.

Figure 23-5: The large display (A) is a magnified view of what's inside the rectangular handle (circled). The lower display (B) always shows the sound in its entirety. You can control how much magnification the upper display shows by dragging the outline of handle C, and you can move forward or backward through the sound by dragging the center of handle C.
Finally, to retain the same magnification but move elsewhere in the sound, click inside the view rectangle and drag to either side.

**Saving and moving sounds**

HyperCard’s on-line help (choose About Audio from the Edit menu) gives plenty of tips on installing your newly recorded (or edited) sound into other HyperCard stacks. It’s mum, however, on the topic of installing them elsewhere on your Mac.

The answer lies in ResEdit, included with this book. See Chapter 21 for basic instructions. See the “Six great things to do with sounds,” next, for specific instructions on grabbing sounds out of HyperCard stacks and pasting them elsewhere.

**Six great things to do with sounds**

Okay. So you have a Mac and you have a mike. You read Chapter 3, so you know how to record new sounds using the Sound control panel. Here are some other ideas.

**Change your error beep**

Whichever sound is selected in the Sound control panel’s list becomes your error beep.

**Double-clickable sounds for your friends**

Record a sound using the Sound control panel. Save and name it. Double-click your System file. Drag the icon that represents your new sound out onto the desktop. (If you want to preserve it in your System file, Option-drag it to the desktop.)

You just converted the sound into an icon file that you can copy to a disk and give to a friend.

**Leave a good-morning memo**

You can leave a voice message for you or whoever next uses the Mac.

As instructed in the last Secret, record a sound and drag it out of the System file. Put the icon instead into the Startup Items folder of the System 7 System Folder. Next time you start up the Mac, you hear that cheery recording played just as the desktop appears.

**Paste sounds into a Word document**

After you copy a sound from the Scrapbook, HyperCard, or the Sound control panel, choose Voice Annotation from Word’s Insert menu. (Of course, this assumes you installed the Voice Annotation feature when you ran Word’s installer. If the command doesn’t appear in your menu, find your Word disks and install the Voice Annotation feature.) The palette in Figure 23-6 appears.
If you try to paste your copied sound, you won’t get anything but an error beep. That’s because Word defaults to working with high-quality 22KHz sound (Best quality). The Sound control panel, on the other hand, always records sounds at 11KHz (Good quality).

Therefore, before you paste, choose Good from the Quality menu in Word’s Voice Annotation palette. Then you can paste the sound in.

**Suck sounds out of all your other programs**

Use ResEdit, as described in Chapter 21, to open all the programs (and HyperCard stacks) on your hard drive. Root through them in search of snd resources. Open the snd resource and highlight one of the sounds in the list. A new menu, called snd, appears on the menu bar. It lets you play the sound or (if you have an Apple microphone) rerecord it.

But by using the Edit menu, you can cut or copy the sounds, which is great fun. Paste them into your Scrapbook or Sound control panel for easy future access.

To get you started, here are a few programs that contain sound resources ready for your perusal: the Puzzle desk accessory; the America Online program; Kid Pix (tons of them); the System file (the famous camera-shutter sound, among others); HyperCard (19 of them); and so on. Games, in particular, tend to be crammed with great sounds.

**Sound Secrets**

**The classic Mac II/III sound problem**

The II/III is famous for having a problematic speaker connection. The symptom is that your Mac falls mute and stops playing sounds. If your II/III is afflicted with this sort of sound problem, consult our II/III Secrets in Chapter 11, where you’ll find a few clever ways of getting around the problem.

**Stashing sounds in the Fonts folder**

Using your trusty pal ResEdit, you can create sound suitcases that the Mac happily gulps into System 7.1’s Fonts folder. We can think of two advantages of storing sounds there instead of in the System file (where they’re normally stored). First, the Find command finds them. Second, they are preserved if your System file gets corrupted and has to be replaced.
More detailed instructions for this trick are in Chapter 21. In the meantime, here's the crux: change the file's Type to FFL.

**Sound stuff with this book**

If your Mac has no microphone, your SECRETS disks contain enough material to get you started on a promising sound-management career: a healthy handful of sounds from the commercial hit Kaboom! sound collection (from Nova Development) and three Sound Clips from Olduvai. In the back of the book, you'll also find discount coupons for Sound Clips, Kaboom 2.0, and Kaboom Factory, a fun, snappy sound-editing program.

**Music with MIDI**

The digital sounds you just read about aren't really music, as far as the Mac is concerned. They're fixed digital recordings, *samples*, that may or may not contain music (they might just as easily be hinge squeaks or voices).

The Mac is equally famous for its second music technology: *MIDI* (pronounced "middy"). MIDI stands for Musical Instrument Digital Interface — computerese for *synthesizer hookup*.

We like to think of MIDI as something like PostScript, the printer language spoken by the Mac over a cable. But instead of sending page-description instructions to a printer, MIDI cables convey *music*-*description* signals to a synthesizer. One signal says "play middle C"; another says "push the sustain pedal down." The keys and pedals don't actually move, but otherwise the instrument responds by playing exactly as though a human were at the controls.

**Sequencing**

Because the Mac transmits hundreds of these MIDI signals per second, it can play some very complex music indeed. It can, for example, play the synthesizer's string, woodwind, and percussion sounds simultaneously. Using a technique called *sequencing*, you can record one instrument's musical line at a time into the Mac; then, like a multitrack tape recorder, the Mac plays all the parts back in perfect synchronization.

Unlike a tape, however, the Mac-as-a-sequencer can change the key or tempo independently; you don't get Alvin and the Chipmunks when you speed up the piece, as you do with a tape. Also, unlike a tape recorder the Mac never makes you wait to rewind or fast-forward; a sequencer is random access, so you can jump instantly to any spot in the piece. Above all, composing with a sequencer means you can fix wrong notes, add accents or crescendos, or copy and paste parts of a song without ever having to rerecord the original performance.
What you need

All you need for MIDI sequencing are the three ingredients: a synthesizer, a MIDI interface to connect it to the Mac, and a sequencing program.

The keyboard

The most important aspect of the synthesizer you buy for MIDI is that it should be, of course, MIDI-compatible (some of the really inexpensive ones aren’t). It should also be multitimbral (capable of playing more than one instrument sound at a time). You can tell if a keyboard is MIDI-compatible by checking for the presence of two round, nickel-sized MIDI jacks in the back. You can’t really tell if it’s is multitimbral by looking; get a salesperson to tell you. The most basic multitimbral MIDI keyboards cost about $150 in music stores; Casio, Yamaha, and Kawai each make several keyboards with street prices in that range. The more realistic the sounds, the more the synthesizer costs.

For multimedia work and presentations, consider getting a sound module (a synthesizer that has no keyboard). After you record the music, you don’t need a keyboard; remember, the Mac plays MIDI over a cable, not by pressing keys. Therefore, a sound module, such as the cigar-box-shaped Yamaha TG100, is portable, inexpensive, and lightweight. But when hooked up to speakers, it still sounds like a fair representation of actual instruments.

The interface

You next need a MIDI interface to connect the synthesizer to the Mac. A MIDI interface is generally a small box. You plug one end into the modem port of your Macintosh; into the other end you attach MIDI cables from your synthesizer. There are two cables, labeled IN and OUT, because MIDI signals only run one way in each cable.

Don’t let them sell you some $300 professional interface. For most people, there’s no reason in the world not to get a cheap $50 Altech or Opcode interface with outputs for three musical keyboards (and no power plug to hog spaces on your surge suppresser).

The sequencer

The final element of a MIDI sequencing setup is a sequencing program. In some ways a sequencer is unique in Mac software; there’s no Print command. You can’t paste anything from it into PageMaker. You hardly use the Mac keyboard at all. But a good sequencer can turn you into an orchestra.

All sequencers are fundamentally alike: in one window there are buttons labeled Play, Stop, Rewind, Record, and so on. You click Record, and play the synthesizer. After you click Stop, every note you played appears as a strip on a horizontal bar graph. As with a tape recorder, you hit Rewind and then Play; the sequencer plays the synthesizer, recreating your performance to the subtlest nuance. The sequencer captures and plays back an amazing amount of musical feeling from the stream of numbers that pours in from the MIDI cable (see Figure 23-7).
When you play your MIDI synthesizer, the sequencer program records all kinds of information, in numeric form, about the music. For every single note you play, it records (A) the measure number, musical beat, and fraction of a beat when you pressed the key; (B) when you pressed or released the foot pedal; (C) which note you struck, and how hard you played it; and (D) how long you held the key down. You can, of course, edit any of this information.

- **Pedaling information.** Actually, the sequencer only stores two tiny messages: when the pedal goes down and when it comes back up.

- **Key velocity.** Key velocity is a numerical measurement of how hard you strike each key when you play. On a real piano, key velocity determines volume: the harder you strike, the louder the note. In the crazy world of synthesizers, velocity doesn’t have to control volume. Hitting a note harder can instead make the sound have more vibrato, be brighter sounding, or have a wah-wah effect. In fact, you can even program a synthesizer to sound softer the harder you hit a key!

- **Aftertouch.** Here’s a musical quality you can’t even get on a real piano: the ability to affect the sound after you strike the note. On synthesizers equipped with this feature, the concept is simple: you can adjust how hard you’re pressing on a key after it’s already been struck! If you think about it, how else could you get a crescendo in the middle of a long trumpet note?

After all of this information — and much more — is recorded, the Mac can reproduce with uncanny accuracy your exact musical performance. The advantage is that if you play a wrong note, you can fix the pitch of the note without affecting any of the other musical nuances.

## MIDI Secrets

### Sharing the modem port

After your MIDI interface is hooked up to your modem port, where does your modem go?

This age-old problem can be solved in two ways. The inexpensive way is to buy an A/B switch box for your modem port, or a software-switchable one like the Axion Switch. (They’re listed in the ads of mail-order companies in most Mac magazines.) The more sophisticated way is to buy a serial port expander card for your Mac II-series computer. This card adds four more “modem ports,” so you can have a modem, MIDI interface, label printer, and yet another modem port-connectable peripheral all attached at the same time. You switch from one to the other using software. These NuBus cards, too, are advertised in the Mac magazines.
PowerBooks and MIDI

The PowerBook drove MIDI musicians absolutely crazy when it first appeared on the market. MIDI, it was said, no longer worked.

Actually, MIDI always did work if all you were doing was ordinary sequencing of the sort we’re discussing. Only for specialized major data transfers — system exclusive data, as it’s called — did the PowerBook 140 and 170 bog down and stop working with MIDI.

What few realized is that most of the “PowerBooks don’t work with MIDI!” cries arose for a completely different reason. It turns out that these Macs (even the new models) don’t work with MIDI if AppleTalk is off! Open your Chooser and make AppleTalk active; then restart. Only then does a PowerBook correctly handle MIDI information through its modem port.

We’re told that the PowerBook Duos and recent full-sized PowerBooks have no problem with MIDI. Any PowerBook, even one that’s having trouble, can be made to work with the addition of an extension called OMS (from Opcode Systems, 415-369-8131).

Finale 2.6.3 hidden movie

Finale, the music-notation program, has one of the best About boxes ever (version 2, not version 3). Choose About Finale from the Apple menu. The Finale logo — a conductor in the spotlight — appears. Don’t do anything. After ten seconds, the conductor gets tired of standing there motionless. He drops his arm to his side and walks off the podium!

Hail the power of MIDI files

MIDI files, the generic interchange format for Mac music, aren’t just good for swapping music between brands of Mac sequencer. They’re also great for swapping music with other brands of computer! Any computer — IBM compatible, Atari, Amiga, whatever — can read your MIDI files. To transfer them, send them over the modem (see Chapter 27) or put them on an IBM or Apple II disk using Apple File Exchange (see Chapter 4).

Hail the power of MOD files

As you’ve read, there are two prevailing sound formats on the Mac: digitized sound (large files, good realism) and MIDI files (small files, requiring a synth). There’s actually a third, up-and-coming format: MOD files.

These sound files are popular on the Amiga computer, and with good reason. Each file contains MIDI-like note information and one tiny recording of each instrument sound — a rimshot sample, one piano-note sample, and so on. When played back, the note data triggers the digital recordings with split-second accuracy; the result is a superbly realistic, textured, multitimbral sound. You can speed it up or slow it down without affecting the pitch, or vice versa, just as with MIDI files. And because the MOD file’s note information takes up little disk space, a small MOD file can play for several minutes.

If you have a modem, America Online’s music forum (keyword: MMS) is a terrific source of MOD files — about 300 the last time we checked. That’s also where you get the software you need to play MOD files: a program called Sound Trecker is one of several available.
QuickTime Movies

*QuickTime* is Apple's movie technology. It's not a program. It's not a control panel. If anything, it's the name of an extension you drop into your System 7 System Folder to make your Mac movie-ready.

Even if you do drop in the QuickTime extension, you don't notice a single difference. Your Mac appears to be no better off than it was before — until you get a QuickTime movie file and some program that can play it.

When that moment arrives, you're either extremely excited or, at the very least, amused and intrigued. If you haven't seen movies playing on your screen before, you're in for a treat. Yes, they have a reputation for being tiny, jittery movies. But they're real *movies*, playing right on your screen. And technology has been marching on; today's Macs, and today's greatly improved version of QuickTime, make larger, smoother movies commonplace.

We'll tell you how to get going in QuickTime and how to go beyond the basics. But first we want to make sure you realize that there's some expense, a bit of terminology, and some serious hard drive space-guzzling ahead.

How to record your own movies

In theory, digital movies on your Mac shouldn't be possible at all. If you work with graphics, you know that just one color picture can take up a megabyte of disk space. A TV picture is composed of thousands of individual frames flashing by at 30 per second. To fill your whole screen with color, your Mac would have to be able to process 30MB *per second*. That's not just a lot; it's impossible for any computer much shy of a Cray.

That's why QuickTime is such an achievement. To reduce the amount of information necessary to display video, its authors have pulled all kinds of clever stunts. The primary cheat is, of course, that the movie you watch doesn't fill the screen — in fact, most QuickTime movies play in a rectangle that's only ¼th or ⅛th of the standard screen size. Obviously, such a tiny movie drastically cuts down the amount of data the Mac needs to handle. Next, QuickTime compresses the file, discarding redundant information as it studies the color information in your movie.

The biggest coup in QuickTime technology is the way Apple made it so that any QuickTime movie can play on any QuickTime-ready Mac (see the next section, "What you need"). If you play a certain QuickTime movie on a Quadra, of course, it plays back very smoothly, flashing 30 frames per second in its little window. Play that same movie on an LC, and you only see 8 frames per second — but you'll still hear everything. In other words, if a Mac is having trouble keeping up with the movie, QuickTime is smart enough to skip frames but honor the sound track.
What you need

Even so, the Mac must still process a huge amount of information every second. Therefore, QuickTime requires a fast Mac. A Mac LC barely suffices; more recent and more powerful Macs, of course, are better (see Chapter 11). You also need at least 5MB of memory and System 7.

That’s what you need to play QuickTime movies. If you want to make your own movies with a camcorder, you need a digitizing card, which means you need a Mac with slots, with NuBus or PDS slots (see Chapter 11 for model information). The VideoSpigot and Movie Movie are not only about the least expensive, but also among the best. (The AV Macs don’t need an added card to do simple digitizing; they’re ready to go.)

You don’t actually need a color monitor, but QuickTime isn’t very impressive in black and white. Finally, you need the QuickTime extension itself: an extension you can get from a user group, Apple dealer, the System 7 kit, or an on-line service.

Recording and compressing

To make your own QuickTime movie, install your digitizing card into the Mac and plug your camcorder, TV, or VCR into the back of it. Each digitizing card comes with its own software with tape-deck controls: Record, Play, Stop, and so on. All you have to do is set the TV or VCR playing, click the on-screen Record button, and save, and you have yourself a new QuickTime movie on the hard drive.

When you save the file, you’re asked to choose a compression method. This compression business is what really makes QuickTime remarkable. You have a choice of several compression methods (called codecs, short for compressor/decompressor). One codec works best for video, another for animations, another for still images, and so on. Each strikes a different balance between picture quality and the space the file takes up on your hard disk.

Of the codecs, the most useful are the Apple Video and Compact Video (Cinepak). Apple Video movies look good and compress relatively quickly (and we mean relatively — saving a QuickTime movie can take many minutes), but they take up a huge amount of disk space. Compact Video, the newest codec, takes an incredibly long time to save a movie — sometimes overnight — and the resulting movie is, say, 10 percent grainier than other QuickTime movies. But people love Compact Video because the files are much smaller on the disk, and, most important of all, they play back more smoothly.

Of frame rates and tradeoffs

Smooth playback is not a point to be underestimated, either. The smoothness or jerkiness is measured in frames per second (fps). Remember, TV smoothness is 30 fps. A really good QuickTime movie is visually satisfying at anything over 15 fps. Unfortunately, with the exception of the VideoSpigot digitizer, most digitizing cards only capture at between 5 and 10 fps, even on an LCIII or lici, resulting in jerky motion.
Of course, you can maximize your frame rates if you’re willing to make some sacrifices. The world of QuickTime is positively *brimming* with tradeoffs you can make. Here are some examples:

<table>
<thead>
<tr>
<th>If you want this…</th>
<th>You have to settle for this:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smoother playback</td>
<td>Larger file on disk, or smaller playback window, or fewer colors (8-bit vs. 24-bit)</td>
</tr>
<tr>
<td>Bigger playback window</td>
<td>Choppier playback, or a larger file on disk, or fewer colors</td>
</tr>
<tr>
<td>A smaller file on disk</td>
<td>Choppier playback, or a smaller playback window, or fewer colors</td>
</tr>
<tr>
<td>Richer colors (24-bit)</td>
<td>Choppier playback, or a smaller playback window, or a larger file on disk</td>
</tr>
</tbody>
</table>

Here are some real-world examples. On a Mac IIcx with 8MB of memory, the VideoSpigot can capture a 24-bit movie at about 12 fps — if the window is at its smallest size, 160 by 120 pixels. Capture that movie with a double-size screen (320 by 240), and the frame rate drops to 8. Capture in 8-bit color instead of 24-bit, and you gain two fps. But record sounds simultaneously with a MacRecorder, and you lose 3 fps.

**How to play back and edit movies**

Once you capture a pile of raw film clips (or grabbed them from America Online, a CD ROM of *clip movies*, or another source), you can play them back in several ways. All kinds of regular commercial software can play QuickTime movies: Word, Persuasion, HyperCard (with the $15 QuickTime Tools stack from Claris), Kid Pix (with the additional Kid Pix Companion), WordPerfect, and so on. (See Figure 23-8.)

![Figure 23-8](image)

*Figure 23-8:* A QuickTime movie embedded in a Word file. It’s a big file on the disk, but wow, does it convey more than words.
There's also the Simple Player or Movie Player. These are straightforward QuickTime movie-playback programs from Apple; they come with the QuickTime Starter Kit, among other things. Using the Simple Player — or, indeed, using any of the QuickTime-equipped programs we just mentioned — you can perform simple editing on your QuickTime movies: cutting pieces out, rearranging clips, and anything else you can think of to do with Cut, Copy, and Paste commands.

If you use the special version of the Scrapbook that comes with QuickTime, you can even paste movies (and watch them) right in the Scrapbook desk accessory. Ditto with Multiclip Lite, included with this book.

To do any fancier editing, such as creating dissolves between scenes or superimposing footage, you need Premiere (Adobe), Video Fusion (Video Lake), or VideoShop (DiVA). These programs are creaking with fancy features that can duplicate almost every single one of the special video effects you see in today's TV commercials. (You probably got one of these programs with the purchase of your video card.)

What good is it?

In our experience, making a QuickTime movie in one of these editing programs is like making a real movie: you spend incredible amounts of time relative to the length of the final product. We average about a day of work per minute of finished, polished movie. We'd do better on a Power Mac, of course, but even those Mac powerhouses make you wait endlessly when you're processing or saving a QuickTime movie. When you see what all the fuss is about — a tiny, jittery movie the size of a Wheat Thin — you may wonder why it's worth spending the money and time.

It's pure, heart-racing fun, for one thing. Suddenly you are Hollywood, with complete control over the look of every single frame of your masterpiece. In terms of real uses, there's training, kids, games, and business presentations, and, of course, storyboarding for actual movies or shows.

Furthermore, the days of tiny and tinny movies are fading quickly. As Macs become faster, as the PowerPCs hit the market, as improved versions of the QuickTime extension appear, the frame rate of the average movie continues to increase. So does the frame size. For example, your garden-variety Quadra running QuickTime 2.0 can deliver half-screen movies with all the color and smoothness of TV — a breathtaking technical achievement. We hear today's QuickTime compared to the first ImageWriter: no, it wasn't desktop publishing, but its simplicity and naturalness hinted at the amazing things to come.

QuickTime Secrets

The classic Startup Movie trick

This is the only possible way you can see a QuickTime movie without owning a single piece of extra software.

Just put a movie file named Startup Movie loose in your System folder. Each time you turn on the Mac, it plays in the center of the screen.
Simple Player surprise
A feline surprise awaits you in Apple’s Simple Player program. Press Option as you choose About Simple Player from the Apple menu.

Hidden Standard Controller tricks
The Standard Controller is the interface you usually see for playing QuickTime flicks. It’s the funny little scroll bar as shown in Figure 23-9.

Figure 23-9:
The Standard Controller for controlling QuickTime movie playback.

A. The volume control. Click this speaker icon and hold the mouse button to get a sliding volume scale. Secret: Option-click the speaker icon to immediately mute the sound. Option-click again to restore the sound.

B. The Play/Pause button. In most programs, you can also press the Space bar to start and stop playback.

There’s an odd but useful feature buried in this button (in some programs, but not, interestingly, the Simple Player). If you Option-click it, you see every single frame of the movie shown in sequence, no matter how long it takes. On any Mac short of a Quadra, this means that it doesn’t play in real-time (remember, on slower Macs, QuickTime drops frames as a matter of course). In fact, it plays slower than real-time and without sound.

C. The scroll bar. This strip is a map of the entire movie, no matter how long. Click on anywhere in the strip to jump to the appropriate spot.

D. The slider. This little rectangular handle indicates where you are in the movie. Drag it back and forth to move through the frames.

Shift-drag to turn a portion of the strip black, as shown in Figure 23-9. Anything that’s black is selected and can now be cut or copied. (To paste it, move the slider to the point where you want to paste, and then paste!)

E. The step-backwards button. Click to step one frame toward the beginning of the movie.
F. The step-forward button. Click to step one frame toward the end of the movie. 

You can Control-click either of these step buttons to make a jog-shuttle control appear. Keep the mouse button down and drag the tiny handle left or right. Your movie plays backward or forward at a speed you dictate by the distance your mouse travels, *with* sound!

Option-click these step buttons to jump to the first or last frame of the movie.

G. Resize box. You can drag this resize box as you would any window’s resize box. You can make the playback frame long and thin, if you want to. Be aware, however, that the result is an extremely slow, choppy playback. QuickTime movies like to be played back in their original shape, and preferably at even multiples of the original size — twice as big, half as big, and so on.

In fact, if you Option-drag this resize box, the window gets larger or smaller in those increments.

H. Zoom box. To restore a movie to its original dimensions after you stretch its window, click this zoom box.

*Quick backward playback with sound*

Shift-double-click the main part of the window, where the movie plays. Try it — it’s weird!

Double-click the image *without* the Shift key to play forward; single click the image to stop it.

*24-bit color at twice the speed*

If your Mac is equipped with a 24-bit color monitor (see Chapter 10), QuickTime movies look their all-time best. Unfortunately, they also play at their all-time slowest, because of the massive amounts of color information the Mac needs to process every second.

If you record or save your movie in 16-bit color, though, you notice very little degradation from 24-bit color. As a bonus, you’ll get playback that’s *double* the speed of 24-bit.

How is this possible? The Mac works with color in powers of two. When it’s working in 24-bit color, it actually reserves 32 bits of data. (That’s why 24-bit color is sometimes referred to as 32-bit color, as in *32-bit QuickDraw.*) Dropping back to 16-bit color cuts the data stream in *half*.

In recognition of this wonderful trick, Apple endorses 16-bit color as the Official Color Depth of QuickTime.

*Where’s the controller?*

If you see what looks like a movie but you don’t see the Standard Controller, you may see a *badge* (see Figure 23-10) in the lower-left corner of the movie.
The presence of the badge indicates that the Standard Controller bar is at the ready, but just tucked away out of sight. Click on the badge to expand the window so that the controls spring into sight.

**Keyboard shortcuts**

Use the arrow keys to step through the frames of the movie one by one. Press the up or down arrow keys to adjust the sound level.

Press Space or Return to start or stop playback. If you also press Shift, you select the portion of the movie that plays.

**The hidden QuickTime message**

If the QuickTime extension is in your System Folder, you can get a sample sense of the programmers' humor if you choose Show Balloons from the Help menu. Just point to the QuickTime icon in the Extensions folder.

**Putting It Together**

You've made your movies. You've recorded your sound FX. You've composed a throbbing, insistent beat using MIDI and your synthesizer. Now you have to show it all to somebody.

Fortunately, there's an entire Mac software category dedicated to letting you integrate all these different pieces into an attractive, viewer-controlled show.

**General multimedia presentation software**

Multimedia is more than sounds, movies, and pictures; it's skillfully blending them into a single production. To assemble presentations that combine a variety of audio and visual elements, you need a multimedia integration program.

On the most basic level, you can perform media integration with slide presentation programs such as Microsoft PowerPoint and Aldus Persuasion. These programs are designed primarily to create static slide-show presentations, but the newest versions offer QuickTime support as well. (Even programs like Excel, ClarisWorks, and Canvas have basic slide-show features; so does MultiClip Lite, included with this book.)
For more cinematic presentations, you need a program like Passport Producer, Macromedia's Action, or Vividus's Cinemation. These programs let you do more than insert pictures and movies onto a static slide; you can animate objects to fly along paths on screen and add a soundtrack that plays continuously as scenes change. Also, you can build interactivity into the presentations by creating buttons that link to other objects, sounds, or scenes. Viewers can control the flow of the presentation by clicking the various buttons.

On the high end, script-based multimedia packages are available, such as HyperCard, Macromind Director, and Authorware Professional. Don’t expect to load one of these programs and turn out a polished presentation an hour later. All three employ scripting languages that take a while to learn. The scripts permit a high level of interactivity and let you control external devices like videodisc players from within a presentation.

Generally, integration programs are designed to combine sounds and pictures, not create them. But there are exceptions: Macromind Director and Cinemation include a full range of painting tools so that you can create frame-by-frame animation from within the program. One of the newer packages, Gold Disk's Astound, includes a sound recording feature. At the very least, all the programs include a text tool, so you can create titles and headings without having to import every word.

**HyperCard**

We’re not sure how to proceed with HyperCard. What a rollercoaster ride! First Apple included it with every Mac. Then Apple handed it over to Claris, who began selling it for $200, and Apple still gave it away with every Mac. Then Apple stopped giving it away with every Mac and created a stripped-down, playback-only version called HyperCard Player. Then Apple took HyperCard back from Claris, enhanced it with color, variable window sizes, and other goodies, and re-released it as HyperCard 2.2.

We almost considered not mentioning HyperCard; everybody's into it and its programming language, HyperTalk, to a different degree. If you want to learn to program HyperCard, we merrily refer you back to your bookstore bookshelf for entire books devoted to the topic. Nonetheless, we've acquired a few tasty morsels to pass along.

**HyperCard Secrets**

_The Magic password_

As we mentioned, for a time there were two versions of HyperCard: the free one distributed by Apple and the $200 one distributed by Claris.

As it turns out, there was no difference between the two versions! The free version was temporarily crippled when you first got it, but the following trick instantly changed it into the full, working, Claris programmable version:

Launch HyperCard. Go to the Home stack (⌘-H). Press the left arrow key to go to the Preferences card. Press ⌘-M to bring up the Message box. Type _magic_ and press Return. Suddenly, the two final user levels, 4 and 5, spring into view! If you click level 5, you unlock your copy of HyperCard.
Of course, after sly Mac authors like us started spreading the Secret, Apple and/or Claris promptly took the secret out! The version that accompanies all current Macs, HyperCard Player, can’t be turned into the full version. No way, no how. (We’re not even sure why it’s included at all, because it doesn’t come with any stacks to play with!)

More about the Message box
The Message box in the last Secret is a powerful channel directly into the heart of HyperCard. Here are some of the commands you can type into the Message box. Remember, press ⌘-M to bring the box onto the screen and press Return at the end of the command.

- s Opens the Stack Info dialog box.
- b Opens the Background Info dialog box.
- c Opens the Card Info dialog box.
- nav Opens the Navigator palette, containing shortcuts for the navigation commands in the Go menu.

Keyboard shortcuts
If you’re in Button or Field-editing mode, press Tab to switch back to Browse mode.
Press ⌘-Option to make a dotted outline appear around every button on the current card. This is a great trick for making sure you’re not missing some of the fun by failing to click something. (Hidden buttons, however, remain hidden; they’re only outlined when you’re in Button mode.)

- ⌘-Option-click a button to open its script instantaneously. Press ⌘-Option-Shift to display a dotted outline around every field and button.

Your name (and Mac) in lights
HyperCard 2.1 has one handy and one goofy feature in one: the About box. Press the Option key as you choose About HyperCard from the Apple menu. As you see in Figure 23-11, HyperCard credits you with having authored the program.
How does it find out your name? From the Sharing Setup control panel if you entered your name there. (If not, you see instead the name of one of the actual programmers.) If your name doesn’t appear, try again; with each attempt you’ll see somebody else’s name — and, eventually, yours.
In the main part of the dialog box, you also see a number of interesting specs concerning your Mac.

Externals for a better world
One of the best parts of HyperCard is the externals, or XCMDs, that serve as plug-in features for your stacks. They can make your stacks do things you could never program them to do yourself: control laser disc players, create pop-up menus, and so on. You can get externals from on-line services, by mail order, and from Mac user groups.
Be careful if you decide to distribute your stacks, however; some of the externals have strict licensing limitations. On the other hand, you can often find freeware or shareware externals that do exactly the same thing as a commercial one.

**What system software version?**

Here's a handy little undocumented function that tells you the current Mac's version of the System. (You can use this in either the message box or in a script.) It's `systemVersion()`.

If you type this into the Message box, the version number appears as soon as you press Return.

**Open a new window**

You're probably used to thinking of HyperCard as a one-window show. As soon as you open one stack, the preceding one disappears.

Not so! Press Shift when you open a new stack (or use the Recent window to go to another stack). The new stack appears in its own separate window.

**Unhide the menu bar (or keep it hidden!)**

Some stacks that come your way may hide the menu bar! You can't use any of the normal HyperCard commands — unless you know the secret keystroke to bring it back into view (or unhide it): ⌘-space bar.
Of course, you, the HyperTalk whiz, can block those ungrateful users from showing your menu bar if you’re really bent on keeping it hidden. Just use this script in your stack:

```hyper```
on show what
  if what ≠ “menubar” then pass show
end show
```

**Hide and show the palettes from the keyboard**

When any painting tool is selected, press Tab to show the Pattern palette (or hide it if it’s already open). And no matter which tool is selected, you can hide and show the regular painting tools palette by pressing Option-Tab.

**Fun with your built-in synthesizer**

No wonder they call HyperCard a natural for multimedia. It can play recorded sounds. It can play movies. Now we’ll show you how to play its built-in electronic keyboard.

It’s a simple one, to be sure. You have to preprogram every single note, and that’s all it can play — single notes. But it’s fun. You can put this programming either into a button script or directly into the Message box.

You use the command `Play`. Follow it with the instrument name in quotes (turn off your curly-quotes feature!); the default HyperCard instruments are Boing and Flute, but of course you can record and insert your own instruments.

After that, you just specify which notes and rhythms you want. You can use the regular notes of the scale, A, B, C, and so on, or note numbers (middle C is 60, C-sharp is 61, and so on); following each note name, you can put a number representing which piano octave it’s supposed to be in (the middle C octave is 4). You can use the first letter of each rhythmic value to specify note lengths: q is a quarter note, w is a whole note, and so on. To make a rest, put the value-letter followed by an r (a quarter-rest, then, is qr); to make a dotted note, type a period (a dotted-half note is h.), and to make a triplet type the rhythmic value followed by a 3 (so a triplet sixteenth-note rest is s3r).

Here, then, is how you’d listen to “Mary Had a Little Lamb” on the flute. Note the shorthand: if the octave or the note duration stays the same on two consecutive notes, you don’t have to repeat that information in the next one.

```hyper```
play “flute” e4q d c d e e eh dq d dh eq g gh
```

Now you’re a HyperCard soloist! Go to town.

**Salvage a corrupted stack**

Corrupted cards may make it impossible for you to page through a stack. If so, you can copy and paste the cards one by one into a new stack.

Then, when you get to the card just before the one causing the problem, type the following command into the Message box: `go card the number of this card + 2`. This lets you skip the card or cards that are corrupting the stack.
Putting the Mac on TV

As you've probably either heard or discovered through unfortunate experimentation, you can't use a TV as a monitor, can't record your Mac's picture on a VCR, and can't get a clean picture of a Mac monitor with a camcorder — at least not without special equipment.

Consult Chapter 10 for more detail on the problems. In essence, the two devices simply use different schemes for drawing the picture on the screen.

Overscanning

Two different incompatibilities prevent you from sending the Mac's video image to a TV screen. One is *overscanning*: a TV paints its screen from edge to edge, extending past the edges of the glass. It usually doesn't matter that you don't see the outer edges of a TV show image. In presentations, however, missing the outer edges could definitely matter. The TV, in effect, magnifies the Mac's screen image. Some of the Mac's most important elements (the menu bar, icons, and so on) tend to be at the edge of the Macintosh display, and so on a TV may wind up nearly off the screen. Keep a generous margin, therefore, when you're designing your presentation.

Flicker

The other problem with trying to show a Mac image on a TV is the flickering of thin lines, especially the horizontal lines in a title bar or the lines in a spreadsheet. You may recall from Chapter 10 that the Mac repaints its screen 60 times per second; a TV only draws its screen picture 30 times per second, in alternate passes — one pass draws the odd-numbered lines of the screen, and the next draws the even-numbered lines. Any thin horizontal line in the Mac image falls in just one line of the TV's interlaced image; therefore, it only gets painted during an odd or an even pass of the TV's electron gun — 15 times per second instead of the normal 30 — and so it flickers.

For a price, you can get add-on equipment that corrects the flickering and/or the overscanning problems. Apple's Macintosh Display Card 8•24 and 8•24 GC are among them. These cards also produce a smaller desktop that compensates for overscanning on the TV display. Radius' $2500 VideoVision, a complete display and QuickTime digitizing system with direct plug-in jacks for a TV or VCR, has a feature called convolution that corrects the flickering.

Of course, there are less expensive alternatives. E-Machines, Focus Enhancements, and several other companies now offer low-cost video cards and conversion boxes that support Mac-to-TV output. Most of these units cost about $300 to $400. The important thing to remember when shopping for such a product is that you're looking for a converter that encodes the Mac's RGB video signal into shape for an NTSC device (that is, a TV). An AV-model Mac (such as the Quadra 840av or a Power Mac AV model), by the way, has both this encoder and flicker/overscan features built-in.

Crummy resolution

The last problem with displaying the Mac image on a TV is that, frankly, a TV has poor resolution (dpi) compared to the Mac. Nothing ever looks quite as good on a TV as it does on the Mac.
As a result, you should use larger font sizes and less detail when you set up a presentation you'll be showing on TV. Use Photoshop (or another professional graphics or presentation program) to create anti-aliased (smooth-edged) text, and avoid sharp color contrast between the text and the background color.

If you're using one of the Apple 8•24 color cards' built-in antiflicker feature, or an AV Mac's antiflicker feature, design your presentation so that it fits in a rectangle that's 512 pixels wide and 342 pixels high; the Apple card's anti-overscanning feature blows up this smaller image to neatly fill the TV screen. To turn on this feature, open the Monitors control panel. Use 256 or fewer colors. Click on Options, select Flicker Filter, and restart. The Mac now uses the smaller desktop image to compensate for the TV's overscanning and has a flicker-free display.

Shoot the screen

Ever seen computers on the nightly news? They always, always seem to be on the blink. Their monitors always have those crazy horizontal lines rolling, rolling, rolling up the screen — but that problem only exists in the TV picture of the computers, not in person, and not in movies!

This is the problem you encounter in trying to record the Mac image on TV. The problem, once again, is the difference in scan rates. The symptom is that in the TV image of the Mac, a fat whitish line always appears to be rolling up or down your Mac screen.

We have two easy fixes. First, don't forget that filming a PowerBook screen never has any such problem. It comes out beautifully on TV (because it's not a CRT screen).

Second, if you have a Mac II-series machine and a standard Apple video card, you can get VideoSync. It's a control panel made by Apple that actually changes the scan rate of the Mac to match that of a TV camera, so that the Mac image can be taped without the rolling effect (from APDA, 800-282-2732, $35).

Multimedia presentation Secrets

Our thanks to Elise Dorsey of Ready to Go, Inc., for these tried-and-true secrets.

Make them remember

Begin and end your presentation with exciting music and/or eye-catching graphics; people always remember the beginning and the end the most.

Avoid jerky or ripped animated objects

When animating objects to move across a path, smaller objects move faster: if you're using a slowish Mac, avoid animating large graphics.

And if you're using a slower Macintosh, animate one object at a time to avoid noticeable jerks when the Mac's processor is drained from having to display a second staggered animation.
**Thwart Murphy's Multimedia Law**

Things *always* go wrong with software and equipment. Always.

Test your presentation on the *exact* computer from which it will be displayed before the presentation day. Problems to look out for: necessary software is not installed; necessary fonts are not installed; screen displays colors differently; different Mac CPU speed affects quality of animations; different screen size is incompatible with your presentation; sound is not turned up enough; color depth (256 vs. thousands of colors) is set wrong; and so on.

**Two tips for tasteful presentations**

First, pay as much attention to how your objects exit the screen as you do to how they enter the screen.

Second, avoid repetitive animations, such as an animation that begins each scene. These become tedious and distracting.

**Put the controls where you can always find them**

Put your buttons (for Next Slide, for example) and other presentation controls in a consistent area on the screen. *Never* put the buttons for controlling the entire presentation in different locations on different screens.

**Advice on color selection**

Use *cool* colors for your background and *warm* colors for your foreground. Cool colors are variations of red, yellow, blue, and green that have a bluish tone; warm colors are the same hues with a reddish tone. For example, blue-green is cool; yellow-green is warm. Blue-purple is cool; magenta is warm.

**Advice on font selection**

Use a consistent format for the titles, subtitles, body text, and so on. Text style is a key to your viewer of the structure of your content; by using a consistent visual language, your information is easier to assimilate.
For a term that's not even used correctly, Macintosh fonts have certainly changed the world.

For centuries, typographers used the word font to designate one type face, size, and style. Times Bold 18-point was one font. Times Bold 14 was another. Even today, professional typographers (the non-Mac variety) still refer to one type style as one font: Times Italic, Times Bold, and Times Roman are three fonts. But in Macintosh parlance, one type family is usually called a font. Times is a font. Helvetica is a font. Monaco is a font (barely).

The only Macintosh people who still count every stylistic variation as a separate font are the manufacturers of laser printers, who can then advertise their printer as having “35 built-in fonts!”
Anyway, fonts are both a blessing and a curse on the Mac. They've always represented a technical topic. Trouble is, every time some genius gets the bright idea to improve the situation, the Mac font world gets twice as messy; witness, for example, the increasing font-management nightmares caused by the introductions of ATM, TrueType, and (especially) QuickDraw GX. And it's not over yet.

We're going to do our best to make all of these competing and overlapping technologies clear. Prepare ye, though, for some admittedly tough slogging in the pages ahead; when it comes to the programmers of font formats on the Mac, too many cooks have definitely spoiled the broth.

The Evolution of Mac Fonts

When the Mac first appeared, fonts were extremely simple. There were ten typefaces (see Figure 24-1).

<table>
<thead>
<tr>
<th>New York</th>
<th>San Francisco</th>
<th>Athens</th>
</tr>
</thead>
<tbody>
<tr>
<td>London</td>
<td>Venice</td>
<td></td>
</tr>
<tr>
<td>Monaco</td>
<td>Chicago</td>
<td></td>
</tr>
<tr>
<td>Geneva</td>
<td>Los Angeles</td>
<td></td>
</tr>
</tbody>
</table>

*Figure 24-1: The original Mac fonts. There are some pretty clever jokes going into the names of these fonts: New York is a take-off of Times (used by that prestigious newspaper); Geneva is based on Helvetica (get the Swiss connection?); London is an Old-English font; Monaco is a monospaced font (every letter the same width); Cairo is a picture font, like Egyptian hieroglyphics; and so on. (Anybody got any good theories about Chicago or San Francisco?)*

Font format #1: bitmapped fonts

These first fonts were the original Mac fonts: *bitmapped* fonts. They were designed exactly the way you'd imagine them to have been designed: by somebody painstakingly drawing each letter, pixel by pixel, in a MacPaint-like program. Each letter was composed of a *map* of dots (or bits). And that's how the Mac understood each letter: as a predefined arrangement of pixels.

Of course, bitmapped fonts weren't ideal. Each letter of each font had to be drawn separately in each size. Because it was so much work to design a font, these fonts (then as now) came only in 9-, 10-, 12-, 14-, 18-, and 24-point sizes — if that many. Venice only came in one size (14 points); London came in one size (18 points). You knew which sizes had been predefined by looking at the Font menu of your programs (see Figure 24-2).
If you chose a point size that wasn't predesigned by the font-maker — 17-point, for example — the Mac did its best math. It examined the fonts at the sizes that had been custom drawn and shrunk them or enlarged them slightly, usually with hideous results.

Eventually, people learned not to use those non-installed point sizes. The world became filled with newsletters featuring 24-point Helvetica headlines and 12-point New York body text.

Like most Mac monitors of today, the Mac screen of 1984 was composed of 72 dots (pixels) per inch. That 72 dpi resolution happened to work well for fonts because fonts were traditionally measured in points — of which, naturally, there are 72 per inch! A 12-point letter on the screen could be exactly 12 pixels tall.

The 72 dpi resolution also worked especially well with the Mac's printer, the ImageWriter, whose printouts in Standard mode were also 72 dpi. Each dot on the screen produced a corresponding dot on the page. Your printouts were WYSIWYG.

In terms of fonts, though, what you saw wasn't what you wanted. Text at 72 dpi may have looked okay on a computer screen, especially compared with what passed for type on the screens of other computer brands. But when it hit the page, the low quality of those 72 large square dots per inch gave the edges of each printed letter a ragged, stairstepped appearance. Even today, when things go wrong and text prints out jaggedly, you hear people saying, "My text printed out bitmapped."

Font Format #2: PostScript fonts

The situation changed dramatically when Apple created the LaserWriter printer. Its resolution was 300 dpi, over four times as sharp as the ImageWriter's Standard mode.

The most dramatic feature of the LaserWriter, though, was a new font (and graphics) technology built into it, called PostScript. Chapter 25 has the details; in short, the result of PostScript was that text printed by a Macintosh no longer had to be crude, 72 dpi bitmaps. Text still appeared on the screen at that resolution — and, indeed, it always will — but when printed, text printed by the LaserWriter was smooth, crisp, and fine. Furthermore, the LaserWriter could print text smoothly at any point size, no matter how jagged it was on the screen.
A new kind of font — in two parts

On the laser, those ten classic Apple fonts still printed out at exactly the same coarse 72 dpi resolution. To work its high-res magic, the LaserWriter required a whole new set of fonts: PostScript fonts (see Figure 24-3). To distinguish them from the bitmapped fonts everybody knew, these fonts had noncity names.

<table>
<thead>
<tr>
<th>Font Name</th>
<th>Font Name</th>
<th>Font Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Times Roman</td>
<td>New Century Schoolbook Roman</td>
<td>Helvetica Roman</td>
</tr>
<tr>
<td>Times Bold</td>
<td>New Century Schoolbook Bold</td>
<td>Helvetica Bold</td>
</tr>
<tr>
<td>Times Italic</td>
<td>New Century Schoolbook Italic</td>
<td>Helvetica Oblique</td>
</tr>
<tr>
<td>Times Bold Italic</td>
<td>New Century Schoolbook Demi Italic</td>
<td></td>
</tr>
<tr>
<td>Avant Garde Roman</td>
<td>Palatino Roman</td>
<td>Helvetica Narrow Bold</td>
</tr>
<tr>
<td>Avant Garde Demi</td>
<td>Palatino Bold</td>
<td>Helvetica Narrow Oblique</td>
</tr>
<tr>
<td>Avant Garde Italic</td>
<td>Palatino Italic</td>
<td>Helvetica Narrow Bold Oblique</td>
</tr>
<tr>
<td>Avant Garde Demi Italic</td>
<td>Palatino Bold Italic</td>
<td>Zapf Chancery</td>
</tr>
<tr>
<td>Bookman Light</td>
<td>Courier Roman</td>
<td>αβγδεζηηθικ (Symbol)</td>
</tr>
<tr>
<td>Bookman Demi</td>
<td>Courier Bold</td>
<td>☀☀☀☀☀ (Zapf Dingbats)</td>
</tr>
<tr>
<td>Bookman Light Italic</td>
<td>Courier Italic</td>
<td></td>
</tr>
<tr>
<td>Bookman Demi Italic</td>
<td>Courier Bold Italic</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 24-3: The 35 built-in LaserWriter fonts.

The LaserWriter meant that your screen and your printer had completely different resolutions. To solve this incompatibility, Adobe came up with a simple enough solution: create two files for every font — one for the screen and one for the printer.

The screen display used the bitmapped fonts people had always used. In the age of laser printers, bitmapped fonts, also called fixed-size fonts, now took on a third moniker: screen fonts.

This was to distinguish the screen-display fonts from the PostScript half of each font: the printer font. This was a separate file. It was distinctive for several reasons:

- You didn’t install it into your System file, as you did a screen font. You left it loose in your System folder.
- Its name didn’t match the screen font’s name. Instead, it was abbreviated to signify that it was a printer font. The printer font for bold, oblique Helvetica Narrow was called HelveNarBolObl (see Figure 24-4).

Figure 24-4: The two halves of a PostScript font: the screen font (top) and the printer font files, one for each type style.
Chapter 24: Inside Fonts

There was a distinct file for every single style variation of a font. To create an italic bitmapped font, for example, the Mac simply slopes the letters (offsetting each consecutive row of pixels). But a true italic typeface has a completely different design. Therefore, a PostScript font required one printer font apiece for bold, italic, and bold italic styles.

PostScript fonts did more than solve both problems associated with bitmapped fonts (low resolution and small choice of sizes). Because PostScript was a graphics language and not simply a font technology, you could perform all kinds of wild text manipulations with PostScript text: stretch it, print at an angle, distort it, and so on. (We showed you a couple of these techniques in Chapter 20.)

How it works

A PostScript font is capable of all these stunts because it isn’t a bitmap. Each character is stored as a series of mathematical equations that describe curves forming a hollow outline of each letter (see Figure 24-5).

Figure 24-5: How the Mac thinks of a screen font (left) and a printer font (right).

The PostScript printer simply fills in this outline with black, regardless of how many printer dots it takes. A LaserWriter fills it in with 300 dots per inch. A PostScript imagesetter (see Chapter 25) fills it with many more dots per inch. If there were such thing as a PostScript ImageWriter, it would fill in the outline with 72 or 144 dpi.

Since a PostScript font is a set of mathematically defined character outlines, you can see how really easy it is for a printer to enlarge or reduce your text. All it must do is multiply its little equations by .3 or by 3 or 33, for example, to create text that’s much smaller or much larger than normal size. That’s why the screen still needs a certain font in several installed sizes, but the printer doesn’t.

Despite the PostScript breakthrough, Adobe’s dual font system wasn’t without its drawbacks. The requirement to maintain two sets of fonts in the System folder was one. The requirement to use the awkward Font/DA Mover to install the screen fonts was another.

Suitcase

Just as the font situation became unmanageable, Steve Brecher wrote a utility called Suitcase, which solved two of the problems. First, it let you install fonts in one quick step, without having to use the Font/DA Mover. Second, Suitcase (in later versions) let you store your mass of printer font files into a folder by themselves, which didn’t have to be in the System folder. A rival program, MasterJuggler, soon followed, serving the same purposes.

The only problem still plaguing Mac typography was the screen display. PostScript screen fonts worked just as badly as the original bitmapped fonts always had.
ATM

The remaining problems with PostScript fonts were finally solved by the invention of Adobe Type Manager (ATM) in 1989. In principle, this control panel does one very simple thing: it treats the screen as just another printer. That is, it interprets those same PostScript printer fonts, in your System folder, for drawing on the screen. Fonts still appear at 72 dpi, of course, but they have all the other advantages of PostScript fonts: they can be stretched, angled, and — most importantly — changed to any size without sacrificing clarity (see Figure 24-6).

Figure 24-6:
A 111-point Palatino letter R on the screen — both without (left) and with ATM installed.

With ATM, then, the Mac thinks of type as outlines, both on the screen and when printed. Thus ATM provides one other hugely important benefit: smooth, resizable text printouts on non-PostScript printers, like ImageWriters or StyleWriters. Suddenly, as far as type is concerned, those QuickDraw printers (see Chapter 25) get the royal PostScript treatment. Because of ATM, PostScript-fonts jaggies have been banished from both the screen and every kind of printer.

You do pay a small price for ATM's impressive technology — much less today than in its original incarnation, but a price nonetheless:

- ATM requires a large chunk of memory: 200K for itself, plus an additional amount that you can adjust in the ATM control panel (usually between 192 and 512K).
- ATM slows down the works. When you resize some text, you sometimes have to just sit there while ATM does its behind-the-scenes math and finally displays the text on your screen.
- This is the big one: ATM only works with PostScript fonts, and the printer fonts must be in your System folder. Trouble is, most people don't have the printer-font files for the LaserWriter's built-in fonts (Times, Helvetica, Palatino, and so on).
- You have to buy ATM. Originally, it cost $99. Then, starting a couple years ago, Adobe made a spectacular deal with Apple (spectacular from the Mac lover's point of view, that is). The company agreed to give away ATM to Mac owners, free, for $7.50.

Note that the $99 package and the $7.50 one aren't quite the same. The ATM software itself is the same. But ATM works by adapting the printer-font files for use in the screen display. The $99 version of ATM comes with the complete set of printer-font files for the standard 35 LaserWriter fonts (Times, Helvetica, and so on). Without these printer fonts, ATM won't do any good whatsoever for those basic fonts. The $7.50 version comes with only one typeface family: Garamond, including the necessary printer fonts. (The really free version of ATM, the one that comes with System 7.5, doesn't come with any PostScript fonts.)
By the way: We campaigned Adobe doggedly to let us include ATM on the disks with this book. Adobe's best deal: they'd let us include it if we paid them $9 per book. Guess what? We've made a better deal for you. We didn't include it, kept the book $9 cheaper, and hereby give you the phone number to order it yourself for $7.50! It's 800-776-2333.

ATM Secrets

Installation

Of course, ATM comes with its own instructions. It's important to note, however, that all pre-GX versions of ATM have two parts: a control panel and a driver file. The control panel goes into your Control Panels folder (System 7) or loose in the System folder (System 6). (Ever wonder why the control panel is called -ATM? It's to force ATM to load last, after all your other control panels and extensions have loaded at startup.)

The driver, however, has to go loose in the System folder, whether on System 6 or System 7.

Your ATM disks actually come with two versions of the driver. The one called 68000 is for the Classic, PowerBook 100, Plus, and SE series Macs. The one called 68020/30 is for all other Macs. You can have them both installed with no ill effects, but you must at least have the one that's right for your Mac.

Versions

ATM is great, but you've got to stay on your toes as Adobe cranks out new versions. Old versions of ATM are a Number One suspect if you get system crashes after installing a new version of the Mac's System software.

Version 1.0 of ATM is very slow. Version 2 is twice as fast, but not 32-bit clean (see Chapter 8). Version 3 is the first to recognize System 7.1's Fonts folder. (Version 3.5 comes with SuperATM, 3.6 comes with Acrobat, 3.8 is required for the Power Macintosh...and so on.)

Font Format #3: TrueType

ATM and PostScript fonts made the world's graphic designers happy enough. Trouble was — as far as Apple was concerned — nobody was getting rich except Adobe. Adobe made the fonts. Adobe made ATM. Worst of all, Apple was paying Adobe a royalty of close to $750 _per_ LaserWriter for permission to include PostScript technology. That kept prices of laser printers high, and it kept sales lower than Apple would have liked.

So Apple came up with a brilliant scheme. They'd come up with their own version of PostScript! Apple would own it, and therefore wouldn't feel beholden to Adobe Systems. The font technology Apple came up with was TrueType.
A TrueType font works exactly like a PostScript font-with-ATM in that you can resize, reshape, and stretch the type, and it always looks smooth and sharp on the screen and when printed. As an added bonus, it has three advantages:

- There's less file mess. One single icon on your disk represents both the screen-font information and the printer-font information.
- You can find out what the font looks like by double-clicking its icon in System 7.
- A basic set of TrueType fonts comes free with every System 7 Mac (see Figure 24-7).

<table>
<thead>
<tr>
<th>Times</th>
<th>Helvetica</th>
<th>Palatino</th>
</tr>
</thead>
<tbody>
<tr>
<td>Courier</td>
<td>Σψμβολ (Symbol)</td>
<td>Chicago</td>
</tr>
<tr>
<td>Geneva</td>
<td>Monaco</td>
<td>New York</td>
</tr>
</tbody>
</table>

*Figure 24-7: The basic set of nine TrueType fonts included with System 7. Note that some former bitmapped-only fonts — some of the “Apple Classic Fonts” — have been converted into TrueType form.*

For a few months, the Mac community tensed, expecting all kinds of system crashes and font conflicts between the two type systems. People wondered what would happen to Adobe Systems if the wind was taken out of their sales by TrueType, which came free with every Mac.

Turns out the two technologies coexist perfectly well on a Mac. Adobe didn’t shrivel up and blow away, either. Many people had invested huge amounts of money in PostScript fonts, and they weren’t about to buy an entirely new library of TrueType fonts — if they could even find any TrueType fonts; the market was awash in PostScript fonts and font companies, but few TrueType fonts were initially available.

Furthermore, TrueType is only a font technology. PostScript, on the other hand, is a graphics technology. It does much more than manipulate text, as you’ll find out in Chapter 25; it does lines, shadings, and colors equally well. TrueType, which deals only with type, couldn’t possibly have replaced all the flexibility of PostScript.

**ANSWER MAN**

**My icons don’t match yours**

Q: I wanted to see my three different icon types, like you’ve been talking about. But I’m not seeing any icons like yours!

A: Two things may be confounding you. First, you might not be able to find your font icons. For guidance, see “Where Do They All Belong?,” later in this chapter.

Second, even when you discover where your font files are lurking, you may not see any icons that match what we pictured. You may see icons like these, for example:

![Icons](Times, Petru, Auror@BRemCon)

The first icon we’ve shown here is a font suitcase file. This is nothing more than a container for TrueType and screen-font files (or any kind of GX font). Think of it as a little folder. If you double-click a suitcase, it opens into a window that shows the icons we’re talking about (as shown in Figure 24-8).

The second and third icons pictured here are indeed PostScript printer fonts. They’re just not Adobe printer fonts. These fonts come from other companies, and therefore they have different printer-font icons.
Font Format #4: GX fonts

After years of behind-the-scenes programming, Apple unleashed QuickDraw GX upon the world in 1994. Chapter 25 covers GX in more detail; in brief, this new printing/color/type architecture does amazing things for fonts. A GX-savvy font has many more symbols than a standard font; some have two or three complete alphabets — one for small-capitals printing, one for fancy swashed capitals, and so on. These fonts are even typographically smart, automatically kerning themselves; creating typographically correct fractions when you type 1/2; and, if you wish, smartly putting in automatic ligatures (which we'll describe later in this chapter). See Figure 24-8 for an example.

Unfortunately, to benefit from all this magical intelligence, you have to have programs that are GX-font savvy. We say "unfortunately" because this conversion to GX-savviness may happen slowly — or never. Because GX is a Macintosh-only technology, not every company who also sells software to the IBM-clone market will want to invest in GX technology, reasoning that the IBM version wouldn't benefit.

A second obstacle to world domination by GX fonts is GX fonts themselves.

"Put 1/2 of that fish back in the vats."

Figure 24-8: When GX fonts are used in a GX-savvy word processor, remarkable things can happen. Here, the fraction was formed automatically; the swashes magically appeared on the letters e and v; and the ligature in the word fish happened all by itself.

The two GX pseudo-formats

Until GX, there were three kinds of font-file formats littering your System folder, each with its own icon: screen fonts, TrueType fonts, and printer font files. If you examine your System file (System 7.0 or 7.0.1) or your Fonts folder (System 7.1 or later), you'll see the three different kinds of icons for yourself (see Figure 24-9).

Figure 24-9: Three kinds of fonts, three reactions to a double-click. On the left, a bitmapped (screen font) icon. Double-click it (in System 7) to view a window where you see what this screen font looks like in its one size and style. Middle: a TrueType font. Double-click its icon to see the type style in three sample sizes. Right: a PostScript printer-font file. Double-click it and you just get an error/help message.
When you install QuickDraw GX onto a Mac already endowed with fonts, a most bizarre transformation occurs. All your existing font files are converted into GX-format suitcases, still sitting there in your Fonts folder. For TrueType fonts, that’s not a big deal; you won’t notice any difference in them. (Incidentally, the fact that they’re now TrueType GX fonts doesn’t mean, obviously, that they’ve suddenly sprouted all the extra characters and auto-kerning intelligence of TrueType GX fonts; they’ve just been converted so they’ll work with GX. For the special features, you have to buy special new fonts.)

But when it comes to your existing PostScript fonts, a much more spectacular event takes place. You’ll recall that PostScript fonts are normally split into separate screen and printer files. But when you install GX, all of these splintered files, residing in separate folders, are merged into one. When it’s all over, you see a single font suitcase in your Fonts folder — where you used to have a multitude of printer fonts plus a screen-font suitcase. The printer-font files’ information is absorbed directly into the suitcase itself; the icons for the printer files are gone forever. See Figure 24-10.

![Figure 24-10: When you install QuickDraw GX, your existing Type 1 PostScript font files in each family, wherever they may be (left), are merged into a single GX font suitcase (right). As a courtesy, all of your pre-conversion PostScript fonts are handily tucked away for you into a backup folder.](image)

What’s good about the GX font-file system

What a beautiful system, right? For the first time since the invention of PostScript fonts, you’re free from that gaggle of confusingly named printer-font icons. Furthermore, the special version of Adobe Type Manager that comes with GX — ATM GX, of course — works beautifully with these resulting combo suitcases, giving you (as before) smooth type on-screen and in printouts. And just in case you change your mind about the conversion to GX, the GX installer is gracious enough to put all your old, pre-GX PostScript fonts into a special folder called •Archived Type 1 Fonts•.

When it’s all over, then, you have a Fonts folder filled with a bunch of identical-looking fontsuitcase files. Some are TrueType GX fonts. Some are converted PostScript fonts. But they all look alike. And if everything goes well, they all work alike. And the hassle of where-to-put-what-font-files is a thing of the past.
What’s not good about the GX font-file system

Making TrueType GX and PostScript GX files look exactly alike in your Fonts folder may seem like a useful simplifying premise. But it actually poses some potential problems.

For example, even though the suitcases look alike, under the skin, they’re still two different technologies — TrueType and PostScript. The TrueType fonts still look great on the screen at any size. But the PostScript fonts still require ATM for smooth screen display. If you remove ATM GX from your System folder (or turn it off), therefore, the PostScript fonts will once again look jagged and crummy on the screen. (They’ll look crummy on non-laser printers like the StyleWriter, too.) Likewise, if you were missing any printer fonts before installing GX, you won’t get any notice. You’ll just get jagged-looking printouts, even on laser printers, and you won’t know why.

The worst part of this possibility is that you have no way of troubleshooting! In the olden days, if a certain typeface printed coarsely, you’d just open up your Fonts folder and look among your printer-font files. Eventually, you’d figure out which printer-font file was missing.

But under the GX system, there are no more printer-font files. You’ll open your Fonts folder and stare, for hours, at the multitude of identical suitcases. Some are TrueType; some are PostScript; and one among them may be missing the essential printer-font data. But you’ll have absolutely no visual clue as to which is which.

Apple and Adobe have made great strides toward incorporating PostScript fonts into the regular Macintosh operating system — but, by their own admission, they haven’t gone far enough. ATM should be built right into the system software — and one day it will be. Until then, it’s still not safe to forget the distinction between TrueType and PostScript fonts, even though they now look exactly the same in your System folder.

Working with multiple font formats

Today, then, you’ve got three essential kinds of fonts: bitmapped, TrueType (and GX), and PostScript (and GX). This can be confusing, because you’re quite likely to run into fonts of the same name in each of these formats!

Can font formats coexist?

We’re frequently asked if it’s okay to have multiple font formats of the same name on the same Mac. The answer is: For the least trouble and the most safety, you shouldn’t keep a TrueType and a PostScript font of the same name on the same Mac.

Why screen fonts still exist even with ATM

If ATM consults the printer fonts to decide how to draw the characters on the screen, then you might wonder why a PostScript font has a screen-font portion at all.

The answer is that, without at least one point size of a screen font, the Mac wouldn’t know that you even have a font. That font’s name wouldn’t show up in any of your Font menus. Yes, ATM can handle the display of any other point size you select. But one point size of each PostScript font must be installed into your System just so it will turn up in the Font menus.
The GX Detective: telling font suitcases apart

Q: All right. You've explained that just by looking in your Fonts folder, there's no way to tell TrueType GX suitcases apart from PostScript GX suitcases. But gosh darn it, I need to know! I'm having a heck of a time tracking down a jaggy-printout problem, and I want to be able to tell my suitcases apart.

A: Actually, there are a couple of ways to know which GX suitcases are which.

The quickest way: double-click the font-suitcase file. Inside, if every single icon inside has a point size listed, you're looking at a PostScript font. On the other hand, if there's one icon inside that bears the font's name but has no point size — or if there are no point-size files at all — it's TrueType. The following illustration should make everything clear.

In the left-hand figure, the icons inside the suitcase have point sizes. Since this is the GX world, that means it's a PostScript font (the printer-font files have been subsumed into the suitcase itself). The suitcase on the right has no point-size files, your sure clue that you've got a TrueType GX file on your hands.

And by the way: we discovered another way to find out a suitcase file's secret identity. Open it with ResEdit (see Chapter 21), included with this book. Double-click the SFNT icon. Look carefully at the first four letters of the hexadecimal mumbo-jumbo that appears — it'll say either typ1 (for Type 1 PostScript) or true (for you-know-what).

In fact, we can make a good argument for keeping more than one point size of each font installed. Whenever you display a font at a size for which no bitmapped version is installed, ATM must kick into gear, consulting the printer-font files in your System folder and drawing the resulting text on your screen. That processing takes time — anywhere between half a second and many seconds, depending on your Mac speed and the amount of memory you allotted to ATM using its control panel.

If you set some text in a point size for which the System contains a bitmapped font, however, ATM doesn't kick in at all. It simply throws the ready-made, predefined bitmap onto the screen. You get two advantages: speed and quality of display. (A hand-designed bitmapped font is almost always more attractive than the computer-generated approximation.)

Why screen fonts still exist even with TrueType

In TrueType technology, outline-font and screen-font information are both contained in the same single TrueType file. Therefore, you may wonder why pre-GX TrueType suitcases also contain bitmapped fonts for the same TrueType typefaces! (See Figure 24-11 for proof.)
Figure 24-11: If you double-click a pre-GX font suitcase that comes with System 7, you'll discover something odd. Yes, there are TrueType font files inside; in this example, they're called Courier and Courier (bold). But there are also bitmapped screen fonts, each in one particular size!

We mentioned that using ATM, you must install each font into your system in at least one point size. With TrueType, however, you don't have to install any screen fonts. You can put just the TrueType file by itself into your System file or Fonts folder, and all your fonts show up correctly in your Font menus and look good at any size.

As with ATM, the reason to keep screen fonts around even with TrueType is speed of screen drawing. Without installed screen fonts, both type technologies produce a delay when you change type sizes on the screen. But ATM uses a memory cache to store recently built font bitmaps. TrueType must generate font shapes afresh each time you change a font or font size, so (without screen fonts installed) it tends to be slower.

Finally, as with PostScript fonts, a bitmapped screen font on the screen generally looks better than its TrueType-computed equivalent. Figure 24-12 shows that not only are installed-size screen fonts better looking than TrueType- (or ATM-) computed fonts, but they also give a more accurate preview of line breaks. If you set up a document in a TrueType size for which you don't have an installed screen font, you could be in for some rude surprises when you print.

Figure 24-12: The same font — Palatino — in its bitmapped and TrueType-generated incarnations. Note that the line breaks in the boldface version are different when no screen font is installed.

If this screen-doesn't-match-printout syndrome occurs, the TrueType version is usually telling the truth. In such a case, remove the bitmapped, fixed-sized fonts and use the uglier — but more accurate — TrueType representations. As a bonus, you'll get a better on-screen display of styled — bold and italic — text, as we'll explain later.
Which font version is that?

For best results, install into your System folder either the TrueType version of a certain font or the ATM/PostScript version. It's perfectly okay to use the TrueType Times, the PostScript Palatino, and so on; just avoid having the TrueType and the PostScript Times both installed.

Which font you get on the screen

If you do, however, have both formats installed, the Mac selects which type to display on the screen as follows;

- If there's an installed bitmapped screen font in the appropriate size, that's what you see.
- If there's no screen font, the Mac constructs the screen font using the TrueType version.
- If you don't have the TrueType version, you get the ATM-created version (if you have appropriate PostScript printer-font files).
- And if you have neither the appropriately sized screen font nor TrueType nor ATM, the Mac creates a bitmapped screen font based on whichever point sizes of that font are installed, just as the very first 1984 Macs did.

Which font you get on a PostScript printer

Printing to a PostScript printer is another story, however. Keeping track of which type you're actually getting on paper isn't easy; in fact, we found the following information surprising:

- Regardless of the type technology used for the screen display, you get the printer's built-in version of the font, if available, on the printout.

  Therefore, even if you install (and are using) TrueType Times on your Mac, you get the PostScript version of Times in the printout!

  This weirdness is true regardless of whether it's a built-in printer font (Times, Helvetica, Courier, and so on) or a PostScript font you've downloaded to the printer (see Chapter 25 for details on downloading fonts).

- If there's no PostScript version of the font in the printer, only then does it print the TrueType outline-font version of the type.

- If the font you're printing isn't a PostScript or TrueType font, then it's a regular old bitmapped screen font. It prints out at 72 dpi, exactly as it appears on the screen.

Which font you get on a non-PostScript printer

What's particularly bizarre about the decisions the Mac makes is that the font-preference order is different if you're printing on a QuickDraw printer, such as a StyleWriter, DeskWriter, ImageWriter, or other 'Writer.

- The Mac first tries to print using the TrueType outlines, if it's indeed a TrueType font.

- If it's not a TrueType font, the Mac attempts to use ATM. It checks to see if you're using a PostScript version of the font.

- If you're using neither a TrueType nor a PostScript/ATM font, then once again the Mac prints whatever's on the screen, as a 72 dpi bitmap.
Hinting

Earlier in the chapter, we mentioned that Adobe kept the secrets of Type 1 PostScript fonts close to its chest for years (up until the day Apple released TrueType). There was another kind of PostScript font, though — an inferior kind known as Type 3. Adobe always made the technological specs for Type 3 available to the world at large. The primary difference between the superior Type 1 fonts and Type 3 fonts is hinting.

The Mac screen is composed of 72 comparatively large square dots per inch. When the Mac attempts to display a TrueType or ATM/PostScript character on the screen, it has to decide which dots to turn black. In the Mac's head, it superimposes that character's outline (as it's stored in the font file) over the grid of Mac screen dots. The usual rule is that the Mac turns each pixel black whose center falls inside the outline of the letter (see Figure 24-13).

Unfortunately, this scheme can leave some holes in the letter, also as shown in Figure 24-12. Because of this, the font designer has to build in some special programming instructions for each font, telling the computer how to fill in some of those missing dots. These instructions are the hints.

Even at finer resolutions, such as the 300 dpi of the LaserWriter, hinting assists with legibility at very small point sizes. On the other hand, imagesetters (such as a Linotronic) have such a high resolution that hinting doesn’t make any difference to the final product.

Where Do They All Belong?

All right. Now you know the techy differences between all the different font formats; and, we hope, you know how to identify each kind of font file. But to make them work — and print smooth letters on the screen and on paper — you have to know where to stick them.

We'll assume you know how to spot a suitcase file — akin to a folder for font files. You may, for example, store all the different bitmapped screen versions of a font into a single suitcase for convenience. Then there are the printer font files, required for each style of a pre-GX PostScript font.
Depending on which System version and font utilities you use, there are four places each component may be stored — in the System file, the Extensions folder, in the System folder, and in some other folder of your choosing. For beginners in particular, keeping track of all these rules-of-placement is like juggling while standing on your head.

Here's the exact rundown.

**Where to put font files in System 6**

**Screen fonts**
The screen fonts have to be installed into the System file itself, using the Font/DA Mover. (The Font/DA Mover came on the white System disks with every Mac.)

**TrueType fonts**
If you have System 6.0.7 and the TrueType init, you also use the Font/DA Mover to install TrueType fonts into your System file. (You must use version 4.1 or later.)

**PostScript fonts**
If you have PostScript fonts, you install the screen-font portion into the System file with the Font/DA Mover. The printer-font files go loose in your System folder.

**QuickDraw GX fonts**
Ah — trick question. QuickDraw GX only works in System 7.1 or later.

**If you have Suitcase II**
With Suitcase II or Master Juggler installed, you can keep your fonts in any folder, and you don't have to install the screen fonts using the Font/DA Mover program.

However, if you use ATM, you must keep the screen fonts and their matching printer fonts in the same folder together (see Figure 24-14).

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**Figure 24-14:**
This folder arrangement won't work with Suitcase and ATM. The printer fonts have to be in the same folder as the screen fonts, or ATM won't work.

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A word of warning: Suitcase needs updating with every new system version and, often, with the introduction of new Mac models. Outdated versions of Suitcase are among the most frequent causes of mysterious system crashes and other headaches. (Updates are available from online services like America Online, or from the company itself.)
Where to put font files in System 7.0 and 7.0.1

The new font-installation scheme for System 7 is a breath of fresh air to Mac fans who spent years fussing with the Font/DA Mover to add and remove fonts. In System 7, you can install any kind of font file — TrueType, PostScript printer font, suitcase, or screen font — simply by dragging its icon on top of the System folder icon (see Figure 24-15). (Don’t drag these files into the System folder window, but instead onto the icon.)

When you drop the files, or even a folder containing font files, onto the System folder icon, the Mac asks you to confirm that you want the fonts installed properly. Click OK.

While this installation procedure is infinitely easier than using the Font/DA Mover, it’s not much speedier. You still have to sit, sigh, and stare at a lengthy bar graph as it slowly charts the progress of the font installation.

Screen fonts and TrueType fonts

Screen fonts and TrueType fonts still belong in the System file, just as in System 6. The only difference is that the Mac now puts them there automatically. If you drag a suitcase file onto the System folder icon, the Mac strips away the suitcase itself and puts its contents (the individual font files) into the System file.

What’s new in System 7, however, is that you can double-click the System file icon to open it into a window (see Figure 24-16). There, among your sound files, are all your screen and TrueType fonts.

This double-click-the-System-file trick is exactly how you remove fonts from the System. Open the System file window and then drag these fonts to the trash. But you can’t add or remove screen or TrueType fonts if any programs are running.
PostScript fonts
The screen-font portion of PostScript fonts, like any screen fonts, gets stored in your System file automatically by the Mac. The printer-font files for a PostScript font go into the Extensions folder, of all things. Here again, the Mac will do the placing for you if you drop the printer files on top of the System folder icon.

Everything still works if you leave the printer fonts loose in the System folder, however (outside of the Extensions folder), just as in System 6.

If you have Suitcase II
Once again, Suitcase lets you keep all kinds of fonts in any folder you wish. The same rules apply in System 7 as they do in System 6 (see “Where to put font files in System 6,” above).

Where to put font files in System 7.1 and later
System 7.1 was a much bigger deal from Apple’s point of view than for the average Mac user. Most of the changes were deep-seated, techy kinds of tweaks instead of substantial feature enhancements. (See Chapter 5 for details.)

One juicy plum for everyday Mac users, however, was the new Fonts folder. It’s dedicated to storing all types of font files: screen fonts, suitcases, TrueType fonts, and PostScript printer-font files alike.

This scheme is more than convenient and simple. It also offers two profound benefits:

- Incredibly, you can now add fonts to your system while programs are running. We think that’s a remarkable feature. (We’re told that the new Fonts folder is a real “hack,” meaning a sneaky, perhaps not quite by-the-book piece of programming — but we’re not complaining.) However, these fonts probably won’t show up in the Font menus of those programs until you relaunch them.

- Fonts are installed or removed instantly. You no longer have to sit and wait while the “Now moving files” message dominates your screen. (Fonts still take a long time to get trashed, however.)

A word of caution: When you upgrade to System 7.1 from an earlier version of System 7, the Mac doesn’t always correctly transfer to the new Fonts folder whichever fonts you previously installed. Specifically, it does copy the fonts to the Fonts folder. But it sometimes fails to remove them from the System file, where they were stored.

After installation, it’s a good idea to double-click your System file and make sure no fonts were left behind there. Simply drag their icons into the new Fonts folder (if they weren’t copied there) or to the Trash (if they were).

GX fonts, screen fonts, TrueType fonts, and PostScript fonts
All of this stuff goes into the Fonts folder. If you drop any font-file icon on top of the System folder icon, as with other versions of System 7, you’re asked if you want the Mac to store them in the appropriate place for you. Click OK.

As in previous incarnations of System 7, however, you can still install screen and TrueType fonts into the System file itself. Likewise, PostScript printer fonts can still go into the Extensions folder or the outer level of the System folder.
If you have Suitcase II

Nothing's changed. Yet again, Suitcase lets you keep your fonts anywhere on any drive. Our previous words apply: keep like-named screen and printer fonts in the same folder.

In some ways, the necessity of font utilities like Suitcase has waned with the advent of System 7.1. Two of the problems Suitcase and MasterJuggler were designed to circumvent — System folder clutter and hassle of installation — are things of the past.

But you still need a utility to manage sets of fonts. For example, you can use Suitcase to create one set for a newsletter project, a second for a flyer, and so on. You can load or unload a set at any time, which is easier than having to install or uninstall a group of individual fonts.

System 7 Font Secrets

That 128-font limit

The Fonts folder is all well and good, but it does have its limit. You can put no more than 128 font suitcases into the Fonts folder at a time.

This really isn't a limit at all, however. The operative words are “font suitcases.” A suitcase file can have as many TrueType fonts and screen fonts in it as you care to pack in! You could put 50 TrueType fonts in one font suitcase, which would only count as one file toward the Fonts folder's limit of 128.

To add font files to a suitcase, drag them onto it. You can even add an entire suitcase to a suitcase.

How to create a new font suitcase

In System 6, you can create a new font suitcase using the Font/DA Mover's New button. But with no Font/DA Mover, how are you supposed to create a font suitcase in System 7? (Suitcases are still important if you plan to exchange fonts with System 6 Macs, which can't understand fonts unless they're in a suitcase file.)

You have to take an existing font suitcase (there are plenty on your system disks), duplicate it, open it, trash its contents, and rename it. Then add your own choice of individual font files.

System 7 and the Font/DA Mover

The Font/DA Mover wasn't wiped off the earth with the invention of System 7. In fact, this homely little program was actually upgraded to work with System 7. But the latest version, 4.1, is no longer included with each Mac. You have to hunt it down. (You can get it from a user group or from an on-line service.)

And what's it good for? Believe it or not, it's not good for installing or removing fonts! In fact, the Mac won't let you use the Font/DA Mover to install or remove fonts from the active System file.

You can use Font/DA Mover, however, to transfer fonts or desk accessories to and from suitcase files (or System files that aren't currently running the Mac). You can also use it to create new, empty (or filled) suitcase files.
Why Text Prints with Jaggies

Conventional wisdom has it that jagged text is a thing of the past in Macintosh printouts. Outline fonts (courtesy of TrueType and ATM) have completely eliminated the need to put up with stairstepped font outlines and "jaggies," whether your printer is a PostScript laser printer or a QuickDraw printer (such as a StyleWriter or DeskWriter).

Here are the only possible reasons that your printouts might contain jagged text.

For any printer

It actually is a bitmapped font

The obvious cause of this problem is that you are, perhaps, actually using a bitmapped font. If you're on System 6, and the fonts you're using have city names like New York and Geneva, that's the problem. As we mentioned at the beginning of this chapter, those aren't outline fonts capable of looking great at any size and on any printer.

Get yourself ATM and some PostScript (noncity-named) fonts. Or upgrade to System 6.0.7 or System 7 and start using TrueType fonts. (Those same city-name fonts will print fine if you use System 7 or System 6.0.7 and the TrueType init because those systems come with TrueType versions of the familiar city-named fonts.)

It's a PostScript font and you don't have the printer files

If you are using a PostScript, noncity-named font and you're getting jaggies in the printouts, you may be missing the printer font files that go with the font you're using. (Remember that a PostScript font has two parts: the screen font and the printer font.)

You'll never have this problem with the built-in LaserWriter fonts (Times, Palatino, Helvetica, and so on). But if you're using a "downloadable" font, a PostScript font you installed yourself, then you're probably missing the printer portion.

It's a PostScript font and you've misfiled the printer files

You also get jaggy printouts of PostScript fonts if you put the printer fonts in the wrong folder. See "Where Do They All Belong?" on the preceding pages for specific information.

As mentioned above, you won't have this problem if you stick to the printer's built-in typefaces. You will have this problem if you're using other PostScript fonts and the printer-font files aren't in the correct folder.

If you're printing on a non-PostScript printer and you're using ATM, then ATM probably can't find the printer-font files it needs. Keep in mind, too, that only ATM versions 3.0 and later know where to look for the printer fonts in System 7.1.

It's QuickDraw GX

If you've got GX, there's only one conceivable explanation for jaggy printouts: you're trying to print a PostScript font, which you already owned, that got converted to GX format — and you didn't have all the printer fonts to begin with. Reinstall the entire font in all its multiple-icon glory, then restart the Mac so GX can do its conversion all over again.
It's System 7 and your program doesn't understand font locations

Some older programs (notably PageMaker 4.0.1) don't recognize System 7's new font-location schemes. Upgrade to the latest version or put your printer-font files loose in the System folder.

For QuickDraw printers only

You don't have ATM

Even if you're using PostScript fonts (that is, fonts whose names aren't city names), you still get jagged printouts unless you get ATM. It's only $7.50, so there's no reason not to grab it.

ATM is out of memory

Adobe Type Manager is one memory-guzzling hound dog. If it's struggling to deal with too many fonts at once, or if its memory allotment is too low, it'll simply give up and stop working, without notice. Jagged text is the result.

You give ATM more memory by opening its control panel. Use the arrow buttons to increase the memory and then restart the Mac.

Style Variations

From the very first Macintosh model, you could create an italic or bold version of any font. In fact, you could also create a number of less attractive variations: underlined, outlined, shadowed, or any combination of these.

Style variations for bitmapped fonts

If you were reading about this topic in 1984, there'd be nothing much to read. The Mac uses a built-in style-generating algorithm to create these so-called derived styles. It slants the letters a little to create italic. It adds a couple of pixels on either side of the letter to create bold. It does everything, however, at 72 dpi (see Figure 24-17).

Be careful what you wish for. You might get it.

Be careful what you wish for. You might get it.

Be careful what you wish for. You might get it.

Figure 24-17: At top, what 12-point Palatino Roman looks like on the screen. In the center, the Mac's version of italic — it's simply a slanted version of the Roman version. At bottom, a true Palatino italic. As you can see, it's actually a completely different typeface.
In real typesetting, however, a completely different set of type is used to represent italic and boldface versions of fonts. Related, but different; every character has been designed individually in each style variation, as shown in the bottom example of Figure 24-16.

**Style variations for PostScript fonts**

That's how PostScript fonts work. Each font comes with several different screen fonts: one each for bold, italic, bold italic, and sometimes more. If all of these styles are installed, a few interesting things happen:

- Your Font menus get long and disorganized. For some reason, font companies give horribly inconvenient names to these style variations. Adobe doesn’t call it *Times Italic*. It calls it *I Times Italic!* (The *I* prefix, of course, stands for Italic.)

As a result of the superfluous *I* at the beginning of the name, the italicized font’s name isn’t alphabetically adjacent to *Times Roman*, as it should be. Instead, it’s up in the *I*’s. Multiply the problem by *B Times Bold* and *BI Times Bold Italic*, and multiply that by 30 fonts, and you’ll see what a poorly designed naming scheme this is (see Figure 24-18).

Thank goodness for WYSIWYG Menus, included with this book. It consolidates all the separate styles into shorter, simpler Font menus that use submenus to list the style variations, as shown in Figure 24-17. See Chapter 33 for full instructions. (Other programs, such as Adobe Type Reunion, do the same thing but without nearly so much flexibility.)

- If you highlight some normal, upright Palatino (that is, Palatino Roman) and choose *Italic* from the Format or Style menu, the Macintosh is smart enough to use the *I* Palatino *Italic* typeface, if one is installed. In other words, it doesn’t simply slant the letters of Palatino Roman. It actually substitutes another font entirely.
This feature can have some unexpected results. When the Mac displays the Palatino Italic font on the screen, for example, the computer doesn’t think it’s displaying an italic font. It just thinks it’s displaying a regular, unstylized font. Therefore, you’re allowed to choose the Italic command again, and you’ll get a double-italicized font! (See Figure 24-19.)

<table>
<thead>
<tr>
<th>On the screen</th>
<th>When printed</th>
</tr>
</thead>
<tbody>
<tr>
<td>William “Automatic” Teller</td>
<td>William “Automatic” Teller</td>
</tr>
<tr>
<td>William “Automatic” Teller</td>
<td>William “Automatic” Teller</td>
</tr>
<tr>
<td>William “Automatic” Teller</td>
<td>William “Automatic” Teller</td>
</tr>
</tbody>
</table>

**Figure 24-19:** The hazards of double-stylized text. On the left: from top to bottom, you see the Roman version of the font, then the authentic italic font, and then the authentic italic with the Mac’s Italic command applied. On the right: the resulting printout. Of course, there’s no such thing as double italic, so the third line prints the same as the second.

Fortunately, there’s only one printer font designed for italics in the typical font. When your double-italicized (or double-bolded) font prints, then you’ll just get a single-italicized (or -bolded) font.

This second example proves an interesting point. When you’re working with PostScript fonts, stylized text you see on the screen may not print out as stylized text. Your success at printing stylized text is completely dependent upon whether or not there’s a printer font designed in that style.

Look in the appropriate System folder location to see which style variations you actually have for a given font. But be aware that some fonts don’t have any stylized versions. The standard Zapf Chancery built into office laser printers, for example, comes in only one style. You can apply styles to it on the screen. But since there’s only one printer font (in this case, one that’s built into the typical PostScript printer), you only get one style of printout, as shown in Figure 24-20.

<table>
<thead>
<tr>
<th>On the screen</th>
<th>When printed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zapf Chancery</td>
<td>Zapf Chancery</td>
</tr>
<tr>
<td>Zapf Chancery Italic</td>
<td>Zapf Chancery Italic</td>
</tr>
<tr>
<td>Zapf Chancery Bold</td>
<td>Zapf Chancery Bold</td>
</tr>
<tr>
<td>Zapf Chancery Bold Italic</td>
<td>Zapf Chancery Bold Italic</td>
</tr>
</tbody>
</table>

**Figure 24-20:** What you see on the screen (left) won’t print unless you have a PostScript printer font for each style variation you used on the screen. (There aren’t any style variations for the Zapf Chancery font unless you purchase the full family from Adobe, so all four printouts, on the right, look the same.)
Other styles

There’s more to life than bold and italic, of course. Depending on the font you’re using, there may be as many as six or eight different “weights” (thicknesses) and even different degrees of *italicity* (if that’s a word).

Futura, an Adobe PostScript font, for example, comes in two different shades of bold (Heavy and Extra Bold) in addition to several italicized versions.

Generally, you can figure out what the style names mean: Roman is the “regular,” upright, normal-weight typeface. *Oblique* is a slanted face reminiscent of italic, just as *demi* is a variant of bold. In fact, in order of boldness, typical fonts are named Ultra Light, Extra Light, Light, Roman, Medium, Demi, Bold, Extra, Black, and — for the really fat look — Ultra Bold.

Other derived styles

There are a few other styles in the typical Style menu that we haven’t said much about: Underline, Shadow, and Outline.

These styles aren’t like the bolds and italics we’ve been discussing. These styles *don’t* each require a printer font in your System folder, and they *will* print as you stylize things on the screen.

That’s because the Mac generates these specialized styles itself (the font designer has nothing to do with it) by modifying the PostScript code it sends to the printer. Be warned: the resulting printouts may not look much like the screen representation, especially in Shadow style. (The printed version actually creates a *second* complete set of type, slightly offset from the first, and printed in a light gray.)

We encourage you not to use these font variations much. We especially urge you to forget about the Underline style (as we’ll explain later in this chapter).

Font style Secrets

*Avoiding the All-Bold-Italic syndrome*

Up until System 7.1, PostScript fonts in bold and italic worked as you’d expect. If you put Bookman type on the screen and used the Italic command, the Mac automatically displayed I Bookman Italic in its place. (See “Style variations for PostScript fonts,” above.)

However, System 7.1 can zap you with an oddball style conflict if the *screen fonts* for each style are *loose* in the Fonts folder (instead of being in a suitcase file). The symptom: bold Bookman, italic Bookman, and bold italic Bookman *all* appear on the screen in the bold italic face!

The solution, obviously, is to stuff all of these screen fonts into a single suitcase file.

*How to fix TrueType styled text that looks lousy*

On the screen, the Mac creates italic and bold styles by slanting or thickening the Roman version. In the world of PostScript fonts, it only does this crude stylizing *if* you don’t have an installed PostScript font that’s been custom designed for italic or boldface.
TrueType is a different story. Even if you have a TrueType font installed for Times (Italic), for example, you won't see a true italic Times on the screen! You see the Mac's standard crude slanted-Roman version.

The key, it turns out, is the bitmapped screen fonts you have installed. As we described earlier, these fonts are generally desirable because they appear faster on the screen and look better (than a TrueType-generated font).

But it's these same screen fonts that prevent the Mac from displaying TrueType's true stylized variations! Remove all screen fonts for a certain font, leaving only the TrueType file (in your Fonts folder or System file), and you see the TrueType style's true colors (see Figure 24-21). Ah, but there's the rub: without the screen fonts, the unstyled (Roman) TrueType font look crummy. Unfortunately, you can't have this cake and eat it too.

**Figure 24-21:**
The TrueType catch-22. Stylized text looks good only if you take out all the fixed-sized fonts (bottom) from the System folder. And yet if you do that, regular text takes longer to appear on the screen and looks worse.

---

**The Non-Typographer's Guide to Type**

Typography is an art and a science. The best Mac typesetters, naturally enough, are people who used to do traditional typography and have adapted to the Mac's electronic flexibility.

Still, almost anyone can improve the look of documents by boning up on some of the basics of typography and design. This information may be more than you want to know if you simply want to get your memos typed up. On the other hand, your Mac offers you the tools to create great-looking, professional documents; with very little effort, you can make your documents look as though they've been published.

For additional tips on great-looking, self-published documents, see our page layout guidelines in Chapter 18.

**Proportional fonts**

Here's one of the most important differences between typewriters and Macs: a typewriter uses *monospaced* type. That is, every letter is exactly the same width, be it an I or a W.
But each letter in a Mac font is exactly as wide as it needs to be. This fact actually makes life considerably more complicated, as you'll read in some of the items below. It also, however, makes text much easier to read.

There are two standard Mac fonts that are monospaced like a typewriter's: Courier and Monaco. As shown in Figure 24-22, every character in such a font is the same width.

![Figure 24-22: In a monospaced font (Letter Gothic used here), every symbol and letter is exactly the same width. Even when it looks goofy, as with the apostrophe.](image)

Wide, wide world

Pig's-hair muffs

Suit yourself, but we find monospaced fonts (especially Monaco) ugly. Your documents will definitely not be mistaken for typeset pages if you use one of these fonts.

However, monospaced fonts have their place in the world. For instance, many of the less graceful computers in the world (DOS, for example) tend to use monospaced fonts all the time. If you ever exchange files with one of these computers, or if you use a modem to download text from an on-line service, eventually you'll probably run into a file that looks like Figure 24-23 when you open it in your word processor.

![Figure 24-23: When you open an IBM or modemed file in your word processor, nothing looks aligned.](image)

Tevye..............Bill McIntosh..........AEA
Golde, his wife.....Jean Ogdenberg..........AFTRA
Chava, his daughter..Leslie Skolnik..........AEA
Perchik............Michael R. Hausman....Non-Equity
Grandma Tzeitel.....Tracy Ellen Puge.......AEA

What happened? It turns out that your word processor probably prefers to use a nice proportional font, unless you specify another one. So it took what used to line up nicely in some monospaced font and substituted a proportional font in which the characters are all different widths...and presto, nothing lines up!

In these cases, just change the font to one of your ugly old monospaced fonts, like Courier, and you get the nicely aligned look of Figure 24-24.

![Figure 24-24: Courier makes everything line up.](image)

Tevye..............Bill McIntosh..........AEA
Golde, his wife.....Jean Ogdenberg..........AFTRA
Chava, his daughter..Leslie Skolnik..........AEA
Perchik............Michael R. Hausman....Non-Equity
Grandma Tzeitel.....Tracy Ellen Puge.......AEA

Spaces between sentences

Here's a rule you actually have to unlearn from your typing classes: type one space after a period (on a Mac).

This principle follows from the fact that the Mac uses proportional type. Not only is every letter the correct width, but so is a space — it's already slightly wider than the typical letter, saving you the trouble of putting two spaces after a period. If you do put two, the gap between sentences will be too big. (Use SmartKeys, included with this book, to zap them for you automatically. See Chapter 33.)
Don’t use underline style

There are two reasons not to use underlining in Macintosh documents. First of all, the underline tends to look thick and gawky, and it slashes right through the descenders in your font (the parts that stick down below the line, as on a p or a g).

The more important reason: underlining is a decrepit workaround, invented for the benefit of typewriters. It was used to denote emphasis. But real publishers, for years, have used italics for emphasis — with much more success. (When’s the last time you saw anything underlined in a book or magazine?)

But your Mac can do real italics. You may also want to use boldface in some situations where you’d be tempted to use underlining, such as character names in a script.

As a matter of fact, here’s an even better secret for getting emphasis, while still being classy: use small caps. This special type style uses all capital letters, but what would have been lowercase letters are set at a smaller size, as shown here:

```
COITER & KIMMEST
Attorneys at Law
125 TAYLOR STREET
SAN FRANCISCO, CA 94108
```

Most word processors and all page layout programs offer the small caps option in their formatting menus or dialog boxes.

If you must use the underline style — if your art director demands it, for example — consider leaving letters with descenders un-underlined, as shown in Figure 24-25.

Use tabs, not spaces

Having just read about monospaced and proportional fonts, you’ll especially understand this principle: whenever you’re trying to line up text, don’t do it by pressing the Space bar! Text aligned using spaces to separate chunks of text does not look the same in printouts as it does on the screen, as shown in Figure 24-26.

```
<table>
<thead>
<tr>
<th>Screen:</th>
<th>Born</th>
<th>1992</th>
<th>Elected President</th>
<th>Graduated college</th>
</tr>
</thead>
<tbody>
<tr>
<td>Printout:</td>
<td>Born</td>
<td>1992</td>
<td>Elected President</td>
<td>Graduated college</td>
</tr>
</tbody>
</table>
```

Figure 24-26: If you try to align columns by typing a bunch of spaces in between phrases, you shall reap what you sow. Spaces are notoriously narrower in printouts than they are on the screen.
Admittedly, learning how to use tabs in your particular word processor involves four-and-a-half more minutes of learning than typing spaces does. But we promise it will pay off in spades.

**Em dashes**

An *em dash* is a long dash — like this.

Here’s yet another complication in your life caused by the fact that typewriters’ characters are all the same widths. Because a typewriter can’t type any shape wider than your typical letter, years of typing teachers have instructed you to imitate an em dash by typing *two* hyphens — like this. But a double hyphen is about as good an impersonation of a proper typographical em dash as Budget Gourmet is for a wedding dinner.

To produce a true em dash, type a hyphen while pressing *Shift* and *Option*. (Our little Secret: because we use em dashes in this book a lot, we use SmartKeys, included with this book, to convert our double hyphens into true em dashes automatically.)

Usage: Use an em dash when there’s a halt in the flow of the writing. “She ran to the edge of the cliff after him — but it was too late.” Derivation: An *em* is a typographer’s term (and a darned useful Scrabble word) that refers to the width of the capital letter *M* in a particular typeface.

**En dashes**

There’s yet another kind of dash. This one’s not as short as a hyphen nor as long as an em dash. And it’s called an *en dash*. You produce the en dash by typing a hyphen while pressing *Option*.

Usage: Use an en dash to indicate a stretch of numbers or time. “See pages 79–80.” Or “The reception will last from 7:30–9:00 p.m.” Or “I was self-unemployed from 1988–1990.”

Derivation: An *en* is another typographer’s term. As you guessed, this one refers to the width of the capital letter *N* in a particular typeface.

**Special spaces**

Those special variants of dashes actually come from the world of typography. There are also special *spaces*.

For example, there’s the *nonbreaking space*. This kind of space looks just like an ordinary space. But its behavior is slightly different: a nonbreaking space doesn’t end a word! If you put a nonbreaking space between the words *New York*, then these two words will always appear on the same line (and therefore on the same page).

To create a nonbreaking space, type a space while pressing Option.

**Leading**

It rhymes with sledding. *Leading* is line spacing, as in single-spaced or double-spaced.

But in the world of computers, single-spaced and double-spaced text are only two of an infinite number of settings. There’s 1½-spaced. Triple-spaced. And so on.
In fact, most word processors can make these adjustments in much finer increments — in points, just like type. (A point is a typographical measurement that’s equal to 1/72 inch.)

Leading measurements are expressed, among professionals, as “ten on twelve.” They’re saying that the font size is 10-point, and that the leading is 12-point. You can do the math: there’s two points’ worth of blank space between the lines.

In Word 5.1, you control the line spacing by selecting text and choosing Paragraph from the Format menu. In MacWrite Pro or WriteNow, there's a line-spacing control right on the ruler; by clicking, you increase the leading of the selected text in increments of 1/12 point or a whole point. Figure 24-27 shows a few examples of leading in action.

As you can imagine, the leading for your text has a huge effect on the psychological impact of your text, on its readability, and (of course) on the length of the document. If you’re trying to make a certain article just fill a page, for example, you might tweak its leading to make it come out exactly right.

**Tracking**

If leading is the control of vertical spacing of your text, then tracking is a measure of horizontal spacing. (Kerning is slightly different; see below.)

In page layout programs, such as PageMaker, there’s an actual tracking control. It’s measured in plain English: Tight, Loose, and so on (referring to how closely the letters are packed in). See Figure 24-28.

“It’s a little loose,” he said tightly.

“It’s a little loose,” he said tightly.

“It’s a little loose,” he said tightly.

**Figure 24-27:** Four degrees of separation. These four examples show different degrees of leading, none of which is actually single-spaced or double-spaced. They’re all in-between gradations.

As you can imagine, the leading for your text has a huge effect on the psychological impact of your text, on its readability, and (of course) on the length of the document. If you’re trying to make a certain article just fill a page, for example, you might tweak its leading to make it come out exactly right.

**Tracking**

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“It’s a little loose,” he said tightly.

“It’s a little loose,” he said tightly.

“It’s a little loose,” he said tightly.

**Figure 24-28:** Using PageMaker’s Tracking command, you can create loose, normal, or tight letter spacing (from top to bottom in this figure).
In Word, you can select some text, choose Character from the Format menu, and use the Condensed or Expanded controls to achieve some control over tracking. In MacWrite Pro, it's the Character Spacing command in the Style menu. In other word processors (such as ClarisWorks), you may not have any tracking control at all.

That's okay, though. To be sure, tracking is a rarefied art. Except for commercial type (such as advertisements or newsletters), there's little reason to mess with the tracking of your text.

**Kerning**

*Kerning* also has to do with letter spacing. But where tracking affects the letter spacing of an entire block of text, kerning is the act of adjusting just two characters, relative to each other. People generally kern very large letters—in headlines, for example—whose shapes overhang each other (see Figure 24-29). They kern for two reasons: first, because kerned, compact type is easier to read than unkerned type. Second, because kerning a headline means that more can fit into the equivalent amount of page space.

*Figure 24-29: Kerning at work. The top example is what you get when you type normally into a word processor. Each letter begins just to the right of the previous letter, as shown by the gray lines in the top example. After the capital letters (and the hyphen and the lowercase y and o) have been kerned (bottom), the phrase is more compact and easier to read. Note how the lowercase o now tucks under the wing of the capital T.*

You can turn kerning on or off in any page layout program (Quark, PageMaker, and so on) or graphics software (Canvas, FreeHand, Illustrator). In other programs, it may either be combined with some kind of tracking control (as with MacWrite Pro) or missing entirely (Word). (Note, however, that our Word Secrets in Chapter 17 reveal how you can pull off kerning by typing a few secret codes.)

**Ligatures**

Here's another typographical nicety that, technically speaking, you never need to consider for most everyday writing. Even in publishing, in fact, this feature is dying out.

Still, you sometimes hear people refer to *ligatures*. A ligature is when two letters are run together, as in the words aesthetics, Oedipus, fishy, and flugelhorn. In fact, these are about the only examples we can think of: a/e, o/e, f/i, and f/l.

These two-letter pairs are each represented in most fonts by one symbol. If you have QuickDraw GX and a GX-savvy word processor or page-layout paragraph, you can opt to have ligatures created automatically. (SmartKeys, included with this book, can do that, too.) Otherwise, here's how you make them manually:
Where leading came from

Leading is so called because of its origins in the world of movable typesetting. Back when every line of text published had to be set, letter by letter, by hand, into a printing-press frame, the typesetter could increase the distance between lines of type by inserting slugs of lead. The thicker the strip of lead, the farther apart the lines. That's why it was called leading.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Get it by pressing these keys</th>
</tr>
</thead>
<tbody>
<tr>
<td>æ</td>
<td>Option-apostrophe</td>
</tr>
<tr>
<td>œ</td>
<td>Option-Q</td>
</tr>
<tr>
<td>fi</td>
<td>Shift-Option-5</td>
</tr>
<tr>
<td>fl</td>
<td>Shift-Option-6</td>
</tr>
</tbody>
</table>

A word of warning, though. If you use your word processor's spelling checker, don't type ligatures as you go. The spelling checker (except in QuarkXPress) will choke on every one of these and flag the words that contain them as misspelled.

Instead, type your document normally. When it's finished, use the spelling checker first. Then do a search-and-replace for those letter pairs, replacing each with the appropriate ligature.

Hyphenation

You hyphenate, of course, to avoid ragged-looking right margins caused by long words that aren't broken at the line break. Figure 24-30 shows a good example from a newspaper-style column.

Dr. Elizabeth Muranksi, an enthusiastic but underschooled practitioner, tells us she thinks acupuncture's time hasn't yet come in the field of broken bones.

Figure 24-30: What a difference a hyphen makes. In the first figure, the right margin looks terrible because of the long words. Judicious use of a program’s auto-hyphenation feature brings the type closer to having an even right margin (right).

Each program's auto-hyphenator works differently, so we'll refer you to your manuals for specific instructions.

However, we can give you some basic rules for hyphenation:

- Avoid having hyphens wind up at the right margin in more than two successive lines of text.
Part IV: Attachments

- Avoid breaking a word up in such a way that one letter is left alone on a line. In fact, if you have a choice, it's usually preferable to break a long word in the middle, rather than leaving a two- or three-letter syllable alone on a line.
- Try not to hyphenate: words that are shorter than six letters; a word that already has a hyphen (or a slash); the last word on a page; or the last word of a paragraph.
- Don’t hyphenate centered text.
- Avoid hyphenation that makes a word hard to recognize, as in recre-ation (when you mean re-creation), read-just (when you mean re-adjust), and tapes-tries (when you mean tapestries).

Most page layout programs let you customize a document's hyphenation thresholds to take many of these guidelines into account.

On the Mac, most word processors have a little-known but handy feature: you can create a discretionary hyphen. This is, if you think about it, just exactly the kind of hyphen you want: it remains invisible unless the word needs to break at the end of a line.

Try it in Word or MacWrite Pro, for example. Type the first half of the word. Then press Option-hyphen; absolutely nothing will happen. Then finish the word.

If this specially prepared word ever needs to break at the end of a line, it will do so at the discretionary hyphen. Even more amazing: if you delete some text to the left of it so that the word no longer falls at the end of a line, the hyphen will disappear, and the word will be made whole again!

Fractions

Despite the amazing variety of symbols and non-alphabet characters hidden behind the Mac's Option key, fractions aren't to be found anywhere (except in GX fonts with GX-savvy programs). You've got the yen symbol, the French cedilla, and every Greek symbol you can think of — but nary a proper typographic symbol to be found.

Sure, you can get a special font that's nothing but fractions. For most of us, however, that's overkill.

Actually, we have no suggestions to make. You'll either have to plod along, typing the confusing-looking “1 1/2” when you mean 1.5, or use decimals, or painstakingly construct normal-looking fractions using a combination of superscript and subscript lettering (if your word processor has this feature). (A superscript character floats just above the normal horizontal baseline of text; a subscript character, like the 2 in H₂O, floats below the line.) Fortunately, the occasional program (Word, PageMaker, Quark) does have a feature for correctly typesetting fractions.

Incidentally, we have one more tip for fractions: don’t use the regular slash key. Instead, use the tighter, more elegant slash produced when you press Option-Shift-1. (Here's the nicer slash: ½. And here's the normal one: 1/2.)
**Ellipses**

An ellipse looks like three periods in a row. It's used, for example, to indicate that some words of a quotation are missing ("This movie is really...a...full-length...film"); in the Macintosh world, ellipses are used in menus to suggest that you'll be asked for further information before the command can be executed.

The trouble with typing three periods in a row is that sometimes they get separated from each other if they fall at the end of a line. Fortunately, the Mac's famous Option-semicolon keystroke produces a single, un-separatable character that looks like — you got it — three dots. They're even a bit more compact than periods would be.

**Curly quotes**

Our last pair of typographical tips has to do with quotation marks and apostrophes. You can spot the difference immediately in Figure 24-31.

"Well, I'll be a jack-o'-lantern," he muttered.

“Well, I’ll be a jack-o'-lantern,” he muttered.

**Figure 24-31:** The top line is what you get if you don't take action: awkward-looking straight quotes. Turn on your word processor's curly-quote feature (bottom), and you've got yourself some classy-looking dialogue.

You can type a curly quote in any program, and in almost any font, if you avoid the quote key on your keyboard! Instead, press as follows:

<table>
<thead>
<tr>
<th>Type this:</th>
<th>To produce this:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option-[</td>
<td>&quot;</td>
</tr>
<tr>
<td>Shift-Option-[</td>
<td>&quot;</td>
</tr>
<tr>
<td>Option-]</td>
<td>'</td>
</tr>
<tr>
<td>Shift-Option-]</td>
<td>'</td>
</tr>
</tbody>
</table>

Every Mac book ever written points out these key combinations. Few bother, however, to point out the logic behind the assignments. Your instinct would be, we'll bet, to make the left and right bracket keys the basis for the open and closed versions of the various quotes. Instead, Apple chose to make the left bracket always stand for double quotes, and the right bracket always produce single quotes. The Option key always makes the open version of whatever you're typing. And you add Shift to get a closed single or double quote.

All of this is usually moot, thank heavens, because almost any self-respecting word processor has a built-in "smart quotes" feature, usually in a Preferences command. They're called smart quotes because all you have to do is press the normal quote key at the right end of your keyboard's home row. The program examines the context — are you beginning or ending a word? — and automatically substitutes a curly quote, curled in the correct direction, for the straight one. (And if you have a program that isn't smart enough, use SmartKeys, included with this book, to do curly quotes for you. See Chapter 33.)
Some quotes are smarter than others

There are plenty of programs that do smart quotes: MacWrite Pro, SmartKeys, QuicKeys, and so on. Trouble is, all of these programs decide which way to curl your quote based on whether or not you just typed a space. If the keystroke before the quote was a letter (and not a space), then, obviously, you get a right-hand quote because you're probably finishing up a sentence or putting an apostrophe into a contraction. Otherwise, the program automatically substitutes a left-hand quote mark.

They're missing one big boat: a little thing we call editing! Any program whose smart-quote feature simply counts on your having typed something before the quote is ignoring all the times you want to insert a quote or apostrophe where there wasn't one originally. You can see the problem in this example:

"It was a feel-good performance," said she.

"It was a feel-good' performance," said she.

"It was a 'feel-good' performance," said she.

As you type the first sentence, everything is fine. The program puts an open quote before the first line because it was preceded by a space. It puts a close quote after the comma because it wasn't preceded by a space.

What if you decide that you really wanted to put single quotes around feel-good? In the center example, you see that all is well so far. You click the mouse just after the D. The program thinks to itself: "No, they didn't just type a space. Therefore, this is a close quote."

Trouble is, it thinks that same thing when you click before the F! It again thinks: "Still no space has been typed. This, too, is a close quote."

All of these programs, therefore, err on the side of too many close quotes! What's much preferable are the smart quotes found in Microsoft Word and WriteNow. When you click the mouse to add a quote, the program actually looks back at what's already on the page! It therefore produces the correct curling quote, whether you're typing them for the first time or editing madly.

(To be fair, SmartKeys — included with this book — offers a convenient workaround. If SmartKeys produces a close quote when you intended an open one, you just press the quote key a second time. SmartKeys instantly replaces the close quote with an open one.)

When to use dumb quotes

Curly quotes, however, are, typographically speaking, only for use as quotes. Prime-number, degree, inch marks, and feet marks are another story. They're not supposed to be curly.

Here, in order of preference (and effort), are the three best ways to represent feet and inch marks:

- Use the Symbol font, Option-4 and Option-comma, respectively, to produce the authentic, 100 percent correct typographical marks. (PopChar, included with this book, makes finding these suckers much easier. See Chapter 33.)

- In System 7, use Option-Shift-Z for the single, and Option-Shift-G for the double prime.
Turn off your smart-quotes feature long enough to type the feet or inch marks straight. Then italicize them for the finessed, correct, slanted look.

Just turn off the smart-quotes feature and use straight single and double quotes. See Figure 24-32 for examples of the results.

In the meantime, keep in mind that after you create these markings, you can save them in your word processor's glossary or library so that you won't have to construct them the next time you need them.

He stood 6', 2" tall.
He stood 6', 2" tall.
He stood 6', 2" tall.

Figure 24-32: At top, the best solution: use the correct typographical feet and inches symbols from the Symbol font. Middle: using italicized straight quotes will do but may give you some trouble with spacing. Bottom: straight quotes. Better than nothing.

The Option-key character set

There's more to a typeface than the characters in the alphabet, of course. Almost every Mac font has dozens or hundreds of hidden symbols. They're tucked away behind obscure Option-, Shift-, and Control-key combinations. Of particular usefulness are the Option-key characters: ©, ‽, ™, ¥, and so on.

Where they're hiding

We're often impressed by the shrewdness of the placement of these hidden characters. Among the Option-key characters, for example, Y is ¥, ℃ is S (because ℃ is short for two S's in German), V is V, and so on.

In fact, we considered devoting a 30-page section to illustrating the appropriate keystroke to produce every one of these hidden symbols in every font, like certain other Mac books we know — but it dawned on us that you, as the owner of this book, will never again need to know which keystroke produces which symbol. You have PopChar, which comes on the disks with this book. It pops up a palette (see Figure 24-33), from which you can choose any symbol in the font for instant insertion into your document.

Figure 24-33: PopChar eliminates the need for remembering which keystroke produces the § symbol (among others).

(We illustrated a few of the best Option-key strokes in Chapter 9.)
The basics of font design

You sometimes hear the terms ascenders, descenders, baseline, and x-height used among Mac users. These terms refer to the various vertical components of a certain typeface, as shown here.

1. The descent line. This imaginary line marks the lowest point of any character in the font.
2. The point size. It may surprise you that the point size is actually measured from the ascent line (5) to the descent line (1). This measuring scheme explains why some fonts seem tiny at the same point sizes as other fonts. Park Avenue, Zapf Chancery, and other decorative fonts, for example, are almost too small to see at 12-point size, where 12-point Times is fine. It's because those decorative fonts have large ascenders and descenders, making the overall type seem smaller by comparison.
3. The x-height. It's the height of most lowercase letters.
4. The leading. It's measured from baseline to baseline. Typographers sometimes refer to text as being "ten-on-twelve." They mean that the font is 10-point, but the leading is 12 points, leaving a two-point gap between lines of text.
5. The ascent line, which is at the height of the tallest letters.
6. The capital line. As you can see from this example, the capital letters in a font aren't always the tallest letters. The capital line is often below the ascent line.
7. The mean line. This is the imaginary line that marks the top of the x-height of the font.
8. The baseline. It's the imaginary line upon which all the letters sit.

The scrambled System 7 keyset

To the consternation of font nuts everywhere, Apple decided to scramble the locations of several dozen of these hidden Option-key characters in System 7. As a result, certain keystrokes don't work anymore to produce the symbols they did in System 6.

If you open your Keyboard control panel in System 7, you see something odd: you have two keyboard layouts! (See Figure 24-34.)
Finally, you know why there are *two* layouts. The only difference between them is the scrambling of these lesser-known characters. For example, Å is Option-Shift-R in System 6, but Option-Shift-M in System 7. If some symbol isn't where it used to be, try the other keyboard layout and see if it surfaces.

**Option-key Secrets**

*Remembering the dead keys*

The Mac has five so-called *dead keys*. When you press one of these keys, nothing happens on the screen until you then press *another* key. To produce the ñ character, for example, you first press Option-N. (Nothing happens.) Then you type a regular n. Just remember to UNite! Those are the dead keys: U, N, I, and E.

(Much as we enjoy remembering EUNICE, as we've read in other sources, the C isn't actually a dead key.)

*The semi-dead key*

The upper-left key on your keyboard, the tilde key, is an oddball key. It acts as a "dead key," but *only* if the next character you type is a vowel (since this marking only affects vowels, in the languages that use it).

When you press Option-tilde, nothing happens; if you then type a consonant, you get both markings together (such as `m`) instead of one atop the other (such as ô).

*Bringing the dead (keys) back to life*

Here's an undocumented System 7 feature: you can type one of the dead-key symbols (', ´, `, or ~) and see the symbol appear immediately on the screen, without having to type an additional letter. The Secret: add Shift (or the Caps Lock key) to the Option-key combination.
Where to get fonts

Fonts are everywhere — free ones, commercial ones, even fonts on CD-ROM.

If you have a modem, proceed directly to America Online (or, if you have money and time to burn, CompuServe), where you’ll find hundreds of fonts to download, in every conceivable format and style.

If you have a CD-ROM player, consider getting a CD-ROM disc with the entire library of fonts from a certain company. For example, for around $50 NEC, Adobe, ImageClub, and other font companies will sell you a CD-ROM disc that includes your choice of a handful of fonts. But the CD-ROM contains the screen fonts of every typeface that company makes! To unlock the printer-font files, you call them up, give your credit card number, and type in the code you’re given. It’s not dirt cheap, but it’s quick and convenient, and you’ll never be stuck waiting for a font you need.

You also have several commercial typefaces included on the disk with this book. See Chapter 33 for details.

Font Futures

Today, Mac users are still stuck with three different font formats — not including the two GX flavors of outline-font technology — each of which must be handled and stored differently. It’s certainly not as graceful a scheme as most other aspects of the Mac. People — even the pros — still regularly get bitmapped printouts of outline fonts that should print gorgeously. The Courier font still shows up in printouts when a nice PostScript font is what you selected. If you’re like most people, you still can’t receive a document file and view it as it was designed, unless you happen to have all the fonts installed that were used by the document’s designer.

Apple and Adobe have worked together for several years trying to bring some harmony to this disorder. The current plan is for PostScript technology to be integrated seamlessly into the system software; no ATM will be required. One day, according to this plan, GX will reign, and all fonts will work and act alike, residing in the Fonts folder. We’ve also heard rumors that Apple plans to do away with bitmapped screen fonts and font suitcases entirely.

TRUE FACT

The T-shirt company that awaits you

This is only faintly related to fonts. But when your cheerful authors were in college, we came up with a brilliant scheme to make a million dollars. (In those days, that was a lot of money.) We’d start a T-shirt company.

We even had our first two designs figured out. You know those annoying shirts that say I ♥ NY or I ♥ Rush Limbaugh?

Well, we were going to market shirts that say I ♥ my cat and I ♥ my husband.

Then we got lives. We hereby relinquish all rights. Go wild, ye entrepreneurs.
SuperATM and the missing-fonts problem

Q: What exactly is SuperATM?

A: Super ATM, Adobe's dramatic enhancement of ATM, goes a long way toward solving the old familiar problem: you open a document for which you don't have all the original fonts installed.

Instead of simply showing you Courier or New York in the place of the missing fonts — complete with awful line breaks that result from the different widths of these fonts — SuperATM consults a database of all Adobe fonts. (As you can imagine, this database takes up considerable disk space.) It then displays a font on the screen that looks almost like the original.

SuperATM's success at re-creating the exact look of a missing font varies from font to font; its substituted text faces look amazingly close to the absent fonts, but its display faces (especially fancy ones) may bear little resemblance. You can, however, always count on SuperATM to draw its substitute font at precisely the correct letter widths. Therefore, you can always count on line breaks and headlines looking exactly as they did with the original fonts.

SuperATM's sole limitation is that it only works with Adobe PostScript fonts. It can't help your library of Bitstream or other PostScript fonts (and it certainly can't help with non-PostScript fonts, TrueType, and bitmapped fonts).

Unfortunately, we've also heard much more disturbing rumors: that Microsoft has refused to adopt QuickDraw GX. Instead, Microsoft intends to develop still another new type format of its own, which it could then use on both Mac and Windows products. Microsoft has invited Apple to adopt this new Microsoft font format — but the subsequent ugliness, with what would then be six competing font formats, is too frightening to contemplate.

Common Font Problems

Of course, the most common font problems today are jagged printouts. See "Why Text Prints with Jaggies," earlier in this chapter.

With several different font formats, four different System software versions, dozens of different competing font manufacturers, and tens of thousands of fonts, you're bound to encounter the occasional font problem that goes beyond the jaggy-print problem. Here are some of the classics.

Font-menu problems

Font name doesn't show up in Word's menu

This problem isn't really a problem. It's just a goofy feature in Word.

We haven't been able to pinpoint when it strikes. We just know that one day we'll start up Word — perhaps it's a newly installed copy — and discover that our Font menu is very, very short. We know we've got other fonts installed.
The solution is to use Word's List All Fonts command. Choose Commands from the Tools menu. Scroll down the list of commands on the left side until you find List All Fonts. Click it. Then click Do It in the upper-right corner of the dialog box.

Your menu bar will blink frantically black and white. When the frenzy is over, you'll find your Font menu restored.

Font name shows up dimmed
Some programs, notably PostScript drawing programs (FreeHand and Illustrator), keep track of all the fonts that were installed at the time you created a particular document. If you reopen that document on another Mac (or on your Mac after removing some fonts), those original fonts still show up in your font lists, but their names are dimmed.

That's the program's way of telling you that your artwork or page layout document may require some fonts that you no longer have. Reinstall the missing fonts.

ATM troubles

ATM's time lag
ATM imposes a slight penalty on almost any Mac when you use fonts for which it needs to perform its on-screen-smoothing trick. For example, you'll see the lag when you display that type for the first time, zoom in or out, or change views in a word processor.

When ATM draws type on the screen, it stores the characters in a chunk of memory it's set aside called the Font Cache. If that memory becomes full, ATM has to dump whichever characters aren't on the screen at that moment in order to display the ones that are. Then, when you change views or scroll to a new page of your document, ATM sits there and rebuilds the fonts it just dumped from memory. This cycle of purging and rebuilding characters from ATM's memory is what slows you down.

The solution is to increase ATM's font cache, using its control panel. If the font cache is large enough (we know people with 512K ATM caches), you shouldn't notice much slowdown at all, except for the first time you put a new size or font up on the screen.

When ATM stops working
Sometimes ATM simply seems to give up the ghost. You may see incredibly strange fonts on the screen for a moment, and after that nothing but chunky, jagged text, as though you didn't have ATM installed at all.

Once again, memory is the culprit. Once again, the solution is to increase ATM's memory allotment (use the ATM control panel).

Option-key character glitches
Option-key characters don't print
This is one of the oddest problems we know, and we're proud to expose it.
In certain programs (we've seen it happen in lots of music programs, for some reason), you may be using some Option-key characters. You may use curly quotes, for example, or a © symbol. But when you print out, you get nothing! Wherever each Option-key symbol was supposed to occur, you get either a blank spot or a comma, of all things.

This is a holdover from a very strange workaround that was set up early in the days of the Mac. The character sets of the original PostScript fonts (Times, Helvetica, and Courier, for example) didn't contain every single Option-key symbol — at least, not in the printer font. You'd see a © or a ™ symbol on the screen in Sabon 12, for example, but these symbols didn't actually exist in the printer font.

Therefore, the Mac was set up to use a clever scheme. It sends a little alert message to the Symbol font, which does contain all of these peculiar little symbols, to step in and handle the printing of that one character. Your printout slides from the printer with the Symbol font's rendition of that © or ™, and you usually never know the difference.

This syndrome still kicks in occasionally. But if you don't have the Symbol screen font installed in your Mac, the Mac assumes that you don't have Symbol. The hand-off won't take place. The laser printer will try to print whatever characters were mapped into the corresponding slots of your on-screen font, which is usually nothing.

The same problem occurs on non-PostScript printers if you're using ATM. Here, the problem is worse because you have to have both the screen and the printer fonts of Symbol installed. Otherwise, instead of blank characters, you'll just get jagged symbols.

The solution is easy: install the Symbol font from your original Mac System disks. (Or don't remove it to begin with.)

The classic "damaged" suitcase problem

One of the worst aspects of the System 7 font-suitcase scheme is the way your font suitcases, which worked just fine in System 6, suddenly become "damaged."

Actually, the Mac just says that the font suitcase is damaged when you double-click the font suitcase's icon. In fact, almost always, the fonts inside are perfectly okay.

How to solve it

First, try dragging the suitcase file onto the System folder icon. The Mac may install them correctly, despite the fact that you can't open the suitcase on its own.

Another way to rescue the fonts is to start up under System 6. Use the Font/DA Mover to copy them into a fresh new suitcase file.

You can often have just as much success using Font/DA Mover 4.1, without having to leave System 7, if you copy the contents of the troublesome suitcase file into a good suitcase file.

What causes it

Apple has identified a list of about 12 different circumstances that can lead to a damaged System 7 suitcase file.
Prominent among them: using the Font Valet program (a utility that comes with Suitcase II), under System 6. The result is a suitcase that gets reported as damaged under System 7. (The current version of Suitcase II doesn’t corrupt suitcase files.) Another problem can occur if a suitcase contains more than eight styles of the same font.

The damaged-suitcase syndrome can also occur if 31 characters of two fonts’ names, in the same suitcase, are the same. The problem is that, theoretically, a font’s name within a System 6 suitcase can actually be longer than 31 letters. But a file’s name in the Finder can’t.

When you double-click a suitcase file, you’re actually asking the Finder to open it up and turn it into a window, complete with icons and files (the individual fonts inside). Since no two files in a Finder window are allowed to have the same name, the Finder simply doesn’t open the suitcase at all.
Chapter 25
Macintosh Printing Secrets

In this chapter:

- How printing works (Dot-matrix, inkjet, laser)
- Tales of DPI: 300, 600, 1200, and more
- The truth about QuickDraw Printing
- Inside PostScript and PostScript Level 2
- How QuickDraw GX will change the world
- PrintMonitor (and background printing) revealed
- Color printing and service bureaus
- Troubleshooting

Getting your drawing, letter, spreadsheet, or text document picture-perfect on your Mac's screen is one thing. Getting it on paper is quite another.

The Macintosh has always been hailed as being a radical step forward in the world of printing. For the first time in the world of personal computing, the printouts looked a lot like the image on the screen. People called the Mac a WYSIWYG computer (What You See Is What You Get).

Over the years, printing has even become more complicated. There’s QuickDraw, PostScript, TrueType, inkjets, color printing, background printing, deferred printing — and WYS is less and less WYG.
How Printing Works

If you're not much interested in the mechanics of how ink or powder gets onto the paper, skip down to "The Truth About QuickDraw Printing." Just remember that when it comes to the look of your printouts, dpi — the number of printer dots per inch of paper — is king, whether it hits paper by ribbon, spraying ink, heat-fused powder, or melted crayon dots.

Dot-matrix printers

When personal computers first hit the scene, daisy-wheel printers ruled — dot matrix came shortly thereafter, as a result of the high cost slow performance of letter quality output. The most common printer was a dot-matrix device. The image is composed of little dots, like the dots on your Mac's screen. Dot-matrix printers, like Apple's ImageWriter II, are often referred to as impact printers — the pins actually strike a ribbon against the printed page. They're also dying out, having been supplanted by inexpensive, much higher-quality inkjet printers.

Inkjet printers

If the price of a laser printer is still too high for you, but you want higher quality than a dot-matrix printer offers, there may be an inkjet model calling your name. Such printers, like the Apple StyleWriter II or the HP DeskWriter, use an ink-filled cartridge that slides across a moving track, back and forth, spraying narrow sheets of ink on the page. In theory (or should we say "on paper"?), these printers print even sharper text and graphics than typical laser printers. An inkjet printer sprays 360 very fine dots per inch, where a standard laser printer's resolution is only 300 dpi. In practice, however, because of the way the ink spreads when it hits the page, fine images printed by an inkjet printer tend to blur slightly, making the printouts just short of laser-quality.

Inkjet printers offer plenty to like: they're inexpensive (about $300). They're also small and light, making them easy to transport or store.

Laser printers

A laser printer has more in common with a copying machine than with other printing devices. Inside the printer, the paper wraps around a cylindrical drum, just as it does in a copying machine. But instead of using a light-and-lens assembly to read an original, the laser printer uses a laser diode that beams the image of your document onto the drum. The drum uses an electrostatic process to attract toner particles, and the toner is fused to the printed page using a heated set of rollers. Some "laser printers" don't have lasers inside at all. Instead, they use a CCD (Charge-Coupled Device) assembly to generate the image; the printed results are very similar.
The toner (the black powder that creates the printout) is contained in a cartridge that, in Apple and Hewlett-Packard PostScript printers, includes the drum as well. When you replace the toner, you’re essentially giving the printer (forgive us) a stomach transplant.

Laser printers come in two types: QuickDraw and PostScript (or “PostScript compatible”—but we’ll get to that). For now, just note that a PostScript printer has its own CPU and memory, and is therefore faster than a QuickDraw laser.

The typical PostScript laser printer also comes with a set of resident fonts (fonts built into the printer’s ROM chips). The basic set consists of 35 fonts that range from Avant Garde to Zapf Dingbats, but some low-end models may contain as few as 13 fonts, which keeps the cost down. Some laser printers, including some Apple models, come with extra fonts on floppy disks as well.

ROM-based fonts (built into the printer) are always more desirable, of course, because they print faster. They don’t have to be downloaded to your printer every time you process a new file. You can use as many of them as you want, in whatever order you want, and they won’t use up any precious printer RAM. Unfortunately, some of these basic fonts are, frankly, overused.

Tales of DPI

300 dpi laser printers

The most common laser printer is very much like the original LaserWriter model that Apple released years ago. The guts of it (the engine) can print 300 dots per inch, which means that a single square inch of the printed page has 90,000 dots. This kind of printer is ideal for letters and basic desktop publishing.

Compared to a higher resolution printer or imagesetter, 300 dpi text is thicker, and, in smaller sizes, a little chunky-looking. The little holes in characters (like the upper half of a lowercase e) may be partly filled in, and the fine details of a decorative typeface are often lacking. When you print a photo on a 300 dpi printer, its different shades of gray don’t get very fine.

**ANSWER MAN**

**A keyboard jack on the LaserWriter?**

Q: This must have been a design mistake. There’s a keyboard/mouse jack on my Apple LaserWriter!

A: That ADB port, which comes on the original LaserWriter II series (the SC, NT, and NTX) was designed to handle “future expansion,” as the press release put it. In other words, it was supposed to be able to control external devices such as cut-sheet feeders, output collators, and so forth.

Unfortunately, no such add-ons were ever made available. To further frustrate matters, even if the devices did exist for these printers, the printers’ ROM is not equipped to read the port. Since these printers are no longer in production, this is one feature that will probably never be used.
Still, even high-end production houses often have a bank of laser printers on hand to proof documents before printing on an imagesetter or color proofer, which uses very expensive media and take much longer to process files.

### 600 and 800 dpi laser printers

A more recent generation of laser printers, such as the Apple LaserWriter Pro series and the Hewlett-Packard 4M, is built around a true 600 dpi engine. (We say *true* to distinguish these printers from the pretenders — certain 300 dpi models that use various “enhancement” techniques that *simulate* finer resolution.) There’s even an 800 dpi LaserWriter model.

A more precise engine, coupled with extremely fine-grain toner powder, gives you ultra-sharp reproduction of fine details. A 600 dpi printer *is not* twice as sharp as your 300 dpi printer. Think about it: the image from a 600 dpi printer contains 360,000 dots per square inch, so it’s actually *four times* as sharp as a 300 dpi printer! Furthermore, these new printers cost less than half as much as a 300 dpi laser printer did just a few years ago. Incredibly, in the years to come, even higher-grade toner and higher resolution print engines will become available — and commonplace.

### 1200 dpi laser printers

Several printers, from LaserMaster and others, are advertised to have a resolution of 800 to 1200 dpi, supposedly going head-to-head against professional imagesetters.

These printers do indeed make sharp printouts. They *vary* the size of the dots that make up the printed image; they also adjust the movement of the drum as the paper rides through the printer. Those stunts, plus the use of fine-particle toner powder, greatly improve the printouts from a conventional 300-dpi, 400-dpi, or 600-dpi engine.

But despite these fancy tricks, the output from even one of these enhanced laser printers isn’t quite as sharp as that of an imagesetter (described next). The limitations of toner and paper simply can’t match imagesetters’ fine resolution of small text and artwork.

### Imagesetters

When you seek the ultimate quality for your document, book, or magazine, you take your file to a prepress plant or service bureau, where they’ll print your stuff on an *imagesetter*.

The original phototypesetting devices of the 1960s and 1970s consisted of a large spinning drum, upon which film strips containing negative images of the type were placed. A lamp flashed through the type in the film strip onto a roll of light-sensitive film or paper. This paper had to be developed in a processing machine, something like the developing unit an X-ray laboratory used. The mid-1970s brought the beginning of digital technology to the typesetting world, in which a TV-style picture tube (a CRT) replaced the spinning drum and light source.

Modern-day imagesetters — made by Linotronic, Agfa, Varityper, and so on — are very similar to those CRT typesetters, except that lasers now expose the photographic media. Paper is pulled through an imagesetter by an array of rollers, gears, and springs. When you’re creating color printouts, *registration* (the precise alignment of four plates, one of each color) is critical. Therefore, high-end imagesetters are drum-based. Some imagesetters print a single sheet for each plate.
All imagesetters are driven by a computer running software called a **RIP** (short for Raster Image Processor). The RIP is essentially an extremely sophisticated version of the PostScript interpreter that’s in your desktop laser printer. Many RIP computers use large hard drives to store programs and fonts. All of this sophistication, of course, costs huge amounts of money.

## General printing Secrets

### Printing page one

In our ever-vigilant desire to be as efficient as possible, here are some keystrokes you can save in the Print dialog box when you don’t want to print the entire document.

First, you know (don’t you?) that you move from blank to blank in the dialog box by pressing the Tab key (see Figure 25-1).

![Figure 25-1: Power printing. In four keystrokes, you can get page 1, and only page 1, on its way to the printer.](image)

### TRUE FACT

**Let’s go to the Lino**

Sometimes a product makes such an impact on the marketplace that its brand name becomes synonymous with the product itself. People ask if you’ve got a Kleenex handy, even though they could care less about the actual brand of tissue. Likewise, people write Jell-O, Band-Aid, or Coke on the shopping list, even when they have no intention of buying those particular brands of gelatin, bandage, or soda.

If you’re heavily involved in desktop publishing, you probably call your trip to the service bureau a visit to the Lino shop, and call all of their imagesetters “Linotype machines.” Yet the Lino is only one particular brand of imagesetter; you’re just as likely to run across equipment manufactured by Agfa, Vartiyper, or other firms.

The manufacturer of Linotype imagesetters, the Linotype-Hell Company, is the descendant of two companies whose lineage dates back to the early history of typesetting. The founder of the original Mergenthaler-Linotype Company, Ottmar Mergenthaler, produced the original Linotype machines in 1886. Many of the typefaces that are so familiar to laser printer owners are original Linotype-Hell designs, licensed by Adobe or Apple. These original fonts — genuine Lino fonts, if you think about it — include Helvetica, Palatino, and Times Roman.
Most people figure out, therefore, that to print only page 1 of something, they press Tab (to get to the From box), type 1, press Tab again (to get to the To box), and then click Print.

Our Secret du jour: don’t even bother with the first number 1. Leave the From box blank. Just put a 1 in the To box, and the Mac is smart enough to figure out what you mean. Figure 25-1 should make this efficiency-nut’s trick clearer.

Likewise, if you only want to print from page 18 to the end, you can put 18 in the From box, and leave the To box empty.

**Label printing**

Label printing isn’t quite as straightforward as printing paper, but almost. First, you have to buy the labels; if you’re going to use a laser printer, you need to buy special laser labels made by Avery. (Office-supply stores sell them.) Many programs have form setups for standard Avery label types.

These labels are anything but cheap, however. Print a test page of your labels on regular paper and then hold that page up to the light against an unprinted page of labels to check your alignment. As a matter of fact, consider removing every other label from a sheet of labels; when you hold that up to the test piece of paper, you’ll be able to see much more clearly how your addresses will line up with the labels.

If you’re printing on an ImageWriter, heed this tip from your battle-weary, deeply scarred authors: don’t roll the labels backward through an ImageWriter. They peel off inside the printer, get permanently stuck to the roller, and make you waste a day trying to get the thing working again.

**Canceling a printout**

Without background printing, it’s easy to stop a printer in its tracks. Just hold down the period for a few long seconds. And then wait a minute for the printer to finish what it’s in the middle of before responding.

But if Background Printing is on, the little background program called PrintMonitor has now taken over the printing tasks. You can press the period from now till doomsday, and PrintMonitor won’t get the message.

*Unless,* that is, you pull PrintMonitor to the foreground. To do so, wait until about 20 seconds after you used the Print command. You see PrintMonitor’s name appear in your Application menu. Choose it. The PrintMonitor window pops to the front, where the big, fat Cancel button is staring you right in the face. Click it.

A minute or so may elapse before PrintMonitor actually stops the printing. But if you catch it early enough, the printing operation is aborted. (We have much more to say about PrintMonitor — and its, successor, Quick Draw GX — later in the chapter.)

Finally, a word of friendly advice: when all else (meaning the period) fails, don’t be timid about just shutting off the printer in midprint. Sure, you may have to help the page-in-progress out of the machine’s innards, but no harm’s done, and you may save a lot of time. (PrintMonitor will squawk in protest, of course, but a couple of judicious clicks on Cancel should shut it up.)
Printing from the desktop

In many cases, you don't even have to open an application to print a document. You can do it from the desktop simply by highlighting the document icon — or several icons, even those created by different programs — and choosing Print from the Finder's File menu. The Mac automatically launches the programs that created those documents, memory permitting, and asks you to confirm the Print dialog boxes, print, and then quit those programs.

The application and document need to be on the same disk — unless, of course, you make aliases of documents from several disks, copy the aliases to one disk, and select (and Print) them all at once.

The Truth About QuickDraw Printing

QuickDraw versus PostScript

There are two different schemes the Mac uses to tell a printer what to draw on the page: PostScript and QuickDraw.

QuickDraw is the built-in software that the Mac uses to draw text and graphics on its own screen. It remained essentially unchanged from its invention in 1984 through the debut of QuickDraw GX (read on).

A QuickDraw printer uses that same image-drawing technology to take what you see on the screen to the printed page. When you print on a QuickDraw printer, the Mac's QuickDraw programs, built into its ROM chips, do the processing. Therefore, the speed of a QuickDraw printer is directly dependent upon the speed of your Mac. The ImageWriters, StyleWriters, and DeskWriters of the world are all QuickDraw printers.

Some of today's QuickDraw printers are very high-resolution printers. The memos and newsletters printed at the StyleWriter II's 360 dpi resolution look great. So who needs PostScript?

The trouble with QuickDraw printers

Adobe Type Manager and System 7's TrueType technology do magical things for printed text on QuickDraw printers. But graphics are another story.

Graphics drawn in QuickDraw graphics programs (otherwise known as drawing programs, such as MacDraw) look great when printed on QuickDraw printers. (See Chapter 20 for more on graphics programs.) But graphics from a PostScript drawing program, such as FreeHand and Illustrator, don't translate well into QuickDraw. Your printouts may turn out to be a jagged 72 dpi representation of the high-quality graphics you created on the screen. To print this kind of professional-looking graphics, you need a PostScript printer (see “The Truth About PostScript” later in this chapter).
What's good about QuickDraw printers

Until a few years ago, you got what you paid for in printers. You could pay several thousand dollars for a PostScript laser printer. Or you could pay only a few hundred and get a QuickDraw printer — the first one, the ImageWriter. It was a dot-matrix printer, whose printing quality wasn't anything you'd want to do your résumé on. People made these associations in their heads: "PostScript = fast, professional-looking, expensive. QuickDraw = slow, crude-looking, inexpensive."

With the invention of the StyleWriter II, one important aspect of that equation has changed dramatically: printing quality. Now you'd say "QuickDraw = slow, great-looking, inexpensive."

In fact, if all you print is text, a QuickDraw printer (like a StyleWriter II or even a non-PostScript laser printer) is a very attractive option. Because print quality isn’t much of an issue anymore, the only remaining drawbacks to QuickDraw printers are their slower printing speed, their inability to print PostScript graphics, and (in the case of inkjet printers) the difficulty of finding a paper/ink combination that looks sharp but doesn’t smudge.

The ImageWriter II

The ImageWriter, the very first Mac printer, is a heavy, hardy, noisy, built-like-a-brick, dot-matrix QuickDraw printer. Its nine pins are fired in precise choreography as the print head slides back and forth across the page, stabbing an inked ribbon up against the paper.

The three printing modes

The ImageWriter's Print dialog box offers three printing options. When in Faster mode, the print head goes across the page once per line, printing exactly one dot on the page for each dot on the screen. The resolution of the printout is 72 dots per inch.

In Best mode, the Mac creates double-resolution text (double the resolution of the screen, that is — 144 dpi). The Mac uses a clever scheme: in its head, it actually doubles the size of the text on the screen, which it then prints on the ImageWriter at half size. The result is smaller, but sharper, text, exactly like the reducing feature of a copying machine. (That's why you're always told to install the 24-point version of a font if you want to print at 12-point size in Best mode on an ImageWriter.) Best-mode printing requires the print head to make two passes across the page for each line. Both the computation of the half-size fonts and the two passes make Best quality printing more than twice as slow as Faster printing.

And then there's Draft mode. It uses a crude, awful-looking, weirdly spaced, built-in font with no formatting or graphics at all — but it's extremely fast.

The end of the line

Except for people who need to print multipart forms (the ones that say "Press hard — you are making three copies"), the ImageWriter's time has come and gone. About the only question anyone ever asks us anymore about this printer is: "How much can I sell it for?"

Still, Apple still sells it, and we've accumulated an ImageWriter Secret or two.
ImageWriter Secrets

The test page

The ImageWriter II prints self-test samples of all three printing modes. To do this, turn off the printer. Hold down the Form Feed button as you turn the printer back on. This starts the Draft mode-self test.

While the test page is printing, push the Line Feed button and then push the Print Quality button to select a new mode. Reselect the printer by pushing Line Feed again. When the print head begins a new line, it prints in standard-quality (Faster) mode. Repeat the Line Feed/Print Quality/Line Feed sequence to start printing the test page in Best mode.

Making circles print circular

The normal settings for an ImageWriter aren't so normal, actually, because a perfect circle on the screen gets printed as an oval. That is, the ImageWriter tends to stretch every graphic slightly.

To get around this problem, select the Tall Adjusted option in your Page Setup box. Tall Adjusted makes the number of dots the same both horizontally and vertically. Graphics print with their proper shapes — but now text is distorted because the width of the page increases by 11 percent. The only workaround: consider printing the graphics on a separate pass through the printer (or on separate pages).

How to make Draft mode work for you

Draft mode usually looks horrible because the printer uses a built-in font and ignores the font you used on the screen. Yet it does pay attention to where each word on the screen begins, in terms of its horizontal placement on the page. The result: the printed words are incredibly far apart.

There's a great trick, however, for avoiding this weird word spacing: format your document on the screen in Monaco 10-point font. It's a decent match for the small monospaced font the ImageWriter uses for Draft printing. For the first time, you'll get reasonable Draft-mode word spacing.

The StyleWriter II

This printer has become almost everyone's best-buy. For about $300, you get a machine whose printouts look very nearly laser printed. Not only is the StyleWriter very compact, it weighs less than seven pounds, can print surprisingly good grays (i.e. photos), and can even be networked. Its two-pages-per-minute speed (for Normal printing) won't make your pulse race, but it's not bad for home or small-office use.

The StyleWriter's feeder holds 100 sheets of letter-sized paper or 15 envelopes. The StyleWriter can even print in the background, just like the laser printers costing five times as much.

The StyleWriter II's GrayShare feature not only lets you print gray-scale images, it lets you share the printer across a network. (Don't ask us why these two features should go hand-in-hand.)
To activate “sharing,” all of StyleWriter II’s software must be installed on your Mac. Also — weirdly — the printer must be attached to the modem port, not the printer port as you’d expect. (And what if you have a modem that needs the modem port? You’ll have to buy an A/B switch box. This setup is a little clunky, but it works.)

Open the Chooser, select the StyleWriter II icon, and click Setup. The dialog box in Figure 25-2 appears.

You can give your printer a unique name. You can even set up a password to restrict access to certain users.

After it’s set up, people sitting at other Macs on the network will be able to select your printer in their Choosers. They can then print documents just as though the printer were any kind of networked device (like a PostScript laser printer).

But the StyleWriter is a QuickDraw printer. Therefore, it needs a Mac to do its processing; in this case, it’s the Mac directly attached to the StyleWriter. Whoever happens to be using this “server” Mac will have to wait through bouts of mysterious computer sluggishness, as other people on the network send their documents to it. Furthermore, all the fonts used in the documents sent by the network Macs must be installed on the “server” Mac, or you’ll be in for some unpleasant surprises when you look at the printed pages.

Still, sharing a StyleWriter among two or three Macs is a decent and inexpensive option, as long as you can put up with the slowdown on the StyleWriter-attached Mac when other users access the printer.

**StyleWriter Secrets**

*Paper suggestions*

StyleWriter (and DeskWriter) printouts take time to dry. Especially if you’re printing on shiny copier paper, be careful not to let the sheets stack up as they emerge from the printer because one outgoing page may smudge the previous one. This is especially true of transparencies.

For what it’s worth, Apple recommends 25 percent cotton bond paper.
When the cartridge doesn't work

We've heard it often: a new inkjet cartridge is installed — or you're using one that's been installed for a while — and it simply won't work. The StyleWriter tries to print, and its print head slides back and forth, but no ink emerges. (Yes, you've pulled that little piece of plastic tape off the bottom of the cartridge.)

It turns out that if a cartridge hasn't been used in a while, droplets of ink on the surface of the cartridge may dry and cake slightly.

The solution is hidden away in the printer's Print dialog box. Choose Print from the File menu. In the dialog box that appears, click Options. You see the box in Figure 25-3, featuring its lone option: "Clean ink cartridge before printing."

![StyleWriter II Print Options]

Figure 25-3: When your StyleWriter II won't print, here's what the doctor orders.

When you select that checkbox and click OK, the printer attempts to blast the dried crud free. Fortunately, you don't have to remember to turn off this option; the Clean option is turned off automatically after each time you use it. (The HP DeskWriter's Prime button does the same thing.)

Use the StyleWriter II driver for the StyleWriter I

The StyleWriter II printer comes with its own super-duper printer driver. This driver offers several advantages over the original StyleWriter driver: faster printing, better grays, and so on.

Apple has finally admitted that you can use the StyleWriter II software with the original StyleWriter. The only obstacle to your using it is getting it. Throw yourself upon the mercy of a StyleWriter II-owning friend or a friendly dealer. (Or get System 7.5, which includes the II driver but not the I driver.)

Why didn't Apple originally encourage StyleWriter I owners to use the new driver? We have our theories. Among the most plausible: Remember that jet-clearing trick in the previous Secret? Because the StyleWriter I doesn't use the same mechanical components as the II, we've heard rumors that using that print head-cleaning option could actually damage your StyleWriter I. Our advice: Get the new driver, but just don't use the "Clean ink cartridge before printing" option.

How to print envelopes and thick pages

You have to adjust two StyleWriter II adjustment levers when you want to print envelopes and thick paper (like labels). If you look at the printer from the front, the levers are both on the right side.
The first lever is on the outside of the printer, on the feeder tray. Flip it to the position marked by the envelope icon. To get at the second lever, you have to open the front panel. Inside, there's a second, blue-tipped lever on the ink cartridge itself. This level, too, must be flipped into the envelope-icon position.

Before you insert envelopes into the sheet feeder, crease the leading edge of the envelopes (where the flap is) to help it pass through the paper tray more smoothly. Be certain the paper guide is moved snugly, but not too tightly, against the paper or envelope.

When you finish printing, be sure to flip both levers back to their normal "paper" positions.

Printing test pages
Just as on a regular laser printer, you can print a test page on a StyleWriter. Just hold down the On button continuously until the test page begins.

StyleWriter II driver installation hazards
When you prepare a Mac for use with a StyleWriter II, you're supposed to use the original StyleWriter II installation disks. But suppose you already own a Mac that works with the SW II, and you want to set up a friend's Mac. You might be tempted simply to grab the StyleWriter II driver icon from your Extensions folder, stuff it onto a floppy disk, and be on your way.

Watch out, though. The SW II driver isn't the only component you need to make a Mac work with this printer; you also need a special version of the Chooser! Be sure, therefore, that you also copy the Chooser from the first Mac's Apple Menu Items folder; it needs to be installed on the new Mac, too.

Of course, using the original StyleWriter install disks — or System 7.5 — would obviate the need for this chicanery.

StyleWriter II jams
If you're among those long-suffering souls who endure repeated StyleWriter II paper jams — where the printer pulls two sheets of paper through instead of one, for example — we have two nearly sure-fire solutions.

First, take note that the StyleWriter isn't a happy camper at all without more than 20 sheets of paper in its input slot. Forget about sticking one page of smallish stationery in there — the printer will show its disgust by pulling that page all the way through without making a mark on it.

Second, in humid weather, we've found that fanning the stack of paper (smooth laser-printer paper works best) before resquaring it and slipping it into the input slot prevents the pages from sticking together.

PowerBook owners: Where to stick it
If you own a Duo or a 500-series PowerBook, you may have noticed that, where most Macs have a modem jack and a printer jack, your Mac only has one serial port. It's a combo modem/printer jack. Obviously, it's the only place you can attach your StyleWriter.
But as far as the Mac's electronics are concerned, there are still two jacks to choose from, and if you don't select the correct one, your StyleWriter won't work. Open the Chooser. Click the StyleWriter icon. Make sure AppleTalk is inactive. In the upper-right corner of the Chooser, you see two jack icons — one depicting a printer, one depicting a telephone.

*Click the telephone.* You want your PowerBook to treat its lone jack as the modem port, because that's where the StyleWriter is supposed to go. If you click the printer instead, the StyleWriter won't operate.

### The Truth About PostScript

*PostScript* is one of those terms that you hear every two minutes in the Mac world. Most people associate it with laser printers. Yet you can buy a laser printer that doesn't have PostScript, and you can buy a PostScript printer that isn't a laser printer. Furthermore, people talk about PostScript as though it has something to do with text — and then you hear about a PostScript *drawing program*.

In fact, PostScript is actually a computer *language*. It's used, pure and simple, to describe images. Those images can be text; graphics; on the screen; on paper. If you know what you're doing, you can actually sit down and type out the PostScript codes necessary to make the computer draw, say, a triangle.

The word PostScript pops up in conjunction with almost everything in the Mac world: fonts, printers, graphics, commands, and so on. We'll tackle them one by one.

### PostScript fundamentals

PostScript was released by Adobe Systems in 1985. It's a computer language that describes the characteristics of a page, including the text and the pictures. The PostScript file that you create on your Mac (or IBM PC, or other computer) is nothing more than a set of *instructions* to the printer: "Draw a straight line, starting an inch from the top of the page. Turn left. Draw another line...."

PostScript was designed to provide what Adobe calls *device independence*: that is, the same PostScript file comes out at 72 dpi on the screen, at 300 dpi on a PostScript laser printer, and at 2400 dpi on a PostScript imagesetter. It prints, therefore, at the highest resolution your printer (or screen) is capable of.

PostScript gave desktop publishing the boost it needed to take over from traditional typesetting. Older professional-level printers could only use a single set of fonts provided by the manufacturer and could only work with a certain kind of computer workstation. With PostScript, you can use the same file and the same fonts on printers made by many different manufacturers — and you know that your file will print at the highest resolution that is possible on that printer.
**PostScript printing**

The Mac draws images on the screen using QuickDraw. When you print to a PostScript laser printer, therefore, the QuickDraw commands that compose the screen image have to be translated into PostScript.

After the PostScript instructions are sent to the printer, yet another conversion takes place: the printer’s processor (its *interpreter*) translates the PostScript instructions into a *bitmap* that describes exactly which microscopic dots on the page need to be black.

All of this instruction-translating accounts for the delay between the time you click OK in the Print dialog box and the moment the first page emerges from your printer. How long the printer takes depends on the power of its processor, the size of your document, how many fonts and graphics the document has, and how much memory (RAM) is in the printer.

**PostScript fonts**

A PostScript font is a file that may be loosely compared to a coloring book. The file contains only the hollow *outlines* of the letters and symbols (which is why we call them outline fonts). (See Chapter 24 for details.)

The PostScript interpreter (the computer inside the printer), in effect, supplies the crayons to fill in those outlines. The set of outlines that describes the font may come from any of three places. It may be transferred over the printer cable to the printer by your system software (a *downloadable* font). You may have copied it onto a hard drive attached to your printer for greater speed and convenience. Or the font may be a *resident* font, permanently installed in your printer’s ROM. (On a few rare printers, you can install font *cartridges*, too.)

**PostScript Page Setup**

A *driver* is a piece of software that tells your Mac how to communicate with some external piece of equipment — like a laser printer.

Printer drivers go into your Extensions folder (System 7) or loose in your System folder (System 6). As every first-time Mac owner eventually discovers, you can’t print a single page until you open your Chooser desk accessory to select a driver. After you select a driver, the options in your Page Setup dialog box change to reflect the features of the printer you specified.

**The Page Setup dialog box**

The PostScript printing process begins with your mandatory visit to the Page Setup dialog box, where you make a few decisions that dictate how your document prints (see Figure 25-4).
Some applications add their own special settings to those in the Page Setup box, but the basic options are always the same. You specify the size of the paper you print on; whether you want the image to print at normal size (100 percent) or to be reduced or enlarged; and whether you want the paper printed in portrait (taller than it is wide) or landscape orientation (on its side).

### Ineffectual FX...before GX

In today's world of powerful, high-tech Postscript printers, the Printer Effects are next to useless. Unchecking them conserves RAM, saves printing time, and leaves the printing quality unaffected.

But because they're always there, staring you in the face, we'd like to demystify them.

- **Font Substitution**: In the early days, there were only two kinds of fonts: laser fonts and ImageWriter fonts. As you learned in Chapter 24, these two categories actually corresponded to PostScript fonts and bitmapped fonts (which printed jaggedly on the LaserWriter).

  In those uncertain days of 1985 and 1986, people sometimes used the fonts they were accustomed to — Geneva, New York, Venice — in preparing documents. Of course, when they tried to print such fonts on a laser printer, the text inevitably came out looking jagged, because no PostScript instructions (outline fonts) were involved.

  As a helping hand, Apple offered the Font Substitution option. It automatically swapped a PostScript font for its non-PostScript equivalent. That is, wherever you used Geneva in your document, the laser printed Helvetica; wherever you used New York, you got Times; for Monaco, you got Courier. Unfortunately, the characters in each of these fonts simply aren't the same widths. As a result, your Helvetica, Monaco, and Times text had ridiculous word spacing when they finally hit paper.

  Today, this option is almost completely irrelevant in terms of print quality. In TrueType-equipped systems (such as System 7 Macs), Geneva, Monaco, and New York are no longer bitmapped fonts. They're TrueType fonts, so they'll never print jaggedly on a laser printer at all. For best results, leave this option off.

- **Text Smoothing**: If, by some freak of fate, you're still using bitmapped fonts (such as Venice or London), this setting supposedly makes them look better when printed by an Apple laser printer by smoothing the ragged edges.

---

**LaserWriter Page Setup**

|--------|-----------|-----------|----------|-----------|

| Reduce or Enlarge: | 100% |

| Orientation | Tabloid |

Part IV: Attachments

- **Graphics Smoothing**: This option performs a similar smoothing operation, but it applies only to bitmapped pictures, those you created in MacPaint or another painting program. Except when using the LaserWriter 8.0 driver (described later), this item has no effect if you're printing to a non-Apple laser printer.

- **Faster Bitmap Printing?** When originally designed, this option forced the Mac to preprocess bitmapped (MacPaint-style images) before sending them to the printer, resulting in faster overall printing.

  **Strange but True** This has got to be one of the best jokes in the world of Mac, however. It turns out that today's laser printer processors are so much more efficient that Faster Bitmap Printing actually results in slower bitmap printing! Leave this option off.

Obviously, we're not the only ones who think that these options are goofy; in successive generations of printer software, Apple and Adobe have been sneaking these checkboxes out of your life. In the Postscript Level 2 laser-printer driver (LaserWriter 8.0), most of them have been hidden away in the Printer Options dialog box, described next. (And Faster Bitmap Printing has been removed completely.)

Furthermore, you'll be happy to learn that in the even newer printer driver, the awe-inspiring QuickDraw GX (described later), none of those silly printer effects clutter up your screen. They've all gone to that great dialog box in the sky.

**Pre-GX printer options**

There are still more PostScript printing options. Frankly, these other options are more useful than the Effects we just described. Yet they're hidden in a second dialog box — the one that appears when you click the Options button (see Figure 25-5).

**Figure 25-5:** Standard Setup Option box for a laser printer.

- **Flip Horizontal** and **Flip Vertical**: These options are used for mirroring your document; as illustrated by the sample image in the dialog box, they serve to flip the printed image right-for-left so that it only appears correctly when read in a mirror, or upside down. You may occasionally need to print something flipped horizontally when you print onto film using a Linotronic imagesetter, in the event that your pages are required to be "emulsion side down."

  You *never* need Flip Vertical, as far as we can imagine. You can accomplish the same thing by simply selecting Flip Horizontal and then turning the page upside-down in your hand — and you get your printout much sooner!

- **Invert Image**: This choice prints a negative of your pages: black-for-white and white-for-black. You can use it, we guess, at Halloween. (It was originally designed to create negatives for PostScript-savvy slide printers. It's gone from QuickDraw GX.)
The inevitable Dogcow sidebar

Look back at Figure 25-5. In fact, look at your own Printer Options or Print dialog box. Look at that animal, the one who stands in for your actual document image, the one who obediently flips, shrinks, grows, turns black, and hangs upside down to illustrate the effects of the various printer effects as you turn them on and off.

What is that animal?

Is it a dog? Is it a cow? No. According to anonymous sources at Apple, this animal is the Dogcow. The Dogcow has become legendary among the Mac intelligentsia. There are Dogcow T-shirts. Dogcow discussions on CompuServe. And in the newest Print dialog boxes (for the StyleWriter, for example, or the Level 2 PostScript driver), the Dogcow has been elevated to a much more prominent position.

Two other things are whispered about the Dogcow. One is that his name is Clarus, which, we admit, isn’t particularly clever (if it’s supposed to be clever).

The other is the sound he makes: Mooof!

- **Precision Bitmap Alignment:** Here’s another obsolete feature. You’re supposed to use this option when you’re printing MacPaint-style documents (72 dpi bitmapped art).

  It so happens that 72 doesn’t divide evenly into 300 dpi, which is the resolution of a laser printer. Precision Bitmap Alignment reduces the overall image by four percent so that each on-screen dot perfectly fills up four of your 300 dpi printers’ dots.

  If you ask us, you should ignore this option completely. Instead, when you go to print, simply specify that you want to print at 96 percent of full size! The effect is exactly the same, but you save the trouble of trudging through two dialog boxes to find this option.

  Speaking of which: if you have a 400 dpi printer, such as an HP DeskWriter, the Precision Bitmap Alignment button doesn’t work at all. You can accomplish the same effect, however, by printing at 90 percent.

- **Larger Print Area:** This is a very important and a very useful option!

  Most laser printers impose a mandatory half-inch margin upon your pages. Anything you design in your documents that comes closer to the edge of the page than that simply gets chopped off, looking extremely silly.

  With a single mouse click upon this checkbox, however, you can expand your printer’s printing area to within ½ inch of the edge of the page all around.

  In the days of the original LaserWriter and LaserWriter Plus models, you paid a price for using this feature: it used up more of your printer’s memory. That occasionally meant that some documents simply wouldn’t print.

  Today’s printers have more RAM, however, and you can use this feature with abandon and joy. (On the other hand, the feature doesn’t work on some new PostScript Level 2 printers. This, too, is gone from the LaserWriter GX driver.)

- **Unlimited Downloadable Fonts:** Consider the final setting as a last resort. It doesn’t work in concert with the Larger Print Area option, but it does allow you to print documents that contain too many fonts for your printer to handle otherwise.

  This feature works by flushing fonts from RAM as soon as they’re used and then downloading the next batch. This constant downloading and flushing makes the printing take longer, of course, but it may be the answer when lack of printer memory would otherwise render your document unprintable.
One caveat: If you're printing an EPS graphic that contains the only instance of a certain font, this setting may not download that font correctly. The Courier font will be substituted instead. If that syndrome happens to you, you may have to turn off Unlimited Downloadable Fonts and find another solution.

Send in the clones

When you read the ads for PostScript printers, you sometimes see one advertised as being PostScript compatible. That's not the same thing as PostScript!

A PostScript compatible, or clone, is one that some company has designed to imitate the way a genuine PostScript interpreter (processor) works. Why would anyone bother? Because companies who make true PostScript printers have to pay a licensing fee to Adobe for every single printer they sell. A clone, therefore, costs less than a real PostScript printer.

Do not buy a printer that contains a clone interpreter until you've actually spoken to people who have that model. Find out if they've had problems. And try the printer out, if you can, before buying. Clone printers generally work smoothly until you try the fancy stuff: complicated FreeHand illustrations, say, or, more commonly, Adobe's Multiple Master Fonts. The new Apple laser printer driver may also cause these printers to fail (not surprising, really, since the driver was written by Adobe!).

PostScript printing Secrets

A word about grays

Remember the old joke about the kid who announced that his family had just bought a two-color TV? "Two colors?" his friends asked. "Yup," they were told, "black and white."

Well, your laser printer is a two-color printer: black and white. It can't actually print the color gray. It can, however, do a reasonable job of simulating grays by the judicious placement of tiny black dots.

But you won't even get that unless you click the Color/Grayscale button (or choose it from the pop-up menu) when you go to print. (You'll just get a muddy blotch where the photo should be.) In all other cases, leave the setting on Black & White, which prints faster.

(On the other hand, if you're using the LaserWriter 8.0 driver, leave Color/Grayscale selected all the time. There's no speed penalty, and printouts are more predictable.)

Introduction to PostScript files

As we noted, one of the PostScript printing options is PostScript File. Instead of actually printing your document on paper, the Mac creates a file on your hard drive that contains all the necessary printing information for that document. After you create a PostScript file, all you have to do is send it to your printer, using the LaserWriter Font Utility.
Contained in that PostScript file are all the instructions the printer needs to start spewing out pages. In other words, that time-consuming QuickDraw-to-PostScript conversion process has already happened. Printing a ready-made PostScript file, therefore, is much faster than printing using the Print command.

That’s good to know when you’re in a hurry, such as when you’re printing at a service bureau or copy shop, and you’re being charged by the hour. PostScript files are ideal for service-bureau visits for another reason, too — you don’t have to take along the program that created them. The file by itself (and any special fonts you used) is all you need.

Read our section on service bureaus later in this chapter for details.

**How to make a PostScript file**

To make a PostScript file on a System 7 Mac, choose Print from the File menu. Where it says Destination, choose PostScript File and then click Save.

On a System 6 Mac, creating a PostScript file is a little trickier. (This is really a Macintosh Secret.) First, turn off Background Printing (open the Chooser to do so). Then choose Print from the File menu and click OK. Just as the printing process begins, press `⌘-K`. A new file, called PostScript0, appears on your hard drive.

Then again, maybe you should press `⌘-F`. The first time you print something on a PostScript printer, the Mac has to *initialize* the printer by sending it a “prep file” filled with useful information (identifying the computer as a Mac, for example). Without being initialized, the printer won’t work.

The difference between the `⌘-F` and `⌘-K` shortcuts for System 6 is that the former doesn’t include this prep file as part of the resultant PostScript file, and the latter does. A PostScript file you create using `⌘-F` takes up less space on the disk, but it can only be printed *after* the printer has already been initialized (by printing some other file normally, for example, also from System 6). A PostScript file you create with `⌘-K`, on the other hand, takes up more disk space but automatically sends the Laser Prep info to the printer, making it a safer bet. (The `⌘-K` shortcut includes all the fonts into the PostScript file, too, making the file especially huge. See “On the Level About Level 2,” in this chapter, for the ramifications of embedding the fonts in a PostScript file.)

**PostScript — The Language**

A PostScript file is a text file containing instructions to the PostScript interpreter in your printer. If you open an Adobe Illustrator file in a program that reads simple text, you see what we mean. Although the instructions that follow are rather oblique, they are, more or less, in English. The numbers describe, in points, the precise location of the various parts of the graphic file (see Figure 25-6).
When you actually print the file on your PostScript laser printer, you get something like Figure 25-7.

If you want to try your luck at PostScript programming first-hand, here's a sample or two for you to play with. These instructions are designed to be used in Microsoft Word.

Naturally, this experiment only works on a PostScript laser printer, and it requires Helvetica Bold (one of the fonts built into your laser printer).

**Super 3-D shadow text**

First, here's a neat way to produce shadowed, 3-D text that looks like its shadow is being cast by a 4 p.m. sun (see Figure 25-8). Type the following code in a new Word document:

```
/inch {72 mul} def
/pica {12 mul} def
0 792 translate
```
You can customize this experiment in various ways; for example, you can change the point size listed (36 in this example) or the message (Your Name Here! in this example).

When you're done typing, select what you typed. While pressing Shift, choose PostScript from the list of styles at the left end of the Ruler. Finally, print your work!

Figure 25-8: The finished shadow text.

Faint diagonal words across the page

This trick stamps a word diagonally across the page in faint lettering (such as "FINAL NOTICE").

In this example, too, you can change the point size or the text itself (FINAL NOTICE, in this example). You can also change the angle of rotation (45 in this example) or the degree of grayness (.5 in this example, meaning 50 percent).
LaserWriter 8.0: a New Level

In 1991, a new generation of PostScript printers hit the market, bearing the impressive-sounding adjective *PostScript Level 2*. These were supposed to be the second generation of PostScript products, with some fancy new features to make printing faster, more predictable, and with additional flexibility.

Surprise — these printers actually added *nothing* new to the printing process!

It turns out that they were, in reality, only Level 2-ready. They were waiting for the Mac to catch up to their sophisticated electronics. And the Mac required a new Chooser-selectable *driver* in order to take advantage of these Level 2 printers' capabilities.

Unfortunately, it took another two years for the Level 2 printer driver, developed and distributed jointly by Adobe and Apple, to become available. Level 2 turned out to be more than just a fancy advertising promotion; it did indeed add new capabilities and new speed to PostScript printers. In fact, there may even be *other* Level 2 drivers, sold by other companies, that add even more features.

What you get in Level 2

Here are some of the Level 2 features that are either here now or promised for future incarnations of the Level 2 driver:

- **Faster background printing**: Apple says that its new Level 2 driver speeds up background printing an average of 10 percent (as much as 30 percent for graphics).

- **Forms and form caching**: When you print more than one form at a time, such as tax forms or billing statements, Level 2 is smart enough to memorize (cache) that part of the image that doesn’t change from page to page. It stores, in other words, the gridlines and label text. The only processing the printer has to do, therefore, is to fill in the blanks for each particular page. The result is faster overall printing times.

- **Patterns and pattern caching**: This feature works like forms caching, except that here the printer stores fancy patterns (which are otherwise time consuming to calculate for each new page).

- **Data compression and decompression filters**: PostScript files can be enormous. When programs begin to offer compression features for their printing files on disk, Level 2 printing speeds up because the Level 2 processor can now automatically read compressed files.

- **Improved halftoning algorithms**: A *halftone* is the illusion of a gray-scale image created by placing fine dots of black in strategic locations. Level 2 uses a smarter simulation method that reduces common problems with halftone printouts — moiré patterns, for example — that even affect high-end imagesetters.

- **Improved memory management**: A Level 2 PostScript printer makes better use of memory. (To get technical, it now uses a single shared memory pool instead of splitting up the printer's memory among different processing chores, as Level 1 printers do.) Complex graphics print faster, and you get fewer out-of-memory messages.
- **Improved support for printer-specific features:** The Level 2 driver software comes with a folder full of *printer-description* files, or PPDs. (Don’t confuse a PPD with a PDD, which, in QuickDraw GX lingo, is a Portable Digital Document!) Each file tells the Mac what special features are unique to your make and model of printer: the capability to handle special paper sizes, multiple paper trays, *duplex* printing (on both sides of each page), and so on.

Other improvements include support for complex foreign language fonts, such as Kanji (with over 7,000 characters); built-in ATM font-rendering technology; improved text and graphics handling; better color printing on any color printer; and, in general, more efficient PostScript files, which means faster printing of complex documents.

The original Macintosh Level 2 driver was promised for the Fall of 1991. It actually arrived in the late spring of 1993. Even so, not all of the features of Level 2 were included in first incarnation of the new driver. For example, the manual for Adobe's edition of the Level 2 driver mentions nothing about forms and pattern caching, making us suspect that these features didn’t make it into the initial release of the driver.

**A tour of the Level 2 PostScript driver**

Apple and Adobe each released the same driver under different names. The Apple version is called *LaserWriter 8.0* (or 8.1.1, or whatever the current tweak happens to be). It comes with a set of PPDs strictly for Apple printers.

The Adobe edition, *PSPrinter*, comes on two high-density disks and includes over 200 PPDs so that you can customize the driver for almost any printer on the market. If your printer isn’t included in the set of PPDs, Adobe has added a General version that supports basic printer page sizes and screen capabilities.

**What’s a PPD file?**

PPD stands for Printer Page Description. A PPD is a small text file that describes the custom characteristics of your printer: its possible page sizes, screen angles, its list of built-in fonts, whether or not it has more than one paper tray, and so on. Actually, PPDs are nothing new; professional programs like Adobe Illustrator, Aldus FreeHand, and PageMaker have used them for years. (QuarkXPress uses them, too, but calls them PDFs and uses a special format that only works with XPress.)

**The drawback of Level 2**

There aren’t many disadvantages to using the Level 2 driver. You need to be running a Mac Plus or better, running system 6.0.7 or later. System 6 Macs need 2MB of RAM to use the driver, and System 7 Macs need 4MB.

The only possible downside: To get the most from this driver, you need a Level 2 printer. Some Level 1 printers, such as the Apple LaserWriter II series, can be upgraded to Level 2 status. It’s an expensive upgrade, involving a controller board transplant.

Still, even with an ordinary Level 1 printer, the Level 2 driver still gives you more efficient printing, custom printing features, and a few new ways to make PostScript files.
LaserWriter 8.1.1 (Level 2) Secrets

Installing the Level 2 driver

Whether your copy of the Level 2 driver came from Adobe or Apple, you install it using the standard Apple Installer. The Adobe driver comes with over 200 PPDs, however. Our advice: Click Customize at the main Installer screen and install only the set of PPDs that includes your particular printer.

After you install the driver, the next step is to configure it to your printer. You customize it by opening the Chooser, selecting your printer, and clicking Setup. You get a window like the one shown in Figure 25-9.

![Figure 25-9: PSPrinter Setup box.](image)

The driver automatically looks through the installed set of PPDs to find one that matches your printer profile. It loads the correct file by itself.

What's my printer like?

The Level 2 driver gives you all kinds of insider information about your particular printer. In the Chooser, click the driver's icon. Then click Setup, then More Choices, and then Get Info. You arrive at the box shown in Figure 25-10.

![Figure 25-10: The Level 2 driver gives you a basic profile of your printer.](image)

EPS on the fly

This is a really hot feature.

The Level 2 driver actually creates an EPS file of any document, even in programs that don't give you that option.
Suppose that you want to create an EPS file of a MacPaint document that's on the screen. Choose Print from the File menu. In the Print dialog box, where it says Destination, click the File button. When you click Save, a new dialog box appears, as shown in Figure 25-11.

![Figure 25-11: Creating different types of EPS files is a snap with the Level 2 driver.](Screenshot)

From the Format pop-up menu, choose EPS Mac Standard Preview, as shown in Figure 25-11. Give the EPS file a name.

Also note the extremely useful Font Inclusion pop-up menu. If you choose All, the actual PostScript fonts needed to print your graphic are embedded directly into the EPS file! That's an important feature that has two important effects. First, the size of your EPS file on the disk balloons upward, because it includes all the font information for all the fonts in the file. Second, despite its unwieldy size, you can now give this EPS file to a service bureau or a friend, confident that it will always print correctly, whether your recipient happens to own the fonts you used or not.

### QuickDraw GX

You may ask: Why are we using the word QuickDraw smack in the middle of a discussion about PostScript?

It turns out that QuickDraw GX, Apple's major upgrade to QuickDraw, affects both PostScript and non-PostScript printers. In fact, it represents a dramatic leap forward in printing on the Mac. Not just printing, actually, but font handling, color, document distribution, screen display, and much more. Whereas LaserWriter 8.0 was only a driver enhancement, QuickDraw GX brings changes and enhancements to drivers and just about everything else related to type, printing, and graphics.

QuickDraw GX, an extension for System 7.1 or later and a standard component of System 7.5, took Apple years to develop. It wolfs down at least 1.5 megs of memory. And it changes your computing life in a number of ways.
Some of the changes affect you the very day you install the GX extension (which we'll call Instant Features). A second category requires software companies to upgrade their programs, making them GX-savvy. We cover each class of enhancement separately.

**Instant Feature #1: Desktop printer icons**

Before GX, whenever you wanted to print a document, you had to go through a tedious, multistep process. If you hadn't selected a printer, you had to open the Chooser to pick one. Then, as instructed by the Chooser, you had to open and close the Page Setup box. Keeping track of multiple documents being printed on several different printers wasn't easy, either. Even PostScript Level 2, for all its juicy new features, didn't change these tiresome rituals.

But QuickDraw GX changes all that. Its Installer replaces all the usual icons in the Chooser (StyleWriter, LaserWriter, and so on) with new ones (StyleWriter GX, LaserWriter GX, and so on). When you select one of these icons in the Chooser and click the Create button, an icon representing that printer appears on your Mac's desktop. To print a file on that printer, you simply drag the document's icon on top of the printer's icon! (See Figure 25-12.)

![Figure 25-12: QuickDraw GX's desktop printer icons. Just drag your document to specify which printer you want. Double-click a printer icon to see how busy it is.](image)

If you double-click the printer icon, you see a full list of the files waiting to be printed on the printer it represents. If you need to change the order in which these documents print, you can either (1) drag them to a different place in the list or (2) drag them to the icon of a completely different printer. (Neat tricks: By highlighting one of these icons and choosing Sharing from the File menu, you can even control who on the network has permission to use each printer!)

The standard Print dialog box reflects these changes, too. A pop-up menu (shown at the top of Figure 25-13) lists the printers available to your Mac. If you're not enjoying the increasing desktop-icon clutter of Apple's latest system-software tweaks, you can use this pop-up menu instead of the desktop icons to select a printer for the printout. This Page Setup box doesn't change, by the way, depending on whether you're going to use a QuickDraw or PostScript printer. The document will print successfully without your even having to think about what printer type you're using. All of this, need we point out, makes the world of Macintosh printing about a thousand times simpler and more convenient.

Figure 25-13 shows a few other goodies in the standard GX Print box, too. (They appear when you click the More Choices button.) Click the Print Time icon to specify when you want the printing to take place. Click the Paper Match icon if your printer has multiple trays — one for letterhead, one for plain, and so on — and you want to control how the printer matches pages of your document to these different kinds of paper.
Figure 25-13: QuickDraw GX’s expanded Print dialog box, showing some of the new printing options. The pop-up menu at top controls which printer will do the deed, if you do, in fact, have more than one.

**Instant Feature #2: Portable Digital Documents**

Another benefit conferred on you by GX on the very day you install it: it lets you create Portable Digital Documents, or PDDs. You choose the PDD Maker the same way you choose any printer — by using either the Chooser, the pop-up menu shown in Figure 25-7, or a desktop PDD Maker icon. (Does the Mac world really need another three-letter acronym starting with “P”? We’ve already got PPDs, PDFs, and PDAs....)

A Portable Digital Document is one that anybody can open, read, and print on any QuickDraw GX-equipped Mac. The document looks exactly the same on their screen as it did on yours, even if the recipient Mac has neither the fonts nor the program you used to create it! GX creates these PDDs by cleverly embedding, into the document itself, whatever fonts you used. It doesn’t bother embedding the entire font; that would create enormous documents. Instead, it embeds only the actual characters you used in that document! (This is true for TrueType and GX fonts only; PostScript Type 1 fonts are embedded in their entirety.)

The resulting PDD file is large, yes, but not astronomical; a one-page word-processing document with three fonts in it is about 250K. And it can be opened and printed by anybody whose Mac also has QuickDraw GX, even though they don’t have the fonts or the program you used to make the original document. Your recipients use a Viewer program to look at and print your PDD.

If this sounds suspiciously similar to such portable-document programs as Acrobat, Common Ground, and Replica, you’re right; it’s the same idea. If we were the marketing honchos behind those programs, we’d be a little upset by GX. Apple is essentially duplicating those efforts, but making them part of the standard system software.

**Instant Feature #3: Better background printing**

The third feature you’ll be able to enjoy without upgrading your existing software is better background printing. QuickDraw GX is smarter about printing while you continue to work in your applications. When it detects activity on your part, it slows down its printing work, returning more of the Mac’s horsepower to what you’re doing. When you’re between typing bursts or mouse movements, GX kicks into higher gear with its printing duties. As a result, you notice less sluggishness when you’re working.
Another improvement in background printing: the death of PrintMonitor. Yes, just when somebody (us) finally got around to explaining what PrintMonitor does and how you can learn to live with it, Apple cans it. In PrintMonitor's place is a new Finder menu, to the right of the Special menu, called Printing. It only exists when you're printing, and it has controls for halting, resuming, and otherwise managing the ongoing printing processes. We have to admit that the Printing menu is a smarter, more integrated-feeling solution to background-printing management.

When the software companies upgrade their programs
All existing font formats work fine with QuickDraw GX. In fact, you even get a special version of Adobe Type Manager with GX, to handle all your PostScript-font display and printing needs.

But those older font formats won't give you all the glitzy new type-twisting features that TrueType GX fonts will. High-quality typography is built into these fonts. They're actually self-kerning, self-tracking, and self-ligature-making (see Chapter 24 for more on ligatures). In other words, the designer of the font decides how far apart the letters or words should be, taking into account the type size, boldness, and so on — and the font adjusts itself automatically, regardless of the program. These automatic features are virtually limitless; it's all up to the type designer. For example, when you type 1/2, the font (which can now include up to 65,000 different characters!) can intelligently substitute the typographically correct ~ and foreign languages — forget about it. QuickDraw GX can handle type that goes right to left across the page, up or down, or even a combination of these within a single line of text. (You're not a type expert until you've adjusted vertical kerning in Japanese text!)

All this built-in font intelligence has a remarkable overall effect. For the first time, people who have never even heard of kerning and tracking will, perhaps unwittingly, create absolutely gorgeous, typographically graceful documents, courtesy of these extra-smart fonts (some of which come with GX).

The other category of GX features won't be available until you get GX-savvy programs and special GX fonts. Once you've upgraded to these applications, even more GX (and GX font) talents will be at your disposal, such as the following:

- **Type twisting**: If controls are available in your programs, you can skew, distort, or twist any piece of text like taffy. You can even slant or curve the baseline — and the text always remains editable.

- **Complex graphics**: In today's QuickDraw-and-PostScript world, you never know what you'll get when you print a PostScript graphic on a QuickDraw printer. Rotated images may print raggedly or stairstepped. QuickDraw GX, on the other hand, supplies its own core graphic routines built right into the system software, and you don't get those rude graphics surprises.

- **Color publishing**: QuickDraw GX uses Apple's ColorSync technology to make color output predictable through the entire creation process — from the scanner, to the monitor, and finally in the printed output. Of course, your scanner, color printer, and so on require ColorSync "profile" files, of which there aren't many yet.
QuickDraw GX: slow on the draw

The moral of QuickDraw GX is, of course, the same as the moral of System 7.5, or Drag and Drop, or Publish and Subscribe, or any new Apple technology: Apple's software wizards have laid the groundwork. Utopia won't arrive, however, until every company who makes Mac software plays ball, goes back to the drawing board, and incorporates Apple's latest vision into its programs. In this case, the equipment makers have to work, too: you need to get a GX-savvy printer driver for whatever printers you work with.

At this writing, many major programs either ignore GX's smarts or don't work with GX at all. Unfortunately, many companies live the dream of cross-platform compatibility; they want their Mac and IBM/Windows programs to look and feel identical. In other words, they don't want to incorporate GX into their programs, because then their Windows (IBM-style) programs would be left behind. As a result, don't expect to see very many GX-savvy programs right away.

More bad news: The GX printer drivers that get automatically installed into your Chooser are an all-or-nothing proposition: you can't choose a non-GX printer driver without turning off the GX extension and restarting the Mac. Kind of makes you wish you could return from a desert island in two years, when the world will have decided on one font format and printing method.

The PostScript Printer Guidebook

Believe it or not, a Postscript laser printer is an actual computer unto itself. Most models contain a Motorola 68000-series processor, just like a Mac. And if you still need convincing, consider a laser printer's price: even in the days when the original LaserWriter cost $6000, the printer cost as much as, or more than, the computer itself.

Fortunately, using and maintaining this second computer of yours isn't nearly as complicated as using the first one (your Mac). But there's still plenty to learn.

Background printing

Background printing means that you can keep working on your Mac while your document is being printed. Without background printing, your Mac simply displays a "Now printing" message for as long as the printing takes. You can move the mouse, but you can't type, use menus, click buttons, or get any work done at all until the Mac's attention returns to you.

Under System 6, background printing is only available if you use MultiFinder; in System 7, background printing is always an option. And, though we're discussing background printing here in the context of PostScript printers, some non-PostScript printers (notably the StyleWriter and DeskWriter) can also print in the background.

In all cases, the on/off switch for Background Printing is in the Chooser. Just open the Chooser, click the icon representing your printer, and click On or Off (see Figure 25-14).
Printing is faster if it’s the Mac’s only focus of attention. Therefore, when you’re in a hurry, and you have no additional work to do on the Mac, turn Background Printing off.

The messages you see during printing

Whether printing is foreground or background, a series of status messages appears on your screen while the printing is going on. (If you’re printing in the background, you can’t see the messages unless you pull the self-launching PrintMonitor program to the front. More on PrintMonitor in a moment.)

“Looking for LaserWriter”

The first message you see is “Looking for LaserWriter: Claire’s Printer” (or whatever you’ve named the printer that’s selected in the Chooser). (In the early days, we actually got calls from panicked novice Mac-using friends. They couldn’t figure out why the Mac had to go looking for the LaserWriter when it was sitting right next to the Mac...!)

In reality, this message simply means that the Mac is trying to confirm that your Chooser-selected printer is attached and turned on. If not, the message will change momentarily to tell you that the printer is “not found.”

“Initializing printer”

Each time you turn on your PostScript printer, it has to be initialized. (The Mac doesn’t bother to initialize it until you actually try to print something.)

When it initializes a PostScript printer, the Mac transmits a printer-preparation file to the printer. (In System 6, this is the file called Laser Prep.) This file contains PostScript instructions specific to the printer driver you installed. (In this age of laser printers that can be shared between Macs and IBMs, initialization tells the printer that it’s connected to a Mac, for one thing.)

Initialization only becomes an issue if you’re on a network of Macs that aren’t all on System 7. In that situation, the “Initializing printer” message precedes every printout. That’s because System 6 uses one set of printer-prep (driver) information, and System 7 uses
another. As a result, the printer continually has to restart itself, disgorging System 6 prep-
file information to receive the System 7 one (or vice versa).

Fortunately, the solution to this time-wasting phenomenon is simple: install the System 7
LaserWriter driver on the System 6 Macs. Now all Macs are using the same printer driver
(which works equally well on both Systems), and the printer will only be initialized once,
when the very first document of the day is printed.

(QuickDraw GX and the new Level 2 Postscript driver from Apple or Adobe, incidentally,
never have to send a Laser Prep file to the printer.)

"Starting job"
After all the preliminaries are out of the way, the task of printing your document begins. In
Apple parlance, each document that you’re trying to print is called a job (see Figure 25-15).

"Processing job"
Now the printer begins to process the printing information from your document. In other words,
it interprets the PostScript instructions coming from the Mac and begins to form it into an
image, so to speak, in its head. This processing process can take seconds, minutes, or even
hours, depending on the complexity of the document and the number of fonts used in it.

What a difference RAM makes
We mentioned that a printer is actually a computer unto itself because it has its own
processor chip. It’s like a computer for another reason, too: it has its own memory.

While 2MB may be enough memory for a typical Mac application, 2MB in a printer is barely
enough to process a single letter-sized page with a couple of different fonts. The original
Apple LaserWriters had less RAM than that, and they had constant problems printing
complex files. (Ever try to print a legal-sized document on an original LaserWriter? If things
went your way, you’d get a legal page with inch-and-a-half margins. Even the newer
LaserWriter II NT was never quite at home with legal-sized documents.)
The telltale print job

When you're connected to a network of Macs and printers, you've got no privacy.

We know a woman who landed in some serious hot water at the PR firm where she worked. She'd been thinking of quitting her job there for weeks. Just when she got up the courage to start sending out résumés to other companies, her boss called her into his office. He demanded to know why she was spending company time and resources seeking a new job.

She was flabbergasted. How could this guy have known? She hadn't told a soul she was planning to leave! Actually, she'd told everybody. She had failed to realize a simple fact: when you print on a network, anybody else who's trying to use the same laser printer gets a message on the screen that describes what that printer is doing.

The woman hadn't changed the name of her résumé. Her boss had tried to send a document to the same laser printer. And the message on his screen said "Now processing job: Pam '92 Résumé." He didn't have to be a rocket scientist to guess what she was up to. (And he was glad he hadn't yet installed the new PostScript Level 2 printer driver, which no longer announces documents' names over the network.)

You can install additional memory into most current PostScript printers. That's lucky, since hardly any printers come with even enough RAM to handle complex graphics and text on full-width, legal-size pages. And the situation's only going to get worse: all of the latest printing features — Level 2 PostScript, for instance, or Apple's FinePrint and PhotoGrade enhancements — suck up RAM with abandon.

Brand upgrades

Speaking of upgrades, it's worth bearing in mind that you can upgrade from one Apple LaserWriter to another, as long as you stay within the brand name line. You can upgrade a LaserWriter II SC to a IIIf or IIg, a Personal LaserWriter to a Personal LaserWriter NT or NTR, a Select 300 to a 310, and so on.

LaserWriter Pro upgrades

Adding memory to the LaserWriter Pro is a tad complicated. These printers contain one double-sized, 80 ns, 72-pin, 8MB RAM chip.

Unfortunately, these printers have a little quirk. The LaserWriter Pro has two memory banks. But if there's a double-sided SIMM in one slot, as there is when you first buy the printer, each side of the chip is recognized as an individual bank. Therefore, you can't add another 8MB SIMM to the second bank to get a total of 16MB RAM — a rude surprise for a number of people we know.

The only way to get more memory in the LaserWriter Pro is to remove the existing 8MB SIMM from the first slot and replace it with a 16MB SIMM. To reach the maximum 32MB capacity of the Pros, you have to add two 16MB SIMMs (which is apt to leave a growing market of partly used 8MB chips out there).
LaserWriter Utility

We first mentioned this oddball, forgotten, underdocumented gem in Chapter 4. It's a program that Apple throws onto your System disks. Yet it doesn't get copied to your hard drive by the Installer. It lurks on a Tidbits disk, perhaps, deep in a folder, waiting for you to read this book and learn of its existence.

Formerly the LaserWriter Font Utility, this performs a collection of useful tasks related to using your PostScript printer.

Naming the printer

When System 7 first came out, our clients kept asking: "Isn't there a way to name printers anymore?" (In the pre-System 7 days, you got a special little program called Namer with your laser printer. You used it to give your PostScript printers names so that each would show up in the Chooser with a different title. Otherwise, you wouldn't know which printer you were selecting. But there's no Namer in System 7.)

There are two ways out of this dilemma. The first trick is our own little inside workaround: pull the printer driver (called LaserWriter) out of the Extensions folder (where System 7's Installer places them). Put it loose in the System folder. Now you can use the old Namer program, which will find the driver and be able to rename the printer.

The officially sanctioned method, however, is to use Apple's LaserWriter Utility.

Printing a PostScript file

There's a strange new option in System 7's Print dialog box (which appears whenever you choose the Print command): PostScript File (see Figure 25-16).

![Figure 25-16: The PostScript File option (new in System 7), as indicated by the cursor in this illustration.]

When you select this option, the Mac creates a new file on your hard drive, containing PostScript instructions for whatever you just tried to print. (See "PostScript — The Language" earlier in this chapter for more on PostScript files and why they're useful. And see "PostScript printing Secrets," earlier in this chapter, for info on making PostScript files in System 6.)
Only trouble is, nobody bothers to tell you how you print a PostScript file after you created it—a rather crucial step, we think. The LaserWriter Utility (LU) is your answer. Choose Download PostScript File from the Utilities menu. You’re asked what file you want to send to the printer; find the PostScript file you created earlier and open it. Provided your PostScript printer is on, the file finally prints.

**Downloading a new font to the laser printer**

You can also use the LU to download a font to the printer.

A PostScript laser printer comes with a certain set of fonts built in: Times, Helvetica, and Courier at least, and usually Avant Garde, Palatino, and a few others. If you want to print using a laser font that’s not built in—Bodoni, say—you must send (download) that font to the printer before printing the document.

Fortunately, most well-behaved programs do this font downloading automatically. (Even LU itself, when downloading a PostScript file you created, downloads any necessary fonts before printing.) Now you know why certain text documents take longer to print than others: the Mac needs extra time to print any document that contains a font not already built into the printer.

You can avoid this time delay—well, divide it up, anyway—by sending the fonts to the printer separately. You may do this, for example, when you’re on a deadline and the designer is still working on the document. You can get the printer ready by sending the fonts to it ahead of time.

To send the fonts, choose Download Fonts from the File menu. You see the dialog box shown in Figure 25-17, but it will be empty. Click Add and navigate your way to the System folder (System 6) or the Extensions folder in the System folder (System 7 and 7.01) or the Fonts folder (System 7.1 and later). Find the name of the laser font—it’s the name of the regular font minus a few letters. (For example, Palatino Roman’s printer font is called PalatRom.) Double-click its name and then double-click the names of any other fonts you want to send to the printer.

When you click Done, you return to the dialog box in Figure 25-17 where the fonts you selected are now listed.

Finally, click Download. If the printer is, in fact, on and connected to your Mac, LU sends the font information to it.

**Remembering the font: the printer’s task**

One additional little Secret about downloadable fonts: If you send a font to the printer using LU, the font stays there in the printer’s memory until you turn off the printer.

But if a program downloads a font in the course of printing a document, it immediately flushes that font from the printer’s memory as soon as the document is finished printing. This flushing does make your printer ready for its next task, and it does save printer memory. But it makes documents take longer to print because fonts have to be loaded first and flushed after. That’s why, if you plan to do lots of printing involving the same downloadable fonts, you should use LU to send the font before printing the document.
Finding your printer's fonts

Of course, you have a general knowledge of which fonts your laser printer has built in. But it may be wise to know more specifically; any document you prepare using the built-in fonts will print faster than one that uses downloadable fonts.

A quick, paperless way to find out is to use LU’s Display Available Fonts command (File menu). After consulting your printer, the program shows you a list like the one in Figure 25-18.

The Display Available Fonts command can be especially useful in troubleshooting printing problems. It doesn’t just list the built-in fonts; it shows all available fonts, including those that you downloaded to the printer manually.
Printers with hard drives: Are they worth it?

If you've got a large font library or need to use lots of fonts in a single document, having a printer with a hard drive may be an easy way to increase printing speed. Rather than storing a font in RAM, the printer reads it off the disk. (You copy the printer fonts, not the screen fonts, onto this specially formatted hard drive.) The delay that's usually introduced by the Mac downloading the necessary font files from your Mac to the printer is eliminated.

Of course, only certain printer models accept a SCSI drive. Furthermore, only certain hard drives can be formatted, using the LaserWriter Utility, as a “Printer's Disk.” (Ask before you buy!)

Here's yet another wrinkle: If you use Adobe Type Manager to clear up the jaggies on your screen (or even if you use TrueType fonts), you still have to keep a duplicate copy of each printer font on your Mac. That's because ATM (or System 7, with TrueType fonts) needs to have access to the printer font to provide clear screen display. Keeping the fonts on a hard drive attached to the printer does save you time, but unfortunately, it doesn't save you Mac disk space.

PostScript printer Secrets

How to extend toner-cartridge life

Every printer has a dial (or a software control) that adjusts the darkness of the printing. The lighter the setting, the less toner gets used up. While you're working toward the final draft of your document, consider printing at lighter settings to conserve toner.

Working Software's Toner Tuner, an extension, gives you a huge amount of control over how much toner is used for each print job (408-423-5696). In fact, you can specify that only ten percent of the normal amount be used (or any percentage you choose). At that setting, printouts are a faint gray, but your cartridge lasts ten times longer, and you can still proof the text and the graphics.

Save bucks on cables

You're supposed to connect your Mac to a PostScript laser printer with two PhoneNet or LocalTalk connectors (about $40 each) and cabling. If you're a one-Mac operation, however, we've found that a plain old $15 StyleWriter cable works just as well.

We love repeating this trick because it always works for us, and it's a big money saver. We're sometimes told, however, that such an arrangement can pose problems for certain PostScript printers (we can never get anyone to be specific, however).

Eking out a few more pages

When your printer reports that the toner cartridge is out of powder, this old trick can squeeze out a few desperate additional pages.
Remove the cartridge (remember, you're supposed to do any cartridge-removing in dim light). Tilt it gently from side to side so that you redistribute what remaining powder there is inside the container. Replace the cartridge. You should now be able to print a few dozen or even a few hundred additional pages.

**Refilling cartridges**

A typical laser printer toner cartridge lasts for between 2000 and 6000 pages, depending on the model and the type of work you do. Inevitably, though, it gives out. Copies become lighter, and you may see the dreaded amber light appear on your Apple laser printer.

Both Apple and Hewlett-Packard have joined the conservation movement and include shipping labels you can use to send your spent cartridges off to the recycling plant. Some local business supply stores even give you a few bucks for the used cartridge. (They send your used cartridge off to a recharging plant to refill it with toner.)

You can save quite a lot of money if you use refilled cartridges. However, the quality level varies considerably. You may find the printing too light or too dark for your taste; sometimes fiddling with the density control will fix this. You also may find that toner coverage isn't always even across a page, and reproduction of gray-scale matter isn't up to the brand-new variety.

On the other hand, a refilled cartridge may work just beautifully.

The only advice we can offer is to get a recommendation from a friend or coworker, or local user group. You might ask the recharging service for some sample pages. It’s not a bad idea to insist on a money-back guarantee. If you're happy with the service and quality from a certain cartridge-refilling company, stick with it; you're onto a good thing. (In any case, you can’t damage your printer by using a recycled cartridge.)

**Multiple pages in manual feed**

Most people think of the manual-feed slot on a laser printer as a one-page-at-a-time mechanism. You can, however, get a laser printer’s manual feed to work with multiple pages automatically — if you master a simple technique.

Fan your stack of paper slightly so that the leading edge of the stack looks like a little staircase. Gently slide the stack into the printer’s manual feeder, being careful not to disrupt the “staircase.” The printer should now be able to grab the pages one at a time.

Depending on your printer, you should be able to reliably feed several pages using this method. Don’t make the stack too thick (five pages seems like the maximum) and don’t overdo the fanning. If the pages are staggered more than a couple of millimeters, they won’t feed continuously.

**Manual feed part II**

If you’re a former System 6 user who uses Background Printing and who occasionally prints manual-feed pages, you may be less than pleased when you switch to System 7. Every time you print with System 7’s Background Printing feature turned on, you’re told, for every page, that PrintMonitor requests your attention. You have to choose
PrintMonitor from the Application menu. A message appears saying that "the LaserWriter is waiting for a sheet of paper." As they say, this is a feature, not a bug.

Fortunately, you can use the preferences in PrintMonitor to rid yourself of this warning. Launch PrintMonitor (if it's not already running, you can double-click its icon in the Extensions folder of your System folder). From the File menu, choose Preferences. In the dialog box that appears, choose "Give no notification" (see Figure 25-19).

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**Figure 25-19:**
PrintMonitor lets you control what degree of annoyingness it uses to get your attention when you're doing manual-feed printing.

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**Squelching the startup page**

We certainly hope that your laser printer doesn't still spit out a pointless and wasteful startup page every time you turn it on. Nobody knows why they set up laser printers to do this, but it annoys the heck out of most people. (It doesn't thrill the rain forests, either.) And making the laser printer stop spitting out startup pages is so easy!

Turn the printer on. Launch the LaserWriter Utility. From the menu, choose Startup Page Options. Click Off (see Figure 25-20). Wasn't that easy?

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**Figure 25-20:**
Make the start page stop!

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**Printing envelopes**

Envelopes frequently jam when going through a laser printer because they're too stiff to bend around the mechanism of the paper path. This is especially true of the newest generation of printers, where the paper path is narrower and curvier.

The low-tech solution is extraordinarily simple and takes about two seconds. Before printing, "break the spine" of the envelope. Run the flap edge of the envelope between your thumb and forefinger, bending it at about a 45-degree angle as it passes through. Do this twice, bending once in each direction so that the envelope ends up flat. Avoid paper cuts entirely by folding the flap over backwards.

For an even better pass through the printer, break the stiffness along both edges. This makes the envelope more flexible and the likelihood of jamming is reduced.

**Two more envelope-feeding tricks**

A simple solution to jamming envelopes is to open the door at the end of the LaserWriter II so that the paper path is straight. Almost every PostScript laser printer has a similar door or latch in the back, which makes the paper slide straight out the back of the printer instead of curling into the normal output tray.
One more thing: Stick with plain bond paper for envelope stock if at all possible. The very thick, rag-based papers seem to fare worse when traveling through a laser printer.

**Printing on letterhead paper**

Letterhead creates an interesting problem because you normally use one kind of stationery for page one and blank sheets for additional pages.

If you have a one-tray printer, place the first page in the manual feed slot; print it first. Then print the rest of your document (from page two to the end) in a separate pass.

Letterhead printing can be made much simpler if your printer has two different trays; its printer driver (or the new Level 2 printer driver) offers a built-in option to take page one from one tray and additional pages from a different tray.

**Preserving your prints**

A laser printout is, after all, just a bunch of black dust that’s clinging to the paper. As such, the black stuff can be prone to chipping, smearing, or peeling.

To minimize these aftereffects, our desktop-publishing friends swear by this technique: go to an art-supply store and buy a can of a spray-on fixative. Hold the can far away from the page and spray a very light coating.

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**PrintMonitor**

PrintMonitor is one of the most powerful, intelligent, and useful programs on the Mac. It can also be the biggest headache.

Despite the confusing fact that it resides in your Extensions folder, PrintMonitor is, in fact, an application. Yet you probably can’t ever remember double-clicking its icon. That’s because PrintMonitor launches itself, unbeknownst, almost ghostlike, every time you print a file when Background Printing is turned on.

On pre-QuickDraw GX Macs, PrintMonitor is Apple’s print spooler. When you use the Print command, the Mac creates a spool file on your hard drive — to be specific, the spool file is stored in the PrintMonitor Documents folder, inside the System folder. (A spool file is a disk-based version of the printout that waits its time to be sent to the printer.) PrintMonitor now takes charge of the printing process. It grabs the first spooled file and directs it to your chosen printer. When the Mac’s preprocessing of the file is done, PrintMonitor quietly departs from your screen, even if the pages haven’t actually come out of your printer yet.

When things go smoothly, it’s entirely possible that you’ll never even be aware of PrintMonitor’s existence. Unless there’s a printing problem, the only way you’d know that PrintMonitor was running is the fact that it’s listed, temporarily, in the Application menu.

Remember that PrintMonitor only plays a role in printing if you’ve turned on the Background Printing option in the Chooser. If you intend to print one document at a time and take a coffee break while printing is in progress, you may not even need background printing.
But to use your time most effectively, it’s more convenient to have your Mac multitask and process the job in the background. You do pay a small price for using background printing, both in the time it takes a document to print and in the peppiness of your Mac while things are being printed in the background.

Under System 7, the PrintMonitor window remains hidden even when it’s running. You can, however, bring it forward (while it’s running) by choosing its name from the Application menu. (In QuickDraw GX, just go back to the Finder, and use the Printing menu.)

You can also summon PrintMonitor on command (to change its settings, for example), even when you’re not printing anything. Just go to your Extensions folder (System 7) or your System Folder (System 6) and double-click the PrintMonitor icon. It launches just like any other application. After changing your settings using the Preferences command in the File menu, you can make PrintMonitor go away just by clicking on the desktop (unless, of course, PrintMonitor is actually processing a document).

**PrintMonitor Secrets**

*The great PowerBook delayed-printing Secret*

Some PowerBooks, such as the 500 series, can do the time-consuming dirty work of printing (processing the document and converting it into instructions for the printer), even when it’s not convenient to print. (We’d say that typing at 39,000 feet is one example of an inconvenient time.) That is, if you try to print when no laser printer is attached, you’re offered a Print Later button. When you finally arrive at an available printer, all those stored printouts are automatically dumped onto paper.

If you own any other Mac model, however, or if you generally print to a non-laser printer, here’s how you can use PrintMonitor to accomplish the same thing.

Make an alias of your Print Monitor icon (which lives in the Extensions folder of your System folder). Put the alias somewhere handy: on the desktop or in your Apple menu. (System 6: Just put PrintMonitor itself on the desktop.)

When you’re on the plane and ready to print, launch Print Monitor, and choose Stop Printing from the File menu. Nonsensical though it may seem, now start printing your documents! Obviously, nothing actually prints, but Print Monitor preserves the printouts in disk form, in your PrintMonitor Documents folder.

When you finally are hooked up to a printer, launch PrintMonitor again. From the File menu, choose Resume Printing. Your suspended printouts will start spewing forth. (They’ll also start printing automatically the next time you turn on the PowerBook.)

You can use this same technique on non-PowerBooks, of course — to prepare printouts while your printer is busy or turned off, for example. And you can use QuickDraw GX’s Printing menu (the Stop Print Queue command) to accomplish the same thing.
Excuse me, what’s Backgrounder?

Backgrounder is an init that handles Background Printing under System 6. It’s not needed under System 7.

Background printing and PageMaker

If you’re using any version of Aldus PageMaker before 5.0, you won’t be able to use Background Printing unless you select the Apple printer driver. To do so, press Option as you choose Print from the File menu.

What SPOOL stands for

Ever wonder about the derivation of the term print spooler? We always assumed the word spool is a metaphor: your printed documents are waiting to be printed, like thread waiting to be pulled off a spool. But in fact, SPOOL is an acronym meaning Simultaneous Peripheral Operations Off-Line. (We like our thread explanation better.)

Notes on Color Printing

Color inkjet printers

If you want a bargain-basement color printer, maybe a little zest to spark up a flier you’re printing up, you might consider a color inkjet. The most popular example is the DeskWriter C, into which you can install an optional three-color ink cartridge that contains three of the four primary printers’ colors (cyan, magenta, and yellow). The DeskWriter C takes several minutes to prepare a page for printing. And the fact that black, the fourth printing color, is missing from the color ink cartridge means that solid black illustrations or type have a brown-black color. The DeskWriter C costs about twice that of the plain DeskWriter.

A more recent candidate is the Apple Color StyleWriter. It costs less than $600, it’s compact, and its printouts are impressive. From three feet away, we’ve seen printouts of scanned color photos that look convincingly like the real thing — definitely an improvement over the DeskWriter C. The Color StyleWriter is also a vast improvement over the Apple Color Printer. This SCSI-attached printer uses four built-in ink cartridges, capable of spraying out the four primary colors. You get clear, solid black images, and you can print on 11 x 17 paper, but the price and quality aren’t very impressive.

There are more expensive, more full-featured products in the marketplace, but most Mac users usually look at these low-cost inkjets before buying into color. These are QuickDraw printers, but true PostScript inkjet printers are on their way to the marketplace; some, like the color printer from LexMark, can already be termed affordable.
Color separations

Printing on a Color StyleWriter or even a color PostScript printer is fine for printing a color flier or two. But when you want to publish thousands of copies of something, or when you’re doing professional work, you need the help of professionals. You need to take your files to a shop that can generate color separations.

Four-color printing used to be a photographic process. Today, separations are typically generated by high-end digital scanning equipment from such companies as Hell, Crosfield, and Scitex. Instead of being shot through a series of filters, as in days of old, your graphic is scanned, and the color information is separated electronically into its component four colors: cyan, magenta, yellow, and black. That’s where the terms four-color printing and color separations come from.

The Mac can save you some steps and give you more flexibility. You can perform the scanning, placing, and separating yourself. Depending on your quality requirements, however, you’ll need some expensive equipment. And you’ll need to work closely with your print shop’s staff to figure out the best settings for the separations.

Before you take the plunge into desktop separation, study the subject. You’re going to get involved in such arcane arts as trapping and choking. Violent though these terms sound, they’re techniques for handling colors that abut each other on the page, to avoid leaving a gap if the color plates aren’t precisely aligned when the printing begins.

Prepare carefully for a trip to the service bureau to print film. A normal imagesetter isn’t always capable of providing precise enough registration for high-quality color. In other words, one plate may not line up against another. You don’t want to find that out after you’ve spent serious money for four-color printing.

Secrets of the Service Bureau

So now you’ve run proofs of your work. It looks absolutely perfect, and you want to take it over to your friendly Lino shop for high-resolution output. Before signing a work order, be certain your job is absolutely ready to go there. Here are a few tips we’ve gleaned from the School of Painful Experience.

Service bureau checklist

- **Fill out the form.** Most service bureaus give you a job ticket or order form on which you describe the files you’re sending. To avoid delays and extra expense for the staff to fix errors for you, answer every question.

- **Check the software.** Every service bureau has the popular programs on hand, such as Illustrator, PhotoShop, PageMaker, Word and QuarkXPress. But if you’re using less ubiquitous programs — Canvas, Publish-It Easy, and ReadySetGo, for example — find out if the service bureau has it. And check the version number. If your version is more recent than the service bureau’s, they may not be able to open the files at all.
List the fonts. Next to missing graphic files, the Number One source of output problems at a service bureau is missing or mislabeled fonts. You don't want to find your carefully kerned Garamond text coming out with different line breaks, in Courier, when the job is sent back to you. (Particularly since you'll still be obligated to pay the bill; service bureaus aren't responsible for your mistakes.) The service-bureau technician won't even know there's a problem, unless you provide a printout to check the work against. Font substitutions may also occur if the ID numbers of the fonts on your Mac don't match those at the service bureau. This is a problem only if your application thinks of your fonts by ID number instead of by name. In such a case, ID number 1578 may be Palatino on your Mac, and Brush Script at the service bureau. Fortunately, most modern applications, such as PageMaker, QuarkXPress, Word (5.0 and later), and FreeHand, identify fonts by name.

Also take a moment to notice the manufacturer of the font. Most service bureaus have a decent selection of Adobe fonts. But if you've got a collection from Bitstream, the Font Company, Image Club, Monotype, or another foundry, you'll run into trouble if the service bureau doesn't have the same version you have.

Be wary of TrueType. An important note for System 7 users: not every service bureau can use TrueType. Older imagesetters' RIPs (controlling computers) may need a hardware update to work with the new font format, and some service bureau owners may not want to make such an investment (which can cost thousands of dollars). Before choosing fonts for a particular document, call your service bureau about this first.

Make a last check. Before you pack up your work or send it via modem, make test prints on your own printer. The service bureau needs a test print to verify that the work has been printed satisfactorily. If your document takes 45 minutes to print on your desktop laser printer, it will take much, much longer on an imagesetter. If it won't print at all for you, don't expect the imagesetter to do any better.

PostScript files: the pros and the cons

If your service bureau doesn't have the program or font you used to create your document, you may be tempted to save the file as a PostScript file (see "LaserWriter Utility," earlier in this chapter). As we mentioned in "PostScript printing Secrets," PostScript files are easy to make under both System 6 and System 7.

But sending PostScript files to the service bureau requires some thought. Talk to the technicians. You may need to configure the Page Setup box in your publishing program to match the requirements of the printing shop. You might also require a special printer description file to customize the setup for their imagesetter, to get proper page sizes and screen settings.

Above all, you have to be absolutely certain that your document is perfect! Unlike a regular document file, where you can always make last-minute changes, a PostScript file is practically etched in stone. A PostScript expert can, in theory, open up the file, scroll painstakingly through it, and perhaps change a misspelling for you. But he or she will bill you at a high hourly rate for such exasperating work. A PostScript file is essentially a one-way street; don't take the plunge without setting it up carefully.
Service Bureau Secrets

Don't use Helvetica Narrow
Yes, we know, Helvetica Narrow is a common font on PostScript laser printers. Weirdly, it's not common on imagesetters. If you must condense Helvetica, use the horizontal scaling feature in your page layout program, or buy Helvetica Condensed, which actually looks far superior.

Don't use PICT
Don't save your graphics in PICT format. That's a strange piece of advice, isn't it? You'd think PICT would be the perfect choice. It's the Mac's most basic and common graphics file format (see Chapter 20).

But professional imagesetters aren't Macs. They've been known to hang up for agonizing periods when sent a PICT file. Instead, save bitmapped images (paintings, such as Photoshop images) in TIFF format, and save object-oriented graphics as EPS files. These files take huge amounts of disk space, but they'll be much surer (and quicker) to print.

Scan ahead
When using scanned images, scan efficiently. Don't save gray-scale or monochrome images as color TIFF files; save them as regular TIFF files. Furthermore, scan gray-scale and color images at no more than twice the line screen you want in the final output (see Chapter 26 for details on line screens). Scanning an 85 lpi photograph at 300 lpi not only produces an unmanageably huge file but may very well choke the imagesetter's RIP.

The page-layout trap: non-embedded graphics
QuarkXPress doesn't actually embed your graphics into the page-layout document itself. Instead, it simply keeps track of where that graphics file is on your hard drive. The nice result of that system is that the document file remains small. The not-so-nice result is that it's extremely easy to leave important graphics behind on your hard drive when you send the Quark file to a service bureau for printing! (PageMaker, which used to store graphics within the document, can now use this on-disk referral system, too, so that it requires the same amount of caution.)

Before leaving for the service bureau, be certain that you have included every graphic file used in the document. Make sure that you are sending the exact version of the graphic file that's linked to the document (otherwise, the service bureau will get an unfriendly warning when they open the file). And don't rename the files either. If you do, the page-layout program will simply report the graphic file as "missing."

Slide printing tips
To get a presentation that you created on the Mac — in Persuasion or PowerPoint, for example — transferred to slides, you have to send your file to a service bureau equipped with a film recorder.
A film writes the image onto the slide in horizontal lines. Therefore, although your presentation software may make it easy for you to create stunning gradients (ramps of graduated color) that change in density from left to right or diagonally, bear in mind that film recorders can take a long time to process such a slide.

A gradient that changes color from top to bottom, on the other hand, won't be nearly so challenging for the film recorder. (We're not saying that you shouldn't use diagonal blends; we're just pointing out that such designs may carry a price.)

## Printing Troubleshooting

After all is said and done, it doesn't matter if you're using a QuickDraw or PostScript printer, Level 1 or Level 2, in the background or foreground, if the document won't print right.

What put the Macintosh on the market was its ability to display an image that closely matched the one that came out on the printed sheet. But the trip from screen to printer isn't always an easy one, and things can change across the way.

### Screen resolution

For example: Not all Macintosh monitors have true WYSIWYG screen resolutions to begin with. Today, you can't count on a monitor's being 72 dpi. Some PowerBook models cram more than 90 dots into every inch; the Apple 12" monitor had fewer than 70 per inch. It's therefore possible that the screen image may be slightly larger or smaller than the printout.

### Low-res screen, hi-res printer

There's also quite a bit of difference between the 72 dpi display of a monitor and the 300 dpi (or higher) resolution of a printer. Very fine details of a document simply can't show up on the screen; they won't show up until you actually print. Two common examples: the letter-spacing of type may be off, and graphics may not be positioned as precisely as you thought.

Some publishing programs (and some word processors) let you zoom in, magnifying your document on the screen. Only then can you see the fine points of the text you're about to print.

### The printer-driver difference

Different print drivers may have different effects on the output. In other words, the way the words fall on each line, and the way the lines fall on each page, may actually shift considerably depending on which icon you selected in the Chooser! (This is primarily a problem when printing documents on a laser printer when the ImageWriter was selected in the Chooser.)

The solution to this problem, then as now, is simple. Before finalizing your document's layout, open the Chooser. Select the printer driver you'll ultimately be printing with, even if no such printer is connected to the Mac!
PostScript versus QuickDraw

As we mentioned earlier, the kind of image you're printing and the kind of printer you're using may also cause unexpected results. A QuickDraw printer may have trouble printing rotated text or graphics that you prepared in Illustrator, for example.

Font problems

The difference between the way type appears on your screen and on the printed page may be due to simpler reasons, too. If you're using a PostScript font, the printer-font portion (see Chapter 24) may not have been installed correctly.

Furthermore, among the popular font families such as Times, a raft of font-conflict problems may zap you. Believe it or not, there are two different screen versions of the common fonts — one each from Adobe and Apple. They are named and designed similarly, but their actual letter spacing is different. It's perfectly possible, therefore, that your printout (using the laser printer's built-in Times font) might not match the screen (which uses the Apple screen font). Likewise, if you've installed both the TrueType and PostScript version of the same font, the document may look fine on the screen, but the printed results may be unpredictable. (See Chapter 24 for details on printed deviations from TrueType on-screen display.)

Even worse surprises may result if you get caught in the snarl of competing font companies with fonts of the same name. Two fonts of the same name from different suppliers may differ in their metrics (width and height information).

Color differences and ColorSync

Color work can be ever more complex. Each brand of monitor has a different overall color tone and gamma setting (see “Monitors control panel” in Chapter 3). Chances are good that the colors you see on the monitor won’t quite match the ones produced on a color printer.

To get around the differences in desktop color, Apple has created a technology called ColorSync. It’s a system of calibrating your color monitor so that its colors match those printed by a particular color printer. (Several competing products, such as EfiColor, are also gaining popularity.) ColorSync works very well among Apple products — monitors, scanners, printers — but the required “device profile” files aren’t readily available for color products from other companies.

Our favorite upcoming printing technologies, Level 2 PostScript and QuickDraw GX, will also help lessen the disparity between display and printed color.

Font and graphics problems

Question: My document prints, but the fonts are coming out all jagged. What’s wrong?

Answer: See the section of Chapter 24 called “Why Text Prints with Jaggies.”
Question: I'm trying to print out a document with an Illustrator EPS file containing Futura, but I'm getting Courier instead. Why can't this printer work properly?

Answer: You should first suspect that your printer font isn't properly installed. Once again, see Chapter 24.

Next, you may simply be overwhelming your printer's memory. Try using fewer fonts.

Finally, check to see if you selected "Unlimited Downloadable Fonts" under Options in your Page Setup box. If so, fonts are flushed from the printer right after use, to make way for new fonts. It's a way of managing printer memory better. But if a font is used only in an imported graphic (and not in the publishing or word processing document itself), the fonts may not be downloaded properly, and font substitution may result.

You have two ways out: First, use that font in the text of your document (color it white if you don't want it to show up in your printout). Second, turn off the Unlimited Downloadable Fonts option.

Question: My illustrations looked beautiful until I imported them into my publishing program and printed them; now they're printing bitmapped and jagged. What's wrong?

Answer: In most publishing programs, such as QuarkXPress, the image you see on the screen is only a stand-in for the actual EPS file, which resides safely on your hard drive. When it comes time to print, Quark consults the file on the disk in order to print.

If the EPS file has been moved or renamed, Quark does the only thing it can: prints the low-resolution PICT representation of the file that's used in the on-screen document. This PICT portion of the EPS file may look fine at the 72 dpi of your Mac's screen, but it will look chunky or ragged when printing. The solution is to re-import the EPS file from wherever it now lies.

Question: Why can't I print my FreeHand files on my Style Writer? They either don't print, or they come out jagged and bitmapped.

Answer: Illustrations done in FreeHand and Illustrator are PostScript graphics. The best a QuickDraw printer (like the StyleWriter — or most fax/modems, by the way) can do is to print the PICT portion of the image, if it's available. This is one instance where owning a true PostScript printer actually makes a difference. (If you're willing to throw a little time and money at the problem, you can buy a software program like Freedom of Press, which does a good but slow job of printing PostScript graphics on a non-PostScript printer.)

Question: I decided to use TrueType because I bought System 7, but now my PageMaker documents are printing in Courier instead of Helvetica.

Answer: Versions of PageMaker before version 4.2 aren't compatible with TrueType. The workaround: download the TrueType font directly to your printer, using the LaserWriter Font Utility (covered earlier in this chapter).

Or, alternatively, use the Apple printer driver instead of the Aldus driver. (In PageMaker, press Option as you choose Print from the File menu.) You won't be able to choose from among custom page sizes and custom screens (unless you've got Apple's Level 2 PostScript driver installed), but you'll get your document printed with the right fonts.
General printer errors

Question: I sent a six-page file to a LaserWriter. After about a minute, I noticed the menus took forever to drop down and the mouse seemed to be ignoring my clicks. Then, all of a sudden, things began working again. Then the cycle would repeat. I ran Norton Utilities and it said, "PrintMonitor was damaged..." so I replaced it. Weird.

Answer: When something goes wrong in the printing process, the system software takes a few seconds to digest the message. During that time, you may think the system has crashed. Then, in a moment, things will start working fine again.

As for the PrintMonitor damage: there's a bug in System 7.0 and 7.0.1. It sometimes causes PrintMonitor to quit unexpectedly or to become corrupted. Fortunately, there's an easy workaround: don't quit the program you're printing from until the printing is over.

Fortunately again, there's a simple longer-term fix: install System 7 Tune-up, Version 1.1.1. (Get it from an Apple dealer, a friend, or an on-line service.) The PrintMonitor problem was fixed in System 7.1.

Question: I've noticed a similar problem with all recent Apple printer drivers: When first printing, I get a dialog box asking if I want the memory size of PrintMonitor increased. After one or two times, everything is okay.

Answer: This is normal. When you first install your System software, PrintMonitor comes with a memory allotment of only 80K. Often, that isn't enough to spool a document efficiently. Fortunately, the System software is smart enough to figure out what's going on, and it offers to boost PrintMonitor's memory allotment to avoid the problem. (Apple's Level 2 driver comes with a version of PrintMonitor whose memory allotment is preset at 130K.)

It's easy to give your current PrintMonitor more memory. Select its icon (in the Extensions folder under System 7); choose Get Info from the File menu; and type a larger number into the Current Size or Preferred Size box. That should eliminate the "increase the memory size" messages and give you faster printing in the bargain.

Question: Whenever I try to print, I get an out-of-memory message. I've already followed your instructions in the previous trick and increased PrintMonitor's memory allotment. I'm using System 7. What am I doing wrong?

Answer: When it's printing, PrintMonitor steals some memory from the Finder, so increasing PrintMonitor's memory may not be the end of your troubleshooting.

You can try increasing the application memory of the Finder, but that's not easily done; if you select Get Info after highlighting the Finder's icon, you won't see any way to change its memory allotment. Solution 1: Restart your Mac with System 6 (if it works under System 6; the newer Macs won't). Then you'll be able to change the System 7 Finder's memory just as you can do with any other application.

Solution 2: Make a copy of the Finder, open up ResEdit, open its Size resource, and increase the minimum memory allotment. (See Chapter 21 for the full particulars on using ResEdit, which is included with this book.) Restart the Mac with the edited Finder in place.
**Question:** I've been getting out-of-memory problems with PrintMonitor on my IIci, which has 8MB of memory. An Apple technician finally solved the problem: it turns out the problem was insufficient free space on my hard drive. Why would that make a difference?

**Answer:** When using Background Printing, the printer driver stores the printout on disk as a spool file, which PrintMonitor eventually gets around to sending to the printer. After it's printed, the Mac automatically deletes the spool file.

Depending on how big and how complex your document is, that spool file can be anywhere from 100K to a few dozen megabytes. If you don’t have enough free space on your hard drive to accommodate this file, your choice is to free up the space or turn off Background Printing.

**Question:** Why can’t I use Background Printing with my Mac LC and StyleWriter in System 7? I could do it when I had System 6.0.7 installed.

**Answer:** You need to upgrade your StyleWriter driver. This problem was fixed in the StyleWriter driver version 1.1. This new StyleWriter driver came with the System 7 Tune-Up and System 7.1 (you can probably get it from an Apple dealer).

**Question:** I just installed the System 7 Tune-Up extension, and now my Microtek PostScript printer doesn’t work. What did Apple do to me?

**Answer:** Ah, you mean the Microtek PostScript-clone printer. The Tune-Up kit includes new, more efficient printer drivers for PostScript printers. Apple tested these new drivers with true Adobe PostScript printers but not with all the clones. Go back to the 7.0 printer driver, or contact the manufacturer of your printer and see if they have a custom driver you can use.

**Question:** Every time we try to print a document from a networked Mac, the printer restarts, or we get messages about the printer being initialized.

**Answer:** It sounds like you’ve got Macs on the network running both System 6 and System 7. These two systems have conflicting PostScript drivers; each time you switch from one to the other, the printer has to be reinitialized.

The solution is simple: install the System 7 LaserWriter driver (the icon called LaserWriter, in the Extensions folder) on the System 6 Macs. You can even install the Level 2 drivers on any Mac running 6.0.7 or later.

**Question:** Every time I try to print a document, I get a message about an “Undefined Offending Command,” and, a few seconds later, another message that the document is “OK, but can’t be printed.” What’s going on?

**Answer:** For some reason, your file is choking the printer; maybe the document is simply too complex.

First, try printing the document one page at a time rather than all at once. If that doesn’t help, go to the Page Setup box and turn off those silly printer effects (Graphics Smoothing and so on). They don’t make much difference in the quality of your output, but they do steal RAM that may be needed to image the document. Another RAM-gobbling option is the Larger Print Area checkbox (in the Options dialog box of the Page Setup box).
Try turning off Background Printing.

Finally, try restarting the printer. This last step flushes out the RAM and gives you a fresh start.

If all else fails, go back to your document and use a smaller number of fonts, or replace some downloadable fonts with those that are built into the printer (Times, Palatino, and so on). Consider making your illustrations less complex. PostScript is a truly wonderful way to produce high-quality pages, but it has its limits.

**Question:** My printing appears to go okay, but when I look at the pages, the image on the edges of the pages are clipped off. What gives?

**Answer:** Turn on Larger Print Area (click Options in the your Page Setup dialog box). If, when printing on legal-size paper, you still have this problem, it may be that your printer doesn’t have enough RAM to process a page of that size. It may be time to get some additional RAM installed, if your printer can be upgraded.

### Complex printing errors

When you work on documents with complex graphics and many font changes, or you’re baby-sitting a high resolution laser printer or imagesetter, the problems get harder to handle.

**Question:** I’m frustrated. If it isn’t one thing, it’s another. When I try to print a file, I get a slew of printer errors. Sometimes it’s “Limitcheck,” then it’s “VMerror,” or “-8133.” On occasion, the printer just restarts.

**Answer:** “VMerror” is what it says: a virtual-memory error. It means that your printer has run out of memory and can’t process your document. You can simplify your document by using fewer fonts, or make the graphics less complex.

The Limitcheck error occurs most often when you’re trying to print a document with a linked EPS file created in a drawing program like Illustrator. It means that there are too many elements (paths or complex patterns).

There are several ways to clean up the document. First, open your document and get rid of elements you don’t need. Just coloring them “white” won’t help (the printer still has to process them anyway).

Second, Illustrator has a pair of settings called Split Path Resolution and Split Long paths, which make it easier for a printer to handle the file. Unfortunately, these options will make it difficult to edit your document later on; you can’t undo the path-splitting process. Make this change, therefore, to a copy of the file.

If you’re using blends, you might have to make them use fewer steps.

You can also turn off Background Printing or restart the printer.
If you've done the best you can, your printer may simply need more RAM. Consider printing the EPS file separately from the document file and then putting them together the old-fashioned way by pasting one atop the other.

That "-8133" error is just a general PostScript error. It means something is wrong; it's no more explicit than that.

**Question:** Every time I try to print a document, the printer resets itself or halts on just one page, but I'm only using one font on that page. What's wrong?

**Answer:** Maybe it's a bad printer or screen font. While the text may appear fine on your Mac's screen, a damaged printer font can prevent the document from being printed.

**Question:** When I try to print blends or halftone patterns on my printer, I get a banding or moiré effect. What can I do?

**Answer:** PostScript can only print 256 different shades of gray, and a standard laser printer can't even lay down that many (only a high-res laser printer or an imagesetter can approach that number).

Some imagesetter manufacturers have developed new software to optimize printing of halftones and blends to get around this limitation. In the meantime, check with the publisher of your drawing or publishing software on how to deal with this problem. Some software publishers can send you technical memos that show you how to calculate the number of permissible steps in a blend. QuarkXPress can automatically figure it for you, as long as you know the target line screen and dpi of your output device.

Just one general hint: Reducing the length of your blend helps since each step in the blend occupies a smaller amount of space, thus reducing the banding effect.

**Poor printout quality**

**Question:** My printouts aren't coming out with even blacks anymore. The black areas look like a dark gray.

**Answer:** Sounds like you're running low on toner powder. In dim light, remove the cartridge and rock it gently to redistribute the powder — then get a fresh cartridge ready to roll when this one gives out.

**Question:** Each page has a regularly spaced blob or spot or dot on it. Do I need a new cartridge?

**Answer:** No. There's a blob or spot or dot on the roller inside the printer. Open the printer (you should probably let it cool since those rollers get very hot). Hunt the surface of the roller for a caked-on piece of toner or crud, and scrape it off with a Q-tip. (This goes for a continuous thin streak, too.)
Question: There's a white streak horizontally through the page, one dot high, in the same place every time. Should I clean my rollers again?

Answer: Sorry, no. This time it sounds like a piece of RAM has gone bad. You have to get the printer repaired.
The Macintosh is a terrific tool for manipulating information. For most people, that information gets into the Mac by being typed on a keyboard. Or it enters your Mac's memory bank from a disk, from another Mac in the network, or even via modem.

But some kinds of information can't be typed, can't be downloaded, and can't be recorded from a microphone: visual information. When you want to modify a photograph in Photoshop, pop a line drawing into your newsletter, even import some pages of text that aren't worth retyping, that's when a scanner comes into play (see Figure 26-1).

Figure 26-1:
The conventional flatbed scanner looks like a squashed copying machine.
How It Works

A scanner is the sibling of a copying machine. Macintosh flatbed scanners consist of a long table with a cover (like a flattened copy machine). Under the cover you see a piece of clear glass. Beneath the glass is a light source connected to a motor-driven assembly.

When you use the scanner, the light flashes on, and the motor hauls the lamp across the image area. An array of CCD sensors (short for Charge-Coupled Device, a light-sensitive chip) picks up the image of the item on the scanner's glass bed and converts it to electronic current. This information is then converted into digital data that can be read and processed by your scanning software.

If you stop to think about it, a scanner is the opposite of a printer. A printer takes what’s on the screen and sends it to a piece of paper. A scanner takes what’s on paper and sends it to your screen.

Hooking Up Your Scanner

Scanners are generally SCSI devices, which means they have to be attached and terminated in the same way you hook up a hard drive or CD-ROM player to your Mac. Read the manufacturer's instructions carefully before making the connections, however. Some scanners work best if they are last in the SCSI chain; then again, sometimes your other SCSI devices want to be last, too, so setting up your SCSI chain can be a juggling act.

If you have problems getting your scanning software to recognize the scanner, or your Mac won’t boot, it’s time to try the usual ritual of shuffling SCSI equipment around. (Consult Chapter 29 for insights into the mysteries of the SCSI chain.)

Color Scanning

The basic scanner reads black-and-white and gray-scale images, but many new models scan color, too. They convert the image into RGB values. RGB information (Red, Green, and Blue) is the same signal used in a regular TV picture tube or a color monitor, where three electron guns are combined to create a full-color image.

There are two kinds of color scanners. Some use a single-pass process, in which three separate lights, corresponding to these three colors, flash on and off to capture the matching color information in your document or photo. The lamps on other scanners make three passes, in which red, green, and blue filters are used, in turn, to capture those portions of the color spectrum.

Each method has drawbacks. The single-pass process may introduce sharpness errors because of the effects of the three lights flashing on and off. The three-pass scanner may have registration problems (where the three elements of the color image don’t exactly line up). Be sure to inspect a scanner’s actual output before you buy one.
In the past, this sort of high-end color processing was the province of high-priced, drum-based scanners. In those machines, the scanned item was placed on a large drum, and the image was exposed onto film. Such devices were sold for $40,000 or more. But the flatbed scanner has been refined in recent years. Today, a flatbed scanner provides results comparable to many of the more expensive products, especially after you tweak the image a bit in your image-processing program.

**Which Scanner to Buy**

The most common scanners for desktop publishing use are the flatbed models we've been discussing. Gray-scale scanners cost around $800; color scanners cost a few hundred dollars more. Because new models are being released all the time and existing ones updated, the first step in buying a new scanner is to read reviews in a Macintosh magazine.

Scanners usually come with their own special software. Many scanners also come with “plug-ins” (add-on software) for professional image-editing programs like Photoshop. In fact, you often get a feature-limited version of Photoshop free with your new scanner purchase.

**Other kinds of scanners**

Not all scanners are flatbed scanners. Some models are sheetfed; in other words, the document is inserted as though the scanner is a fax machine. A roller assembly moves the pages across the light source, which, unlike the lamps in a flatbed scanner, doesn't move. This sheetfed technology has its limits. It can't handle pages that are too large or too thick to fit inside the machine, but that could be placed across the bed of a stationary flatbed scanner.

*Overhead* scanners are another type, usually costing several thousand dollars. They have a scanning base onto which you place the original to be scanned. The imaging assembly is mounted at the top of the device. This kind of contraption may be very useful if you're trying to capture the image of an actual 3-D object, like a box or a smallish sculpture.

Then there are *slide scanners*. These convert a piece of positive film, say a 35mm slide, into an image file. A slide scanner passes light directly through the film, much like a slide projector. The resulting Macintosh graphic file is usually of better quality than you would receive from a flatbed scanner, in which light is reflected off an original image. Greater detail is captured, and the resulting file prints out better on high-end color equipment.

But slide scanners are extremely expensive, and they're limited to dealing with a positive film. You can't even use them to scan a piece of paper with text, graphics, or a traditional photograph! You have to convert these originals to slides first before scanning.
Hand-held scanners

If you don't plan to scan much, you may consider a hand-held scanner, which is much cheaper than a flatbed model. These scanners are portable, so you can carry them to different work locations. And when you're not working on a project that involves scanning, you can tuck the thing away in a drawer.

But using a hand-held scanner isn't always a pleasant process. You need to roll the scanner (which looks like a plastic letter T in 900-point Futura Extra Bold) very straight and very slowly across the document you're scanning. If you move or shake the scanner, your image may come out with slightly wavy lines (like a monitor that's out of adjustment). If that happens, you have to repeat the scan. Because the hand-held scanning device is usually just a few inches wide, you have to scan a large image in two or more passes. Then you somehow have to merge the separate images on your Mac screen — not an efficient use of time.

Scanning Secrets

About Ofoto

Usually you get software bundled with your scanner, and you don't have a choice of programs. But Apple scanners come with an interesting application called Ofoto. You can also buy Ofoto separately (about $300), and it works with most popular scanners.

Ofoto automates the scanning process. You place an original onto your scanner's bed and start scanning. In its automatic setting, Ofoto will prescan the document and determine whether it's a line drawing, a piece of gray-scale art, or a black-and-white or color photograph. It automatically crops the image, and, if need be, straightens it as well. It even determines the best resolution for scanning, based on its profile of your printer or other output device.

All this intelligent decision-making means that scanning takes somewhat longer than it does with other scanning software. But it usually means that you get an acceptable result the first time (instead of having to make several attempts, adjusting the controls each time). Ofoto also provides some basic image-editing tools to crop and enhance the scanned image. (For advanced touch-ups, though, you still need a real image-editing program like Photoshop.)

Buying tips

When buying from a store, take along a sample of whatever kind of document, photograph, or artwork that you'll be scanning in your regular work. Try out the scanner. See how well the supplied software enables you to correct or manipulate the image. Copy the resulting image onto a disk so that you can review it on your own Mac to see how easy it is to work with in your own software.

Here's a perfect way to test a scanner's capabilities: Try scanning in a page of agate type — that's the super tiny type (usually about 5.5 point) used in newspapers for listing sports statistics and financial data. Grab a page of baseball stats, run them through the scanner, and take a look at the results. You'll get a good idea of how clearly the scanner can read and reproduce fine print.
Chapter 26: Scanning Secrets

TRUE FACT

True Facts: Where the TWAIN shall meet

In recent versions of scanner-friendly software, a peculiar term is beginning to crop up. It's TWAIN, which is not Elmer Fudd's way of referring to a locomotive. It's a new kind of application communications protocol dreamed up by Aldus, Caere, Hewlett-Packard, Logitech, and Eastman Kodak. It lets you scan an original document directly into the program you happen to be working in without having to use a special scanning application. That is, if your program supports TWAIN.

For example, there's a free TWAIN Plug-In for Photoshop. This Plug-In (a modular software add-on) lets you scan an image using the DeskScan II software (for example) — but the image appears in a new window in Photoshop. Similarly, you can scan an image directly into PageMaker 5.0, which can also speak TWAIN.

Quark offers a Photoshop XTension for Quark Xpress that lets you accomplish the same thing in a roundabout way. When you choose Acquire from the File menu, it activates the TWAIN Plug-In from Photoshop, which then activates DeskScan II. The beauty of it all is that it really works.

Also consider how long the scan takes. A three-pass color scanner naturally takes several times longer to process a color photograph than the single-pass model. Weigh the time it takes to do a scan against the quality of the finished result. If you intend to do lots of scanning, you may have to weigh the time against image quality if the best results are produced by the slowest scanner.

Before plugging into your scanning software and getting on with it, first study the image carefully and see what kind of image processing it requires. Most scanning software lets you make basic adjustments: to contrast between the lightest and darkest areas, and brightness. Even if you intend to do most of your picture touch-ups in an image-processing program, it's still a good idea to get the best quality scan first. Fixing a poor-quality image later may not always be an easy task. Don't forget the phrase "garbage in, garbage out."

The time-space-money continuum

Graphic images can take up huge amounts of disk space, especially if you decide to scan at a very high resolution. To save time and disk space, crop the image to the actual area that will be used, if you can, at the point when it's scanned (instead of cropping the resulting file).

As a bonus, you speed up processing of the image later on because an image's size determines how long it takes your graphics program to handle the image. Furthermore, if you import a full-sized TIFF file into a publishing program and crop it there, the image may take nearly as long to print as the full image would have itself. Service bureaus are known to charge high hourly rates for documents that take extra time to image.

Secrets to feeding in originals

If you're scanning a large number of pages, the temptation is to leave the scanner's cover open all the time as you scan away. But you may regret your haste. The quality of the scan can suffer if the page isn't completely flat on the scanner's glass bed. Parts of the image may come out fuzzy. (For some scanners, you can buy a document feeder, which will automatically feed the loose pages to the scanner bed.)

If you're scanning text from large books, scan good photocopies of the pages instead.

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Of LPI and DPI

Q: Here it is, the inevitable question. What's the difference between LPI and DPI?

A: DPI, dots per inch, is a measure of your printer’s resolution. As you know, 300 dpi is the standard quality for a laser printer.

LPI, on the other hand, is a much less discussed term. It has only to do with a single computing act: printing color or gray-scale graphics, such as photos, on a printer capable of printing only black and white.

To simulate different gray shades, the printer varies the sizes of its all-black dots. It places these dots along a grid of evenly spaced lines, as shown in this magnified view. The more gridlines per inch (lpi), the more convincing the shade of gray. These phony gray shades, which you see every day in every newspaper, constitute what’s called a halftone image.

Actually, of course, a laser printer can’t vary the size of its dots. To create a halftone, the printer creates larger dots composed of its much smaller, regularly sized dots, as shown in the figure above. Immediately, you can tell that dpi and lpi are related. If the printer’s regular dots are smaller, then the number of different sizes of composite dots is larger, and therefore the different number of simulated gray shades the printer can produce.

Most scanner software offers you a choice of lpi. The usual rule of thumb is to set your scanner at twice the output resolution of the printer that will ultimately print this graphic. If your printer’s resolution is 60 lpi (that is, a 300 dpi laser printer), scan at 120 lines. If you are enlarging the image before it’s printed, choose a higher lpi setting. (Of course, if the images are shown only on the Mac screen, scan at 72 dpi, which is the screen’s resolution.)

Scanning at an lpi higher than twice the ultimate printing resolution won’t improve the quality of the image; it will only waste disk space and slow down printing.
Chapter 26: Scanning Secrets

**How to mark up your originals**

If you need to make any notations on an image to be scanned, use a *nonrepro-blue* pen or pencil. You can buy such a pen or pencil inexpensively from an art or office supply store.

These markings are invisible to most scanners. You won't have to do time-consuming editing work later on to clean off the garbage from your scanned image.

**About those 1600-dpi scanners**

It's not a bad idea to read the fine print in the manufacturer's ads or sales literature, which usually says that resolution is *interpolated*. That means that the scanning software divides each pixel in your scanned image pixels into smaller pixels to *simulate* a sharper image.

On line drawings, this process may actually help because interpolation is apt to smooth jagged lines. But interpolation will never be quite as good as higher resolution. Interpolation won't, for example, fill in the details in an image that can't be picked up by the scanner's optical source.

The *optical resolution*, on the other hand, is the true indication of the native sharpness of the scanner. Most popular flatbed scanners offer resolutions between 300 and 600 dpi. True 1200-dpi scanners cost lots more and may be overkill for basic desktop-publishing use.

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**All About OCR**

Normally, if you scan an item, the result is a picture — usually a TIFF graphics file. The Mac thinks of that scanned image as a bunch of pixels. If those dots happen to form words, the Mac doesn't know about it. The only way you can edit those words is by using the Eraser tool in your painting program.

But with an OCR program — short for *optical character recognition* — the Mac can be asked to analyze those patterns of dots to see what the text is and to store the text in a brand-new text file. You can then open up this exported text file in your word processor and go to town, editing it and formatting it.

OCR equipment cost tens of thousands of dollars when it first became popular in the 1970s. But today, for a few hundred dollars, you can buy software for your Macintosh that works even better than those early machines. OCR software is, however, memory intensive, and it requires lots of processing power. As a matter of fact, OCR programs require between 4MB and 6MB of memory, and they must run on Mac II-class machines or better.

**How OCR software works**

A scanned image is made up of lots of little dots called *bitmaps*. (See Chapter 20 for more on bitmapped graphics.) The scanner itself does not discriminate between text, drawings, or photos; it simply records the light and dark areas of a page and converts them into an electronic reproduction of the original image.
OCR software examines the little dots and, using various programming schemes, attempts to determine whether those assemblages of dots correspond to letters and numbers. Some of the more sophisticated OCR programs even attempt to duplicate the original formatting of a document (typeface and layout).

An OCR program may consult a kind of database of letter shapes in its attempts to recognize the characters. Some programs are trainable; that is, you can teach them to recognize oddly shaped or distorted characters. This new information is recorded in a preference file, and the program uses that data to improve the accuracy of character recognition the next time.

**Faxes and OCR**

Faxes, because of their fuzzy edges and low resolution, can easily confound the best OCR software. Because most fax machines have Normal and Fine settings, you have the best results with faxes sent in the Fine mode. Caution whoever is sending the fax to make the copy as clean as possible.

Recent fax/modems, however, come with specialized software that provides OCR recognition of faxed pages. STF Technologies, which makes fax/modem software for many modems, sells a program called Fax Manager Plus that offers this feature. The result is often far more accurate than that produced by a stand-alone OCR program, and the price is quite a bit less, too (see Figure 26-2).

![Figure 26-2:](image)

Similarly, Global Village includes excellent fax OCR features in its newest fax software. Alas, Global Village's software only works with its own brand of fax/modems.
The end of spell-checking?

OCR software can save hours of drudgery in retyping a manuscript, but it isn't 100 percent accurate. Not even close. While 99 percent accuracy may be achieved on an especially clean manuscript, that means at least one typo per 100 characters.

Worse, the errors made by OCR software aren't the simple ones of letter transposition or minor (but consistent) misspellings made by the human typist. Instead, they're errors of visual identity. The letter m might become nn when recognized by the OCR program, or ii becomes h, and so on. These can be especially sinister mistakes because a spelling checker won't catch them. What on the original said yarn may be translated into yam, and the spelling checker won't blink an eye. (Your client may well do so, however.)

Run your spelling checker on your OCR-resultant documents, by all means. But in the end, a human proofreader is essential. OCR software may mean less work for typists, but proofreaders won't be looking for new jobs anytime soon.

OCR Secrets

The importance of a clean original

When you're working with a poor-quality original scan, you may discover that you could have retyped the material in the amount of time you spend fussing with the OCR program.

Use a clean, clear copy of a manuscript or book. Copy that is indistinct or marked up heavily with an editor's pen will wreak havoc on the accuracy of a scan. Even a single pen mark on a single character will prevent the OCR software from recognizing the word. Some OCR programs even skip an entire line when encountering markings that it considers unfamiliar.

Resolution: bigger isn't better

If your scanning software lets you adjust the scan resolution, such as 300, 400, or 600 dpi, bigger is not always better. A higher resolution scan may draw attention to minor imperfections in character shapes or slight smudges. Furthermore, doing the scan itself takes longer at higher dpi settings. For OCR purposes, if the text is of normal size (10- or 12-point or so), 200 or 300 dpi is sufficient.

What a difference the brightness makes

The brightness controls are critically important in achieving a high accuracy rate of text recognition. When scanning smudged or dark copy, for example, lightening the scan by 25 percent or so can dramatically improve the OCR accuracy. (This is especially true of the one and only OCR-ready hand scanner, the Typist from Caere Corporation.)
**Which fonts to use**

In most cases, you don't have a choice in the typeface you are trying to scan in; what you've got is what you've got.

But if you do have any control over the preparation of manuscripts, here are some pointers. The text should be clearly typed or typeset in a reasonably large size, say 10 to 12 point. Believe it or not, one of the best typefaces for OCR is that old standby Mac typewriter font, Courier. Its characters are classically shaped and easily recognized by the OCR software. We've also heard good things about Adobe Lucida and Lucida Sans, which were designed for low-resolution situations. (By the way, originals printed on color paper don't help OCR much.)

Each software package has its weaknesses. Some OCR programs are thrown for a loop by traditional serif faces, such as Palatino or Times, and prefer a sans-serif font like Helvetica. For other programs, the reverse is true. If you're not sure of a program's weaknesses, do a little trial-and-error testing yourself.

**OCR on dot-matrix printouts**

If the manuscript was printed by a dot-matrix printer like an ImageWriter, see if your OCR software has a special setting for recognizing such documents.

Otherwise, here's a trick: Photocopy the document and scan in the *copy*. The Xeroxing will, in essence, connect the separate dots that make up the characters and improve the accuracy of the translation.
Chapter 27
Mysteries of the Modem

In this chapter:

- V32.bis and other jargon: What it means to you
- Mastering the Hayes command set
- How to dial up another Mac by modem
- The Mac as fax
- On-line services
- The SECRETS guide to on-line etiquette

Connecting a modem to your Mac is easy; getting it to communicate with the outside world — which is, after all, the whole point — is more challenging. Welcome to telecommunications, a technology riddled with numbingly unintuitive terms like Cyclic Redundancy Checking and YMODEM-G; a technology in which several of the commonly used abbreviations are in French; a technology requiring equipment that makes hideous sputters, whines, and squeals when it's working right.

Of course, we don’t believe for a minute that DOS-flavored terminology, shrieking hardware, or even French words should stop you from mastering the art of communicating via modem. This is one of the most rewarding aspects of Macintosh computing. Once connected to a modem, the world is your desktop. Your Mac suddenly becomes a tool with which you can shop, conduct research, exchange ideas on an international level, play games, even commute to work — without ever stepping out of the house. When you consider the possibilities, it’s hard to think of a more exciting way to use your Mac — if you can get it to work.
The Hardware

Modems exist because computers and telephones communicate in two fundamentally different ways. As you probably know, your Mac thinks in binary numbers, processing every shred of information in digital form. With each action performed by the Mac, millions of electronic switches in its circuits are thrown either on or off, producing a stream of 1s and 0s.

Telephones don’t think in 1s and 0s; they’re analog devices, meaning they convey data (specifically, sounds) not through a series of on and off signals but by means of a steady flow of electric current that is modulated to different frequencies, voltages, and amplitudes.

So the modem’s job is to take your Mac’s digital code — all those 1s and 0s — and translate each little piece of code into a corresponding frequency that can be sent over the phone line. It does this by varying, or modulating, the electronic signal being sent through the phone line, assigning a different frequency for each bit or group of bits. In case you haven’t already heard, this is how modems got their name; they modulate and demodulate the electric current passing through the phone line.

Both internal and external modems are available for the Macintosh. External modems, which plug into one of the Mac’s serial ports, are usually equipped with a row of status lights to tell you when the modem is ready to connect; when the phone is off-hook; when the modem detects a carrier tone from another modem; and when the modem is receiving or sending data.

Modem speeds

Probably the single most significant feature of your modem is its transmission speed. Right now, people most commonly use modems that transmit at 9600 bits per second, but 14,400 bps is rapidly becoming the standard.

Just how fast is that? Well, if you’re sending a 1MB file with a 2400 bps modem, the job takes about 72 minutes. The same file, transferred at 9600 bps, takes only about 18 minutes. If you’re fortunate enough to be equipped with a 14,400 bps modem, the file transfer can be completed in as little as 12 minutes. Obviously, a faster modem saves you a bundle on long distance charges and on-line service fees.

If you go shopping for a modem, you’ll notice many manufacturers boast transmission speeds of 38,400 or 57,600 bps for their modems. Be aware that in actuality these modems transmit at 9600 or 14,400 bps, but they include data-compression features that can produce an effective throughput that’s much higher because the data moves across the phone lines in compressed form. The fact is that you never actually get speeds that high because the modem automatically slows down if line noise or other interference is detected on the phone line. With less-than-ideal line conditions (and most line conditions are not ideal), you experience less-than-ideal transmission speeds.
ANSWER MAN

Baud and bps: The true story

Q: All right, once and for all. I'm sick of not understanding this. What's the difference between a 2400 baud modem and a 2400 bps modem?

A: The terms baud and bps both refer to a modem's transmission speed, the rate at which it sends information over the telephone line. Many people (and Macintosh books, we might add) consider the terms interchangeable—but they don't mean the same thing.

Baud is the number of times a modem changes the frequency of its signal per second, while bps refers to the actual number of bits of digital information transmitted each second.

So why all the confusion? In the olden days of telecommunications, baud and bps were the same. Slower modems—those operating at 300 bps—used to send one bit of information with each frequency change; the 1s were represented as tones of 2,225 vibrations per second and the 0s as tones of 2,025 vibrations per second. With this one-to-one correspondence between bits and the frequencies representing them, the number of frequency changes per second did equal the number of bits per second. So 300 baud was the same as 300 bps.

This relationship changed with the development of faster modems. Instead of one frequency representing one bit, a single frequency is used to represent groups of bits. So the number of frequency changes per second no longer equals the number of bits per second. A modem may send at 600 baud (meaning there are 600 frequency modulations per second), but those frequencies may each represent two- or four-bit strings, achieving 1200 or 2400 bps.

The bottom line: what you care about (and should use in conversation) is the bps of your modem, not the baud, which is irrelevant.

The important thing to remember about modem speed is that two modems can only communicate at the highest speed supported by both modems. If you buy a 14,400 bps modem and subscribe to an on-line service that offers only a 9600 bps connection, you'll be forced to log on at 9600 bps. And if you equip your PowerBook with a 9600 bps modem that's advertised to feature "built-in data compression for an effective throughput of 38,400 bps," but your office uses a modem that doesn't support data compression, you'll still transmit at 9600 at best.

Standards and protocols

For telecommunications to work, the modem on the receiving end of the phone line must follow exactly the same rules of frequency modulation and demodulation as the modem doing the sending; if they don't follow the same rules, it's impossible for them to understand and properly decode the signals they send and receive. In other words, there has to be a standard to assure that two modem-equipped computers can talk to each other.

Enter the CCITT — the Comité Consultatif International Télégraphique et Téléphonique (otherwise known as the Consultative Committee on International Telephone and Telegraph), an international group of experts that decides which modem communication methods and protocols constitute the standard. Modem manufacturers, telecommunications carriers, and governmental bodies all sit on the committee.

With consistent standards set for transmission methods, you're assured that two modems can communicate with each other as long as they support the same standard.
Here's a rundown of the standards now in common use; the first three standards have to do with the speed of transmission; the others relate to error correction and data compression.

- **V.22bis**: This is simply the standard for 2400 bps data communications. The *bis*, by the way, is from a French word that can mean *repetition* (the reprise of a song chorus) or *prime*, in the sense that we might say X, X', Y; the implication is that this is a revised version of the V.22 standard. (On the other hand, *bise* is also French for *kiss*, so perhaps this is part of an inside joke concocted by the laff-a-minute CCITT.) If your modem says it is V.22bis compliant, you can be assured that it supports data communication with other 2400 bps modems.

- **V.32**: The standard for 9600 bps data communications.

- **V.32bis**: The standard for transmissions of up to 14,400 bps.

- **V.42**: This standard has nothing to do with speed; it's an error-correction standard. It includes levels 2 through 4 of the Microcom Networking Protocol (MNP) — a transmission scheme that checks for errors in transmission and, if some of your data appears to have been garbled by static on the line, automatically resends the last message. These error-correction features are built into the hardware of V.42-compliant modems.

- **V.42bis**: A data-compression standard that greatly speeds up data transfers by compressing data before it is sent, with decompression handled by the receiving modem. Another transmission protocol, called MNP Class 5, also offers data compression and is supported by many modems. Files already compressed by a utility such as Stuffit don't go any faster with this kind of compression, by the way; their contents already have been compacted as much as possible. For V.42bis to be fully operational, you have to connect the modem to your Mac with a *hardware handshake cable* — a cable specially wired to take advantage of the data compression hardware in the modem.

These standards are not mutually exclusive. A modem can (and likely does) support more than one standard. If a modem is listed as being compliant with the V.42, V.42bis, and V.32 standards, that means it can support data transmissions at up to 9600 bps, has built-in error correction, and uses data-compression technology.

Now, we'll be honest: you don't need much knowledge of communications protocols and standards to use your modem. For example, if your modem supports V.42bis data compression, you really don't have to do anything about it. All it means is that if your modem happens to connect to another modem that also supports the V.42bis standard, a data compression routine is automatically triggered to speed up the throughput. You don't have to issue any special commands, push any buttons, or throw any switches.

For much, much more about modems, protocols, and file transfers, see the excellent manual for ZTerm, included on the SECRETS disks.

**Handshaking: two modems get acquainted**

When two modems connect, the first thing they do — even before you see the familiar CONNECT message — is compare each other's features and come up with the highest-level standard they are both equipped to support. When they've agreed upon a connection method, they go ahead and establish a suitable data connection. This process of comparing features and reaching a mutually agreeable standard is called *handshaking*. 
Most modems are quite good at handshaking; that’s why you usually don’t have to worry about which standards and protocols your modem supports. The modems are smart enough to work things out between themselves.

To illustrate: Suppose that you try to establish a connection between two modems — one that is V.42bis compliant and another that is V.22bis compliant. The V.42bis modem first tries for the best connection possible, employing its full battery of built-in error correction and data compression features. But the other modem doesn’t support those features, so the V.42bis modem drops down — it pretends it has no error-correction features. But there’s still another problem: one modem is trying to connect at 9600 bps, while the V.22 is limited to 2400 bps. So the faster modem drops down to the fastest speed of the other modem. After comparing a number of other transmission parameters, the two modems agree to a standard 2400 bps connection, without data compression or error correction, and the connection is established.

The Software

Before your modem can communicate with the outside world, you have to communicate with your modem. That’s the job of telecommunications software — the link between your Mac and the modem’s brain. You need telecom software to control the modem’s settings, select data for transmission, capture incoming data to your hard drive, and monitor the status of phone connections.

Most modems come with at least some kind of basic telecommunications software. Some of these programs are pretty utilitarian; they let you connect to an on-line service, bulletin board, or another computer and adjust the modem’s basic settings but lack special features for automating modem use and transferring files using special error-control protocols.

For more serious telecommunications, you need a full-featured package such as White Knight, SmartCom II, or MicroPhone II. If you don’t have any of those or find them too expensive, relax; on the disks that came with this book we’ve included a copy of ZTerm, a feature-packed program with all the essential telecom and file-transfer capabilities you need.

All the programs mentioned here include features for automating use of the modem through a scripting language; you can teach the program how to log onto a service and retrieve information, after which the program can step through the entire process on its own, automatically dialing the number, entering the password, and issuing the correct commands to access the information you want. MicroPhone II offers the best script-building features. It provides easy-to-learn tools for creating elaborate scripts, which can be linked to icons displayed in the main terminal window.

Modem settings demystified

If there’s anything that makes telecommunications seem intimidating, it’s the sheer number of options you confront when setting up a telecom session. Should you select full duplex or half? Should you use hardware or software flow control? What kind of parity do you need? Should you send your file using YMODEM or ZMODEM? And what the heck is Kermit?
Here's a roundup of some of the more alien-sounding terms you must wade through when configuring your modem prior to a telecom session. We should stress that none of these settings make any difference if you're connecting to America Online or another service for which you get a special program used for connecting. You worry about these settings primarily when you're connecting with a friend, computer-to-computer.

**Flow control:** Think of flow control as a valve that allows each modem to regulate the flow of data so that the stream of incoming information doesn’t overwhelm either computer. Many telecom programs ask you to choose between two types of flow control: X-On/X-Off and hardware handshake.

X-On/X-Off flow control is software-based. The receiving computer automatically sends out a special X-Off character whenever it begins receiving data faster than it can process it. The X-Off character pauses the sending modem until further notice. When the receiving computer is ready to receive more information, it sends out the ASCII X-On character and the flow resumes.

High-speed modems that support hardware handshaking have flow control built into their circuitry and don’t require the X-On/X-Off characters. Instead, the modems themselves issue Request to Send (RTS) signals and Clear to Send (CTS) signals to control the flow of data traffic — the equivalent of “Hold on a sec!” and “Okay, go ahead.”

**Data bits:** This parameter refers to the number of binary bits (1s and 0s) used to make up each ASCII character in a transmission. Most connections express these characters in 7-bit or 8-bit packets. In order for two modems to communicate properly, they must both be set to expect the same number of bits per data packet. It doesn’t make any difference which setting you use, as long as both modems are set the same.

**Parity:** Parity is an error-control feature used mostly in lower-speed transmissions. There are three settings to choose from — Even, Odd, and None. Usually, you should choose None; parity error checking isn’t used much with higher-speed modem connections. It’s pretty limited and not nearly as effective at preventing data errors as file-transfer protocols (which we discuss later in this chapter).

When parity is activated, the modem adds one extra bit to each packet (burst) of data. If Even parity is selected, the modem adds either a 1 or 0 to make the sum of the bits in the packet add up to an even number. If Odd parity is selected, an appropriate bit is added to make the sum of the bits add up to an odd number. The receiving modem monitors the parity of each packet — checking for oddity or evenness — to make sure all the data bits were transmitted correctly.

**Stop bits:** One letter of the alphabet — one character — takes eight bits of information to identify. A modem adds at least one additional bit to the beginning and end of each packet to delineate the end of one ASCII character and the beginning of the next. The bit added to the beginning is called the start bit, and the bit (or bits) added to the end is called the stop bit.

Here again, the setting doesn’t make much difference, as long as both modems use the same setting. Some telecom programs, such as MicroPhone II, have an Auto stop bits feature, which automatically selects the proper stop bits setting for the connection.
**Local Echo:** When Local Echo is on, each character you type is both displayed on your own screen and sent to the screen of the computer to which you're connected. Because most computers automatically echo, or send back, a copy of each character received through a modem transmission, you usually don't need Local Echo on; you see the characters you type because they are echoed back to you by the remote computer.

If you have Local Echo on and the remote computer also is echoing what you type, you see double characters on your screen, lliikkee tthhiiss. Conversely, if the remote computer does not echo and you have local echo off, you won't see anything you're typing. Each character you type is sent directly to the remote computer without first appearing on your own screen.

Fortunately, you can switch Local Echo on or off during your telecom session. That is, if you suddenly discover that you're typing double letters, turn off Local Echo.

**Half/full-duplex:** A half-duplex connection is like a one-way street — data can travel in only one direction at a time. In the more common (and faster) full-duplex mode, data can travel in both directions simultaneously. Generally, if you connect to a remote computer that's in full-duplex mode, you have to turn Local Echo off because the remote computer is set to echo back everything you type.

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**The Hayes AT command set**

Telecom programs like ZTerm and MicroPhone work in one of two modes — on-line or the command state. Usually, after a successful connection is established, your telecom software automatically jumps into on-line mode. When on-line, you're communicating with the remote computer; the words you type are transmitted directly to the screen of the computer at the other end of the phone line.

Sometimes, however, you may want to send special instructions to your own modem, not to the person on the other end of the line. To do that, you must switch to the command state. In the command state any characters you type are interpreted by the modem as operating instructions. They're not transmitted through the phone line.

Such commands must be issued to the modem in its native language, the Hayes AT command set. This collection of modem commands was originally developed by Hayes Microcomputer for its modems, but the commands have now been adopted as the industry standard.

As the name suggests, the primary command of the set is AT, which stands for ATtention. Not surprisingly, when you send an AT command to the modem (via your telecom software), it calls the modem to attention and prepares it to receive additional commands. In most telecommunication programs, if you type AT and press Return, the modem responds with OK (which appears on your screen); that's the modem's way of saying, "Yes, I'm listening and ready to do whatever you tell me."

In a typical command, the letters AT are immediately followed by other command letters, which instruct the modem to perform a certain action (dial a number, answer a call, hang up). These commands may also tell the modem which of its features it should activate or suppress.
What's interesting is that you can string together a number of these commands — as long as the entire block is preceded by the letters AT — into one long message to your modem. With impressive originality, they call this string of modem commands a *modem string*. (Figure 27-1 shows the anatomy of a sample string.)

![Figure 27-1: Anatomy of an AT command.](image)

There are dozens of AT commands, many of which you'll never see or need. The following list includes the ones you're most likely to find useful in controlling a modem or changing its settings.

Remember that every one of these commands must be preceded by the letters AT. Therefore, to make your modem silent, you type **ATM0**. (That's a zero.) To restore its factory settings, you type **AT&F**. If you're on the line with a friend, chatting by voice, and you decide you want the modem to pick up the line, type **ATA**. And so on. (Follow any of these commands with a Return.)

So where do you type this stuff? If you're using a text-based telecom program like White Knight (formerly called Red Ryder), MicroPhone, or ZTerm, you simply type these codes onto the screen. If you're using another program that dials, such as QuickDex or America Online, you'll find a Modem String blank somewhere in the Preferences or Setup dialog boxes.

Many telecom programs have buttons or checkboxes that eliminate the need for you to type out these commands in AT format. Instead of making you type **ATS0=1** (the command that makes your modem answer the phone on the first ring), for example, the software may offer a dialog box in which you can select Auto Answer with a checkbox (and provide a blank where you can type in the number of rings).

If, during an on-line session, you need to issue an AT command, you can jump back to the command state by typing **+++**. Then, when you're done, you can go back on-line by issuing the **ATO** command (that's a letter O, not zero).
### To Make Your Modem Do This:

<table>
<thead>
<tr>
<th>Action</th>
<th>Type AT, Plus This:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Answer the phone</td>
<td>A</td>
</tr>
<tr>
<td>Repeat the last command issued (don't type AT first)</td>
<td>A/</td>
</tr>
<tr>
<td>Dial a number (using tone dialing)</td>
<td>DT (followed by number)</td>
</tr>
<tr>
<td>Dial a number (using pulse dialing)</td>
<td>DP (followed by the number)</td>
</tr>
<tr>
<td>Hang up</td>
<td>H</td>
</tr>
<tr>
<td>Turn modem speaker off</td>
<td>M0</td>
</tr>
<tr>
<td>Turn modem speaker on only until other modem answers</td>
<td>M1</td>
</tr>
<tr>
<td>Turn modem speaker on permanently</td>
<td>M2</td>
</tr>
<tr>
<td>Switch to command state</td>
<td>+++</td>
</tr>
<tr>
<td>Reset the modem's default settings</td>
<td>Z</td>
</tr>
<tr>
<td>Save the current configuration as the default settings</td>
<td>&amp;W</td>
</tr>
<tr>
<td>Restore the modem's factory settings</td>
<td>&amp;F</td>
</tr>
<tr>
<td>Change the number of seconds the modem will pause when encountering a comma in a dialing string</td>
<td>S8=n (where n is the number of seconds. The default is 2.)</td>
</tr>
<tr>
<td>Change the number of seconds the modem should wait for the other modem's &quot;carrier tone&quot; (the initial shriek)</td>
<td>S7=n (where n is the number of seconds. The default is 30.)</td>
</tr>
<tr>
<td>Change the number of seconds the modem should wait for a dial tone</td>
<td>S6=n (where n is the number of seconds. The default is 2.)</td>
</tr>
<tr>
<td>Change the duration of each touch tone and of the space between each touch tone</td>
<td>S11=n (where n is the number of milliseconds; use a number between 50 and 255.)</td>
</tr>
</tbody>
</table>

### How to Dial Up Another Mac by Modem

Suppose you want to connect to your sister's Mac. Call her up by voice to make sure you've both set up your parameters the same way, as described in "Modem settings demystified," earlier in this chapter. Launch your telecom program (such as ZTerm, included with this book). Your sister should do the same.

If your telecom program has an Auto-Answer feature, she should turn it on (or she can just type ATA and press Return).

On your end, type **ATDT 555-1212** (or whatever her number is) and press Return. If the modem is correctly hooked up, it dials. If _her_ modem is correctly hooked up, it answers. The word **CONNECT** appears on both your screens.
At this point, many beginners give up in frustration because they forget the most critical step. After the word CONNECT appears, press Return. You both need to do this.

Now you're hooked up! It gets wild and wonderful: Anything you type appears on her screen, and vice-versa. You can have an entire conversation just by typing to each other. The text rolls up the screen; depending on your program, you can copy and paste it or capture it into a text file (check your File menu for a Capture Text option).

**Transferring files**

After you connect to a remote computer, chances are you'll want to do more than chat with the person on the other end of the line. At some point you'll want to send an entire file. Most telecommunications programs offer several methods of sending a file.

**Text transfers**

The first and most basic method is a plain text transfer. In such a transfer, you select a file — it must be a plain text file. The contents are automatically typed out on the screen and sent to the remote computer one character at a time, as if you were actually typing out the file while on-line.

There are some obvious disadvantages to this method. You can't send a formatted Word document, for example, using a text transfer. For that matter, you can't send graphics, spreadsheets, scanned images, or any other nontextual data. Furthermore, a text transfer doesn't include any error checking; if the phone line is noisy and characters get garbled, the remote computer has no way of knowing that it has received corrupted data.

With all those disadvantages, why even bother with the text transfer method at all? One very significant reason: It allows you to transfer data between just about any two computers on Earth equipped with just about any telecom software. When all else fails, even the most bare-bones telecom package can do a plain text transfer. Your cheerful authors can vouch for the fact that this feature has saved their necks on various occasions. (We recall, for example, when we were on deadline and had to shuttle information between a Mac and a very old Hewlett-Packard 110 laptop equipped with a stone-tools-level telecom program.) If you absolutely have to transfer data between two seemingly incompatible computers, the plain text transfer is probably your answer.

**Mac file transfers**

To transfer formatted documents and graphics, you need to use a file-transfer protocol. These protocols are special routines that let you send a whole file (or group of files) chunks at a time, with an error-checking routine built in. As the remote computer receives each packet, it verifies the packet to make sure the transfer was accurate. If a discrepancy is detected between the packet of data sent and the packet received, the modems automatically repeat that part of the transfer until the packet transfers without error. In comparison with plain text transfers, protocol transfers are much faster and more reliable.
File-transfer protocols

There are five kinds of protocol transfers you’re likely to encounter. Once again, when you’re connected Mac to Mac, the telecom programs running on both machines have to use the same file-transfer method.

- **XMODEM**: In an XMODEM transfer, a file’s contents are parceled out in packets of a fixed size (usually between 128 bytes and 1K each). As each packet is sent, XMODEM uses one of two error-checking methods to make sure the packet is sent reliably.

  With the older method, checksum, the sending computer adds up the sum of the binary digits in each packet and tacks this number on at the end of packet. The receiving computer performs the same computation with the data after receiving it and checks its result against the sum sent with the packet. If the two numbers check out, the receiving computer sends out an ACK code — a signal acknowledging the receipt of the packet and asking for the next. If a discrepancy is detected, the packet is sent again.

  Some telecom programs offer a new error-checking method called Cyclic Redundancy Checking (CRC). CRC provides more accurate error control than the checksum method.

- **YMODEM**: The YMODEM protocol works just like XMODEM, except that it allows you to batch a group of separate files together and send them with a single transfer command. YMODEM sends data in packets of 1K each and uses CRC error checking.

- **YMODEM-G**: This is YMODEM with one key difference: Under YMODEM-G, if the CRC error-checking routine indicates that a data packet contains an error, the modem doesn’t resend the packet; it just cancels the whole transfer, forcing you to start over. For this reason, YMODEM-G is a good choice only when you’re working the highly reliable connections or with modems that feature built-in error-correction hardware.

  YMODEM-G outperforms regular YMODEM because it doesn’t wait for the receiving computer to send an ACK command before sending the next packet. (However, it does notice if the receiving computer sends a Negative Acknowledgment signal, indicating that a packet was not received properly.)

- **ZMODEM**: Like YMODEM-G, ZMODEM provides fast file transfers because it doesn’t wait for the receiving computer to send an acknowledgment before sending each packet of data. But ZMODEM doesn’t break off a transfer when it detects an error (as YMODEM-G does); it just resends the data packet until it is received without errors. ZMODEM is also unique because if you either accidentally or intentionally interrupt a transfer in progress, you can resume the transfer at another time, picking up exactly where you left off.

  ZMODEM, if available, should be your first choice for sending files to other Macs. (ZTerm, included with this book, can handle ZMODEM transfers.)

- **Kermit**: Slower but more flexible than ZMODEM, the Kermit protocol is useful for transferring files to and from mainframe computers that might not work with other file transfer protocols. With Kermit you can control the size of data packets and change the control characters that define the beginning and end of each packet, making it the most flexible protocol available. Because Kermit is completely ASCII based, it can accommodate communications with very un-Mac-like computers.
MacBinary: Don’t start yelling, techies of the world; we know MacBinary isn’t a stand-alone transfer protocol. It’s a file-formatting option supported by the file-transfer protocols we’ve already mentioned. When you set up a file transfer using XMODEM, YMODEM, or ZMODEM, you usually have to decide whether or not to use MacBinary formatting.

When you send a file without MacBinary, only the file’s data fork — the part of the file containing the actual contents of the document — is transferred. With MacBinary selected, the file’s data fork and resource fork are sent, assuring that the file’s unique Macintosh attributes — its name, icons, size, creation date, and other Finder information — is transferred along with the file. As long as the receiving computer is capable of supporting MacBinary and can display Mac information, it’s always best to use MacBinary.

Telecom Secrets

Correcting line breaks in downloaded text

If you’ve ever downloaded text from a service like America Online or CompuServe, you probably noticed that if you try to open the text file with a word processor, the line breaks sometimes fall in the wrong spots and cause the text to line up incorrectly.

There’s an easy solution for this: reformat the text in a monospaced font — one in which every character and space is the same size — such as Courier or Monaco.

Determining current settings

If you frequently change modem settings, you may have trouble remembering your modem’s current settings configuration. You may forget, for example, whether you’ve set the modem to answer on the third ring or fourth ring — or whether you’ve disabled the auto-answer feature altogether.

There’s an easy way to recall current settings. On most modems, you can use the AT&V command. This command causes your telecom software to display every modem setting on the screen (see Figure 27-2). If your modem supports stored configurations, it shows each of those as well.

Figure 27-2:
The AT&V command shows all the modem’s active settings and any stored settings.
Getting rid of double characters

If you connect to a bulletin board or to another computer and everything you type looks like this, it means you have Local Echo active in a full-duplex connection. In other words, the letters you type are being displayed on your own monitor and echoed back by the other computer.

To eliminate the problem, just turn off Local Echo with your telecom software.

Eliminating overstriking characters

Sometimes, during an on-line session, you may notice that pressing Return doesn't move you to the next line. The lines of typing overstrike each other, making them nearly impossible to read. This usually happens because the computer you're connected to is expecting a Line Feed (LF) command along with each carriage return.

Most telecom software gives you the option of sending carriage returns alone (usually called CR), carriage returns along with a Line Feed command (CR/LF), or line feeds alone (LF). To correct the overstriking text problem, change the setting to CR/LF. (Look for a Preferences or Settings command.)

On the other hand, if you're getting a double-space between lines each time you press Return, you're sending a line feed command that isn't necessary. Change the setting from CR/LF to CR.

Preventing line interruptions from extension telephones

A modem connection or file transfer can be ruined if someone unwittingly picks up a telephone extension elsewhere in your home while your modem is on-line.

You can prevent this from ever happening by connecting a Radio Shack Teleprotector #43-107 to your phone line. This gizmo makes all other telephone extensions in the house go dead so that you can't be interrupted when on-line.

Dialing out with no dial tone

Normally, a modem waits for a dial tone before starting to dial out. If the phone system you're on doesn't provide an initial dial tone — or if you're in a country with a telephone system that uses a dial tone not recognized by your modem, use your telecom software to insert the X3 command into your dialing string (like this: ATX3DT555-1212). Your modem dials without a dial tone present.

Turning off Error Control on PowerBook modems

The internal modems included in some Macintosh PowerBooks are equipped with high-level error-control features. This can be a problem if you're trying to establish a connection with a modem that doesn't have those features and doesn't know how to interpret the error-control signals.

Fortunately, you can use your telecom software to issue the command AT&Q0 to disable a PowerBook modem's error-control feature. After you disable the feature, the modem should work normally.

Using the buffered keyboard

In a full-duplex modem connection, with data zipping back and forth in both directions simultaneously, you experience some bizarre results if you and the person on
the remote computer both try typing messages to each other at the same time. If you type “How are you doing over there?” while the person on the other end types: “I have something important to tell you,” you may see something like this on your screen: “I haHove wso amerethi nyy ou imdpooritangn ot ver ttoh teerll yeo?u.”

To avoid problems like this, most telecom programs (including ZTerm, included with this book) support the use of a buffered keyboard. This is a separate little window in which you can type and edit an entire message, while the remote computer still sends data to your main terminal window. After you type your whole message, send it all at once by pressing Return. The advantage: Your message is sent in one chunk to the recipient and isn’t interrupted by other typing.

**Making your modem shut up — and speak up again**

Don’t you hate the blood-curdling screech that modems and fax/modems emit when connecting? We mentioned earlier that it’s easy to make your modem mute by issuing the ATM0 command. (That’s a zero.) However, we haven’t yet mentioned how to turn the speaker back on again: the command is ATM1.

**Making your modem answer when you want it to**

If you share one phone line between your voice calls and modem connections, you probably want some control over when your modem answers the phone. You can determine this with simple Hayes-compatible AT commands, issued to the modem through your telecom software. The command ATS0=1 makes the modem answer on the first ring, ATS0=2 on the second ring, and so forth. Choosing ATS0=0 disables the modem’s auto-answer function; the modem ignores the ringing phone until you type ATA in your telecom program. (Those are zeros.)

**Connecting two computers over a single phone line**

This is a neat trick for transferring data between two modem-equipped computers when only one phone line is available and the computers don’t support a direct cable connection.

To pull this off, you must be able to dial your own number and open a live telephone connection within your own house. (Some telephone companies offer a service called Intracall that lets you do this.) Set the modem on one computer to dial out but put a blank space in the telephone number field. Set the modem on the other computer to answer incoming calls.

Now, manually dial your number and let the phone ring. When the answering modem answers the call, immediately activate the dialing command on the first modem. It may take several attempts to get the timing right, but using this method you can get the two computers connected over the single phone line and then perform file transfers or any other telecommunication tasks as if it were a normal modem connection.

**Disabling Call Waiting**

Call Waiting can cause serious problems during a telecommunications session. The click of an incoming call in the middle of a file transfer can cause glitches in the transmission and ruin the transfer.
So, if you have Call Waiting on your phone line and you use that same line for modem connections, make sure you disable it before you log on. In most areas of the country, you just dial *70 before making a call.

If you use an AT command to dial numbers with your modem, you can just add the *70 to the number string like this: ATDT*70,555-1212. The comma adds a brief pause after the disabling command is issued and before the number is dialed.

**E-mailing the President of the United States**

Did you know you can send e-mail to the White House? It's part of a new program called Americans Communicating Electronically. Under this program you can drop a line to President Clinton or Vice President Gore by addressing your e-mail on the Internet to PRESIDENT@WHITEHOUSE.GOV or VICE.PRESIDENT@WHITEHOUSE.GOV.

Of course, these addresses presume that you have access to the Internet. On America Online, life is simpler: the address is Clinton PZ.

The government promises your e-mail message will be read and acknowledged immediately, and that the White House keeps track of the number of letters received and makes a note of the subject of each letter. But don’t expect a personalized answer (although you do get a nicely worded canned response almost immediately). The official press release announcing the new e-mail system says the White House is “not yet capable of sending back a tailored response via electronic mail.”

**The Mac as Fax**

When fax/modems debuted a few years back, the Macintosh community was skeptical, to say the least. Many of the earliest models were only send-fax devices, capable of sending faxes but not receiving them. Even the models with full send-and-receive capabilities were overpriced, came with lousy software, and offered unpredictable performance.

Today, there are dozens of send-and-receive fax/modems available, some costing less than $100. Most are equipped with circuitry capable of reliably transmitting data to and receiving transmissions from Group III fax machines at a rate of 9600 bps. Fax software has come a long way, too; the best packages make faxing a document no more complicated than printing. And virtually all of them also function as standard data modems, too, capable of putting you on-line and performing file transfers at 2400 bps or higher.

**How to fax**

With most fax/modem packages, you can send outgoing faxes directly from within any Macintosh application. To fax a document, you usually hold down the Option key or some other modifier key on the keyboard as you choose Print from the File menu. (With Apple’s ExpressModem software, the fax software for use with, for example, the GeoPort Telecom Adapter, you press Shift and Control.) Actually, you choose Fax from the File menu — the word Print disappears when you hold down the modifier key(s).
Alternatively, and if you’re using a network fax/modem, you must first select the fax/modem device in the Chooser — just as you would select a printer — and then choose the Print command.

In either case, the fax software prints (faxes) the document by converting each page into a bitmapped image, dialing a fax number with the modem, and transmitting the converted file through the phone line. The document is transferred from your Mac to the remote fax machine without having to be printed first.

Likewise, a fax/modem lets you receive incoming faxes right on your Mac. You can read the fax documents on-screen without ever having to print them. Of course, if you do need a printout of a document, all you have to do is print it as you would any other document.

Fax/modem buyer’s guide

Here are some important points to keep in mind when shopping for a fax modem:

- Avoid a fax/modem whose accompanying software is the awkward and buggy Quick Link II Fax.
- Look for fax software that offers multiple viewing options so that you can examine an incoming document at various levels of magnification. You should be able to zoom out to view a full page and zoom in to scrutinize fine print. Good fax software packages offer several levels of magnification.
- This may seem obvious, but it needs to be said: buy a fax/modem that’s really designed for a Mac. We’re shocked at the number of Mac-ready modems we’ve seen that are sold without a page of Macintosh documentation. These products are backed by technical support people who sigh heavily when you tell them you own a Macintosh and who blindly suggest you check out your AUTOEXEC.BAT file if there’s a problem.
- Understand what you’re buying. A fax/modem that handles fax communications at 9600 bps doesn’t necessarily handle data communications at the same speed. In fact, a modem’s fax and data transmission speeds are usually different. A 24/96 fax/modem, for example, handles data communications at 2400 bps but fax communications at 9600.
Fax/modem Secrets

Faxing PostScript graphics

Most fax modems don't understand PostScript. If you try to send a document containing PostScript graphics (from Illustrator or FreeHand, for example), the fax machine prints only PICT representations of the PostScript images, and you'll get unacceptably jaggy results.

But you can make the results look a little better using the following method: When you first create the PostScript graphics, make them about three times larger than intended, then import them in a page layout program, and reduce them to the desired size. The reduction gives the final PICT image a finer resolution in the final faxed document.

Margins of error

Some fax/modems and fax machines chop off the edges of a document during the transmission process. So to protect the integrity of your documents, create extra-wide margins on documents that you plan to fax — maybe adding a 3⁄4” margin on every side.

ATM and faxing

For the best-looking faxes, make sure you use True Type fonts, or PostScript fonts with Adobe Type Manager (see Chapter 24 for details). TrueType and ATM work with fax/modems exactly as they do on your monitor and on QuickDraw printers to render smooth, crisp text.

The talking fax/modem

This trick takes a little bit of rhythm and coordination: The three developers of the old Apple Fax/Modem have hidden digital recordings of their own voices within the modem's circuitry. To hear them speak, you have to turn on the modem while holding down the button on the front panel. You hear the modem beep three times. Immediately after the third beep, press the button three times, keeping with the rhythm of the first three beeps, and you hear each of the developers say his or her own name.
The GeoPort and you

Apple seems committed to replacing the garden-variety modem port found on older Mac models with the glorified one called the GeoPort, originally introduced with the AV Mac models. This special jack accommodates a special connector called the GeoPort Telecom Adapter, known affectionately by insiders as "the pod."

The pod, along with the ExpressModem software that comes with it, has two salient features. First, it acts as a high-speed fax/modem, even though it's just a little connector thing that costs $100. Second, its bugs have caused its owners no end of grief — especially in the months following the pod's introduction.

We have a couple pieces of advice. First, if the thing doesn't work at all, open your ExpressModem control panel. Make sure you choose Use Express Modem.

Second, if you're having trouble connecting with one on-line service or another, consult its customer-service department. They may be able to share with you a modem initialization string that works with the GeoPort pod. For example, you'll probably have trouble using America Online until you change the initialization string to:

ATL&Q0&V0\N0N0W0S37=6

(To access the initialization blank, at the America Online startup screen, click the Setup button.)

On-line Services

One of the best things you can do with your modem is dial up commercial on-line services like America Online, CompuServe, GEnie, Prodigy, eWorld and so on. What you're actually doing is dialing into a roomful of enormous humming mainframe computers that are so quick-witted they can talk to your Mac and thousands of other personal computers all over the world — simultaneously.
These services, once you figure them out, provide a wealth of handy up-to-the-minute information. All of the services we just mentioned, for example, let you read movie reviews; book flights on commercial airlines; send e-mail to almost anybody in the world (even, as we said, the White House); get 15-minute-old stock quotes; find out the latest sports scores; read the latest headlines; look up back issues of Consumer Reports; consult Grolier’s Encyclopedia; and more.

At this writing, America Online charges you $10 per month, which includes five hours of connect time. Additional hours are $3.50 each. For full access to CompuServe’s services, you still pay about $13 per hour that you’re connected. However, CompuServe also offers a standard pricing plan: it’s about $8 per month for all the connect time you want. The fine print on that plan is that you only have access to the less interesting services.

**Working off-line**

The smart way to use America Online and CompuServe is to do your work beforehand. Use America Online’s FlashSessions feature to jump on-line, grab your mail, and get off. Read the mail and compose your replies while you’re not connected. CompuServe’s more complex Navigator program is similar but performs even more functions automatically.

If on-line cost is no object, we highly recommend accessing CompuServe using its CompuServe Information Manager (CIM) program. The software, a graphic front-end program, is inexpensive, but it requires that you spend much more time on-line. It makes CompuServe appear on your screen as icons and windows, much as America Online does, making the service much easier to navigate. (Without CIM, you’re condemned to watching lines of 12-point Monaco text scroll up your screen, and you navigate by typing mysterious commands.)

As for Prodigy, don’t bother. It’s slow, it’s underfeatured, it’s slow, it has advertising on every screen, they read and censor your e-mail, and it’s slow.

**The SECRETS guide to on-line etiquette**

You have nothing to be afraid of when you dial up an on-line service. Yes, you’re technically in a public place where your every word and thought are read and judged by thousands of people all over the world — don’t let that phase you. That’s the glorious thing about being on-line. It’s the only human interaction where you’re judged purely by your thoughts. Your age, race, looks, disabilities, insecurities, hair status, accent, height, weight, and even hygiene don’t make any difference to anybody on-line. We’ve heard more than one story of love born via e-mail (or during live chat sessions on America Online). On the other hand, we know at least three couples who did tie the knot after falling in love on-line!

However, your self-presentation counts in our society, and that’s still true in the electronic anonymity of on-line communications. Here are the top four ways you can be sure you won’t identify yourself as an amateur.

- **Don’t type in all capitals.** Leave your Caps Lock key alone. All capital letters are hard to read and have a special meaning in the soundless realm of on-line speech: it means YOU’RE SHOUTING. Reserve it for when you really are shouting.
Watch the flaming. There are two factors that account for the phenomenon known as flaming — that is, unmodulated ranting — on-line.

First, you’re anonymous on-line. You’re often known by a nickname or a number; and even if people can see your real name, you’ll never meet these people face-to-face, so who cares if you lose your cool a little? Second, the on-line services are filled with thousands of messages from people from all walks of life. You sometimes feel as though you have to be a little dramatic just to get noticed.

Our only advice here is that (a) you usually can’t take down a message you put on a BBS, so don’t say things you’ll regret, and (b) you actually may meet these people face-to-face one day!

On-line, no one can hear you smile. Having a friend say “I think you need a vacation” with a grin and compassionately raised eyebrows is quite different from your boss muttering the same line, scowling, while looking over your latest work. We’re talking about nonverbal communications — and on-line, nothing is nonverbal. There’s no body language, no raised eyebrows: nothing but your cold, hard words on everybody else’s screens.

Therefore, be particularly aware of your tone when writing on-line. Somebody who gets your e-mail can’t hear the tone of your voice when you tease; take care to consider what possible misinterpretations lie in the way you phrase things.

A common trick toward solving this pitfall is the use of the smiley-face. You make this little grinning face by typing a colon and a close-parenthesis, like this — :) — which, if you turn your head 90 degrees to the left, look like smiling features. This little face is supposed to indicate that you were smiling when you wrote something. There are hundreds of these little smiley faces:

- :( Unhappy
- ;) Sly wink
- ;* Kissing
- 8) Wearing shades
- :p Sticking out tongue
- :O Shock

…but then again, there are also thousands of people who find these faces insufferable.

Learn the lingo. There’s not much lingo to learn, fortunately. But you’re likely to be befuddled unless you at least know the following handful of abbreviations you’re likely to see people typing on-line:

- LOL Laughing out loud
- ROTFL Rolling on the floor laughing
- BRB Be right back
- BAK Back at the keyboard
- RTFM Read the f—— manual
- IMHO In my humble opinion
- GMTA Great minds think alike
- @*#}*ILL Golly
On-line service Secrets

As the world turns

When you’re using CompuServe Information Manager 2.0.2 and you choose the About CIS command from the Apple menu, you see an animated spinning globe in the About window.

If you Option-click the globe and keep holding down the mouse button, the earth will start spinning in the other direction, and additional windows will appear with the program’s credits listed.

How to put the meter on Pause

Suppose you’re logged onto America Online or CompuServe or some other on-line service and your front doorbell rings. If you leave the computer and answer the door, you waste precious time on-line — for which you’re charged by the minute.

You could sign off — but that would mean having to log on again as soon as you returned to the computer. Instead, just navigate to the on-line service’s help area, where you’re never charged for your time on-line. You can park yourself in the help area as long as needed without logging off, and when you’re ready to resume your work, just move back to whatever else you were doing.

Background America Online and eWorld

When you’re downloading files from (or uploading files to) America Online or eWorld, you’re not condemned to sit there doing nothing while the file comes in (or goes out).

Just click in another program’s window, or on the desktop, and get to work. America Online merrily recedes into the background and continues to download. You are notified by the usual, cheery “File’s Done!” voice from your Mac speaker when the transfer is complete.

Replace the America Online (and eWorld) sounds

If you tire of that guy’s voice — the one who says “You’ve got mail!” and “Good-bye!” and “Welcome!” — feel free to replace him with a sound of your own choosing. You might elect to replace these quips with your own voice, for example, or sound effects like those included with this book, or with silence.

All you need is ResEdit. See Chapter 21’s ResEdit Secrets, where you find step-by-step instructions for replacing America Online’s (or eWorld’s) sounds.

Send mail from one service to another (or the Internet)

Little-known but powerful Secret: from the cozy, user-friendly comfort of, say, America Online or eWorld, you can send e-mail to any other service. CompuServe, AppleLink, and even the Internet (the nationwide network of universities, companies, and government centers) are within hailing distance.
All you need to do is add the appropriate suffix to your recipient's e-mail address. Here they are:

- @AOL.COM = America Online
- @eWorld.com = eWorld
- @CompuServe.com = CompuServe
- @apple = AppleLink
- @prodigy = Prodigy
- @genie = GENie

One other tweak: if you're sending to CompuServe, change the comma in the address to a period.

The following are some examples. If you're on America Online, you'd reach CompuServe member 73057,134 by sending your e-mail to 73057.134@CompuServe.com. Conversely, if you're signed onto CompuServe, you can reach America Online member Pogue by sending mail to Pogue@AOL.com.

When sending e-mail to the Internet, simply type the full e-mail address, complete with dots and @ symbols. For example, to send a message from America Online to somebody whose business card says Squeaky@cti.aero.edu, type all of that into the To: blank. (CompuServe users beware: mail to the Internet carries an extra per-message charge.)

**What's my speed?**

Here's a quick way to find out at what speed you're connected to America Online or eWorld.

Hie thee to a file library...any file library. Double-click the name of a downloadable file. In the upper-left corner of the description window, you are shown an estimate of how long the file will take to download — at your current speed. In other words, it says “Time at 2400 baud: 60 minutes” or “Time at 9600 baud: 15 minutes.” That speed rating shows your current connection speed.

**Automatic file decompression**

Here's a little-known fact: If you download files that have been compressed with Stuffit (and, therefore, bear the .sit suffix in their names) from America Online or eWorld, these files will expand automatically when you log off — even if you don't have a copy of Stuffit on your hard drive. For this to work, you have to have the auto-unstuff option selected in your copy of the America Online or eWorld program.

What happens if your phone goes dead or your system crashes before you get to log off and trigger the automatic unstuffing process? Simple: Launch your America Online or eWorld program and open the stuffed files using the Open command in the File menu. The files will decompress automatically when opened.

And here's the real gem — this same decompression method will work with any Stuffit file bearing the .sit suffix (even those you didn't download from an on-line service).
New-locality shortcut for America Online and eWorld

The software for America Online and eWorld software, if you hadn’t noticed, is practically identical. No wonder, because Apple (eWorld’s creator) licensed the program from the America Online people.

Anyway, both programs offer a handy feature on the startup screen: a Locality popup menu that lets you choose from among several dialing locations. If you often travel between New York and L.A., for example, you can simply use this popup menu to switch from one set dial settings (local access phone number, prefix codes, modem speed, and so on) to another with one mouse click.

To add a new city to this popup menu, you’re supposed to choose Get Local# from it. Then you wait while the program dials an 800 number, shows you your choices, makes you choose one, and so on. But suppose you already know the number? Suppose you don’t want a whole new city at all, but simply want to choose between the 2400- and 9600-bps phone numbers for one city?

Here’s how to add or edit the Locality menu — without using the Get Local# function at all.

Return to the Finder. In the America Online (or eWorld) folder, open the Online Files (or eWorld Files) folder. There you find an icon for each of your Locality settings. Highlight one of them, choose Duplicate from the File menu, and rename the copy (e.g. New York 2400).

Now double-click the new icon. It opens to the usual Locality screen, where you type in the phone number and make your settings. Do so and then click Save. You’ve done it — your new settings file is now listed in the Locality popup menu.

Quick America Online/eWorld exit

If you’ve used America Online or eWorld at all, you know how frustrating these services can be when you’re told that “for some reason, the Host has failed to respond.” Who is this host, anyway, and why is he such an unresponsive creep? Furthermore, why do you have to sit there, watching a spinning cursor, for a full minute before being told that the Host isn’t responding?

Generally, the Host doesn’t respond (which really means “I’m not going to let you do that”) because the service is being overloaded by calls, or because some feature isn’t working right.

Fortunately, you’re about to learn of a weapon you can use on it. It’s an old weapon, really: it’s the Option-Esc keystroke, otherwise known as the Force Quit technique. If you do this as soon as you realize you’ve entered a one-minute unresponsive-Host situation, and you turn off your modem, three good things happen. First, you don’t have to sit there while you’re billed unfairly (the system will notice you’re gone after a few minutes). Second, you can get on with your work. Third, in many cases, you can immediately try logging back on, often with better results.

Apple’s secret Performa forum

Buying a Performa doesn’t get you merely free software and a free modem. If your model came with America Online software, you also get your own secret Q & A forum on America Online.
The entire SECRETS Internet discussion

Q: So where's all the good Internet stuff in this book? What's the matter with you?
A: We're too smart, that's all.

Despite the cover stories on every major news publication, we don't see the charm of logging directly onto the Internet, the mega-network of 1950's arcane computers and universities worldwide. Yes, there are 20 million people on it; yes, there's lots of good stuff on it. But no, you don't have to spend $45 per month for a connection, plus waste hours and hours slogging through useless doggerel, plus learn a command-code language worse than DOS.

Why? Because you can get it all for $10 a month, in an easy, icon-clickable format, on America Online. Look, the Internet has three main goodies: software to download (America Online has all the good Mac stuff already); e-mail between all 20 million Internet members (you can send and receive it beautifully from America Online); and the famous "Usenet newsgroups," otherwise known as bulletin boards — discussions on every conceivable topic. America Online will shortly offer World Wide Web access, too.

It's not just America Online, either. Other services, such as eWorld and hundreds of local BBS systems, are also getting hooked into the Internet with easy-to-use front ends.

Our biggest Secret about trying to get hooked directly into the Internet (if you're not already), therefore, is this: don't bother. Why crawl over 100 miles of parched, cracked, rocky road, when they've just built a monorail?

Your version of the America Online software is called something like 2.0.1a or 2.1a. Other versions don't permit access to the secret area, which is called Club Performa. It's literally the only America Online area officially staffed by Apple reps. (Club Performa is not to be confused with the generally available Performa Resource Center.) Visit your secret Club ... but don't tell anybody!

Gambling on America Online

In a chat room, such as the Lobby or another public room, type this:

//roll-2-6

(Substitute any numbers you wish for the 2 and the 6.) Press Return. Then, in front of everybody in the room, America Online will print:

OnlineHost : Pogue rolled 2 6-sided dice: 4 1

(Of course it'll have your screen name instead of Pogue's.)

We suspect this feature was part of America Online's early design, when the programmers imagined that games of chance would play a role.

A little America Online privacy, please

When your Mac is tied up downloading a file, there's nothing more unsettling than getting Instant Messages (IMs) from your friends. You can't respond — unless, of course, you cancel your download.

Here's the tactful solution. Before you start the download (or go into a free area), send an instant message to the screen name $im_off (you have to type something into the message area, so just type a couple of spaces there or something).

Now, if somebody tries to send you an Instant Message, they'll be told politely that you can't receive it at the moment. And they won't hate you for ignoring them.

To receive IM's again, send an IM to screen name $im_on.
A CD-ROM is a silvery, plastic-coated disc, 4 3/4" across. It weighs about half an ounce. It has two remarkable attributes that make it cry out to be used with a personal computer: it’s dirt cheap to manufacture, and it holds a huge amount of information (600MB) — all on one side! (FYI: The data is recorded on the underside.)
CD-ROM Basics

The speed issue

The CD-ROM has two drawbacks, though. First, it's slow. A CD delivers about 150K of information to the Mac per second. Even inexpensive hard drives are over ten times faster. A CD-ROM player's access speeds (how long it takes to find a particular piece of information) may be anywhere from 300 to 500 milliseconds, as compared to 20 ms for the average hard drive.

Apple, NEC, and others eventually released dual-speed and double-speed CD-ROM players. In fact, in early 1994, NEC announced its triple-spin and even quadruple-speed drives. Major caveat: Though these drives speed up certain aspects of using your CD-ROM discs (opening windows, finding files), they won't play your existing discs anywhere near three or four times faster. To take full advantage of the potential speed, you have to buy special discs that have been optimized for these drives.

The waiting game

The second problem with CD-ROMs is the chicken-and-the-egg syndrome. You can't find very many good CD-ROM discs, so relatively few people buy CD-ROM players. Yet the market won't be flooded with excellent CD-ROM discs until enough people own players!

Apple, of course, has taken a brave step toward doing something about this mutual hesitation: it's begun to design Macs with optional built-in CD-ROM players, beginning with the Centris models, LC 520, the IIvx/Performa 600, and so on. Sure enough, the number of Macs equipped with CD-ROM players has slowly but surely begun to climb.

How a CD works

A CD of any form is basically a sandwich: layers of clear acrylic covering outside, layers of aluminum and plastic inside.

Data gets etched into a single continuous spiral on the disc. The data consists of pits and lands (the space between the pits). As the disc spins, the CD-ROM drive shines a narrow beam of laser light through the clear plastic to strike the pits. The flickering light created by striking pits and lands with the laser beam is converted by the drive's complex electronics into data. The laser device is attached to a long arm that moves back and forth across the disk. Incredibly, data track on a CD-ROM is about \( \frac{1}{300} \) the thickness of a human hair. That's why a disc so small can store 600MB of computer information — that track is three miles long!

A phonograph record spins at a constant rate, usually 33 \( \frac{1}{3} \) RPM, from the edge of the record towards the center. In contrast, the CD-ROM drive reads data from the inside of the disc outward. The drive speed varies according to the position of the laser beam; the disc gradually slows down as the laser travels towards the outer edge of the disk. (In other words, the surface of the disc is always moving at the same speed past the laser.)
When the laser is at the beginning, or inside, of the disc, the disc spins at about 500 rpm; by the end or edge of the disc, it's down to 200 rpm. The data is actually read by the laser beam at a rate of between 1.2 and 1.4 meters per second.

**What to Do with 600MB**

The term CD-ROM stands for *Compact Disc — Read-Only Memory*. As we mentioned in other chapters, *ROMs* on your Mac are chips that have software permanently “burned” onto them. A CD-ROM is also a read-only device: you can get information off it, but you can't store your own files there. (At least, not inexpensively, as we'll explain later.)

You can get CD-ROM discs filled with regular business programs; libraries of clip art, QuickTime movies, and fonts; interactive comic-book adventures with sound and video; electronic encyclopedias; and more.

**Shovelware**

But let’s face it: 600MB is a lot of data. Makers of CD-ROM discs seem to have struggled with the task of filling that much disk space in one of two ways: either they don't fill it, and just put a few dozen megabytes' worth of information on a disc and leave the rest empty; or they pile on some useful stuff and some *shovelware* — demo software, shareware, HyperCard-like presentation stacks, and other fluff you’ll never use.

Still, we've seen a few clever uses for the CD-ROM medium. Sometimes you’ll hear of a *mixed-mode* CD: one that contains both Mac data and regular CD audio tracks that play through your stereo. Some major software companies, such as Microsoft, are bundling their software onto CD-ROMs. CDs are cheaper to mass-duplicate than floppy disks, take up less space, and can't be erased by mistake.

Adobe pioneered a scheme you're going to be seeing a lot. You get a CD-ROM disc containing *everything* they sell, all 40 million fonts (or whatever the number is). But it's password-protected. When you want to “unlock” a certain piece of software, you call up the company and provide your credit-card number. In exchange, you're given the code that unlocks the program (or font) you want. In 1993, Apple released Software Dispatch, a CD-ROM full of commercial software using exactly this scheme, and they have distributed half a million of these disks since then. (Other companies are following suit.)

**TRUE FACT**

*Where's High Sierra?*

The major manufacturers got together at the dawn of CD-ROMs to establish a set of standards so that every maker’s CD-ROM player can play the same discs. CDs that meet this standard can actually be played on CD-ROM players for both Mac and IBM.

The first meetings to discuss CD-ROM format standards were held in 1985. Those attending included representatives from Apple Computer, Digital Equipment, Hitachi, LaserData, Microsoft, 3M, Philips, and others. They held their meetings in a spot called High Sierra, near Lake Tahoe, Nevada.

To this day, the CD-ROM format we've come to know is called the *High Sierra* standard. High Sierra is a part of the general ISO (International Standards Organization) 9660 CD format.
Interactive CDs

One promising use for CD-ROM is the interactive CD. This kind of software responds to your actions or your answers, changing the storyline (if it's a movie or story) or the course outline (if it's training), according to your feedback.

Interactive game/stories, like space-adventure CDs (Spaceship Warlock and Iron Helix, for example), are one category of interactive CDs. Another category is tutorials; software manufacturers have already begun to provide interactive lessons for some of their more complex programs. Adobe Photoshop's version 2.5 CD, for example, comes with a training session that's even better than a videotape. You can sit in front of your Mac, learning first-hand how to use your new software, with a helpful bit of voice and visual feedback as well.

Getting Your CD-ROM Up and Running

Hooking up your CD-ROM player is as easy as connecting any other device on your Mac’s SCSI chain. You have to watch for the same pitfalls of SCSI termination and cabling that we discuss in Chapter 29.

But the CD-ROM adds some additional complexities. A typical CD-ROM comes with a set of oddly labeled system extensions that lets your Mac read the little discs. The AppleCD-ROM drives, for example, include Foreign File Access, High Sierra File Access, and ISO 9660 File Access — and that's just to read the discs. You may have a set of additional utilities that allow you to turn off the double-spin capability (if it applies), access Photo CDs, or to use your CD-ROM unit to play audio discs.

Some of Apple's system software updates have wreaked havoc with older CD-ROM software. When the next release comes, make sure your CD-ROM installation disks are up to date, too.

Photo CD

Eastman Kodak's Photo CD works like this. You take a roll of 35mm film to a local camera shop. They send the film to Kodak's own laboratory, where it's scanned with Kodak's PCD ultra high-resolution film scanner.

After the photos are digitized, they're recorded onto a Photo CD disc. The Photo CD can hold up to 100 photos. They're recorded in five different resolution levels, ranging from thumbnail size up through 3072 x 2048 pixels. That's big enough and detailed enough for professional use.

Photo CD costs roughly $30 for a 24-exposure roll and takes about a week. Be aware that the photos are often multimegabyte affairs, even though they are compressed with Kodak's special compression scheme. A CD-ROM player, even one of the new double-speed drives, can take quite awhile to transfer that data to your hard drive.
If you don’t have enough photos to fill a CD the first time out, you can send the disc back with another roll of film and add more scans to the disc. But only certain CD-ROM players, called multisession drives, can read these multisession discs. All recent drives from Apple, such as the CD-300, can read multisession discs.

After you have a Photo CD disc

After your pictures are transferred to Photo CD, you’ll be amazed at how easy they are to work with.

Kodak’s Slide Show Viewer program lets you preview the Photo CD. If you run a graphics program like Photoshop, you can transfer the image you view directly to it, either by copying and pasting or using a menu command.

If your CD-ROM won’t read Photo CDs

If your CD-ROM drive is an older model that’s not compatible with Photo CD, don’t despair. CD-ROM Toolkit (from FWB), CD-ROM Driver for Macintosh (from Trantor Systems), and SuperCache (from Optical Access International) promise to upgrade many existing CD-ROMs to support Photo CDs.

Make Your Own CDs

If building a clean room and buying expensive CD duplication equipment doesn’t quite fit your budget, you’ve got another option: CD-R, short for CD-Recordable. (Kodak’s Photo CDs are actually CD-Rs.) If you need to make just a small number of CDs, this may be the technology for you.

CD-R works something like WORM optical drives (which stands for “write once, read many”). Data can be recorded on the disc just once; if you make a mistake in what you record, you have got to record another disc from scratch, at the cost of about $30.

A CD-R player uses a laser beam to apply heat to the disc. The heat generates nonreflective spots on the disc surface, very much like the pits on a conventional CD. Also like the most expensive CD products, the CD-R disc is gold-plated, which is said to provide superior reflective characteristics.

The technology is real and practical, but it’s not cheap. Kodak’s own PCD Writer 200 drive costs $6000, plus a couple thousand dollars more for Mac-compatible software. Like the double-speed CD-ROM drives, the Kodak recorder transfers 300K of information per second, can play audio CDs, and can play any standard (ISO 9660) discs. A Philips unit, the CDD 521 MR, lists for $8000; a similar unit has supposedly been released by Carver, the high-end audio manufacturer.

The inexpensive alternative comes from Pinnacle Micro. It’s called the RCD 202, and it costs a mere $4000. But it can’t do multisession recording.
Audio CDs on a CD-ROM Drive

Apple's line of CD-ROM players comes complete with a desk accessory called either AppleCD Remote or AppleCD Audio Player (see Figure 28-1), which you can use to play an ordinary audio CD (other brands of CD-ROM players come with a similar program). When you load an audio CD into a CD-ROM drive, its icon appears on your desktop just like any other CD-ROM disk, but its name is always the generic "Audio CD." And, on older Macs, when you play an audio CD, the sound doesn't come from the tiny speaker in your Mac. You have to have a separate set of amplifiers and speakers (or headphones) to work (for example on your stereo).

The controls for the AppleCD Audio Player are a lot like those on a standard audio CD player. You have some basic programming and repeat functions, the ability to scan through the tracks of a disc, and even shuffle play, which means that the player plays songs in its own random order. When you expand the window, you can see a listing of each track on the disc along with its playing time. A pop-up menu allows you to jump directly to any track by selecting its number (see Figure 28-1).
Chapter 28: A Short CD-ROM Chapter

TRUE FACT

How a CD is made

Manufacturing a CD is such a complex process that the original manufacturing plants cost a whopping $30 million to build. With data on a compact disc reduced to microscopic levels, manufacturing has to be done under extraordinarily clean circumstances. CD plant workers must wear protective clothing and face masks. The work is actually done in a so-called clean room that's carefully controlled to be free of even the smallest contaminants. A single particle of dust is more than 100 times larger than a data pit on a finished CD!

Before they can build a master, workers transfer the data to 9-track computer tape. From there, the data is etched onto a glass master disk, called a float glass. A laser beam burns data onto the float glass.

Next, the glass master is silver-plated to create a negative. The negative is called a father disc, which, in turn, is used to generate a series of positive-imaged discs labeled mothers. The mothers beget sons (we're not making this up), which are the actual molds used to stamp the finished CDs.

The actual injection-molding or stamping process takes about 15 seconds per disc. A laser beam inspects the discs for flaws, after which the disc is coated with reflective aluminum (or gold, in the case of the purist-style audio CDs). Finally, they apply clear acrylic to the aluminum coating; then the disc goes off to inspection and packaging.

At every step of this highly complex process, the equipment must be absolutely clean. The pits in a CD are microscopic in size, and a single particle of dust can make them unplayable.

CD-ROM Secrets

CD Remote keyboard shortcuts

Apple has built a few handy shortcuts into the AppleCD Audio Player desk accessory. When you're using it to listen to an audio CD, you can crank up the volume by pressing the up-arrow key and turn it down by pressing the down-arrow. Likewise, you can move forward or backward one track on the CD by using the Left and Right arrow keys.

Recording CD sound directly to your Mac

Mac models equipped with built-in CD-ROM drives (such as the IIVx, IIV, Centris/Quadra 610 and 650, and the Quadra 800) allow you to record sound directly from an audio CD to your Mac. But you can't just pop in a CD and start recording. In order for the direct recording to work, you first must unplug your microphone from the computer. And if you have a monitor equipped with a mike jack (such as the Macintosh 16" Color Display), you also have to unplug the microphone cable that connects the monitor to the Mac.

After you've disconnected these other sound-in lines, you can record music directly from the built-in CD-ROM drive to the Mac.

Instant desktop access to your songs

While we're discussing the AppleCD Audio Player: if you have it, you also have double-click access to any song on a music CD. That is, when you insert an audio CD, you can view its contents as individual icons. Double-click a track's icon to open it in AppleCD Audio Player, ready to play.
PowerCD vs. the CD300

If you're shopping around for an AppleCD-ROM drive, you should definitely choose the CD300 over the PowerCD. The CD300 transfers data at twice the speed of the older PowerCD (300 kb/sec. vs. 150 Kb/sec.). The PowerCD does have some neat features — you can use it as a stand-alone portable audio CD player, for example — but if you're primarily interested in running CD-ROM software, then you're much better off with the faster drive.

The green-magic-marker trick

You may have heard, and chuckled at, the high-end audio world's particular brand of psychic phenomena: that if you outline the edge of an audio CD with a green magic marker, that disc will sound noticeably purer and better. We're not going to make too much fun of this concept; despite its flimsy scientific foundation, we know some music fans who absolutely swear by it.

However, we can say that this doesn't work on CD-ROM discs. The colors in Spaceship Warlock don't get any brighter, the entries in the electronic encyclopedias don't get any livelier, and no additional fonts appear on Adobe's Type-On-Call disc.

Protecting your discs

Our advice here is the same as it was for SyQuest cartridges: Keep them in the case. One scratch across the plastic (on the underside, that is — which is the only side that counts, actually) and your disc is dead meat.

Take your discs out of their cases only when you want to play them and handle them by the edges (or by sticking your finger through the hole in the middle).

Instant menu access to your songs

Install MenuChoice (included with this book, and also with System 7.5); it makes your Apple menu sprout submenus. Now insert an audio CD into your player. When its icon appears, click it, choose Make Alias from the File menu, name the alias something like Current CD, and stick the alias into your Apple Menu Items folder.

Now, whenever you choose Current CD from your Apple menu, the submenu shows a list of the songs on that CD, even if it's not the same disc you originally inserted.

Unfortunately, even if you name the songs (using AppleCD Audio Player), they still show up in the Apple submenu as being called Track 1, Track 2, and so on. Still, this menu setup is a handy table-of-contents shortcut to your favorite songs.

Make a QuickTime audio track

Launch a QuickTime movie program like Movie Player or Simple Player. Choose Open from the File menu, and select a favorite track on a music CD. (You'll be asked to save the incoming file; select your hard drive, type a name, and save away.) Now wait for the (lengthy) conversion process.

When it's all over, you'll see a strange sight: a movie's controller bar (see page 686) with no movie! Click the Play button, though, and you'll realize that you've got a QuickTime soundtrack that you can manipulate as you would any QuickTime movie. Play it, import it into Premiere as music for your other movies, slap it into a Word document, and so on.
In this chapter:

- The history of SCSI
- The three rules of SCSI
- The ultimate SCSI troubleshooting guide
- What's to become of SCSI?
What is SCSI?

If your Macintosh setup consists of just your computer, an internal hard drive, and a printer, you never have to face the mysteries of SCSI-land. SCSI is short for Small Computer System Interface. It’s the name given to the circuitry in your computer that allows you to hook up hard drives, removable devices, scanners, CD-ROMs, tape drives, high-end color printers, and other external devices to your Mac. (In the beginning, it was originally pronounced either scuzzy or sexy. We prefer the latter. Most people use the former.)

SCSI, as all world-weary Mac veterans know, is used in all kinds of terminology. There’s the SCSI port on the back of the Mac. There’s a SCSI device (any equipment plugged into that port). There are SCSI cables. But unfortunately, the terms you hear most are SCSI conflicts and SCSI problems.

These problems arise because SCSI is a system of sending information incredibly fast through a very narrow set of wires. Worse, SCSI messages can be sent to several different devices, all on a single cable. You may have a hard drive, a scanner, and a CD-ROM player all chained together. Of all Mac components, SCSI is the most user-hostile, the one most likely to cause problems, and one of the very few ways an unsuspecting user can actually damage a Mac by being underinformed.

There are rules for safe SCSI connections. You’ve probably read them before; heaven knows, we’ve read them plenty of times. The secret we wish to impart, above all, is that these rules are made to be broken in the world of SCSI. You may have to experiment. You may have to plug and unplug devices. You may have to explicitly violate one of those golden rules of SCSI. But with a little patience, almost any chain of SCSI devices can be made to work together — and after it’s set up, you don’t have to mess with it again.

A Little History

The search for some sort of standard to regulate connecting extra devices to a computer began in the 1960s. IBM Corporation developed a standard called OEM Channel for its mainframe computers. OEM Channel was a fairly successful system of transferring information. Too successful, actually, as far as IBM’s competitors were concerned; the Federal government adopted it as a standard. IBM’s competitors went to court in an unsuccessful bid to prevent the standard from being adopted.

In the early 1980s, Shugart Associates, a disk drive manufacturer, and NCR Corporation, who makes the SCSI chips found in your Macintosh today, teamed up to develop a new standard based on IBM’s OEM channel. They called it SASI, short for Shugart Associates System Interface. (Before the Mac came along, nobody ever named anything with words — only acronyms.) SASI became the forerunner of SCSI, which was adopted by the American National Standards Institute (ANSI) in June of 1986.

The standard lets up to seven devices be connected together, one plugged into the next, in a daisy-chain. If hooked up properly, these peripherals are recognized by your Macintosh when you power them all up.
Each device communicates with the Mac through a software program called a *device driver*. On a hard drive, the driver is installed by the formatting program (such as your Apple HD SC Setup program). This driver gives the Mac its instructions about reading data from, and writing data to, the SCSI device you hooked up. A scanner's driver may come in the form of a system extension that allows it to work with your Macintosh, as do CD-ROM drives and other peripherals.

**The Three Basic Rules**

As we mentioned, SCSI holds great potential for creating problems on your Mac. We also mentioned some rules that, when followed, are supposed to protect you against these problems.

**Rule #1: Termination**

SCSI is considered a *bus*. That's not a vehicle you ride from one place to another, but it *is* very similar. The bus we're talking about is a road or channel through which electrical signals are sent. A *terminator* is a resistor that's used, in SCSI-land, to *begin and end* the circuit. That's the first golden rule: a terminator must be on each end of the chain of devices.

The terminator prevents power from hitting the end of the cable and bouncing back, creating an echo. This signal reflection could result in all sorts of unsavory consequences, as we'll explain later.

**The first and last**

Your Macintosh's internal drive usually has its own termination resistors already installed. If you ever open up your Mac to look at its internal hard drive, you'll see several components plugged into the bottom of the drive, usually orange. The internal drive is generally the first device on the chain.

Termination must also be installed on the *last* device in the chain, whether it's a hard drive, scanner, plotting device, or whatever (see Figure 29-1). Usually it comes in the form of a gray plug that gets plugged into the empty jack on your last SCSI peripheral. If there's only one set of jacks on the device, you can get what's called a "pass-through" terminator that has a plug on one end and a jack on the other. The jack is for your SCSI cable.

*Figure 29-1:*
Standard SCSI setup. Because the Mac (at left) already has internal terminators, all you have to do is put a terminator on the last physical SCSI device.
External drives, internal terminators

Some manufacturers sell hard drives that are internally terminated. Guess what? That means you can’t string that drive together with other SCSI devices unless it’s the last item in the chain. (And if you have two such devices, you can only use one of them!)

We’ll try to be charitable and not accuse these money-grubbing manufacturers of using internal terminators as a cost-cutting scheme. These arrogant companies assume that the drive will be the only device in the chain (or the last one). Of course, that’s often not the case.

Other manufacturers allow you to switch termination on and off with a tiny set of DIP switches (confusing, because you have to read the manual to figure out which is on and which is off). The very best equipment has a termination on/off switch, which at least makes the process simple (and saves you the cost of a terminator plug).

Before buying a new SCSI device, first check with your dealer or the manufacturer about this. If termination isn’t switchable, buy a device that has no internal terminating resistors.

More exceptions than rules

As we said, termination rules on the Macintosh are not cut in stone. Here are a few exceptions to the Termination Rule.

Take the Mac Plus, for example. The Plus doesn’t have any internal connections for a hard drive. Therefore, the first hard drive you plug into it must have termination. And you still need a second terminator at the end of the chain if you add additional devices.

Then there’s the IIIfx, which requires a 200-ohm terminating resistor, unlike any other Mac. To provide proper termination, Apple designed the infamous black terminator, which includes the terminating resistor and a capacitor that supposedly absorbs power spikes. If you have a IIIfx and no black terminator block, contact Apple or your dealer for one. A regular terminator, according to Apple, can cause problems. (Don’t tell anybody: we had a IIIfx for years, used a regular gray terminator, and never had a problem. That’s SCSI for you.)
The Quadra 900/950

Most of the Quadra Mac models make life even more difficult because they each have two SCSI buses: one chain for the internal drives and another for the external devices. But since the SCSI chip is addressing both banks as though it's one gigantic chain, you are still limited to seven devices on the chain. Talk about confusing!

To add to that confusion, the internal SCSI bus is already terminated at the beginning and end. So if you're installing any additional hard drives into the commodious drive bay of the 900 or 950, you must first remove the internal termination. Or you're asking for trouble.

PowerBook termination

Now about the PowerBook, which has what Apple calls "a small built-in terminator" attached to the internal drive. But this terminator isn't sturdy enough to handle a large SCSI chain. So here's the oddball recommendation: if you have more than one SCSI peripheral attached, connect a terminator to the first external device and the last one (see Figure 29-2)! If you count, you'll realize that you then have three terminators attached (including the internal one). Chapter 12 gives more details about PowerBook termination.

![Typical PowerBook SCSI setup, showing termination both at the first and the last external SCSI device.](image)

Active termination

We can't close this section without briefly mentioning still another aspect of termination. This new wrinkle seems to hold out the promise of relieving SCSI confusion: active termination. This feature is starting to appear in some drives now. It's a circuit that decides whether termination is needed or not and turns it on when it's appropriate to do so. Active termination isn't widespread in the marketplace yet, and we don't know if it solves all of the typical termination-related problems. But if it works, we'll vote for it and hope that it catches on.

(We should mention here that the Quadra 800 does have its own active termination scheme, but it's only active when SCSI devices are installed within its large drive bay. If you install an external SCSI device, the 800's active termination is automatically disabled, and you're back to the usual inconvenient SCSI termination ritual.)

Rule #2: SCSI Addresses

Remember, the Mac can send information to up to six attached pieces of SCSI equipment. To make sure that each SCSI device receives the correct messages from the Mac, each must have a unique address or ID number.

Your Macintosh reserves ID number seven for itself. Apple, when it ships a Mac with an internal hard drive, sets the internal drive's ID to zero. That leaves the numbers one through six for you to play with.
(Of course, some non-Apple internal drives are sometimes set to different SCSI numbers. If you're not absolutely certain, install the SCSI Probe Control Panel included with this book and check for yourself. See Chapter 33.)

What is often misunderstood is that the last actual device on your SCSI chain doesn't have to have the highest or lowest ID number.

External devices usually include some sort of switch, dial, or set of DIP switches that let you change the address number. (We prefer the dial mechanism. Although it's a little harder to change, it's less apt to be changed accidentally when you move or reconnect the drive. As for those hateful DIP switches used by some manufacturers: get with the program. This is the Mac.)

The key to all this is that every device's ID number must be different. If two or more devices have the same ID number, the instructions to the drives will get confused. The drives, or your Mac, or both, are likely to crash.

Note: Before turning on your Mac, make sure there are no duplicate SCSI ID settings!

**Rule #3: Cabling**

Cables are often ignored as a source for SCSI-related troubles. But it's very common for internal wires to fray and jacks to become damaged over time. Any one of these problems can cause unexplained havoc across your SCSI chain. (We actually have a client who threw away a 500MB hard drive that he couldn't get to work. We rescued it from the garbage and discovered that its SCSI cable had become pinched by a heavy piece of equipment. The drive, on the other hand, was fine.)

The first rule here: keep the cables as short as possible. Although the Mac SCSI standard allows you to use up to 18 feet of cable, you have to subtract from that figure the amount of cable inside an external SCSI case. With so many fragile electronic signals traveling so fast and so far, it's not uncommon for troubles to occur even if the overall length of the cables is within the limit.

Almost every new external SCSI component comes with the cable you need to connect it to your Mac. That's usually a smallish, 25-pin connector on the Mac end (called a DB-25 connector) and a very wide 50-pin (Centronics-style) connector at the other. A few drive manufacturers (LaCie, for example) provide cables with 25-pin jacks on both ends because the drives they sell have 25-pin connectors, just like the Mac.

What is usually not included with your new drive is the cable you use if you are going to daisy-chain it to another device. If you have one or more SCSI peripherals already, before you buy another SCSI device for the chain, buy another (usually 50-pin to 50-pin) cable, too.

To be brutally honest, Apple's SCSI cables are the most expensive and the most reliable we've ever used. They're worth every penny. Since the first edition of this book appeared, a half-dozen readers have written us to confirm this: that a new, shielded, Apple SCSI cable instantly solved an otherwise baffling SCSI problem.
**The Great SCSI Power-Off Myth**

Ever since the Mac was introduced, every book, manual, and article has pounded the following warning into our soft little brains: Never connect or disconnect a SCSI device while the Mac is on! At the very least, according to the myth, you'll crash your computer; at the very worst, you may damage your Mac's SCSI controller chip and some of the circuitry in the devices themselves. All you'll have left is a big repair bill.

Well, we've got some shocking news. We asked an Apple hard-drive engineer about this famous bit of Mac lore. Know what he said, off the record, about "hot-plugging," as he calls it? "I've been hot-plugging hard drives daily for ten years, and I've never had a single problem. Nobody here will admit it, but we hot-plug hard drives all the time."

Hard to believe? It's true. If you're careful, it's perfectly possible to plug and unplug SCSI devices while everything's on.

So where did the great Power-Off Myth come from? Even our Apple engineer friend concedes that it's possible to cause damage if you don't hot-plug correctly. And what's "correctly?" All the pins of the SCSI connector should arrive or depart at the same moment. In other words, don't pull the right side off, and then the left; attach the SCSI connector flat, all at once, face-to-face with its jack. If the connector is attached or removed unevenly, you run the risk of creating a power surge on the subset of pins that are momentarily in contact with the jack, or grounding the wrong pin.

The Myth arose for a second reason, too: if a hard drive isn't already attached as the Mac starts up, the drive's icon won't show up on the desktop. This would certainly alarm the novice. If you hot-plug a hard drive without restarting the Mac, its icon still doesn't automatically appear. However, you can use SCSI Probe, included with this book, to "pull" its icon onto the screen after it's attached. (That's how the Apple engineers do it.)

One additional caveat: if a new hard drive you're attaching has the same SCSI address as one that's already attached (see Rule #2), the Mac may very well wipe out the new drive's folder hierarchy. This is no myth.

Obviously, then, it's safest to follow the official Apple guidelines — to turn off the Mac and all SCSI devices when connecting or unconnecting them. But if you're savvy, or impatient, there's no reason to be terrified by the Great SCSI Power-Off Myth.
SCSI Troubleshooting

If all goes well, after you have your SCSI chain set up, you can turn on everything and start your computer. After your desktop pattern appears, you should see the icons for all of your external hard drives in the proper places at the right side of your Mac's desktop.

If every component and every cable is textbook-perfect, you can get back to work or play on your Mac without any further incident. There are times, though, when things just don't work the way they ought to work, and you begin to learn what the term "SCSI hell" is all about.

Most times, SCSI troubles are very obvious. Sometimes they're so subtle you don't even suspect SCSI. So let's take them in turn.

Spotting the symptoms

You won't believe how many different kinds of Mac troubles can be caused by SCSI glitches. These include a Sad Mac icon when you start your Mac, a freeze when the Happy Mac icon appears, or a freeze at the "Welcome to Macintosh" startup screen. Sometimes a specific SCSI device's icon won't show up on your desktop, or you get random freezes when you attempt to save or copy large files onto a specific hard drive.

A SCSI conflict can affect a system software installation, too (for example, the Mac won't recognize one of the installation disks). If something bad is afoot in your SCSI chain, the installation process can come to a screeching halt.

Solving the problems

First, you need to determine if it's really a SCSI problem. As explained in Chapter 32, begin by pressing the Shift key during startup (to turn off all your extensions). Disconnect the 25-pin SCSI cable from the back of your computer. Now you have no external SCSI gear. Try to start up again.

If your computer works, then you have confirmed that something in the SCSI chain is wrong. If your computer still won't work, then perhaps the problem is with your internal drive or system software. Try starting up with your System Tools or System Startup disk (System 6) or your Disk Tools disk (System 7).

If you're able to start successfully, you may simply have to update your internal drive with your formatting software (see Chapter 7 for more on hard-disk drivers and updating them). (Damaged or incompatible hard-disk drivers — software — are sometimes responsible for all sorts of ills that are blamed on the hardware. Sometimes one crash can do a device driver in. Frequent crashes when you are trying to access data from your hard drive or write data to it, may indicate a damaged driver.)
Which SCSI device is it?

If the trouble lies in the SCSI chain, disconnect the newest device on the chain. Recheck your cables and termination again and then power up. If it works okay, then you have narrowed the problem down to that new device. To isolate the problem, connect only that device to your Mac and see if it works. This is the time to check the manual. It may tell you that your new device is internally terminated or that it works best in a certain SCSI chain location.

If you're still having no luck

Take a deep breath. Review each of the following steps, in order. If you follow them all, you will solve what’s wrong. You may never know why things weren’t working, but you’ll be pleased enough that everything finally works.

1. Make sure every device is plugged into a power outlet. Make sure they’re all switched on. Check that each connector is firmly attached to its SCSI jack.
2. Change the ID numbers of your SCSI gear. Try reversing the numbers, for example — but be absolutely certain, before you turn on the Mac, that there’s no numbering conflict.
3. Change the termination. As we said, not everything in SCSI-land is clear-cut. First, try removing all terminator plugs from your external drives. (You can’t hurt your equipment by having too few terminators.) If that doesn’t work, put a terminator plug on the last device in the chain.
4. Suspect your cables. Check their length. The total combined length can’t exceed 18 feet; 12 feet is safer. Swap the cables among the devices in your chain. Replace them, if you have spares. Try Apple cables.
5. Place your SCSI devices in a different physical sequence. Put the last device on the chain first or somewhere in the middle. (But don’t forget: when you make these changes, reinstall the termination on the last item in the chain, check for secure connections and correct ID numbers.)
6. Make sure you’ve installed the proper software driver for each device. Without the driver, your Mac may not even know a SCSI device is there.
7. Put a terminator in the middle of the chain.

What if the drive just won’t mount?

You restart your computer, and everything seems to be working fine — except the hard drive icon doesn’t appear on your desktop!

At times like this, you really need a utility that lets you examine your SCSI setup. One such tool is SCSI Probe, which is provided with this book (on the Macworld SECRETS disks). SCSI Probe shows you the SCSI address numbers of your various devices and whether they are mounted or not. In this case, if you didn’t turn on your external device soon enough before booting your Mac, SCSI Probe will actually pull your external drive’s icon onto the desktop.
If SCSI Probe doesn’t work, or your system crashes when you try to mount the drive, try replacing the device driver with your formatting software first and see if it works.

If you still can’t get the drive to mount, use Apple’s Disk First Aid or a commercial hard disk repair/recovery tools. (One such is MacTools, which has a discount coupon provided in the back of this book.) For greater insights into hard drive lore, consult Chapter 7.

The Future of SCSI

Obviously, SCSI isn’t a perfect — or, actually, even satisfactory — technology. Fortunately, America’s best engineers are hard at work designing improvements. Unfortunately, most of these improvements have to do with improving speed of data transfer instead of relieving the headaches of setting up SCSI gadgets.

The near future: SCSI Manager 4.3

As this book goes to press, Apple has begun testing a new system extension called SCSI Manager 4.3. The principal improvement is that fast data transfers will be more efficient, thus speeding up SCSI performance on high-speed Macs like the Centris and Quadra. The new extension will also pave the way for the next generation of Macintosh models.

Another important improvement has to do with asynchronous transfers, in which two streams of SCSI information take place simultaneously. While the Mac is waiting for a file to finish being saved onto a hard drive, it can process a command to read information from a CD-ROM.
The less near future: FireWire

Whoever elected SCSI, anyway? It’s awkward, it’s headache, it’s limited.

What if something came along to replace it? What if you could connect your hard drives, CD-ROMs, printers, videotape recorders, scanners, and other devices — up to 63 in a chain — to a single jack on the Mac? What if you could connect and unplug them freely, without even having to shut down the computer? What if the cables were smaller, cheaper, and could be longer than SCSI cables? What if these cables conveyed data incredibly fast, along the lines of 100 to 300 megabytes per second? And — while we’re dreaming — how about eliminating the hassles of termination and ID switches forever?

It exists. It’s a new, six-pin, multimedia-oriented system of connecting your Mac peripherals, and it’s called FireWire. Apple developed this new standard with Texas Instruments and plans to introduce it on new Mac models some time in 1995 (in place of SCSI). Of course, in theory, this means that you’ll have to buy all new hard drives, printers, and so on. Fortunately, Apple is working on a way to make FireWire compatible with these existing devices. Frankly, we can’t wait; we don’t care if we never see a SCSI terminator again.

### TRUE FACT

**How fast is your Mac’s SCSI port?**

Apple doesn’t bandy about official figures as to just how fast the SCSI port is of each Macintosh model. But hard drive manufacturers have some rough estimates; below, we’ve listed a few examples. These figures vary from manufacturer to manufacturer. Speeds are also dependent on the kind of storage device installed, the kind of formatting software, extensions, SCSI setup, the size of files being transferred, and so forth.

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<th>Model</th>
<th>Estimated SCSI Port Speed:</th>
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<tr>
<td>Other 68000 Macs</td>
<td>900K per second</td>
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<td>Mac II, IIX, IIXc</td>
<td>1400-1600K per second</td>
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<td>Mac IICi</td>
<td>2100K per second</td>
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Chapter 30

NuBus and Other Slots

In this chapter:

- What NuBus is
- What PDS means
- How to install a card
- The future of NuBus: NuBus 90 and PCI

What if you had an IBM PC instead of a Mac? If you wanted to install a new video card or modem board, you couldn't just open the PC's case and insert the card. No, you'd have to fiddle around with a bunch of little jumper plugs and dip switches, and then you'd have to configure the software to tell your computer that something had been installed.

With your Macintosh, you just insert the board in the slot, reboot your Mac, and you're in business. While sometimes you may have to install a control panel to make some settings to the board, the NuBus device is self-configuring. But that easy setup process belies the sophisticated technology behind it.


**NuBus and PDS**

The expansion slot standard used on the Mac is called NuBus (pronounced *new* bus, which, more or less, describes what it is). The technology was originally developed in the 1970s at the laboratories of MIT and was perfected by Texas Instruments for use in workstation computers. Apple's version of NuBus wasn't released until March of 1987, when the Macintosh II was produced. The Mac II (and its successors the IIX and IIfx) contained six expansion slots; no model since then has had as many.

**The big idea**

The theory behind NuBus is simple: It's a *32-bit architecture* (the circuitry is "wide" enough to allow 32 bits of data to stream through at a time) that lets you expand your Macintosh. Without having to buy a new computer, you can add features as you need them.

By far the most common NuBus card is a *video display adapter* board (see Chapter 10 for more on monitors), into which you can plug your monitor. While many recent Mac models have built-in video memory banks, most still require a video board if you want to get 24-bit color or graphics acceleration.

Some other reasons you might buy a NuBus card:

- To provide Ethernet or Token Ring network communication capabilities for a Mac that doesn't have them
- To speed up SCSI transfers (see Chapter 29 for details on Fast SCSI-2)
- To capture video images, either still frames or movies, for processing on your Macintosh
- To replace some of the functions of your Mac's main logic board, in the pursuit of accelerating your Mac

One well-known NuBus accelerator board, the Radius Rocket, brings *parallel processing* to the Macintosh. It makes the Mac faster by splitting up big computing tasks between its own onboard processor and the Mac's main logic board (or even other accelerators), saving hours of processing time on complex graphics and number crunching.

The Radius Rocket can do what it does because NuBus cards are designed to work together. The technique is called *fair arbitration*, which gives a NuBus card the ability to take over as the leader of the pack, or the "bus master," as it's known. A SCSI-2 accelerator board, for example, can take over from the Mac's SCSI chip and provide speedier transfers of data through the SCSI port.
PDS

Certain Mac models have a Processor-Direct Slot (PDS) instead of a NuBus slot. (The SE, IIsi, and Color Classic are some examples). The PDS is another way of expanding your Mac's capabilities. A card installed in this slot hooks directly to your Mac's main logic board; the PDS board becomes, in effect, a part of that logic board. A NuBus board, on the other hand, can be a computer unto itself. It can, as we mentioned, actually bypass the Mac's processor altogether, or work in cooperation with it. A PDS card is ideal for less ambitious hardware add-ons, such as cache boards and accelerators.

Unlike the NuBus board, which can work in most any Mac where a slot exists, the PDS board has to be designed to support a specific model or range of models.

How to Install a NuBus (or PDS) Card

Apple's instruction manuals tell you how to install NuBus and PDS boards so that you aren't endangering your warranty if you decide to do it yourself. But Apple does offer the usual cautions about reading the manufacturer's documentation, too, in case dealer installation is required.

While directions may differ from model to model, here are the basics:

First, turn off the Mac and all connected equipment. You're usually told to let the Mac sit for a few minutes, to give the storage capacitors in the power supply a chance to drain current. That's just to prevent you from getting "zapped" with some stray electrons. (We've never known any Mac or owner to be zapped from not having waited long enough after shutting down the machine, however.)

Then open your Mac. Depending on which model you have, you need a screwdriver to remove one or more screws. Place them in a safe place (like an ashtray) so that you can find them later. Truth to tell, we know plenty of people with Mac II-class machines who change their expansion board lineup so often they never bother to reinstall the screws.
Losing charge

Before you touch anything inside your Mac, touch the power supply case (the large, metal, silver cube inside the Mac where the power cord attaches from the outside) to discharge static electricity from your body. If your work area has a carpeted floor, or you’re living in a dry climate, you might get a tiny, harmless shock. Your hair won’t stand on end (if you still have hair and it’s not already standing up).

Some manufacturers include, in the NuBus card’s box, a wrist strap to drain current. You wrap one end around your wrist and attach the other end to the power supply. You may feel like a mad scientist wearing one of these things, but we wish more hardware manufacturers offered them with their multithousand dollar NuBus boards.

If your expansion board has an external connector (such as a video display adapter or, if it’s a QuickTime movie board, a jack for a video cable), you have to remove the plastic or metal cover plate at the rear of your Mac. It pushes out from inside. We recommend that you pop it out with the end of a pencil, however, having had our knuckles ripped too many times by those sharp little prongs. You should probably save the plate after it’s out, in case you intend to remove the board later on. (We learned this lesson the hard way, when the day came when we wanted to sell a Mac Ilcx, and we couldn’t find the missing back-panel slot plate. The buyer put up a fuss.)

The board meeting

A NuBus or PDS board usually comes in an antistatic bag. Remove it from the bag carefully, holding the board by its edges or by the metal connector plate, if it has one, at one end of the card. Take the card to your open computer. Look at the bottom of the Mac to spot the actual thin rectangular NuBus connector. Then align the card so that the matching connector on one long edge of it mates with the slot on the Mac floor. The components on the board (all the little transistors and things sticking out of one side of the board) usually face the power supply.

Gently press the card until it’s seated on its connector. Wiggle it back and forth slightly, to see that it’s connected firmly. If you can’t get the board to fit inside the connector slot, first check whether you’re dealing with a NuBus or PDS board (the connectors are different). Don’t force it; you don’t want a big repair bill if you bend or break the connector. If you can’t seat the board in its place, call the manufacturer or dealer or your favorite Mac guru for assistance.

After the board is installed, close the Mac’s cover. Before replacing and tightening the screws, hook up your accessories and start up the Mac, just to be sure everything is working. (It’s perfectly okay to start up your Mac without its cover on.)
A note about Quadra slots

In some Macs, such as the Quadra 800, the NuBus slots aren’t on the floor of the Mac; they’re on the sides, so the NuBus card sits horizontally instead of vertically. To keep everything securely in place, Apple provides a plastic expansion-card clip. You have to remove this clip before connecting your new board and reinstall it after the board is plugged in.

With the Quadra-style tower-design Mac, it also helps to turn your computer on its side before installing an expansion board; installing a card side-saddle can be awkward. And speaking of awkward: the Quadra is a rare Mac. It has both kinds of slots, NuBus and PDS. But they’re positioned so that you can fill one slot or the other, but not both. When there’s a PDS card installed, it blocks the NuBus slot.

NuBus Secrets

Fitting a NuBus card into a PDS

The Macintosh IIsi has a special dual-purpose slot. Technically, it’s a PDS. But if you buy a $200 adapter card from Apple, you can install a NuBus card into it instead.

Some PDS boards are equipped with adapters that allow you to install a second card. But you may not want to attempt this piggybacked scheme in the IIsi. Unlike other Macs, this model’s smallish power supply doesn’t have quite enough juice for that sort of expansion.

How big can a NuBus card be?

The original MIT NuBus standard specified that NuBus boards should be between 11 and 14 inches long. But Apple made a few changes to better suit their designs and declared that NuBus cards for Macs could be between 4 and 13 inches long.

Imagine the consternation of NuBus board manufacturers, then, when the Centris 610 was introduced. Its new case design placed a new limit on the length of NuBus cards that sent card manufacturers scrambling back to the drawing boards: seven inches.

Early Mac II NuBus glitch

If you’ve got a very early Mac II, you may have a problem with any NuBus board that has more than 1MB of memory built onto it (which probably includes many video display boards). If a NuBus board on a Mac II is giving you trouble that you can’t solve, have your dealer run a little application called NuBus Tester on it (they can get it from AppleLink or from Apple). If your Mac II’s motherboard fails the test, you’re supposed to be eligible for an upgrade.
Removing a NuBus card

Removing a card works almost exactly like installing one: you open the Mac's cover, wait a few moments (if you believe in that), and touch the power supply.

Then you grasp the card at two points: the metal clip at the rear of the Mac and the other bare corner of the card. (If it's not a card designed to protrude out the back of the Mac, there may not be a metal clip. Grab that back upper corner instead.) Tug upward, using the metal clip as your main handle. We usually find it easier to pull a NuBus card out diagonally, with the back end (with the clip) coming up first.

NuBus troubleshooting

Some NuBus cards are extremely slot-sensitive. That is, they may work perfectly in one of your Mac's NuBus slots and not work at all in another. (Evidently, some companies manufacture the circuitry in their cards to narrower tolerances than Apple does.)

Here's the point: If you install a card and it doesn't work, try installing it in another one of your available NuBus slots. If that doesn't work, try switching it with the cards installed in other slots. You may have to shuffle the cards a bit before arriving at a card and slot configuration that makes all the cards happy.

NuBus and Power Macs

If you own a Power Macintosh, or are thinking of buying one, be aware that not every NuBus card is compatible with the PowerPC-based Macs. Video-card incompatibilities, apparently, are causing the biggest problems. If you're shopping for a video card, or are planning to install a card from your old Mac into a Power Mac, check with the manufacturer of the video card to make sure the card will work in the newer machines.

Duo Dock NuBus

The desktop housing for a PowerBook Duo, the Duo Dock, can accommodate two NuBus cards. Installing or removing a card from a Dock, however, is nowhere near as easy as it is on a traditional desktop Mac.

We only have one Secret to share here: don't install a NuBus card into a Duo Dock when you're on a deadline. Allot an hour if it's the first time you've attempted the process. You wind up taking the Dock almost completely apart, with the manual on your lap and perspiration on your brow.

NuBus Futures

As you've seen from this chapter so far, NuBus is not a terribly sexy subject. But it's at the heart of the Mac's easy expansion possibilities.
In 1989, the IEEE began work on a new and better NuBus standard, called *NuBus90*. The meetings were originally chaired by Jerry Laws of Texas Instruments, but experts from Apple and other industry experts were on hand.

Most of the changes they came up with were extremely technical, having to do with electronics-level communication between components. Still, a few aspects of the new NuBus should be of interest to the average Mac fan.

**What's up for NuBus90**

First, there's speed. A feature called the IIX Block Transfer Protocol will double the speed of information flowing between the Mac and the card (to 20MHz from the current 10MHz).

Another feature of the NuBus90 spec is something referred to as a 5-volt trickle charge. This lets a NuBus90-capable board receive current when your Mac is turned off but still plugged into the wall socket. How this trickle charge feature will affect your Mac is only a matter of speculation, but here's one possibility. Imagine a NuBus90 fax/modem board. The trickle current lets it remain in standby mode. Then somebody sends you a fax. The modem receives the telephone signal, turns on your Macintosh, and receives the fax. When the fax is finished, your Mac shuts down again. When you sit down at your Macintosh later, you receive a message that a fax came in.

**Beyond NuBus**

NuBus is on its way out. Apple has officially embraced a new expansion-card technology, called the Intel-driven Peripheral Component Interconnect (PCI) Local Bus. Over 150 other companies, too, have endorsed this new technology. That means that the next wave of personal computers, both second-wave PowerPC Macs and IBM clones, will all feature PCI slots instead of their current slot technologies. In fact, the PCI expansion card you purchase for your next Mac may also work in an IBM compatible (if the manufacturer has taken advantage of the cross-platform feature and designed the card that way).

We admit it's kind of weird for Apple to be leaning toward an IBMish system. Underlying this move, of course, is the same old "can't beat 'em, join 'em" thinking that's prompted Apple to make its printers, Macs, and even software Windows-compatible. The instinct, no doubt, is to bring the Macintosh experience to as many users as possible, and to make Apple stockholders happy.

**PCI specs**

The PCI Local Bus can transfer data, 32 bits at a time, at speeds of up to 132MB per second! That's clearly much faster than either NuBus or NuBus90. Pay a little more, and you can get optional 64-bit data "pipes," thus doubling the speed of these cards.
This ultra-high speed transfer capability will be a boon for people working on digital audio, digital video, or any work that's computer-intensive. Huge chunks of data will be transferred more rapidly than ever before. And because PCI expansion boards can work on both Macs and PCs, prices for expansion cards may (may) go down, too.

The PCI Local Bus also bears good news for PowerBook owners of the future. A PCI card can be designed to draw a mere 3.3 volts of electricity. That low power requirement may entice manufacturers to build expansion cards for the next generation of laptop Macs.

What will a PCI board look like? Where a NuBus card has a plastic connecting plug at the bottom, the PCI board’s “pins” are etched into the bottom edge of the board itself. Installation is simply a matter of sliding the board securely into its slot. But other than the connector, the PCI board won't look very different from NuBus cards.

**Obsolescence: pencil it in**

Despite this fancy new expansion-slot technology's promise, don’t expect your NuBus boards to disappear overnight. The PCI Local Bus won't appear in an Apple computer until the second wave of PowerPC models. (See Chapter 11 for more on PowerPCs.) And NuBus boards will still be manufactured for years to come to satisfy the needs of millions of Mac users who have no intention of migrating to PCI-equipped Macs — or whatever they'll be called.
Chapter 31
The Networking Chapter

In this chapter:

- Networking basics and terminology
- LocalTalk, PhoneNet, Ethernet, Token Ring
- How to connect a Mac to a PostScript printer
- How to hook two Macs together
- File servers, print servers, fax servers, net modems, and e-mail
- PowerTalk explained
- How to use Apple Remote Access
- Troubleshooting a network
Networking Basics

Mac users became part of the networking revolution when Apple designed the first Macintosh with built-in networking capabilities. The power to network Macs — to connect them together — has grown ever since.

Shared devices and servers
Like any other great development in technology, networks were invented, in part, out of economy. Because Apple originally charged $6,000 for one laser printer, people eagerly sought methods of sharing a single printer among multiple Macs. Therefore, today's networkable printers and modems are known generically as shared devices.

Then there are file servers. A file server is a hardware and software setup that lets you share files with other people on the network. A file server's icon shows up on your Mac's screen as another disk that you can open and whose files you can access. Using Apple's AppleShare technology, this same file server's icon can also be showing up on other people's Macs. Everybody can be working with the file server's files at once.

AppleTalk messages and LANs
When a Mac prints something out on a laser printer down the hall, it sends the printing information over the network cables in the form of electronic messages. These messages are sometimes called packets.

Since networks are like streets and highways, complete with intersections and two-way movement, the activity on a network is called traffic. Packets can be said to represent individual vehicles as they hug the yellow line of the network cable. If the packet is a city bus, then the passengers on that bus are the data contained within the packet: instructions to a printer, an e-mail for a coworker, and so on.

After you connect several Macs, shared devices, and servers, you've got yourself a LAN: a local-area network.

LocalTalk vs. PhoneNet
A short history of wiring
The original cable for networks, sold by Apple, was called AppleTalk, and it was part of something the company called the AppleTalk Personal Network. That scheme was long ago abandoned in favor of LocalTalk.

A LocalTalk cable is cylindrical. Inside it run two twisted-pair wires. At each end there's a connector, a male three-pin DIN plug that plugs into a LocalTalk connector box (see Figure 31-1). These connector boxes have DB-9 or DIN-8 plugs, so they can be hooked up to all kinds of different Macs and AppleTalk peripherals.
Who's doing all the talking?

Q: Look, as long as I'm getting all this terminology at once, how about defining the difference between LocalTalk and AppleTalk? I'm totally confused.

A: After SneakerNet — running to a coworker's Mac, bearing a floppy disk in hand — the most common method of Macintosh networking is Apple's LocalTalk.

LocalTalk and AppleTalk aren't, of course, the same thing. LocalTalk is the wiring; AppleTalk is the kind of message that travels over it. AppleTalk could be likened to the spoken word, and LocalTalk to the telephone and wires that carry the spoken word.

Unfortunately, these connectors and wires have always been expensive. Worse, they sometimes came unconnected in the real-world office environment, causing network managers to slowly grow bald trying to find the elusive breaks in the network.

A hero is born

Along came a company from Emeryville, California, called Farallon. They designed a new type of LocalTalk connector called PhoneNet. In the eyes of network gurus, PhoneNet was a godsend.

The name PhoneNet was appropriate. These new connectors used ordinary telephone wire, like the thin cable that connects your telephone to the wall jack, instead of Apple's proprietary round connectors. Not only did this new product make networking less expensive, it also meant that you could connect Macs using existing telephone cord that already snaked through the walls in most modern offices.

In fact, PhoneNet network information could be sent over phone cable that was already in use by telephones! PhoneNet relies on a sneaky trick: one normal phone wire consists of at least two pairs of wires enclosed in plastic insulation. But most residential and small business telephones use only one pair of these wires, leaving one pair unused.

With two unused wires readily available to most everyone who had a telephone, the PhoneNet system was a tremendous hit in homes and small offices. Even if you didn't use the unused-wires-in-existing-phone-wiring feature, you could always just buy some phone wire from a hardware store to connect your Macs together, at a cost dramatically less than that of Apple's LocalTalk cables.
As a bonus, PhoneNet also permits the total length of all the wires in your network to be between 3,000 and 5,000 feet, which grants much greater freedom than Apple’s LocalTalk system, whose maximum length is 1,000 feet. Finally, Apple’s original LocalTalk cable and connectors are expensive compared to PhoneNet hardware. Each Apple connector costs about $40. The equivalent PhoneNet connector (see Figure 31-2) costs under $20. (If you want to make a salesman laugh, try asking for an original LocalTalk connector.)

Figure 31-2: From left to right, a PhoneNet network connector, a terminating resistor, and a phone cable.

**The terminating resistor**
This is important. Each end of any LocalTalk cable, whether Apple or PhoneNet, must have a terminating resistor. Without it, you may get errors when sending files or messages, and some network devices may not function at all. The terminating resistors at each end of the wire absorb any stray electrical signals; otherwise, these signals may bounce back down the wire, confusing your Macintosh and other devices with phantom signals.

Each PhoneNet connector usually comes with a terminator, a tiny plastic clip stuck into one of the connector’s jacks. Apple’s LocalTalk connectors, on the other hand, are *self-terminating*.

**Ethernet**
A LocalTalk network works well for a handful of Macs. It even works well for several handfuls of Macs. But the larger the network gets, the slower the network traffic gets. In other words, copying a file from one Mac to another slows traffic to a crawl, especially if somebody else on the network is also copying files. In big business, this kind of delay can be disruptive and annoying.

![TRUE-FACT](image)

**Apple knows a better idea when it sees one**
If PhoneNet connectors are so superior to Apple’s own LocalTalk wiring system, don’t you wonder what they use at Apple Computer?

When we had occasion to visit Apple’s offices in Campbell, California, we were more than a little surprised to see — guess what? — PhoneNet connectors attached to Macs all over the building.

Of course, most of the LocalTalk wiring has been upgraded to Ethernet networks, but the little gray Farallon boxes can still be found hiding under many a desk.

Only in May 1993 did Apple Computer finally acknowledge that the emperor had no clothes. Apple began to sell PhoneNet connectors on its own.
Fortunately for companies who are network-dependent, there’s a much faster, alternate kind of wiring system. It’s called Ethernet and it’s rapidly taking over the Mac world of networks.

Messages travel at about 230,000 bits per second on a LocalTalk network. They travel at ten million bits per second on an Ethernet setup. (For some perspective, a single typewritten character on your Mac screen takes up eight bits of your computer’s memory; this page contains about 20,000 bits.)

According to our figures, then, Ethernet network speed is 43 times faster than LocalTalk. In practice, however, the true throughput bogs down, depending on the level of network traffic, the type of data being exchanged, and so on. In real life, then, Ethernet may run 1.3 to 3 times faster than a LocalTalk connection, with a total capacity of 3 to 5 times that of LocalTalk networks.

If your network has fewer than 20 or 30 devices, and you don’t regularly copy huge files (like your favorite QuickTime movies) across the wires, save money and use a LocalTalk network. Otherwise, plan on spending $150 per Macintosh to set up an Ethernet network, plus an additional $500 or more for the wiring and other gear used to connect the wires at a central location. Of course, the more of your Macs that already have Ethernet jacks on the back, the less expensive the equipment will be.

Ethernet networks can be difficult to expand, and you often have to hire somebody to install it. LocalTalk networks, on the other hand, are far simpler to expand — up to their limit of about 30 AppleTalk devices.

Ethernet Secrets

Apple, Schmapple

Until now, we’ve discussed only Apple Ethernet products. You can save a lot of money (without sacrificing quality) by buying third-party networking components. Third-party Ethernet cards may cost less than half Apple’s suggested prices.

Purchase one brand and plan on some growth

When selecting network cards, purchase cards from one manufacturer. If you don’t, you may wind up spending time as a network troubleshooter, tracking down compatibility problems.

Tally the number of network cards needed for your particular LAN and plan for some expansion. Obtain an agreement from your vendor that says you’re allowed to return unused or faulty cards; then buy a few more cards than you actually need for this installation. This way you have some spare cards to replace any that fail on first use (and for newcomers to the network).
Token Ring

Token Ring is an alternative to Ethernet. The primary difference is that Token Ring controls the traffic on the network by granting permission to only one network device at a time to transmit information.

In contrast, Ethernet nodes speak up, so to speak, whenever they have something to say. Occasionally, two or more Ethernet nodes speak at the same time. A data collision occurs, which is why Ethernet networks don't function very well under extremely high traffic conditions.

Therefore, a Token Ring network can be much more effective at keeping network traffic humming under heavy load conditions. But it's also more expensive than Ethernet, more difficult to expand in networks with large numbers of nodes, and requires a great deal more planning and thought while designing. As a result, Ethernet is still the preferred high-speed choice of most Macintosh networks.

Connecting One Mac, One Printer

Let's start with the most popular network arrangement in the world: one Mac and one laser printer.

Oh, yes indeed, even this individual Mac setup is actually a LocalTalk network. You still have to buy two PhoneNet connectors and string them together with a piece of telephone wire. (That is, unless you use our money-saving cable secret. See "PostScript printer Secrets" in Chapter 25).

Apple suggests that you turn off your Mac and printer before plugging anything into them. (Frankly, we've never bothered, but there you have it.) Connect the round plug of one network connector into the printer port of your Macintosh (see Figure 31-3).

Insert the round connector from the second network connector into the matching jack on the printer.

Now plug the network cable (or the telephone wire) into one of the empty sockets on each of the two network connectors; your devices are now connected. If you're using PhoneNet connectors, plug the terminating resistors into the remaining empty socket on each connector.

If you're using LocalTalk connectors, you don't need a resistor (they're self-terminating).

Congratulations! You've just wired your first network. All that remains is to install the printing software, if it's not already installed, select the appropriate printer icon in the Chooser (see Chapter 25), and test the system.
**ANSWER MAN**

**Terminator, too**

Q: What’s the big deal about terminators? I’ve got two Macs and a laser printer hooked together with PhoneNet connectors. But I’ve never used those little terminator plugs, and everything’s always worked fine.

A: Termination is the process of ending an electronic signal on a network cable. Without termination, signals bounce back off the ends of the cables and can interfere with new signals.

As on a highway for automobiles, light traffic usually moves well no matter what the technical shortcomings may be for a given stretch of road. But with added traffic, any minor engineering flaw quickly creates traffic jams. The same is true in AppleTalk networks.

On short networks, like yours, or on networks with little traffic, reflected signals may present no problem. But as networks grow, correct termination becomes a critical factor. A common symptom of heavy traffic and poor termination is when devices disappear intermittently in the Chooser. This is known as ghosting or dropout.

Q: Well, it doesn’t matter anyway because my brand of PhoneNet-style connectors are supposedly self-terminating. They have a little LED light that glows.

A: Oh, yeah, those. They come on the PhoneNet-style connectors from NuVotech and Focus. They glow when they encounter a spike in network electrical signals. However, these little bulbs are slower to react than true terminator plugs. Worse, the termination power they provide fluctuates, so they may still cause problems on large networks or when traffic is heavy.

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**Connecting Two Macs (and a Printer)**

**Two Macs, no printer**

Your one-Mac, one-printer network is a one-way street. Except for simple status messages, your printer doesn’t send anything useful to your Macintosh.

Eventually, however, you may add a second Macintosh to your network. Maybe it’ll be used by a second person. Maybe it’ll be your PowerBook.

The procedure for connecting two computers is almost identical to connecting one Mac to a network printer. When you’re plugging one Mac into another, of course, you plug the network connectors into the printer port of each Macintosh’s rear panel. (See Figure 31-4.) Don’t forget the terminators.

**A two-Macintosh Network**

![Diagram of a two-Macintosh network](image)

**Figure 31-4:** A simple two-Macintosh network. This arrangement is exactly the same as connecting one Macintosh to a LaserWriter; just substitute a second Mac for the printer.

What’s incredibly handy about this arrangement is that you can remove a connector from either Mac and insert it into a laser printer. The actual wiring, and the connectors, are the same. For a PowerBook owner who returns home and wants to transfer files to a desktop Mac, simply swiping the cord from the laser printer (temporarily) is a convenient and quick way to create an instant two-Mac network.
Networking through the phone lines

We mentioned earlier in this chapter that you could use PhoneNet-type connectors to connect Macs using the ordinary phone wire already installed in your home or office. Now we'll tell you exactly how to pull this off:

Unscrew one of your phone wall jacks and take a look at the existing phone cables; you'll see four wires: Red, green, black, and yellow. The two center wires — the red and green ones — are the ones used to transmit telephone signals. The other two — usually yellow and black — don't do anything.

To set up a LocalTalk network using the existing lines, all you have to do is disconnect the yellow and black wires from the phone jack and reconnect them to a second phone jack, leaving your live telephone wires (red and green) intact. Your PhoneNet-equipped Macs and printers now can be networked by plugging them directly into the newly wired jacks (the ones connected to the yellow and black wires).

And printer makes three

If you reconnect that LaserWriter, you have a network with three devices, or three nodes.

So far, you have two network connectors, two terminating resistors, a phone cable, and two Macs connected together. To add your LaserWriter or other network printer back into the mix, you need a third network connector and another phone cable. You don't need another terminating resistor; remember, you only need a resistor at each end of the daisy chain of devices (see Figure 31-5).

A two-Macintosh, one-LaserWriter network

![Diagram](image)

Figure 31-5: Example of a daisy-chained network topology. Adding more devices to this type of network is as simple as adding more PhoneNet connectors and cable and placing the terminating resistors at each end of the line, as shown.

Open the Chooser on each Mac to verify that you can select your printer from both computers.
Beyond the mininetwork

By adding a network connector to each additional Mac, you can continue to expand the network. If you use the Mac's built-in LocalTalk features, however, you can't string the Macs together in any arbitrary path. You have to string them together in a line. This arrangement, as shown in Figure 31-6, is called a daisy-chain topology. (Topology is networkese for layout.)

![Figure 31-6: A daisy chain of PhoneNet connectors, phone cable, and terminating resistors. (Imagine a Mac or laser printer plugged into the connectors pictured at top.) Electrically speaking, a daisy chain is one long cable with network connectors tapping the signal along its length.](image)

Think of this as a single long water pipe. The pipe may turn corners and go through walls, but it's still one continuous conduit for water. The Macs and other network devices in this example are like faucets you install along this pipe, say every eight feet or so.

Network Services

Now you have a bunch of equipment wired together. In this section, we'll show you what you can do on a network: file sharing, print serving, sending messages to friends and coworkers at other Macs, and teaching your applications to communicate with one another.

File servers

Next to sharing printers, the most common advantage a network offers is the accessibility of file servers. A file server acts as a sort of remote hard drive for network users. Sitting at their Macs, several people can open files from that server at once. A server's icon appears on each user's desktop just like an ordinary disk.

Print servers

Print servers are another kind of network service. We mentioned print spoolers (such as PrintMonitor) in Chapter 25. A print server is little more than a print spooler that does spooling for more than one user, and the files are stored on a networked computer instead of in your own Mac's PrintMonitor Documents folder.
One of the primary differences between a local print spooler and a network print server is that the server can accept and control print jobs for multiple printers. This can be a very real time-saver for print-happy users in a large office.

Net modems

If you're like most people, once you try using a modem to connect to other computers and information services over America's phone system, you're hooked.

But for people using Macs in offices, a modem and a dedicated phone line for it aren't exactly a standard employee perk. Even with just ten people in the office, installing modem phone lines for everybody would cost over $500, plus $1000 for even slowish 2400 bps modems!

Enter the net modem. Hook one of these to its own phone line, and you and your coworkers can dial up your favorite bulletin boards or on-line services with ease, without spending much on equipment. A Shiva Net Modem 2400, for example, has a list price of about $500. It can be shared not only as a dial-out modem among everyone in the office but can also be used by people outside the office to dial in and connect to the office network (using Apple Remote Access, which we'll describe later in the chapter). The only real drawback of a net modem is that only one person can use it at a time.

Fax servers

The fax server is a relatively new development in network services. It lets a group of network users send faxes right from their computers through a single gadget.

In most cases, sending a fax from the computer is as simple as opening the Chooser, clicking the fax server icon, and then printing the document just as you would to a LaserWriter or ImageWriter. You add the name and phone number of the destination fax machine on your screen and you're finished — the fax server does the rest.

Like a print server, after the document to be faxed reaches the server, your machine is freed for you to continue working.

At this writing, fax servers are still expensive and buggy because they're a new and growing technology. We imagine the price will come down as the technology evolves, as it does for every other computer-related goody.

E-mail

Electronic mail is one of the most ingenious and practical uses of a network. You open a desk accessory from your Apple menu, click on the name of somebody in your office, type a message, and click Send — and your message (or maybe just a notice) pops up on the recipient's screen. If that person's away from the desk or busy, the e-mail waits patiently until he or she returns, even if the Mac isn't turned on!
E-mail beats voice mail for several reasons. You can ignore it. It forces people to get to the point. It can be printed and saved forever. It can be sent to a group of people simultaneously. It can be forwarded to somebody else. It can include a Macintosh document or a voice recording. You can request a receipt e-mail back, so you make sure your e-mail reached its destination. You can check to see whether or not somebody's read your e-mail.

The most popular e-mail programs are Lotus Mail, Microsoft Mail, CE Software's Quick Mail, and the up-and-comer First Class (from SoftArc). They're remarkably similar — and absolutely indispensable in any office. (See the details about PowerTalk, Apple's latest spin on e-mail and document-sending, later in this chapter.)

**Program linking**

If you're using System 7's built-in networking features (described in the next section), you may encounter a strange, mostly undocumented item in the Sharing Setup control panel called *program linking*.

Program linking is a system of letting one Mac program control another Mac program, even if they're not on the same Mac (across a network, for example). For example, using a shareware utility called Remote Shutdown, you can restart or shut down any Mac on the network without leaving the comfort of your own Mac.

Programs can also use program linking in more productive ways. Your word processor can send a table of numeric data to a spreadsheet running on another Macintosh. While you continue to work on the word processor, the remote Mac performs the needed calculations and returns the result, and you don't miss a stroke.

Ever since System 7 was first released, Apple has evangelized the power of program linking to developers. One day, companies were told, there'd be no such thing as a 7MB word processor like Microsoft Word — each company would sell tiny, efficient modules, each dedicated to one small task, all working together via program linking. (This vision is part of Apple's so-called Open Doc technology, a system of interlinking different applications.)

To date, though, not very many programs use program linking for more than simple remote control functions, such as the Remote Shutdown example we mentioned.

**File Sharing 1: Setting Up the Control Panels**

You now know that networked Macs can do more than just print to a common printer; they can also use other shared equipment.
One of the most powerful features of all, however, is *file sharing*, where you can make certain files on your Mac available to other people. What's especially great about file sharing is that, for once in your Macintosh life, you don't have to spend any extra money or add any extra gear to get it. This feature is built right into every System 7 Mac.

**A file-sharing history**

**File Share and AppleShare**

Before System 7, Apple offered the world two products called AppleShare *File Server* and AppleShare *Print Server*. The file server lets you view and work with the files on another Mac (the *server Mac*). The server Mac's hard drive icon appears on your desktop just like any ordinary disk, even though it isn't connected to your Mac quite as directly as a hard drive is.

The print server offers a place to store background-printing printer files (on the server Macintosh). By getting the printing process off your Mac, your computer's attention turns to other work as soon as a file is delivered over the network to the server.

To store your printer-bound files on the print server, you select a printer listed in the Chooser as a LaserWriter or ImageWriter — but in fact, it isn't a physical printer at all, but the server software *mimicking* a real printer. You can't tell the difference between a real LaserWriter and the server by looking at the Chooser. Therefore, using the print server is what they call *transparent* — you don't even know it's happening.

Using file service, however, isn't as transparent. To bring another Mac's disk icon onto your desktop, you have to take some strange steps that aren't anything like bringing directly attached hard disk icons onto your desktop. (As a matter of fact, such locally attached disks' icons appear on the desktop by themselves when you turn on your Mac.)

**TOPS of the line**

AppleShare File Server software from Apple cost a little more than most individuals or small businesses could afford. Not only was the price tag up in the clouds, but AppleShare File Server required a *dedicated* Macintosh to run — a Mac that did nothing but serve files — which added thousands to the total cost.

Other companies rushed in with less expensive alternatives to the Apple software. TOPS, for example, not only allows network users to exchange files but also connects to IBM PCs and clones. For years, TOPS was quite successful. It was wiped off the map, however, when Apple decided to build file-sharing features right into the standard Mac system software: System 7.

Apple calls the new sharing feature *Personal File Sharing*. It lets up to ten people share files on each others' Macs. No additional equipment is needed — and certainly no dedicated Mac is needed!

(AppleShare is still on the market, however. It turns a dedicated Mac into a centralized file server that can share files among 120 Mac, Apple II, and DOS computers.)
First stop: the Network control panel

The first step in setting up file sharing is to visit the Network control panel. However, you only use this control panel if you purchased a high-speed networking card or use Remote Access (discussed later in this chapter). If you don't remember ever paying for, say, an Ethernet board or ARA Software, skip this step completely. Jump down to "Second stop: Sharing Setup control panel."

Furthermore, if you don't have one of these cards or an ARA dial-in setup, you can also throw out the Network control panel (if, indeed, you have it).

The Network control panel: what it does

The Macintosh can use several different network types: LocalTalk, Ethernet, and so on. But only one can be active at a time. To switch from one to the other, you go to the Network control panel and click on the appropriate icon. (See Figure 31-7.)

![Figure 31-7:](image)

The icons in the Network control panel represent drivers. A driver is the software used to translate the communications between the Mac and an external device. Of the many available network drivers, the following are the most common:

- **LocalTalk**: This driver is automatically installed in every Macintosh using System 7. It lets you use the Mac's printer port as your network connection.

- **EtherTalk**: This driver is useful only if an Ethernet card is installed in your Macintosh. Some non-Apple boards require you to use a specialized driver, but most current manufacturer's boards work with the Apple EtherTalk driver.

  Within the world of EtherTalk, there are two subtypes: Phase I and Phase II. You should ask a network administrator or Mac guru which driver you need to use. Phase I and Phase II EtherTalk driver icons are distinctive (see Figure 31-8). The Phase I symbol has single arrow heads.
Figure 31-8: The Phase II EtherTalk icon (left), the Phase II TokenTalk icon (middle), and the Remote Only icon (right).

- **TokenTalk**: Use this driver if your Mac has a TokenRing card installed.
- **Remote Only**: This driver gets installed when you install the program called Apple Remote Access, which you buy from Apple. For details on Remote Access and Remote Only, see the Apple Remote Access section of this chapter.

Actually, we should have called the Remote Only icon a *non*-driver. When you click it, the software actually *disconnects* the LocalTalk connection at the computer’s printer port, freeing that port for non-networking functions such as using a modem (yes, on the *printer* port).

### Second stop: Sharing Setup control panel

Sharing Setup is the next stop on the road to file sharing your Macintosh. It’s a required stop, too, not just to make file sharing happen, but also to establish a little security. Without it, everyone on your network would be able to open and read everything on your hard drive.

This multipurpose control panel serves as the on/off switch for both file sharing and program linking. Enter your name here. Also type in the name of your Macintosh as you wish it to appear in the Chooser windows of *other* Macs trying to gain access to your drives. You should also enter a password for yourself. (See Figure 31-9.)

![Sharing Setup Control Panel](image)

**Figure 31-9**: The Sharing Setup control panel offers you the chance to enter your network identity, set a password for yourself, and turn file sharing and program linking on or off. This illustration shows both features in their off state.
You can leave the password field blank, but the control panel will scold you. If you do allow file sharing to start without having entered a password, anyone on your network who knows your name (as you entered it in the Owner Name blank) has access to all of your files.

Finally, click Start. The Mac begins making itself ready for file-server mode. This process can take a few minutes, depending upon the number and size of the disks you're sharing. (Bear in mind that this feature uses up memory. The more files and disks you share, the more memory it uses. Good idea for PowerBook users to turn off file sharing, therefore, when on the road.)

When file sharing has started completely, the button in the File Sharing box changes to say Stop. As you may have already surmised, clicking Stop turns off file sharing, thereby making your Macintosh invisible to other network users.

**Third stop: Users & Groups control panel**

Having switched on file sharing, you present a virtual doorway to everyone else on the network — but you have yet to provide them a key to that door. That's where the Users & Groups control panel comes in.

This control panel provides a simple on/off switch to grant or deny access to your computer's shared functions for each of the other people on your network. Those functions are file sharing, program linking, and (if you installed it) remote access.

The Users & Groups control panel actually doesn't look much like a control panel when you open it. It looks like a window, as shown in Figure 31-10 (but you see your own name on the right-hand icon).

![Figure 31-10: The Users & Groups members of a freshly installed System 7.1. Note the bold outline of the user icon on the right; it identifies that user as this Mac's owner. You can't change the owner's name in the Users & Groups control panel; you can only do that in the Sharing Setup control panel. You can change other users' names, however, exactly as you'd change any icon's name.](image-url)
Each icon represents somebody who could be on the network. We'll show you how to add names and change their security status a little later.

**A word about security**

On a two- or three-Macintosh network, you probably don't have to think much about security. We've been to more than a few offices where everyone shares everything; and, for such a small network, that's fine.

If your network grows, however, or if you set up your Mac to be accessible by telephone (using Apple Remote Access), network security quickly becomes a concern. Here, for the record, is how you can protect your data.

**What the Users & Groups options mean**

To specify how much access a certain person has to your files, double-click one of the icons in the Users & Groups window. The icon opens into the window shown in Figure 31-11. (We'll discuss these icons, and how you create and name them, later in this chapter.)

![Figure 31-11: The access on/off switches for one of the Users & Groups icons.](image)

- **Allow guests to connect:** This checkbox determines whether or not somebody can see the files in your shared disks or folders at all.

  If you turn off this option for the Guest icon, then when somebody on the network tries to log onto your Mac, the Guest icon is dimmed in the Chooser (see Figure 31-12).

**ANSWER MAN**

_Why anybody can be you_

Q: I think I've caught a mistake in your book. You just said that if I don't give myself a password, then anyone on the network can get at all of my disks. But I happen to know that no disk gets shared until I click on it and choose Sharing from the File menu.

A: You do have to turn on sharing for each folder or disk independently — to let other people in.

But when file sharing is turned on, the system software automatically makes all mounted drives available to the owner. That usually means you.

Isn't that a nice gesture? If you try to access your own Mac from elsewhere on the network, you can open all of the folders and disks on your own Mac, even if you didn't turn on sharing for any of them!

Therefore, as we said, leaving your password blank essentially lets anyone else on the network impersonate you just by typing your name. They are free to root through, read, change, and trash anything on your hard drive (or drives).

If your sole purpose in networking is to connect your own PowerBook to your own Mac, this feature can actually be a timesaver. But if you really don't know everyone on your network, it's not such a fun thought.
If guest access isn't permitted on a file-sharing Macintosh, the Guest option is grayed out. The Mac’s file-server functions are available only to users whose names are registered in the Users & Groups control panel.

**Figure 31-12:**

Connect to the file server "KidMac" as:

- [ ] Guest
- [x] Registered User

Name: [ ]
Password: [ ] (Two-way Scrambled)

Cancel [ ] Set Password [ ] OK [ ]

- **Program Linking:** This option controls other peoples’ access to the linkable programs on your hard drives. (We mentioned program linking earlier in this chapter.)

- **Remote Access:** You only see this option if you installed Apple's dial-in network software, Apple Remote Access. We'll discuss this software later in the chapter.

**The Guest icon**

The Guest icon is the biggest security hole in the system. If you set up the Guest icon to permit access to your Mac, then anyone on the network can get access to your shared disks without having to know any legitimate user’s name or password at all.

Incredibly, Apple set the Guest icon’s default parameters in System 7.0 and 7.0.1 to permit Guest access to every Mac! Network administrators shrieked. Apple listened. Starting in System 7.1, the Guest’s default setting is Off. Just in case, your first step should be to check the access settings for the Guest icon.

To do so, uncheck all three checkboxes.

**The Owner icon**

The Owner — that’s you — has a unique icon, distinguished by its bold outline. When you double-click it, the resulting window has an extra setting not available to other user types, called “Allow user to see entire disk” (see Figure 31-13).
Here's an overview of the on/off switches you can flip that govern your own access to your Mac from elsewhere on the network.

- **Allow user to connect**: We don't know why you'd want to keep yourself from getting to the contents of your own machine, but you can turn this feature on and off here. This option affects only file sharing (the ability to mount your hard disk icons onto the desktop of another Macintosh on the network).

- **Allow user to change password**: Of course, you can always change your password using the Sharing Setup control panel. Using this option, however, you can change your password remotely, from the Chooser of another Mac on the network.

- **Allow user to see entire disk**: As we mentioned a moment ago, this option is only available to you, the Mac's Owner.

  For anybody else on the network, even when file sharing is turned on, your Mac's disks are completely inaccessible and invisible unless you select each disk and turn on Sharing (from the File menu).

  Under normal circumstances, however, you are allowed to get at your disks from any Mac on the network even if you don't turn on sharing for any of them. As you see by the wording here — "Allow user to see entire disk" — you're also allowed to see *everything* on your disk, even if you've only specifically shared a folder or two on it.

  If you turn off this checkbox, however, you are treated just like any other user out there on the network. You are unable to see any of your disks (from another Mac on the network) unless you first turn on sharing for each one.

- **Program Linking and Remote Access**: As we mentioned, program linking lets programs communicate with each other. We'll get to Remote Access later in this chapter.
The User icons

The Mac creates a Guest and an Owner icon automatically after you turn on file sharing and restart the Mac. However, only you create user icons. You're generally supposed to create one of these icons for each person who may want to connect to your Mac.

You'll never guess how you make a new user icon — it's one of the oddest mechanisms on the Mac. In the Finder's File menu, the command that usually says New Folder suddenly changes to say New User! (Apple doesn't usually pull stunts like changing the commands in a standard menu; that's why we think this is weird.)

When you double-click a user icon, it opens into the same kind of configuration window as it does for Guest and Owner icons (see Figure 31-14). There's no "Allow user to see entire disk" option, but there is a new blank here: the password.

You don't have to enter a password, but it's a good security precaution. Unlike almost everything else on the Mac, the password is case sensitive. The passwords Fish, FISH, and fish are considered three different passwords.

The Group icons

Whenever more than one user needs access to a particular folder on your system, you can save time by creating a group. The group contains the names of all the users who belong to it — one for each project team or department, for example. Each user can be a member of more than one group. The great advantage of a group is that, in a single step, you can adjust the access levels for everybody who's part of it.
After you create icons for all the individual users, you create a group like this:

1. Open the Users & Groups control panel.
3. To make a user part of this new group, drag the user’s icon onto the group icon. It’s almost like dropping a file into a folder, except that the user’s icon both stays in the window and goes into the group.

To see what groups a user belongs to, double-click the user icon. To see which users belong to a group, double-click the group’s icon. (See Figure 31-15.) To remove a user from a group, drag the user’s icon out of the Group window and into the Trash.

![Figure 31-15:](image)

**File Sharing 2: Sharing Specific Folders**

Even after all of this setting up, nobody but you, the Macintosh Owner, can access the files on your Mac! Then you have to designate which files and disks you want to make available to others. (You can’t share individual files with others on the network: only folders and disks.)

**The Sharing command**

For each disk or folder you want to share, you have to perform the following steps:

1. Highlight the folder or disk icon you want to share with the network.
2. From the File menu, choose Sharing. (See Figure 31-16.)
3. In the dialog box that appears, specify how much access you want to provide to this file or folder.

4. Close the window. When you’re asked if you want to save the changes, click Save.

The Sharing window

Just deciding to share a folder isn’t the end of your decision-making. You can also specify what degree of access you want to grant. For example, you can say that it’s okay for people to look at the contents of a folder but not to change anything. Or they can look and change things, but they can’t throw anything away. (We’ll be honest: this stuff may be tough reading. It’s easier to grasp when you actually do it.)

The Sharing window appears when you highlight a disk or folder and then choose Sharing from the File menu. (See Figure 31-17.)
The privileges — See Folders, See Files, and Make Changes — are the checkboxes in the center section of the window. The clients are listed in the pop-up menus. They have the names Owner, User/Group, and Everyone.

Already things get confusing. Ready for this? The Owner in this window has absolutely no relationship with the Owner of the Mac!

Here’s the explanation. Even if it’s your shared Mac, other people can create new folders on your hard drive. The person who creates a new folder on your Mac is, of course, the Owner of that folder. Other than you, he or she is the only one who can change the access privileges for that folder. He or she can also transfer ownership to somebody else, using this same Sharing window.

The Owner in this Sharing window, therefore, refers to the Owner of the individual folder or disk, not to the Owner of the Mac. Nonetheless, if the folder is on your Mac, then you still have full access to it even if somebody else is the designated Owner of it. (In effect, two people then have Ownership.)

(And why would you want anyone else to have their own folders on your hard drive? We can think of a couple of examples. If you’re the editor of a newspaper, you may want each of the newspaper’s departments — Editorial, Advertising, and so on — to be able to maintain its own folders on your central Mac.)

Odd though it may seem, you can actually let somebody else on the network be the Owner of a disk attached to your Mac, too.

In any case, you can tell at a glance whether or not you’re the Owner of a certain folder. If it’s yours, the folder tab has a black stripe (see Figure 31-18). It doesn’t matter whether this folder of yours is on your Mac or not. As we said, you can perfectly well create a folder on somebody else’s Mac. When you view the contents of that person’s Mac, your one folder appears with the familiar black tab.

Odd though it may seem, you can actually let somebody else on the network be the Owner of a disk attached to your Mac, too.

In any case, you can tell at a glance whether or not you’re the Owner of a certain folder. If it’s yours, the folder tab has a black stripe (see Figure 31-18). It doesn’t matter whether this folder of yours is on your Mac or not. As we said, you can perfectly well create a folder on somebody else’s Mac. When you view the contents of that person’s Mac, your one folder appears with the familiar black tab.

Figure 31-18: The folder on the left is a folder owned by you. Somebody else owns the folder on the right — or perhaps it’s not a shared folder at all.

Different degrees of access

After you open the Sharing window for a certain folder or disk, you can control how much access each network member has.

Three options exist for this folder or disk. In this explanation, let’s suppose you choose a network member named Dad from the User/Group pop-up menu. You therefore specify how much access Dad has to a selected disk when he accesses your Mac from his.

- **See Folders:** If this option is checked, Dad is able to see your folder icons when he connects to your Mac. Otherwise, this disk appears empty.
This setting is primarily useful to help people navigate to folders within folders. You could, for example, allow only See Folder access to a folder but permit greater access to folders within that folder.

- **See Files**: If this box is checked, Dad can see the file icons within this disk. Otherwise, it appears empty.
- **Make Changes**: If this option is selected, Dad can see, duplicate, delete, and save changes to the files inside this disk.

You can combine these three security options in any combination for each user or group listed in the pop-up menus (which come from your work in the Users & Groups control panel). Figure 31-19 shows eight different possible combinations of checkbox settings.

The most common conditions of shared folders are locked (nobody can get anything in or out); the drop-box effect (people can put files in but can't open the disk or folder to see what's in it); see files and folders (where documents and folders show up but can't be changed); and full access.

Others on the network know, with a glance at a folder's icon, how you've set it up. Figure 31-20 shows three examples.

![Figure 31-19:](image)

<table>
<thead>
<tr>
<th>See Folders</th>
<th>See Files</th>
<th>Make Changes</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>

- Completely locked
- Drop-box
- Read files
- Read & save files
- See folders
- See & create folders
- See files & folders
- Full open and save access

![Figure 31-20:](image)

Three folders as they appear to somebody else logging into your Mac. The black tab indicates the logged-in user is the owner of that folder. The middle icon is a drop box — the user may place files inside the folder but can't open it. The third folder is completely locked: the user can't put files in and also can't open the folder to see what's in it.
In fact, even the windows for shared folders and disks have telltale visual cues to indicate their security status. In Figure 31-21, you can see how the Sharing status of a folder — See Folders and See Files are checked, but Make Changes isn’t — affects the window display.

**Figure 31-21:**
The Sharing window for a folder, and the resulting access indication in the folder's open window. The slashed pencil indicates that the user isn’t allowed to make changes or save new files into the folder.

If you turn off See Files and See Folders, the window for the affected folder displays other icons, as shown in Figure 31-22. Again, these visual clues only appear on the screens of other Macs on the network — not on the Mac containing the folder or disk itself.

**Figure 31-22:**
On the left, the window belonging to a disk for which Make Changes and See Folders are both turned off. On the right, a disk window for which Make Changes and See Files are turned off.

If you're enjoying the appearance of these little icons, you may wonder what happens if you deselect all three checkboxes in the Sharing window for a folder. Do networked users see all three tiny symbols in the folder’s window?

Actually, it’s a trick question. If all three checkboxes are deselected, you create a completely locked folder. The user can’t even open the folder icon, and therefore no window for it can ever appear!

**Open for business**

If you’ve followed this discussion, your Macintosh is now a full-fledged file server — even if there aren’t actually any other Macs connected to it.

A few additional thoughts about sharing the folders and disks of your Mac: First of all, you can use the Sharing command to set up different degrees of access for a maximum of ten folders and disks. Of course, that’s really not much of a limitation because any one folder or disk can contain hundreds of other folders that all switch on simultaneously.
Sharing-command Secrets

Who’s Everyone?

When you set up your sharing levels for a certain folder or disk, you can set privileges for Everyone.

Keep in mind that Everyone refers to guests and all other users you set up in your Users & Groups control panel. People often think Everyone means only guests and may inadvertently grant access.

Give the Everyone category the least access of any.

A dangerous option

The checkbox in the Sharing window called “Make all currently enclosed folders like this one” can be a tad dangerous if you’re not thinking. It immediately nukes the access-level settings for any folders inside the folder for which you select this box.

More than one Mac user has spent hours setting up explicit access privileges for some folders — and then wiped out all that work with one click! Use this option only if you mean to. It has no Undo button!

How to find out which inner folder is shared

If you try to turn on File sharing for a disk or a folder, you may sometimes get the message shown in Figure 31-23.

This message indicates that at some point, you turned on sharing for some folder somewhere within your disk. This can be a royal pain if you don’t remember which folder — perhaps buried deeply somewhere in your hard drive — is being shared.

Fortunately, there’s a quick way to hunt down the offending item. Open the File Sharing Monitor control panel. The list at left shows all your shared folders. Note the name, close the window, and find that folder. Turn off sharing for it. At last you can turn on sharing for the enclosing disk or folder.

Monitoring activity on your Mac

After you open your Mac for business, others on the network can begin to tramp through your files (to the extent you’ve let them, of course). It may reassure you to know that System 7 gives you an easy way to keep track of who’s doing what on your disk.

The key to these features is the File Sharing Monitor control panel. (See Figure 31-24.)
On the list at left, you see each folder or disk you are sharing. (Don't forget that all the items inside each folder or disk are also shared.) On the right, you see a list of all the network Mac users who are connected to your Mac.

**How to disconnect someone**

If you decide to boot somebody out of your system, open the File Sharing Monitor control panel, click that person's name in the list on the right, and click Disconnect. You are asked how much warning you want to give these people that they are to be disconnected — type 0 if you want them off now — and click OK.

To boot several somebodies, Shift-click their names before clicking Disconnect.

This unceremonious network dump is only a temporary solution, however. After you disconnect someone, he or she can merrily log right back onto your Mac. (If you really want to keep somebody out, change the appropriate Users & Groups icon settings.)

**One more way to monitor activity**

Even without opening the File Sharing Monitor control panel, the Mac gives you a handy way to see what's going on with a folder on your disk. See Figure 31-25.

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**File Sharing 3: Logging onto Other Macs**

So far, we've exclusively discussed how to set up your Mac for other people to access. But you can only play host for so long; sooner or later, you'll want to be the visitor and work with files on other Macs on the network while seated at your own.
Chapter 31: The Networking Chapter

The table of contents for the Macs on your network is, of all things, the Chooser. Most people think of the Chooser as a mechanism for selecting a printer. In fact, it's called the Chooser (and not, say, Printer Choice) because you also use it to select other kinds of external devices attached to the Mac: network modems, fax/modems, and electronic mail servers, for example.

Here are the steps for logging onto another Mac on the network:

1. Open the Chooser.
2. Click the AppleShare icon. The names of other network Macs show up in the right side of the window, provided their owners are sharing them. (See Figure 31-26.) (If no Mac names show up here, see the Troubleshooting section at the end of the chapter.)
3. Double-click the name of the Mac whose contents you want to see. The window shown in Figure 31-27 appears.

If the owner of the Mac permits access for guests, then the Guest button is available. Otherwise, Guest is dimmed, and you have to type in your official name and password — as it's been previously established on the other Mac. If in doubt, chat with its owner, open up its Users & Groups control panel, and see that you're represented there by an icon whose name and password are what you want.

Remember that the password is case sensitive; enter it here exactly as it originally was set up. If (in the Users & Groups control panel on the other Mac) your User icon was set up so that you're allowed to change your password, you also at this point can click the Set Password button to change your password.
4. Click OK. Yet another window appears, this time showing all the shared folders or disks on the Mac you selected. (See Figure 31-28.)

5. Click the name of the folder or disk you want to open. Shift-click to select more than one, or type the first letters of its name to scroll directly to it.

If you are going to log onto this folder or disk every day, you can save yourself all the trouble of these first five steps if you click the checkbox to the right of a volume's name. The Mac automatically brings that folder or disk's icon onto your Mac's desktop the next time you restart your Mac (if the other Mac is turned on).

6. Click OK.

At last, you've broken through. The icons for the folders or disks you've selected now appear on your desktop exactly as though they were disks attached to the Mac. A network-accessed volume always looks like the one in Figure 31-29, regardless of whether it's a disk or a folder, and no matter what its actual icon looks like (on its home-base Mac).
If something didn’t work right, you have to march over to the owner of the Mac you’re trying to work with. Check the Sharing menu item for the folder or disk in question. Consult the Users & Groups control panel. Make sure you have the correct privileges for the folder or disk you’re trying to work with.

### File-sharing Secrets

#### Log-on shortcuts

When you visit the Chooser to log on to another Mac, you can use a few clever shortcuts to reduce the whole affair to a few keystrokes.

For example, instead of clicking the AppleShare icon in the Chooser, you can just type the first letters of its name and it will be selected automatically. Now press Tab to activate the file server window and type the first letter (or letters) of the name of the file server you want to log on to. Once again, the server is selected automatically. Hit Return to open the next dialog box, in which you type your password or log on as a Guest.

If you want to log on as a Guest, just type `⌘-G`. If the Guest radio button is selected and you want to log on as a Registered user, press `⌘-R` to activate the Registered User option. Then type in your password and hit Return.

#### Password Secrets

Mac file-sharing passwords can be a maximum of eight characters long. Capitalization counts.

If security matters to you, don’t use a password that anybody can guess (like your name or spouse’s name). A good trick is to substitute the number 1 for the letter L (or l) and the number 0 for letter O in an ordinary word—B1NG0 instead of BINGO, for example. This trick foils hackers who are armed with programs that try every word in the dictionary until they break your password.

#### The classic unremovable SyQuest problem

It may not surprise you that you can’t rename or trash a folder or disk that you are sharing.

But you also can’t rename or remove a disk that you aren’t sharing! That’s right: if you turn on the file-sharing feature using the Sharing Setup control panel, you’re suddenly prevented from touching any disk (larger than 2MB—in other words, larger than a floppy) on your Mac, even if you aren’t explicitly sharing any of them.
As owners of SyQuest cartridge drives can attest, this feature has its irritating aspects. If the icon of a cartridge (or a CD ROM disc, for that matter) is on the desktop at the moment you turn on file sharing, the Mac doesn’t let you eject it!

The explanation: the Mac is always prepared to offer you, the Owner, full access to all mounted disks from any Mac on the network. Therefore, it steadfastly hangs onto every disk or cartridge in anticipation of the moment when you might need to access it from elsewhere on the network.

You have to open the Sharing Setup control panel, turn off Sharing, eject the cartridge or disk, and then turn Sharing back on. (Or just get UnmountIt, part of the freeware package File Sharing Improvement Doohickeys, which does all that automatically.)

Apple unleashes killer rabbits!

Today, System 7’s file-sharing feature is called Personal File Share. But while it was in the works at Apple, its code name was Killer Rabbit. (See Figure 31-30, and watch Monty Python and the Holy Grail to appreciate the joke.)

By the time System 7 was released, all references to the code name were removed from the software. All but one, that is. The little fellow in Figure 31-30 was left in. It’s the icon of a file called AppleShare PDS, which is usually invisible. (PDS stands for Parallel Directory Structure.) This AppleShare PDS file is created when file sharing is turned on.

You can see the Killer Rabbit yourself by using DiskTop, included with this book. Look for the AppleShare PDS file in the outer level (root directory) of your hard drive. Using DiskTop, highlight the file and then choose Get Info; using ResEdit, choose Get File/Folder Info and then select the AppleShare PDS file.

In the dialog box that appears, make the file visible by deselecting the Invisible checkbox. Now return to the Finder and have a look! (When you’re done, make the file invisible again.)

Connecting a PowerBook to Another Mac

The discussion in the preceding pages is geared toward using a network in an office environment with at least a handful of Macs. We emphasized the different levels of security you can set up for each disk or folder you want to share.

But if you’re the only person who uses your Mac, then all that rigmarole is probably overkill. If you have exactly two Macs — one PowerBook and one desktop Mac — then you’re probably more interested in some fast and easy system of transferring files between the PowerBook and the other Mac.
For your benefit, here's a greatly shortened version of the usual file-sharing saga. This process approximates the same steps a regular network user would follow. But we assume you're interested in maximum convenience and minimum security, so the steps are vastly streamlined.

For clarity, we'll pretend you're seated at your desktop Mac and want to bring the PowerBook's icon onto the screen. You could just as easily reverse the procedure, of course, and access the desktop Mac from the PowerBook.

Another note: you only have to go through all of the following steps one time! Thereafter, you'll be able to connect the Macs with a quick double-click.

**Setting up the PowerBook**

To reduce verbiage and increase clarity, let's call the Mac on your desk a Centris and call the PowerBook the PowerBook.

1. The PowerBook needs System 7's file-sharing feature. If you didn’t install File Sharing, insert the first Install disk of the System 7 floppy disk set. In successive dialog boxes, click OK; Customize; File Sharing; Install. Feed System 7 disks to the Mac as requested.
2. Restart the Mac.
3. From the Apple menu, choose Control Panels. Double-click Sharing Setup. In the Sharing Setup dialog box, enter your name and a name for the Macintosh. (You don’t need to enter a password for this security-free scenario.)
4. Click the upper Start button. (If you don’t see two Start buttons, then AppleTalk probably isn't on. Open the Chooser, turn on AppleTalk, and restart the Mac. Then start over from step 3.) Eventually, the button changes to Stop. Close Sharing Setup.
5. Open the Users & Groups control panel. Double-click the icon representing your own name. In the window that appears, make sure the first three checkboxes are all selected (see Figure 31-31). Close the window.
Setting up the desktop Mac

Your PowerBook is ready for action. Now connect it to your desktop Mac, as outlined at the beginning of this chapter. After the Macs are physically connected, here’s how you bring the PowerBook’s icon onto the Centris’s screen:

1. From the Apple menu, choose Chooser. In the Chooser, click AppleShare. On the right, you see the name of your PowerBook. Double-click its name. The window in Figure 31-32 appears.

   ![Figure 31-32: Logging onto your PowerBook.](image)

   Connect to the file server "Editorial" as:

   - Guest
   - Registered User

   Name: **Beth Anderson**
   Password: * (Scrambled)

   [Cancel] [Set Password] [OK]

2. Click Registered User. Type your name exactly as you set it up in step 3 above. Leave the password blank (unless you gave yourself one in step 2). Click OK.

   Another box appears. This one only lists one item: your PowerBook’s hard drive (see Figure 31-33).

   ![Figure 31-33: The PowerBook’s hard drive shows up.](image)

   Select the items you want to use:

   Checked items (✓) will be opened at system startup time.

3. Click OK. The PowerBook’s icon should now appear at the right side of your Centris screen. You can open the PowerBook’s window and use its contents as usual.

4. To save time, select the PowerBook drive icon on your Centris screen. Choose Make Alias from the File menu.

   Now you’ve created an alias of the PowerBook. The next time you want to hook up, you won’t have to bother with any of the steps we just outlined. Instead, just double-click the alias. The PowerBook’s actual icon pops onto your screen.
File synchronization

Now that you have two Macs, you have a new problem: how to keep track of duplicate sets of files. If you're writing a book, and you work on Chapter 3 on your PowerBook during a trip, when you return home you have to remember that the Chapter 3 on your PowerBook is more recent than the one on your Centris. Multiply that situation by the hundreds of files you may have and you can get an idea of the problem.

We can think of several schemes for keeping track of which files are most recent, but they all involve extreme discipline (keeping the files you modify in a single PowerBook folder, for example). It may be simpler to buy a file-sync program, whose job it is to bring the files on both computers up to date with each other. (The PowerBook 500 series comes with Apple's own file-sync software, called File Assistant.)

When Nobody's Home: Remote Access

Apple Remote Access (ARA) is a program from Apple that lets a modem-equipped Macintosh connect to an AppleTalk network over the phone! Using System 7's file-sharing feature, you can copy or read files on the home-base Macs. You can even print things — from your PowerBook in Tulsa, you can print on the LaserWriters in Toledo.

The Mac doing the dialing has every bit as much access to the network as any Mac that's actually in the office. You can check electronic mail or retrieve data from a database.

What you need

For optimum performance, use a 9600 bps modem (V.32) or even a faster one. (See Chapter 27 for more on modems.) A 2400 bps modem is okay for simple tasks like checking your e-mail, but trying to open or copy files from the remote network is agonizingly slow without a faster modem. (2400 is the minimum that works with ARA.) ARA also requires System 7 or later.

Setting up the host Mac

In this discussion, the host Mac is the one you dial into. It's usually the Mac at the office or the Mac at home — as opposed to the calling Mac, which is often a PowerBook. For clarity, we'll refer to them as the host Mac and the PowerBook.

ARA comes free with most PowerBooks — well, half of it does; you generally get the part that does the dialing, called ARA Client. You're still supposed to purchase the ARA server software, the part that can receive calls. In any case, install the ARA Client on your PowerBook and the host portion on your host Mac or Power Mac. Make sure both are equipped with modems.
Step 1: Remote Access Setup

On the host Mac, open the Remote Access Setup control panel (see Figure 31-34). From the Modem pop-up menu, specify what particular brand of modem is attached to your machine.

This is an important step. If your modem brand isn't listed in the pop-up menu, you have to call up the modem manufacturer to see if an ARA script is available for your modem. (This kind of script is also posted in the libraries of user groups and on-line services like America Online.) Unfortunately, if you can't locate a script for your modem, it won't work with ARA.

Once the modem type is selected, select the Answer Calls checkbox if you want this Macintosh to accept incoming calls. You can also set up the checkbox on the bottom of the control panel's window, which lets you set up a time limit for incoming ARA connections.

The last option, "Allow access to," lets you confine the caller to perusal of only the host Macintosh (instead of the entire network connected to it).

Step 2: Users & Groups

Next, on the Macintosh you'll be calling, open the Users & Groups control panel. Set it up with your name, if you haven't already, and turn on your remote dial-in features. (See Figure 31-35.)
Figure 31-35:
This Users & Groups window shows that the Owner of this Mac is allowed to connect using Remote Access. For added security, you can enter the telephone number of the modem you’ll be calling from. This Macintosh calls you back to complete the remote connection.

Setting up the PowerBook

Your host Macintosh is ready to accept calls. Now you have to set up the PowerBook.

Install ARA. Set up the PowerBook’s Remote Access Setup control panel, just as you did for the host Mac, and specify the modem model you’re using. Then launch the Remote Access application.

An untitled document window opens (see Figure 31-36). Enter your name as you entered it on the host machine. Then type in the host Mac’s telephone number and enter the password you assigned to yourself.

Figure 31-36:
The untitled document of the Remote Access application. You may save this to use later as you would any document file. If the machine you are saving on is secure, check the “Save my password” box to make your subsequent connections more quickly.
If you want, click the bottom checkbox. ARA reminds you every so often that you're connected to a remote Mac. (If you fail to acknowledge the reminder — if you had to run out, for example — ARA automatically hangs up to save you the long-distance charges.) Believe it or not, this is a useful option; connecting to a remote Mac by long distance is so effortless it's actually fairly easy to forget you have a live connection to Australia (we've done just that — no kidding!).

Fortunately, you can save all this information you just entered. (Choose Save from the File menu.) Henceforth, this set of dialing information (name, password, phone number, and so on) is called a connection document. Such a document is hugely convenient because you can set one up for each remote computer you need to call. Thereafter, you don't need to reenter all that information.

**How to connect**

Once the finished connection document is on-screen, click Connect; the computer does the rest! During the time it takes to make a connection, you see a status window, as shown in Figure 31-37.

![Remote Access Status](image)

To hang up, click Disconnect.
Remote Access Secrets

Disconnect the local network

When you’re using ARA on a networked Mac to dial into a distant network, you wind up connected to two networks at once. Sure, one of them may be thousands of miles away. But from your view in the Chooser, your Mac is connected to both networks at once.

You can, if you want, disconnect from the local network and see only the remote network. You may need to do this, for example, if you run into a network number conflict (when a device on the remote network has the same number as one on the local network). More commonly, you might want to disconnect the local network so that you can use your printer port for a printer instead of being hooked up to the local network.

To disconnect the local network, open the Network control panel. Click the Remote Only icon.

Switch on your Mac automatically

Unless you’re an environmentally reckless soul who relishes high electric bills, you probably don’t want to leave your home Mac on, awaiting calls from your PowerBook, during your entire six-week trip to the Alaskan tundra. Fortunately, it’s easy to turn on the home Mac from wherever you are and shut it off when you’re done remote accessing — if you’re willing to spend $50.

The device is called a PowerKey Remote (from Sophisticated Circuits, 800-827-4669), a one-inch, inconspicuous gadget that goes between your Mac and the modem. When a call comes in, it turns on your Mac, and you’re in business. It comes with a software control panel that automatically shuts down the Mac a few minutes after you hang up.

If you have an LC model, a 610 or 6100, or a one-piece Mac like a Classic, you also need the regular $119 PowerKey (a surge-protected multi-outlet box that lets you turn on the Mac from the keyboard). Actually, even Mac II-series or Quadra users should consider the PowerKey; it lets your phone call power up not just the Mac but any attached hard drives, SyQuest drives, CD ROMs, and other peripherals with the same phone call.

Expanding the Net

Apple’s built-in LocalTalk network, the kind we’ve been discussing, is a terrific, inexpensive way to connect up to 30 Macs. And System 7’s file-sharing feature is a great way to exchange files among ten of them.
But in the really big companies, people want to connect more than 10 or 20 Macs; they want to join several LANs together — or to break one increasingly unwieldy network into several smaller ones.

This is where bridges and routers come in. These gadgets connect two or more LANs together. The resulting jumbo-network is sometimes called an internet. (An internet isn't the same as the Internet, the huge worldwide network of military, government, and university computers, all connected by telephone wires.)

After they are connected by these devices, the networks are said to be in zones. Network traffic generated by somebody on one floor isn't passed through the router to any other floor unless it's supposed to (for example, if you send e-mail to somebody on a different floor). And even then, only the floor with the destination device experiences network traffic; the other floors' routers and bridges ignore the signal.

Routers are smart little devices. First of all, they can join networks of different types: an Ethernet system on one floor, a LocalTalk network on another, and so on. Second, routers send data along the best available wiring routes, based on traffic levels, availability, and the general status of wide-area connections.

When connected by a router, separate networks remain independent, but you can still easily access any device anywhere on any of the networks (see Figure 31-38).

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**Figure 31-38:** The Quadra in the lower zone does not affect network traffic in the upper zone when it communicates with the Mac SE in the same zone as itself. However, when the Quadra prints, its AppleTalk printing traffic passes through the AppleTalk Internet Router to the LaserWriter in the upper zone.
Like routers, *bridges* connect networks — but only networks of the same type (LocalTalk to LocalTalk, Ethernet to Ethernet, and so on). A bridge’s primary job is to monitor the network traffic on either side and pass only data intended for the other side. The benefit of a bridge is that network traffic isn’t passed on to the opposite side of the bridge unless its destination device actually resides there.

**General networking Secrets**

**Reducing traffic on the network**

Of all the types of network traffic, printing is one of the most common.

If your network has more than one zone, put a LaserWriter (or other network printer) in each zone where printing is heavy. As a result, the printer traffic in one zone doesn’t affect AppleTalk traffic in any other zone. The result: lower overall traffic and a faster, more efficient network.

**Installing system software over a network**

In the beginning chapters of this book, we mentioned that Apple’s system software Installer doesn’t work over a network.

Depending on your point of view, we lied. Here’s how you can, in essence, use the standard Apple Installer to install a System folder onto another Mac over the network.

Create a folder on your hard drive and name it Network Install. (It can be named anything, of course, but this is at least an indicator of its purpose.) One after another, insert your system disks into the floppy drive of a Mac on the network and drag the floppy’s icon into this folder. Each floppy’s contents are copied into the Network Install folder, one folder for each disk.

Now open the Network Install folder. Open the first System 7 installation disk folder (called either Install, Install 1, or Install Me First). Drag the items called Installer Script and Installer out of their folder into the enclosing Net Install folder.

You can double-click the Installer to run it. You finally are able to install the system software onto any Mac on the network — without having to feed the Mac any floppy disks at all!

**PowerTalk**

PowerTalk looks, at first glance, like the world’s largest gob of superfluous extensions, control panels, and desktop icons. Then you consult the manual, and you think you’re in a Monty Python skit — the instructions are so confusing and full of meaningless doubletalk that you begin to wonder if PowerTalk might have been designed by, say, IBM.
Actually, though, only the execution of PowerTalk is hopelessly convoluted; the concept behind it is rather brilliant. Imagine that you’ve got a folder full of icons on your desktop, each representing a person you deal with. One may live in a straw hut in Pakistan, and is reachable only via the Internet. Another may be in the Marketing department three floors below you. A third may work in the branch office 3,000 miles away.

Now suppose you want to send a file to one of them. You polish up your design in, say, Photoshop, and then you drop the file’s icon on top of the Pakistani’s icon. The Mac takes it from there, automatically dialing into the Internet, entering all the necessary password information, correctly addressing and sending your file electronically, and hanging up — without any further help from you.

That’s the promise of PowerTalk: to reduce to invisibility the complexities of networking, on-line services, e-mail, and so on. Just drop a file onto a recipient’s icon, and your file is as good as gone.

Where it comes from

PowerTalk comes with certain Macs and certain system software — System 7 Pro, System 7.5, and the PowerBook 500 series, for example. But let’s make one thing absolutely clear: for someone working solo, or even for the office of four people, PowerTalk is absolutely useless. It’s got much bigger aspirations in mind — connecting, as in our example above, coworkers or associates located thousands of miles away, measured either geographically or by phone wire. We’ll try to make some sense of it here, but keep in mind that PowerTalk is extremely complex; its designers made the assumption that a full-time network administrator would be on hand to set things up and guide you past the rough spots.

And by the way: a dedicated wiring weenie isn’t all you need before PowerTalk makes your network a nirvana. You also have to wait until software companies upgrade their network, e-mail, fax, and telecom programs to make them PowerTalk-savvy. At this writing, QuickMail and about 35 other companies have done so (or promised to do so). In WordPerfect, for example, after typing something up, you can mail it to a PowerTalk-connected recipient without ever leaving the program.

Sharing nicely

There are two ways to work with PowerTalk: with or without a PowerShare server: a Mac dedicated to handling the file traffic generated by you and your fellow networkers. (It may be the server Mac you’re already using — as an e-mail server, for example.)

The advantage of a PowerShare server is that, since you never turn it off, it can store anything you mail to a Mac that’s currently turned off. When the recipient finally shows up for work and turns on his or her Mac, the server will automatically shunt your file over.

Again, you can use PowerTalk perfectly well without having a dedicated server — you’ll just have to accept that the files you send won’t necessarily be delivered the moment you send them.
All that PowerTalk clutter

When you install PowerTalk system software (by running the PowerTalk Installer), you'll see significant changes to the look of your desktop. At the upper-right corner, under your hard drive icon, you'll see, for example, the Mailbox and Catalog icons (see Figure 31-39).

Figure 31-39: When you've installed PowerTalk, look for these icons.

After you've set up PowerTalk, the Mailbox icon will take on your name— a more exciting prospect than calling yourself Mailbox forever. This mailbox has both In and Out trays; you'll see your own incoming mail there and, if necessary, you can store items in the Out tray.

If you double-click the Catalog, you'll see icons representing the services you're set up to use, such as other hard drives on your network.

The key to it all

The idea behind PowerTalk is to provide a standard, simplified front end to all kinds of different networked machines and services: e-mail, on-line services, other hard drives, CD-ROM-based directories, big humming mainframes, and so on. As you may have discovered on your own, one hazard of today's computer-drenched lifestyle is that you're asked for another password at every turn: a password apiece for America Online, QuickMail, each shared disk on your network, your Internet account, and so on.

The great idea behind the PowerTalk Key Chain is that you only have to enter all of those name-and-password sets once for each of those services — and then you give one master password to the entire Key Chain (see Figure 31-40). From now on, you only have to remember that one master password. You type it when you want to access any of those network services; PowerTalk provides the correct individual password to the service automatically and invisibly.
Part IV: Attachments

Figure 31-40:
On a PowerTalk-equipped Mac, the Finder’s Special menu offers a new command called Unlock Key Chain. It provides access to this screen, wherein you can provide your master password — your password to your passwords, if you get our drift.

![Unlock Key Chain dialog box]

To prevent unauthorized use, your Key Chain is protected by an Access Code.

Please provide your name and Access Code:

Name: David Pogue
Access Code: ********

Cancel OK

Passwords are case-sensitive in this system (david is not the same as davID) and Apple encourages you to think up non-obvious passwords that include non-letter characters (%,*,#, and so forth).

After you answer the questions in these dialog boxes, you’ll have a new PowerTalk Key Chain icon on the desktop, and the mailbox will at last show your name (see Figure 31-41).

![New PowerTalk Key Chain icon]

Figure 31-41:
Another icon, a new mailbox name: ready for e-mail at last.

To add or remove services, double-click the Key Chain icon, and you’ll see the dialog box in Figure 31-42. Your network administrator can tell you which services are available, and how to set them up. For example, if your administrator buys the pair of programs called Mail*Link SMTP for PowerShare and Mail*Link for PowerShare MS (StarNine, 510-649-4949), you’ll be able to send mail to addresses on the Internet using Microsoft Mail. All the complicated communications connections will be fired up when you drag your expense report onto the icon representing Fred in accounting (at his Internet address!) — but you won’t even be aware that you’re using Internet mail.
By the way, since your 245 different passwords are now entered automatically whenever you use a network or telecom service, it may occur to you that your Mac is now something of a security risk. If you go lunch, any merry prankster in your office could theoretically sit right down at your vacated desk and start sending messages all over the planet — with your name on them.

That explains the presence of the Lock Key Chain command in your Special menu. Choose it when you’re going to be away from your Mac.

**Totally wired**

After you’ve dealt with the Key Chain, you’re now ready to enjoy all the goodies in PowerTalk. PowerTalk will connect your Mac to the rest of the world at a new level of convenience.

For example, if you open the PowerTalk folder and double-click the Info Card icon, you see something like Figure 31-43.

You can fill out an information card like this and put it in your AppleTalk catalog (double-click the Catalog icon on the Desktop and drag the card to the AppleTalk icon), for example, so that other people on your part of the network will know all about you.
The Catalog could just as well have been called Phone Book, since it’s the database of people you can contact (along with little tags of personal or business information about them). But depending on what PowerTalk-savvy software you’ve bought, individual items in the Catalog could also represent an entire group of people, an entire company, a shared disk, or, for example, a CD-ROM disc that contains the listings from every White Pages in the country.

**Files all over**

You can now pull icons (representing people) from your AppleTalk, PowerShare, or Direct Dialup catalogs, and, if you like, put them on the Desktop (see Figure 31-44). When you drag any Mac document to one of those icons, you can consider it mailed.

**Figure 31-44:** Basically, your Desktop is a picture of the accessible world in PowerTalk. For example, you can add a frequent correspondent to your personal Catalog window (bottom right) from the main network Catalog that lists everyone (top left). Using the commands in the Special menu, you can create as many mini-Catalogs of grouped icons (middle) as you want.

**PowerTalk for power users**

There’s more to PowerTalk than we have room to describe; the PowerTalk part of the System 7 Pro manual is 160 pages long (and believe us — that’s still not enough to explain it). Here are some topics that await your further exploration, either in the horrid manual or with the help of your hapless network administrator:

- Digital signatures: The muchadvertised digital signature feature doesn’t look anything like a signature. In fact, you can’t see it at all; it’s a deep-seated, behind-the-scenes computer code the Mac assigns to any document you create. When the document arrives at its destination, your PowerTalk-equipped recipient can tell whether or not you really sent it, and whether or not it’s been tampered with since you sent it.

The process for getting an official digital signature is a tad convoluted — it involves printing a form, taking it to a notary public, registering with the RSA, and so on — but the end result is a piece of data (a signer) that’s as legally valid as your personal signature. Once again, Apple paves the way for the digital ’90s.
AppleMail: That Mailbox icon on your desktop doesn’t actually let you read any mail displayed there; for that, you have to have a PowerTalk-savvy program. While the world waits for software companies to produce said programs, you can use this stripped-down piece of demoware as a rudimentary PowerTalk e-mail system.

AOCE: The acronym stands for Apple Open Collaboration Environment, an elaborate set of system-software enhancements designed for networks of the future (by Taligent, an Apple spinoff company). PowerTalk is only the first panel in the AOCE quilt; more, we’re told, is on the way.

Troubleshooting

Things go wrong on networks all the time. You may try to print something, only to be told that “The LaserWriter ‘Accounting’ cannot be found.” As in any system with as many fragile and interdependent components, chinks can develop in hundreds of hard-to-get-at spots.

Defining the problem

Try not to think of your network as a mass of wires and computers. Think of the network as systems and subsystems. When a problem is befuddling you, try replacing subsystems — one complete Mac with all its wiring, for example — rather than components. You’ll find the trouble far more quickly.

AppleTalk troubles

Even with a network as easy to use as AppleTalk, problems can still be tricky (especially as networks grow larger). AppleTalk problems usually have one of the following three components.

Incompatible System versions

In any office, making sure that all Macs are running the most current version of the Mac system software is always important. But in networking it’s critical. Visit each Macintosh. For System 6 Macs, use the Finder’s Get Info command to check the Finder and System version numbers. For System 7 Macs, choose About this Macintosh from the Apple menu. Also, open the Network control panel and verify the AppleTalk version.

Broken or loose connections

Next, check the network connections. Every connector should be solidly plugged in. If your network includes a networkable printer (such as a laser printer), a simple way to isolate the problem is to open the Chooser desk accessory on each Macintosh. If the networked printer shows up in the Chooser, the connection between that Macintosh and the printer is good. By making this test on Macs that are successively farther away from the printer, you can discover where the connection is broken and isolate the problem.
Circular wiring
Diagramming the network is a good idea even before you have problems, but it’s also an excellent way of discovering circular or other improper connections. AppleTalk is a bus topology network: the network should have two (and only two) end points, each terminated, and no circular connections.

Other common problems and solutions
We obviously can’t cover every possible cause for network failures. But the following common problems and solutions may aid you in becoming a network-savvy person. If you have access to AppleLink, Apple’s on-line service, you’ll find hundreds of useful articles on networking and troubleshooting in Apple’s Tech Info Library.

Missing device problems
Symptoms:
- Can’t access file server, printer, another zone on the network, or another network.

Possible causes:
- Break in connector; damaged pins on connector box; damaged cables.
- Device turned off.
- Network interface card damaged, missing, or not installed properly.
- System software versions not consistent across the network.
- Incorrect or missing software printer driver or other device drivers.

Ghosting problems
Symptoms:
- Network device appears and disappears in the Chooser.

Possible causes:
- Loose connector; damaged cable or extenders.
- Improper termination.
- The cables are too long (check user manual).
- You’ve got too many devices on the network.
- Electromagnetic interference from a large appliance.
- Network not designed properly.
Performance degradation

Symptoms:
- Slow printing, slow file transfer (that is, even slower than usual).
- Network appears to be dead.

Possible causes:
- You’ve got too many devices, or too much traffic, on the network.
- System software versions not consistent across the network.
- Viruses.

File Sharing

Symptom:
File Sharing doesn’t start; the “File Sharing is starting up” message stays on-screen indefinitely.

Possible remedies:
The invisible AppleShare PDS file may be corrupted. The following steps create a fresh AppleShare PDS file, which should solve the problem.

1. Turn off File Sharing using the Sharing Setup control panel.
2. Delete the Users & Groups data file in the Preferences folder.
3. Restart the computer. (When the Mac restarts, it creates a new Users & Groups file. You have to reenter your user and group information.)
4. Go to the Sharing Setup control panel and enter the Owner password.
5. Delete the invisible file called AppleShare PDS. Use DiskTop or ResEdit to see it (see Part V or Chapter 21), unlock it, and make it visible. (You find it in the top level of each disk.) Then throw it away.
6. Restart the computer.
7. Turn on File Sharing. The Mac creates new AppleShare PDS files, and your sharing should work properly now.

For more information

If you still crave more details on networking, check out the Macworld Networking Bible (by David Kosiur and Joel Snyder; IDG Books Worldwide, 1994). We’re also fond of Hands-On AppleTalk (by Mike Rogers and Virginia Bare). It’s somewhat dated but provides excellent background on the construction of LocalTalk and Ethernet networks.

Apple’s own Inside AppleTalk also provides a wealth of information and is especially suited for the technically oriented person. It is available from APDA 1-800-282-2732.
Chapter 32
Troubleshooting

In this chapter:

- The SECRETS Rule of Three
- Error messages explained
- Oddities on the screen
- Startup troubles
- Disk troubles
- File, desktop, and icon ailments
- Keyboard snafus
Principles of Troubleshooting

The Macintosh has an infinite number of cooks. There are the programmers at Apple who wrote the system software. There are the programmers who wrote the software you use, including the extensions and control panels that modify the system software. And there's the hardware, complete with a number of additional software elements (in the ROM chips, for example), both from Apple and other companies.

With so many instructions being shouted at it, no wonder the Mac can get flustered and throw up its hands in frustration. The problems you may encounter vary:

- Mysterious system crashes or freezes
- Startup problems (the blinking question-mark icon or the Sad Mac icon)
- Application problems, when the Mac simply doesn't do what it's supposed to
- Printing troubles
- Disk problems (their icons don't show up on the desktop or the Mac reports that they're "not a Macintosh disk")

A word about troubleshooting

We're perfectly aware that there's a certain emotional element to a Mac going wrong. The Mac, after all, is betraying you, usually at a moment when you can least afford it. We don't know about you, but when our Macs go goofy, we feel a rising well of frustration and loss of control. Our heart rate doesn't go back to normal until some semblance of normal operation has returned.

Therefore, our troubleshooting advice for you is to establish control first, even if it means that you have to strip down your system. Once you know the machine is working properly, you can restore your software and hardware add-ons, one at a time, until you discover which element is causing the problem.

It's important to understand that in many cases, you never find out what caused the problem. You may rearrange the SCSI devices attached to your Mac and find the problem gone. You may change the order in which your extensions load and find that you have no more mysterious crashes. Or you may reinstall your system software and clear up some odd behavior you'd noticed. In all of these examples, you'll never know why you had a problem. You'll have isolated only the general area of the problem.

Still, you'll be just as happy that the problem is gone.

More troubleshooting

Before you become alarmed at the relative thinness of this chapter, please be advised that you'll find substantial troubleshooting chunks at the end of some chapters. Troubleshooting sections appear for fonts (Chapter 24), for example; printing problems (Chapter 25); SCSI (Chapter 29); and networking (Chapter 31).
In this chapter, we hope to give you some Mac-guru wisdom on the general concept of troubleshooting, as well as mention a number of miscellaneous, mysterious, very common Mac problems and how to solve them.

**The SECRETS Rule of Three**

Wouldn't it feel good to know a three-step procedure *guaranteed* to wipe out any mysterious software problems?

There is such a trick. Our sure-fire solution is grounded on a simple idea: your Mac worked when it left Apple's factory! (Some of our friends chuckle at this statement. Still, we have to start somewhere.)

Therefore, our troubleshooting concept is simple: to hunt down the problem, you simply restore the Mac to the way it was when you bought it. It's a three-step process.

Except in cases when something's genuinely wrong with your Mac (that is, it requires a service call), we're convinced that this three-step process is nearly infallible.

**Step 1: Turn off your extensions and control panels**

The first thing you should suspect when you're having strange system problems is the extensions and control panels you installed. These, after all, didn't come from Apple.

If you're using System 7, this is an easy step. Restart the Mac. As it's starting up, press the Shift key.

If it's System 6, grab your Disk Tools disk or another startup floppy disk. Restart the Mac from that floppy. After the machine is running, open your hard drive's System folder and drag out all the inits and control panels you've added since buying the Mac.

This simple step, we've found, promptly cures more than half of the mysterious system errors that plague a typical Mac.

**Step 2: A “clean reinstall” of the System**

System software, like politicians and fresh fruit, may go bad over time. Fortunately, you have an infinite supply of uncorrupted, healthy replacement copies (your system disks).

However, as we mentioned in Chapter 4, there's more to fixing your System folder than simply running the Installer. The Installer program, as a convenience to you, is designed to replace only those components of the System folder that need updating. If your System file is already corrupted, it will stay corrupted. The only way to guarantee a virgin System folder is to perform a *clean install*.

If you're using System 7.5 or later, press ⌘-Shift-K at the main Installer screen, and select Install New System Folder. For any other system, read on.
Open your existing System folder. Hide the System file by dragging it into any other folder — the Preferences folder, for example. Then rename the System folder. (Call it "Old System folder," for example.)

The point of these two steps is to make the Installer think that there's no System folder on your hard drive. Thwarted from simply building a new System folder around your old one, the Installer will build a completely new System folder on your drive.

The new one won't have any of the extensions, fonts, control panels, and sounds you may have added to your original System folder. That's why we had you rename your old System folder instead of throwing it away. After you've confirmed that the clean reinstall successfully restored your Mac to health, you can put those add-on components back into the new System folder, a few at a time. As you do so, restarting each time, one of two good things will happen. Either you'll finish adding everything to your System folder and wind up with a perfectly functioning machine, or you'll stumble onto the one extension or control panel that's started the trouble in the first place.

In any case, reinstalling your System folder can work wonders on a sick Mac. Over and over and over again, we've solved the weirdest problems using this technique, both on our own Macs and our friends' Macs. Many of these problems sound like they have nothing to do with system software: a SCSI drive that's not working; font problems; printing troubles. A clean reinstall solves it all.

In fact, if it weren't that running the Installer entails fifteen minutes of swapping floppies, we'd suggest doing a clean reinstall first when you start getting system troubles.

Network users: Don't forget how easy it is to run the installer on several Macs on a network without having to shuffle floppy disks. (See our “Installing system software over a network” Secret in Chapter 31.)

**Step 3: Unplug the SCSI chain**

As you know from Chapter 29, the equipment plugged into the SCSI port on the back of the Mac can have a huge and devastating effect on your Mac's behavior. In that chapter you'll find specific ideas for hunting down the causes of the conflict.

The first step to figure out is if you have a SCSI problem. Therefore, when you have a strange, repeating system problem, disconnect your SCSI chain from the Mac so that your SCSI port is left empty.

**Other things to try**

We truly believe that our three-step plan is nearly foolproof. After all, once you've turned off your extensions, reinstalled the System, and unplugged the SCSI chain, your Mac should be pretty much the way it was when you bought it!
If you’re still having some unexplained erratic behavior, here are a few more special cases worth considering.

**Update your hard-disk driver**

Follow this step only if your Mac started life using System 6 and then was upgraded to System 7.

As we mentioned in Chapter 7, not all software is compatible with System 7 — that includes the invisible software that controls your hard drive: its *driver*.

If our first three steps haven’t resolved the problems your Mac’s been giving you, and your drive is a candidate (it started out on System 6 and was upgraded to System 7), follow the instructions in Chapter 7 for updating your driver. Fortunately, updating the driver *doesn’t* involve erasing your hard drive or having to copy your files off it.

**Run a hard-drive diagnosis program**

There are certain hard drive problems that even our troubleshooting process can’t solve. They have to do with the invisible files the Mac maintains on your hard drive: the Desktop files, the list of fragmented files, and so on. If these files become damaged, a hard disk repair program may come to the rescue.

Your Mac came with such a program: Disk First Aid. It’s not much, and it’s not nearly as good as the commercial drive-repair programs like Central Point MacTools. But Disk First Aid can indeed solve a number of these hidden disk problems. Just run Disk First Aid and click the Start button.

**Zap the PRAM**

The PRAM is a tiny cache of memory kept alive by your Mac’s built-in battery. It’s responsible for keeping the Mac’s clock ticking and maintaining the settings you make in your control panels.

Rarely, rarely (but still sometimes), this tiny bit of memory gets corrupted somehow. To reset it in System 7, restart the Mac. As it’s starting up, hold down the `Shift`, Option, letter *P* and letter *R* keys until you hear the second startup chord. Release the keys.

In System 6, press `Shift`, *Shift*, and Option as you choose Control Panel from the Apple menu.

**Rebuild the Desktop**

Several times in this book we’ve mentioned the Desktop file, the invisible database on every disk that stores information about all your icons — what they look like, which programs they belong to, and where they’re positioned in Finder windows. If the information in this Desktop file gets mangled, it causes problems.

The cure is simple: You can rebuild the Desktop file by holding down the Option and `Shift` keys while restarting your Mac. For more information about rebuilding the Desktop, see Chapter 1.
For PowerBooks only: reset the Power Manager

The Power Manager is a special circuit in the PowerBook that supervises the use of battery juice. You can try resetting this circuit to its default state.

To do so, remove the battery and unplug the power cord. Let the PowerBook sit there for ten full minutes before trying it again. Here's an alternate method for PowerBook models 140 through 180: Take out the battery; hold down the power button for five seconds; repeat the process a few seconds later. (And yet another method: push in the reset or interrupt switch with a paper clip for ten seconds.) On a Duo, reset the Power Manager by removing the battery and the power cord, and wait 15 minutes. (Try this when your PowerBook refuses to turn on at all.)

Error Messages

The Mac’s error messages are frustrating because they’re so cryptic. When something goes wrong deep inside the Mac, it can only report to you that something is wrong. It has no idea which specific series of keystrokes, mouse clicks, and software interaction actually caused the problem.

That’s why you won’t find any big table of the Mac’s error codes here. We’ve read them over, and they’re completely unhelpful. Here are just a few samples:

<table>
<thead>
<tr>
<th>Error Message</th>
<th>Error Code</th>
<th>Apple’s Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>bus error</td>
<td>01</td>
<td>Software error</td>
</tr>
<tr>
<td>address error</td>
<td>02</td>
<td>Software error</td>
</tr>
<tr>
<td>illegal instruction</td>
<td>03</td>
<td>Software error</td>
</tr>
<tr>
<td>divide by zero</td>
<td>04</td>
<td>Software error</td>
</tr>
<tr>
<td>unimplemented</td>
<td>11</td>
<td>Software error</td>
</tr>
<tr>
<td>bad F-line instruction</td>
<td>10</td>
<td>Software error</td>
</tr>
</tbody>
</table>

Well, that was enlightening, wasn’t it?

Still, we can tell you a few common occurrences that do produce those and other error messages.

Bus errors

If you get a system crash with the “bus error” note, chances are darned good that your hard-disk driver is incompatible with your software. It may be having the incompatibility with any of the following:

- System 7
- Virtual memory
- 32-bit addressing
(See Chapter 8 for more about virtual memory and 32-bit addressing.)

In the meantime, if you have an Apple hard drive, run the Apple HD SC Setup program that comes with the System 7 system disks. If you have a non-Apple drive, call up the manufacturer and get a copy of the latest utility software that can update your drivers.

One other source of bus errors is extensions. Follow Step 1 in the Rule of Three at the beginning of this chapter to ferret out the cause.

**Error -192**

The most common cause of the error -192 is using an out-of-date, System 7-incompatible version of SAM (the anti-virus program). Order the update.

"**Application busy or missing**" or "**Application not found**"

As we mentioned in Chapter 1, you get this kind of message when you double-click a document for which the Mac doesn’t *think* it has the program to open it.

The possible solutions are

- You really don’t have the required program. If you double-click an Excel document and you don’t have Excel on any disk, this is the message you get. Except for locating Excel, there’s nothing you can do.

- You do have the required program, but the Mac is confused. It’s an easy one to fix: just rebuild the Desktop file (see Chapter 1). Or you may have two copies of the same program, perhaps with different version numbers. Clear out the older one.

- You have the required program, but it’s an outdated version, and the document you’re trying to double-click is from a newer version. Update the program.

- You have the required program, but the document’s four-letter creator code somehow has gotten zapped, so the Mac doesn’t know which program it’s supposed to use to open the document. You can restore the creator code by using either DiskTop or ResEdit (both of which are included on the disks that came with this book) to type the code back in. See Chapter 16 for detailed instructions.

**True Fact**

**Easy Open**

You may live to see the end of the "Application not found" message on Macintosh computers.

Apple has created a system extension called Easy Open. If, and Easy Open-aware programs, have built-in intelligence that can handle documents whose parent programs don’t seem to be available.

When you double-click a PICT file on an Easy Open-installed Mac, for example, you get a dialog box that offers a list of every program on your drive capable of opening that PICT file. You just select the one you want to use for opening the file, and you’re on your way.

If and when software companies build Easy Open features into their programs, life will become more and more effortless and carefree. You can already buy the Easy Open extension from an Apple dealer, and it comes free with System 7.5 and some Mac Models, but it doesn’t do much yet beyond handling PICT and text files. (See Chapter 3 for details.)
"Application unexpectedly quit"

Usually this message means that a program ran out of memory. Normally, a program sees the end of its memory supply coming and warns you. But sometimes it gets caught unaware, like a center-fielder who slams into the outfield wall going for a fly.

You can try giving the program a larger memory allotment (see Chapter 8 for instructions on using the Get Info window to do so).

Then again, this might be one of the standard problems: an old version of the program; a program incompatible with System 7; or a program incompatible with virtual memory or 32-bit addressing.

"The File Sharing extension is not installed"

You get this message when you choose Sharing from the File menu in the hopes of sharing your Mac's hard drive with other Macs on the network.

Sometimes, of course, it's true — the File Sharing software isn't installed. Use the Installer on your system disks to install it. On the other hand, this message may indicate a much simpler problem: you need to turn on AppleTalk in the Chooser.

"System 7.1 won’t run on this machine. A newer version is required."

You see this message in exactly one circumstance: when you're trying to start up a Mac that requires an enabler extension (see Chapter 3), and your startup disk is lacking the enabler. (Before System 7.5, which doesn't require enablers for most models, this was a hilarious message — System 7.1 was the newest system.)

Find your original Install Me First system disk, insert it into the drive, and try starting up again.

Oddities on the Screen

"Generic" icons I

As we mentioned in Chapter 1, the solution to your files losing their icons is to rebuild the Desktop.

Every now and then, however, you'll discover that only one program's set of icons are turning up blank. If that's the case, the "bundle bit" (a tiny software pointer that associates a program with its set of icons) may have become confused. You can use a shareware program like ReBundler or Save-a-Bundle, or you can reinstall the program onto your disk.
After you have the bundle problem resolved, you still have to rebuild the Desktop to make the icons reappear — unless you use this System 7 trick. Select a file whose icon is missing. Choose Get Info from the File menu. Click the icon and press ⌘-C (copy); then press ⌘-V (paste). You just pasted the generic icon back onto itself. Finally, press ⌘-X (cut) to remove the “custom” icon. This forces Finder to reread the BNDL information from the file on disk instead of from the Desktop databases.

"Generic" icons II: the SuperATM factor

Adobe's SuperATM has a colossal, lurking bug. Don't rebuild the Desktop while SuperATM is active.

If you do, you'll corrupt your Desktop file, and your files will get generic icons (and may even give you "Application not found" messages when you double-click them).

If you do want to rebuild the Desktop, Apple suggests doing a combo rebuild/turn off extensions. That is, restart the Mac. As it starts, press Shift, ⌘, and Option until you're asked if you want to rebuild. That turns off SuperATM and rebuilds the desktop in the same stroke. (Let go of the keys and click OK.)

Shimmering monitor

A monitor shimmer is usually caused by interference, such as a lamp, a fan, or other appliance that's very close to it, or an air conditioner running on the same circuit. Consider putting the a/c on a separate circuit. You can also spend $250 or so for a line conditioner for the Mac.

If none of these steps solves the problem, it's possible the monitor actually needs to be repaired.

Flashing Apple menu

You wouldn't believe the number of people — even power users — who accept a blinking Apple menu as a way of life. Because it's been blinking for several years, they just assume it blinks all the time.

No, what you're seeing is the Alarm Clock desk accessory, which blinks forever unless you turn it off. (See Chapter 3 for instructions.)

Black Apple menu

On a Mac with a color monitor, the Apple menu is usually marked on the menu bar by an Apple icon with horizontal colored stripes (Apple's logo). If it shows up as solid, puffy black when the rest of the screen is in color, then you or somebody else used the Installer's Minimum System Software option when installing the System folder. The color logo is one of the resources that the Installer leaves behind in its efforts to create the smallest possible System folder. (See Chapter 4 for more on the Installer options.)
Finder changes don’t stick

If your changes to the way the System 7 Finder displays windows and icons don't seem to stick when you restart the Mac (for example, when you change the Views control panel settings), you may have a damaged Finder Preferences file.

Open your System folder; open the Preferences folder; find the Finder Preferences file; trash it; and restart the computer. The problem should be gone now.

No Mac icon on the System folder

The System folder on your startup disk usually displays a little Mac icon, as shown in Figure 32-1.

Figure 32-1:
On the left, a normal System folder. On the right: where is the little Mac icon?

If the System folder has a normal folder icon instead, there are only four possibilities:

- You have a really, really old version of the System, before they started identifying the System folder with this telltale icon.
- You have two System folders on your drive, and this isn't the one currently running.
- You're not looking at the System folder of the startup drive, but instead it's the System folder on another disk.
- The real System folder is inside another folder (possibly this one).

Startup Troubles

The “Sad Mac” icon

First of all, be aware that the Sad Mac icon can appear when you press (or some object on your desk presses) the Interrupt switch on your Mac, either inadvertently or on purpose. See Chapter 6 for more about the Interrupt switch.

If the sad Mac appears during startup, however, something's wrong with the circuitry or the System folder (see Figure 32-2).
Beneath the Mac icon there's a row or two of special codes (such as 0F000D, which you may recognize from Chapter 21 as being hexadecimal notation). In theory, they can help you figure out exactly what's wrong with the Mac. In practice, these codes are designed for techies and may not even be accurate.

In our experience, the Sad Mac most often appears just after you've installed new RAM chips. It tells you that one of the chips is defective or improperly seated. Try reseating the chips.

The Sad Mac can also appear mysteriously as a result of a number of other conditions, most of which you can solve by following our Rule of Three (especially Step 3). In fact, the sad Mac often goes away by itself, even if you don't change a thing.

For the Mac SE and all later Macs, you actually get two lines of codes that are supposed to help you figure out what's wrong. The only useful numbers are the bottom row and the second half of the top row.

This table lists some common codes and what they mean. By Code, we mean here the second four characters on the top row.

<table>
<thead>
<tr>
<th>Code</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>0001</td>
<td>The ROM chip is having trouble (may not be seated correctly).</td>
</tr>
<tr>
<td>0002</td>
<td>Something's wrong with a SIMM in bank B, if your Mac has two banks of SIMMs.</td>
</tr>
<tr>
<td>0003</td>
<td>Something else is wrong with bank B.</td>
</tr>
<tr>
<td>0004</td>
<td>Something's wrong with a SIMM in bank A.</td>
</tr>
<tr>
<td>0006</td>
<td>Something's wrong with your ADB (keyboard/mouse) jack.</td>
</tr>
<tr>
<td>0008</td>
<td>Again, an ADB problem.</td>
</tr>
<tr>
<td>000A</td>
<td>There's a problem with the NuBus slots.</td>
</tr>
<tr>
<td>000B</td>
<td>Trouble with the SCSI chip.</td>
</tr>
<tr>
<td>000C</td>
<td>It's floppy-drive trouble.</td>
</tr>
<tr>
<td>000D</td>
<td>Something's wrong with the printer or modem port.</td>
</tr>
</tbody>
</table>

Be aware of two things about these codes. First, they don't apply to Macs before the SE, and they don't apply to the PowerBook. Second, some of these codes may suggest something obvious for you to try: if it's code 0006, you may as well try plugging and unplugging the keyboard cable. But in general, our original words apply: the problem usually goes away by itself or goes away when you follow our Rule of Three steps.

If it still doesn't go away, and you've even tried reseating the RAM chips, then it's time to call a dealer.

**The blinking question-mark icon at startup**

The Mac blinks the question mark when it can't find a System folder.
Of course, you can always get around this by inserting your Disk Tools system disk. But that's not a long-term solution — something is clearly wrong with your hard drive, which is supposed to have its own System folder.

Apply the Rule of Three. Restart the Mac. Restart the Mac with the Shift key held down. Unhook external SCSI devices. (This often solves the problem; see "SCSI Troubleshooting" in Chapter 29.) Try starting up from your Disk Tools disk. Do a clean reinstall of your system software. Run the Disk First Aid program. If your hard drive still isn't showing up on the screen, get a program like MacTools or Norton Utilities and see if it can bring your drive back to life.

**Crashing on startup**

Clearly, you've got an extension conflict. You can temporarily get up and running without any of these extensions — and without any conflicts — by following Step 1 of our Rule of Three.

To find and eliminate the conflict, however, your first thought should be to change the loading order of your extensions, as detailed in Chapter 3. Then you have to try various combinations of extensions (also covered in Chapter 3) until you find the problematic two (or more) that conflict. (Or just get Conflict Catcher II, which automates this testing process and tells you what the conflict was.)

**Twilight Zone theme, car crash, or four notes**

If, when starting up, your Mac plays a series of musical notes (Mac II series), the first four notes of the Twilight Zone theme (Centris or Quadra), or a car-crash sound (Power Macintosh), it's trying to tell you that it didn't pass one of its routine startup tests. (See Chapter 6.)

**CASE HISTORY**

**Case History: The SCSI from Hell**

We found this message posted on America Online and found it enlightening — and yet typical.

"Nothing was working at all with my System 7 system. I got nothing all day long but constant bus errors, freeze crashes, type 1 errors, and other nonsense.

"Finally, I tried switching the order of my SCSI cable path, from one direction out the Mac, to the polar opposite. (No other change in SCSI ids or any other change, period.) This experiment resulted in a sheer inability to even start my Mac!

"Feeling that, at least, I was on to some source of the problem, I reinstated my previous SCSI path, with one simple difference. Instead of going in on the bottom of each external drive's two SCSI ports, and out the top port, I brought the cables in on the top, and out on the bottom. And I ended the SCSI chain with the terminator on the bottom SCSI port.

"I know it sounds baffling, but my IIx is back to its previous rock-solid state! I'm just very happy to have everything working again, I don't care why!"

(For more on the nonsensical world of SCSI troubleshooting, see Chapter 29.)
You most often hear these chimes just after you've installed new memory into the Mac; it means one of the SIMMs isn't seated right. See Chapter 8 for details.

(We also heard these chimes when we used an obsolete version of After Dark 2.0 in conjunction with System 7.1 on a Centris. Only when we upgraded to version 2.0.x or later did things get better.)

**PowerBook won't start up**

The battery may be dead. The battery has to have at least 15 minutes of juice in it before it can restart the Mac.

If it's a PowerBook 100, consider checking the battery-storage switch on the back panel. It has to be in the On (up) position, or the Mac won't start unless it's plugged in.

**Disk Troubles**

**Hard disk troubleshooting**

For a huge helping of hard drive troubleshooting, see Chapter 7.

In the meantime, if your hard drive is giving you a hard time, try these steps, in order:

- Restart the Mac.
- Run Disk First Aid (click the Repair Automatically button more than once; sometimes this takes several tries).
- Reinstall the hard-disk driver (don't *initialize* your drive, just update; see Chapter 7 for details).
- Rebuild the Desktop (see Chapter 1).
- Do a "clean install" of the System software (see Chapter 4).
- Zap the PRAM, as outlined at the beginning of this chapter.
- Check your SCSI setup (see Chapter 29).

If you've tried everything and haven't succeeded in resurrecting your hard drive, you can always wipe it out, reformat it, and start from scratch. But if there was important data on the drive, you may find it worth sending to DriveSavers (we've provided a discount coupon in the back of this book). They have clean rooms, deoxidants, and all kinds of high-tech gear devoted exclusively to getting data off a drive, and they report a success rate of over 90 percent.
CASE HISTORY

You think you’ve got trouble?

Scott Gaidano of DriveSavers told us the following true story about one of his clients.

In early 1993, a cruise ship was just starting its 1,000-mile cruise up the Amazon. Three hundred passengers were on board. Just as the ship set out, it struck an underwater barge and sank. (It was the same day as the World Trade Center bombing, so there wasn’t much news of it.)

Two of the passengers were a couple, a juggling team, who had been hired as onboard entertainment. The story of their journey was painstakingly written up — on the PowerBook 100, now deep underwater in the sunken cruise ship.

Two days after the ship sank, the guy persuaded his fiancée to get into scuba gear and swim down into the lime-green, piranha-filled ship. She swam down two flights of stairs, down the corridor, and into what had been their stateroom. Sure enough, there was the PowerBook on the desk. She also grabbed, from the dresser drawer, the diamond ring her great-grandmother had given her, a bag of juggling equipment, and her contact lenses that were bobbing in their case on the ceiling of the stateroom.

She brought it all to the surface. She sent the PowerBook to Scott, whose staff decontaminated it, desalinized it — and successfully rescued the files!

All floppy disks show up locked

Of course, all your floppies aren’t really locked. We’ve seen this in several Macs, and the problem is simple enough: dust on the drive mechanism.

If you’re technically minded, open the Mac case. Use a screwdriver to gently take out the floppy-drive unit. (On some Macs, you also have to lift out the hard drive unit first. Just remember where everything came from!)

Look at it closely. You see a toothpick-like, spring-loaded, white plastic pin. This pin usually slips into the locked/unlocked hole in a disk, and it tells the Mac whether the disk is locked or not.

Over time, this pin gets caked with dust and gunk, and becomes less springy; eventually, it may stay in the down position, making the Mac think the disk is locked. Clean the pin carefully, test for springiness, and reinstall everything.

File, Desktop, and Icon Troubles

Strange crashes with 32-bit Enabler

Apple’s 32-bit Enabler, as we mentioned in Chapter 8, is a successor to Mode32. Both give a “32-bit dirty” Mac (IIcx, SE/30, and so on) access to the 32-bit addressing feature. (Again, see Chapter 8.)
Unless you think system crashes make life more interesting, take note of the following: make sure Balloon Help is turned off when you use the standard Apple Color Picker (the circular color-wheel dialog box).

**Can’t empty the Trash**

If you can’t empty the Trash, try one of the following:

- Hold down Option as you choose Empty Trash.
- Quit your programs and try again. (Maybe another program’s using the trash.)
- Restart the Mac and try again.
- Restart the Mac without any extensions (see Step 1 at the beginning of this chapter) and try again.
- Use DiskTop, included with this book, to select the file. Choose Get Info from the DiskTop menu. If the File Protected or File Busy checkbox is selected, try turning it off.

**Recover text from trashed files**

If a document gets corrupted, particularly page-layout documents, use Word’s powerful “open anything” command to scrape the usable text out of the trashed file.

To do so, press Shift as you choose Open from the File menu. Open the file. The screen is filled with garbage characters, but among them you should find whatever text that file contained.

**Keyboard Ailments**

**Dead key**

When we say dead key here, we *don’t* mean one of those Option-key characters. We mean a broken key.

You can get the keyboard repaired professionally, of course. But chances are good the problem is just a gummed-up contact, which you can clean.

Turn off the Mac. Carefully pry the plastic key off its stem. Then take a can of WD-40 aerosol lubricant (available at hardware stores). Insert the narrow plastic WD-40 tube into the point where the key plunger enters the black body of the key. Give a short spray.

Press the key plunger a few times and then hook everything back up to see if the key works. If the key still isn’t fixed, repeat a couple more times.
Crazy slow typing

If the Mac suddenly gets incredibly slow to respond to your typing, chances are good the culprit is one of the following:

- The Key Caps desk accessory is open somewhere in the background. It's intercepting every keystroke, displaying the appropriate symbols, and gumming up everything. Close it.

- You're multitasking. The Mac is splitting its focus between your typing and its background task (printing or copying files, for example).

- If your Mac is on a network, bad equipment or frayed wiring may be transmitting garbled signals over the network lines. Disconnect yourself from the network and see if the slowdown persists. If the problem vanishes as soon as your Mac is cut loose from the network, you know you've got a network problem on your hands. See Chapter 31 for some tips on network troubleshooting.

- Your SCSI chain is acting up. See Chapter 29 for instructions on solving SCSI problems.

When all else fails

Don't forget that Apple is taking especially good care of you and your Mac lately.

If you bought a PowerBook and it's less than a year old, Apple will send somebody to pick it up, ship it overnight to their repair facility, fix it, and air-express it back to you. Free.

If you bought any Mac after February 1993 and it's not yet a year old, Apple will send somebody to your house to fix it! And, remember, you're still eligible for free, toll-free help. Let us tell you: Apple's phone-support people are ace. They sit down there in Austin, Texas, becoming the world's best experts on what can go wrong. And they're darned friendly.

The number to call, both for help and for repairs, is 800-SOS-APPL.

The Top 10 Software Suspects

After having read literally tens of thousands of e-mails and BBS postings, we know one thing for sure: that a huge percentage of crashers, freezes, and incompatibility problems are caused by the same culprits. Over and over again, the problem turns out to be an outdated or incompatible copy of one of the following programs. Pay special attention to these offenders when you upgrade anything on your Mac, such as the system software or the Mac itself.

1. FaxSTF. For some reason, this fax/modem software seems to conflict, sooner or later, with just about everything.

2. Other fax/modem software. It's just a sensitive class of software all around.
3. **ATM.** Everytime Apple engineers sneeze, this thing needs to be upgraded.

4. **After Dark.** Ditto. Before version 3.0, Berkeley Systems had worked their way up to version 2.0y. That means they'd had to tweak this screen-saver to make it compatible 25 times so far. Good thing version 3 came out — what would they have called the version after 2.0z?

5. **TimesTwo.** Bad news all the way around. No wonder they went out of business.

6. **Stacker.** Same problem. You mess around with the Mac's guts enough, you're asking for trouble.

7. **Suitcase.** With System 7.1, there's less call for this — but be sure to upgrade to the latest version if you use it.

8. **Adobe Type Reunion.** Conflict city. Use WYSIWYG Menus (included with this book) instead.

9. **Super Boomerang.** Anything this powerful and complex qualifies as a suspect in times of trouble.

10. **ClickChange.** Likewise. This system colorizer/customizer is awfully neat, but practically guaranteed to cause conflicts somewhere along the line.

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**TRUE FACT**

**Where the names come from**

Ever wonder where those nutty Mac model names come from?

It all started with the initials. There was SE, which stood for some variation of system expansion (referring to its expansion slot). Then the Mac II gave way to the IIX (an extended Mac II), the IICX (a compact extended Mac II), and the IIFX (a fast extended Mac II). There was talk of using the same logic to name the SE/30 — it would have been called the Macintosh SEx — but we're told that the marketing folks couldn't get a trademark.

As we've mentioned, the i in IIsi (slim) and IICi (compact) stands for integrated video. The word Quadra refers to the fourness of its '040 processing chip. LC comes from low-cost color. And Centris? It was the center of the Mac line, and the word has that vaguely ancient-Latin sound that Apple was leaning toward for a while.

Then there's the numbering system. When Apple product numerology was introduced, Mac purists wailed. It seemed that Apple was beginning to turn Macs into the faceless, personality-free product ID numbers common in the IBM PC world. Apple reassured us that the numbers existed only to help consumers understand the power and speed differences within the Mac line.

At first, Apple seemed to be consistent. There were the PowerBooks; then, as now, the weakest model (100) has the lowest number, and the faster models (540, for example) had higher numbers. Among the Performas, the same logic worked for a while, too: the 600 was faster than the 400, and so on.

But the system fell apart with the Quadras (and subsequent Performas). Apple couldn't go much higher than the 950 without starting into four-digit numbers, so it backtracked with the release of the Quadra 800, which actually is faster than the 950. The 840av, of course, is faster still. And with the PowerPC Macs (Power Mac 6100/60, and so on), the names get even less poetic.
Chapter 33
The SECRETS Software

We understand that, despite the countless hours your cheerful authors have spent researching and writing this book, you may well consider the software disks supplied with this book to be the main course.

Before we begin, please note: the SECRETS software comes on high-density disks. If you have a Mac Plus or SE with an old-style 800K disk drive, call IDG Books at 800-434-3422, and we’ll send you a replacement set of 800K disks at no charge. (Name another publisher who’ll do that!)

What You’ve Got Here

There are three categories of software on these disks: commercial software, shareware, and freeware.

The Commercial Software

In general, we’ve included modules or components of the full-fledged, shipping versions of this software: one of the Now Utilities; three of Claris’ PowerBook utility kit modules; five Bitstream and Olduvai fonts. You get the idea. In exchange, the software companies hope you’ll want to upgrade to newer versions as they appear. Or, if we’ve included a component of a utility set, the company hopes you’ll want to order the full package.

They’ve made doing so attractive, too, by including coupons with special offers at the back of this book (usually 50 percent off or more).
Shareware

Shareware represents one of the last bastions of the honor system. Shareware software lets you try before you buy, without paying a dime up front. The authors and publishers of these programs allow you to use them, freely, for a certain number of weeks. Then, if you like the software and want to continue to use it, you pay them the small fees they request (usually between $10 and $20).

In exchange for paying the fee, some authors give you a password to unlock additional features or eliminate persistent reminders to pay up. Often you'll get a manual or a disk back by mail, containing the newest version of the software, along with a selection of other products in the author's line.

If you don't want to use the software and don't intend to pay for it, you should remove it from your Mac.

Freeware

Some of the programs on our disks are designated as freeware; no payment is requested. The author retains the copyright to the product, so if you want to give it to your friends or upload it to a BBS, check the licensing information first. There's a related category called Postcardware, too: if you like the software, the author wants you to send a postcard.

Installation

Getting a program from our disks is simple.

- Insert SECRETS Disk 1. Its window opens on your screen.
- Double-click the SECRETS Installer.
- Select the checkboxes of the programs you want. For descriptions, click the I button next to each one. If necessary, use the Switch Disk button to select which hard drive you want to receive the software. (If you only have one hard drive, no such button appears.)
- Click Install.

You may be asked to insert other disks. When it's all over, you'll find a new folder on your hard drive called Mac SECRETS Software — and inside are the programs you selected.

Incidentally, we've programmed the Installer not to go all the way with the installation. For example, it doesn't put SECRETS control panels into your Control Panels folder; instead, it places each control panel, together with its Read Me and other support files, into a folder on your hard drive. (If the Installer did put the control panel into your Control Panels folder automatically, you'd find a folder on your hard drive containing nothing but a Read Me file, which we thought would be too weird.)

To find out how to install a program the rest of the way, read its description in this chapter.
Chapter 33: The SECRETS Software

The amazing Mr. Vise

Q: OK, I'll bite. Your book’s cover says you’ve included 9MB of software on these three disks. Each can only hold 1.4 meg, and even StuffIt can’t get software that small. So how’d you pull it off?

A: You’re right — we’ve got a Secret here, too. We compressed our stuff using a remarkable software installer called Vise. The company that makes it, MindVision, created a custom installer for this book — for two reasons. First, for you: because Vise compresses files about 10 percent more than StuffIt, we were able to give you about 9MB of programs instead of 8. And using this installer makes accessing (and automatically expanding) the SECRETS programs simple; you can get one program at a time from these disks, as needed.

The second reason MindVision donated its installer technology: as a newcomer to the field, the company wants the world to see what its installer is like. A number of software companies use the Vise installer already for the programs they sell — Director, Nisus, Adobe’s Type On Call, and so on — but MindVision wants its Installer to become even more common. We think it deserves to.

To find out how to install a program the rest of the way, read its description in this chapter.

(The only exception is TempoEZ, which requires each of several files to be placed in various System folder locations. The SECRETS Installer does put those files where they belong automatically.)

A Disclaimer

We’ve tested every program here on Power Macs, PowerBooks, and standard desktop Macs. Still, that’s about the only guarantee we can make: that this stuff works on our machines. We can’t promise that it all works smoothly with whatever junk you’ve already got in your System folder. Strange as it may sound, we also can’t promise that it all works together without a little experimentation — you’ve got to be pretty bold to throw 45 control panels into your System folder at once.

Some of the potential problems are common sense: don’t install our screen saver if you already have After Dark. Don’t install WYSIWYG Menus if you already have Adobe Type Reunion. And so on.

If you have trouble, here are three ways out. First, consult our own troubleshooting chapter, where you’ll find out how to do basic conflict-hunting (holding down the Shift key works wonders; doing a clean re-install works miracles).

Second, contact the company or shareware author who created the program. We’ve generally included phone numbers or e-mail addresses in this chapter.

Finally, if you have no luck, contact IDG Books at 800-434-3422. While we don’t know each program as intimately as the people who wrote it, we’ll see what we can do to help.
AppDisk

What it is

AppDisk is a shareware RAM disk application. What is a RAM disk? It's a piece of software that lets you use some extra RAM memory as a really fast hard disk. The disk appears on your desktop just like any other hard disk, and you can copy files to it normally. The only difference between a RAM disk and a normal disk is that when you turn off your Mac or restart, the contents of the RAM disk are lost. This is one reason AppDisk has several options to automatically save a copy of the RAM disk contents onto your hard disk.

The difference between AppDisk and most other RAM disk programs is that the AppDisk gets the memory for its disk from its application memory. Most RAM disks take memory away from your total system memory when you start up, so you can't get that memory back without restarting. To get the memory back with AppDisk, all you have to do is quit the AppDisk program (or drag the RAM disk icon to the trash).

(See Chapters 8 and 12 for more on the beauty of RAM disks.)

What you need

AppDisk requires System 6 or later.

Installation summary

Get AppDisk onto your hard drive using the Installer on Disk 1, as instructed at the beginning of this chapter. When the Installer's finished, a new Mac Secrets folder window will be open and waiting.

To launch AppDisk, double-click its icon. AppDisk instantly creates a RAM disk on your desktop. (To change the RAM disk's size, change AppDisk's Get Info memory size before launching it.)

The manual

AppDisk's user guide comes in the form of a TeachText document inside the AppDisk folder. If TeachText or SimpleText is on your hard drive, double-click this document to open it. Otherwise, use your word processor's Open command to read it.

Who wrote it

Mark Adams has been writing software since he first had an Apple II in 1980. After earning a computer science degree from the University of Texas at Austin in 1988, he entered the real world and worked on his first commercial product: a Mac game called Space Rogue. After spending a few years writing network management and productivity software (during which time he wrote AppDisk and several other shareware programs), he is now back writing games for the Mac. Currently he is finishing up a Mac flight simulator called Chuck Yeager's Air Combat.

A very hot AppDisk Secret

We've discovered that AppDisk can be extremely useful for extending the lives of any copy-protected software you've purchased.

Most of today's copy-protected software uses a hard-disk install method: you're permitted to install the program one or two times onto a hard drive. Once there, it behaves exactly like any other program. If you choose not to install it onto a hard drive, you're asked to insert the original key floppy disk every single time you run the program. This scheme is used by Performer, Vision, Final Draft, and other niche-market software.
Trouble is, floppies go bad; your key disk may stop working. Worse, standard hard drive maintenance, such as defragmenting or repartitioning, loses your precious hard-disk-installed copy forever. Using AppDisk, however, you can protect yourself. We'll use Performer in this example.

Using AppDisk, create a RAM disk large enough to contain a copy of Performer. Use the hard-disk installation procedure to install a copy of Performer onto the RAM disk. Quit Performer.

Now use AppDisk's Save command. You've just preserved the installed commercial program forever, in its no-key-disk-required condition!

Run Performer's installer a second time, and this time uninstall Performer from the RAM disk! You've now reclaimed that precious installation back onto the floppy.

Finally, quit AppDisk and do not save changes!

At this point, you have a good hard-disk installation left on your master floppy and a RAM disk that, as long as you never save changes, has a permanent supply of HD installs. You can make as many copies of the AppDisk as you want.

Here's what an Apple programmer can do in his spare time: a graceful, beautifully designed, shareware application-switcher for System 7. Applicon puts up an icon tile for each application you have running under System 7. If you click a tile, the corresponding application comes to the front. Option-clicking hides the previous application as the new application comes forward. If Applicon's tiles are all hidden behind other windows, moving the mouse to a hot spot in a corner of the main screen brings them forward.

Applicon itself is an application. It's not an extension, not a DA, and not a control panel. It is very reliable and highly compatible with the rest of your software.

**What you need**

Applicon requires System 7.0 or later.

**Installation summary**

Get Applicon onto your hard drive using the Installer on Disk 1, as instructed at the beginning of this chapter. When the Installer's finished, a new Mac Secrets folder window will be open and waiting.

To use Applicon, double-click the application to open it. Applicon's floating tiles appear on the screen.

**The manual**

Applicon's user guide is a double-clickable electronic manual. You'll find it inside the Applicon folder.
Who wrote it

Rick Holzgrafe says: “I am a California native and a son of a family full of engineers. At UCLA I majored in philosophy because that’s where all the nifty symbolic logic courses were; to my surprise, I found that ethics and metaphysics were nearly as much fun as logic.

“I discovered programming by taking a beginning course in the last quarter of my senior year, and I realized that I’d found a calling. (Something about all those angels singing and blowing trumpets tipped me off, I think.) After a couple of years at grunt jobs, a friend found me an entry-level position as a data entry tech, and (with his help and others) I taught myself programming. Since then I’ve worked at several companies, including a five-year stint at Apple Computer. I now work for the Apple-IBM joint venture, Taligent, helping to design the next-generation operating system for desktop computers. In my spare time, I write shareware and freeware programs for the Macintosh, play jazz on cornet and trombone, read, raise my family, and (when time permits) sleep.”

Shareware notice

Applicon is copyrighted freeware. You can use it yourself all you want. You can give it to anyone else, if (a) you don’t alter either Applicon or this Read Me file, (b) the Read Me file always accompanies Applicon, and (c) you give Applicon away for free (reasonable downloading fees excepted).

Rick Holzgrafe, Semicolon Software, P. O. Box 371, Cupertino, CA 95015-0371
E-mail: rmh@taligent.com

What it is

AreaCodeFinder is a fast, elegant way to find out the area code for a certain city — or vice versa. It has over 2400 American cities listed, and you can add your own. There’s even a US map, so you can make sure you’re not about to wake up somebody in another time zone.

What you need

AreaCodeFinder requires System 6.0.4 or later on a Mac Plus or better.

Installation summary

Get AreaCodeFinder onto your hard drive using the Installer on Disk 1, as instructed at the beginning of this chapter. When the Installer’s finished, a new Mac Secrets folder window will be open and waiting. Open the AreaCodeFinder folder, and double-click the program to begin.

The manual

All the instructions you need are contained within the program. Just click the question-mark button.

Who wrote it

John J. Calande III is a junior at Drexel University majoring in Information Systems. Prior to enrolling at Drexel, John worked in painting, concrete construction, welding, and building houses. After grunting for a few years, John returned to school in 1989 and obtained a certificate in drafting and design, then worked for several years as an AutoCad operator. After becoming completely sick and tired of sitting behind a computer for 10 hours a day, he decided to go back to school in 1991 and get a degree in some computer-related field, so that he might someday find a job sitting behind a computer all day.

Shareware notice

AreaCodeFinder is $8. Choose About AreaCodeFinder from the Apple menu to find out how to register.
Before Dark

If you, like millions of other Mac fans, are getting a little tired of that boring gray desktop pattern, Before Dark is a godsend. This little application fills in your desktop with one of dozens of stunning full-color textures or patterns, the likes of which you could never create in the relatively lame General Controls panel. It's fast, it's safe, and it's the shareware sibling of the commercial program Chameleon.

What you need
Before Dark requires System 7.0 or later.

Installation summary
Get Before Dark onto your hard drive using the Installer on Disk 1, as instructed at the beginning of this chapter. When the Installer's finished, a new Mac Secrets folder window will be open and waiting. Open the Before Dark folder; double-click the Before Dark icon to launch the program.

The manual
Before Dark's instructions are contained within itself. Open the program, turn on Balloon Help from the ? menu, and point to the handful of buttons and menu items.

The main things to notice are: (1) you cycle through the selection of patterns by clicking the tiny arrow buttons above the main swatch; (2) the program works by installing a tiny program in your Startup Items folder, which runs when you turn on the Mac (which explains why you see the old desktop for a split second); (3) you can get still more patterns and textures from America Online and other on-line services; and (4) read the Release Notes for instructions on removing your custom Before Dark patterns.

Bitstream Fonts

What it is
By special arrangement with Bitstream, one of the oldest Mac typeface foundries, we've included with this book a pair of commercial TrueType font families from Bitstream's vast library of typefaces.

After trying out these fonts, check the back of the book for the discount coupon to order the full Bitstream starter collection of 25 fonts and the exclusive Star Trek Fonts collection.

What you need
TrueType fonts work on any Mac running System 6.0.7 or later. (If you don't have System 7, you also need Apple's TrueType INIT and Font/DA Mover 4.1, both available from Apple dealers, user groups, and on-line services.)

Installation summary
Get the fonts onto your hard drive using the Installer on Disk 1, as instructed at the beginning of this chapter. When the Installer's finished, a new Mac Secrets folder window will be open and waiting.
Then, to install TrueType fonts under System 6: Use Font/DA Mover 4.1 to install the Bitstream font suitcase contents into your System file.

To install TrueType fonts under System 7: Drag the Bitstream font suitcases onto your System folder icon. Click OK.

If you use Suitcase or Master Juggler, check your manual for font installation instructions. (See Chapter 24 for more on fonts.)

**Color Coordinator**

**What it is**

This commercial control panel lets you switch your screen's color setting (256 colors, black-and-white, and so on) simply by pressing a key.

More impressively, it handles cases like this: You're editing a 24-bit color document in Photoshop. For relaxation, you want to play a Space Invaders-type game. So you open the game and get a warning that you first have to switch the color depth on your Mac to 8-bit (256 colors). So you quit the game, go to the Monitors control panel to make the change, and open the application again. At the conclusion of the game, you return to the Monitors control panel, switch color depth back to 24-bit, and resume work. What a hassle!

Color Coordinator banishes that scenario. It automatically switches to the appropriate color depth as you switch from application to application, without any effort on your part.

Color Coordinator is part of Conflict Catcher and Other Innovative Utilities, published by Casady & Greene. To order the full package at a special bargain price, check the back pages of this book.

**Installation summary**

Get Color Coordinator onto your hard drive using the Installer on Disk 1, as instructed at the beginning of this chapter. When the Installer's finished, a new Mac Secrets folder window will be open and waiting. Drag the Color Coordinator control panel onto your System folder icon.

Restart the Mac.

**Who wrote it**

Jeffrey Robbin has a B.S. in Computer Science from the University of Iowa and an M.B.A. from the University of Illinois. He's the author of Conflict Catcher and coauthor of an arcade game called Spaceway 2000, both from Casady & Greene. Currently, Jeff is working for Apple Computer as a software engineer. In his free time, he likes to read science fiction novels and spend time with his wife, Laura.

**The publisher's instructions**

**About Color Coordinator**

Color Coordinator is a control panel that enables automatic color switching between different applications. You can specify a different color mode for each application. Color Coordinator eliminates having to go to the Control Panel and select Monitors.

Color Coordinator can accelerate applications by running them in lower color depths. If you launch a program in black and white, such as a word processor, it usually runs faster than it would in higher color modes.

**Opening Color Coordinator**

There are two ways to open Color Coordinator: either by opening the control panel or by using the Hot Key. (The Hot Key is explained later.)

**Adding/removing an application**

Open the Color Coordinator control panel and click Add. Color Coordinator asks you to select the application you want to add. After it is added, you can set the shades of color or grays for it, exactly as if you were in the Monitors control panel.
Note: We suggest that you add the Finder as an application with your desired settings. If you do this, when you exit from a program, your settings of choice are restored.

To modify the settings, select the application in the list and click the new color settings. The changes you make are saved when you close the control panel. These changes go into effect immediately. If you are already running the application you have changed, you may have to switch in and out of it for the change to occur.

To remove an application, simply select it in the list and click Remove.

An alternate way to add an application is to press the Hot Key (see following section), set the desired color depth, and click Add.

**Color Coordinator preferences**

Color Coordinator also lets you specify a Hot Key to quickly change the current color settings, add the foreground application to Color Coordinator's list, or change its settings.

By clicking OK, any changes you make to the current monitor's settings are temporary. This is a much easier way to change color than opening the Monitors control panel.

If the current application is not already in Color Coordinator's list, then the button above OK is Add; otherwise, the button is Change. Click this button to add a new application to Color Coordinator's list or to change the current application's settings if it's already been added.

In System 7, this is the only way to change colors in an application without switching to the Finder. When you switch to the Finder and then switch back to your application, the colors may change, but by changing colors with the Hot Key, no such problems exist.

**Note:** To switch between applications without allowing Color Coordinator to change the color mode, hold down Option while switching.
Color It!

What it is

Color It! is a powerful, commercial 24-bit painting and retouching program, along the lines of the Photoshop — but it's quicker to load, simpler to learn, and requires half as much memory.

Color It! lets you either create new color paintings or retouch scanned photos, from black-and-white all the way up to millions of colors. It reads MacPaint, PICT, TIFF, Photoshop, and EPS files, and offers an impressive list of features: multiple Undo; work with multimegabyte files even with limited RAM; editable tool palette; custom patterns; image masking; and image-processing filters.

What you need

Color It! requires System 6.0.4 and at least 2MB of memory. If you have a black-and-white Mac and you're not using System 7, you also need the 32-bit QuickDraw init.

Installation summary

Get Color It! onto your hard drive using the Installer on Disk 1, as instructed at the beginning of this chapter. When the Installer's finished, a new Mac Secrets folder window will be open and waiting. Open the Color It! folder.

By the way, whenever you launch Color It by double-clicking its icon, your new painting window will be filled by a colorful ad encouraging you to upgrade to Color It! Version 3. Just double-click the Eraser tool to nuke the message. (Alternatively, choose New from the File menu to open a new blank window.)

Who wrote it

Color It! is a complete 24-bit graphics editing program from MicroFrontier. We've included a coupon in this book that lets you upgrade to the new 3.0 version at a special price.

The publisher's instructions

A manual is included in the Color It! folder on your hard drive. Double-click it to start reading; use the Contents menu to turn pages.

CP DriveLight

What it is

This commercial control panel solves a unique problem. When Apple released the compact case that housed the IIcx, IIci, and Quadra 700, they added a really useful little feature — a little LED light on the front of the case that flickers whenever the hard drive is accessed.

Unfortunately, this little feature wasn't carried over to other Macintosh models; nor is there any way to link floppy disk activity and external hard drive activity to such a display.

Worst of all, PowerBook owners attempting to maximize their battery usage have no way of knowing when the hard drive (the biggest juice user) is active, unless the room is perfectly quiet.
Enter CP DriveLight: a handy menu bar icon of your choice that tells you unmistakably when the hard drive is active. (Or, instead of displaying an icon, you can have CP DriveLight flash the little Num Lock and Scroll Lock lights on your extended keyboard!)

**What you need**

CP DriveLight should work on a Mac Plus or better, running System 6.0.5 or later.

**Installation summary**

Get CP DriveLight onto your hard drive using the Installer on Disk 1, as instructed at the beginning of this chapter. When the Installer's finished, a new Mac Secrets folder window will be open and waiting. Drag the CP DriveLight (and CP DriveLight Icons folder) icon onto your System folder icon. Restart your Mac.

**Who wrote it**

CP DriveLight is a part of the MacTools 2.0 utilities package from Central Point Software, a division of Symantec.

**The publisher's instructions**

Central Point DriveLight is a convenient indicator of hard disk or floppy disk activity. After you install the DriveLight control panel, icons flash in the menu bar whenever your Macintosh accesses a disk.

You can create custom icons using DriveLight's built-in icon editing tools.

**Opening the DriveLight control panel**

When you open the DriveLight control panel, the main window appears. From this window, you can configure the location of the DriveLight indicator, edit the icons, turn the control panel on or off, and view on-line help about DriveLight.

To turn off DriveLight, click Off in the lower-right corner of the control panel. DriveLight remains off until you turn it back on.

To change the position of the DriveLight icon in the menu bar, click one of the buttons on the left or right of the menu bar. To have DriveLight flash the Scroll Lock and Num Lock lights on your Apple extended keyboard, click Extended Keyboard.

**Editing DriveLight icons**

DriveLight provides a set of four icons that can be edited from the control panel. If you edit the icons and then later decide you do not want your changes, reinstall DriveLight from the original floppy disks to return to the original icons.

1. To edit the DriveLight icons, click Edit in the control panel. The editor window appears, displaying three bitmaps for the icon you select.

2. DriveLight allows you to specify the type of indicator, DriveLight's location on the menu bar, and the current set of icons.

3. The DriveLight control panel also displays on-line help about DriveLight.

4. To edit the DriveLight icons, click Edit in the control panel. The editor window appears, displaying three bitmaps for the icon you select.

5. To turn off DriveLight, click Off in the lower-right corner of the control panel. DriveLight remains off until you turn it back on.

6. To change the position of the DriveLight icon in the menu bar, click one of the buttons on the left or right of the menu bar. To have DriveLight flash the Scroll Lock and Num Lock lights on your Apple extended keyboard, click Extended Keyboard.
Each icon is actually composed of three layers: Black-and-White (B&W), Mask, and Color. Use the mask layer when the icon is displayed on a non-white menu bar and it contains white space. The mask prevents the color of the menu bar from showing through the white space of the icon.

2. Click the button for the icon you want to edit. The Floppy Read icon is selected by default.

3. Click the icon layer you want to edit. DriveLight places a frame around the icon to indicate that it is active.

4. Edit the active icon layer. Use the mouse to add or remove pixels; click the color palette to change pixel colors; click the arrows to move the icon layer one pixel at a time; and use $\mathbb{C}$ and $\mathbb{V}$ to copy and paste an entire icon layer.

Tip: If you want to create a set of icons from scratch, start with the Black-and-White layer. When it is finished, copy it to the other two layers (using the standard $\mathbb{C}$ and $\mathbb{V}$ sequence) where they can quickly be touched up.

5. When you finish editing the icon layers for each icon, save your changes by clicking OK. The icons are saved to an area inside the DriveLight program itself.

Alternatively, click Save As to save your changes to a DriveLight icon file, which you can load at a later time.

### Loading DriveLight icons

You can save a customized set of icons and load them to use as DriveLight icons at any time. If you do not like the changes you make to the icons Central Point Software supplies, you can reinstall the original set of icons without reinstalling the control panel.

1. To load DriveLight icons, click Edit in the control panel. DriveLight displays the editor window.

2. Click Load.

3. Select the file you want to load and click Open.

### CP Undelete

#### What it is

![CP Undelete](image)

You're panicking. That all-too-important file you've been working on for hours has just been accidentally trashed — where, oh where, is that backup? Is there anything you can do to get the file back? You may stand a chance with CP Undelete, a commercial application from Central Point Software.

This program can recover recently deleted files, even after you empty the Trash. If disaster befalls your hard drive, CP Undelete may be able to recover typed text from your files even if the files themselves are completely trashed.

#### What you need

CP Undelete requires Mac Plus running System 6.0.5 or later.

#### Installation summary

Get CP Undelete onto your hard drive using the Installer on Disk 1, as instructed at the beginning of this chapter. When the Installer's finished, a new Mac Secrets folder window will be open and waiting; to launch the expanded CP Undelete program, double-click the icon.

#### Who wrote it

CP Undelete is a part of the MacTools 2.0 utilities package from Central Point Software, a division of Symantec.
The publisher’s instructions

CP Undelete recovers deleted files from hard disks, floppy disks, and removable media such as Bernoulli cartridges.

Warning: If you need to recover any files, do not write new data to the disk or optimize because these processes overwrite deleted files. If Undelete is not already installed on your hard disk, run it from a floppy disk.

Note: Volume refers to a storage device, like a disk, or to a partition of a storage medium formatted to contain files.

What Undelete does

When you empty a file from the Trash, only data about the file’s location on the volume is affected. The actual data on the disk that constitutes the file remains untouched until it is overwritten by a new file. To recover the file, Undelete must locate this data before it is overwritten and place it in a new file.

Finding files

This version of Undelete uses two methods to find deleted files: scanning for files and scanning for text. (The full current version of MacTools includes TrashBack, an amazing addition to the Special menu. It lists, in hierarchical order, every file you’ve trashed recently. Recovering one is as simple as choosing its name.)

Scanning for files

File Scan searches most volumes for unique information in the first 512 bytes of the file by the application that created it. In other words, you’ll be asked for the name of the program that created the deleted file. To locate files on 800K floppy disks, File Scan searches for file tags.

Scanning for text

If you cannot recover a document with other methods, scan for text to piece together a text document from individual blocks of data.

Displaying files

Undelete’s file list displays files on the volume. Whenever possible, it displays the name, size, and dates associated with the file. In some cases, Undelete may not have enough data to provide this information and instead displays a generic name, such as Unknown 001.

To help you determine which file to recover, Undelete enables you to view the contents of deleted documents.

Recovering files

After you find your files in the list, select them and then click Recover. The program prompts you for a volume to recover the files to and places them at the root of that volume in a folder called Recovered Files.

Starting Undelete

When you start Undelete, the main window appears.

Undelete options

Before recovering files, select options for saving your recovered files. Your selections remain in effect for all recovery attempts until you change them.

To display Undelete’s options for saving recovered files, click the Options button. You’ll be offered two choices. “Save on the same disk they were on”: Automatically saves recovered files to the same disk from which they were deleted.
"Ask me for a disk": Prompts you for a disk to save recovered files to. This option is the default.

**Method 1: File Scan**

The File Scan method searches volumes for unique information placed in the first 512 bytes of the file by the application that created it. On 800K floppy disks, File Scan searches for *file tags*.

This method is used mainly to recover files; however, it also can recover applications because it scans for application resource forks, which store information about windows, dialog boxes, and icons.

1. **Select the volume** you deleted the file from and **click the File Scan button**.
2. In the Scan Disk Dialog box, **select the types of files** you want to recover. If you want to scan for a file type that does not appear in the list, see “Adding document types” later in this section.
   * To select one file type, click the name of the type to highlight it. A check mark appears next to the selected type.
   * To select multiple file types, Shift-click.
   * To deselect a file type, click the name of the file type again.
3. **Click Scan**. Before scanning, the program asks whether you want to save your changes to the list of file types. Changes include any file types that you added and deselected. The new list is saved in the CPS Preferences file in the System folder.
4. After the scan is finished, click the button next to the folder named Deleted files to display a list of files found by the scan.

The condition listed for each file indicates the recovery prospects, from Excellent (fully recoverable) to Destroyed (the file has been completely overwritten and cannot be recovered by any method). Names of destroyed files are displayed in italic and cannot be selected.

If your file still does not appear in the list and it is a text-based file, skip to the next section, “Method 2: Text Scan.”

5. **Select the file you want to recover, or Shift-click to select multiple files**. If the File Scan method cannot provide the original name of the file, it assigns the file a name based on the application that created it (for example, Word file 1). You may want to view the file’s contents before recovering it (by clicking the View button).

6. **Click Recover**. Depending on the option specified, Undelete prompts you for a disk to save the file to, or it places the file on the disk from which it was deleted. Undelete places recovered files in the Recovered Files folder.

**Method 2: Text Scan**

If Undelete cannot recover your text document using the first method, it’s likely that so much of the document has been overwritten that it cannot fully be recovered. It’s also possible that a file type is not available for the document. Using the following procedure, you can scan the disk for text that has not been overwritten and recover it to a new document.

**Note:** If you use a program that automatically compresses data, Scan Text may be unable to recover your document.

1. Select the volume that contains the deleted document and click the Text Scan button.
2. Type a text word or phrase that was in the deleted document. Text Scan is case-sensitive — that is, uppercase and lowercase characters are treated differently.
3. **Click Forward**.

   Undelete displays the first block it finds that contains the text. Strings of meaningless characters, which cannot be translated into text, may appear with the actual text.
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Changing Undelete's document scan types

If the type of document you want to scan for is not in the File types list, you can add a new document type to the list. The number of document types that you add is limited only by the amount of memory available on your Macintosh. To enhance disk scans, delete document types you do not need.

Adding document types

Undelete creates a new document type by searching for common information in documents of the same type that you select. If an application does not place common information in the documents it creates, Undelete cannot create a new type.

1. Select a volume and click File Scan.
2. In the Scan Disk dialog box, click Add Type.
3. In the Add Type dialog box, type the name of the document type you want to add and click Scan.
4. Select a document that is on the same volume you selected in step 1 and that is of the same type you want to add.
5. Click Scan. Undelete searches the volume for other documents like the one you selected, and it uses these documents to create a new document type.

The number of documents of the new type Undelete finds determines the reliability of the new type. Undelete creates the most reliable types using eight or more documents that contain varying data (for example, size, date, number of pages, and layers). Types made from only two or three documents are less reliable.

Undelete places the new type in the list alphabetically.

Deleting document types

You can delete existing document types that you do not use (for example, if you no longer use an application, you can delete its type).

1. Select a volume and click File Scan.
2. In the Scan Disk dialog box, select one or more file types and click Delete.

Note: Clicking Default removes any new document types you may have added.
Disinfectant

What it is

Disinfectant, a freeware application and extension, is one of the very best antivirus programs available for the Macintosh. It both recognizes and eradicates 25 Mac viruses and all known variations and clones of them. Furthermore, Disinfectant also recognizes many possible unknown variations and clones. It detects the viruses and, when possible, repairs files which have been infected by the viruses.

Disinfectant also includes a virus protection extension (INIT) that loads at startup and continually protects your Mac from infection by any of the known non-HyperCard Mac viruses.

What you need

Disinfectant requires System 6.0 or later.

Installation summary

Get Disinfectant onto your hard drive using the Installer on Disk 1, as instructed at the beginning of this chapter. When the Installer’s finished, a new Mac Secrets folder window will be open and waiting. To use Disinfectant, double-click its icon.

The manual

Disinfectant’s excellent manual is all electronic. Launch Disinfectant, then choose Disinfectant Help from the Apple menu.

Who wrote it

John Norstad tells us, “I have been working with computers for 30 years. I have been a staff member at Northwestern University for 16 years, except for one year in 1984 when I worked for Odesta and helped develop the first version of its Helix database program. My current development interest is TCP/IP client/server networking software. I designed and developed a Mac client for the University of Illinois’ CSO directory services system. I am currently working on a Mac USENET newsreader named ‘NewsWatcher’ and on other networking projects.”

How to contact the author

I enjoy getting mail, especially electronic mail, and I invite your correspondence. If you send me a letter through the regular mail, please include a self-addressed envelope if you expect a reply.

Please do not try to call me. I do not have the time to do free consulting over the phone and I cannot return long-distance phone calls from people I do not know.

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Internet: j-norstad@nwu.edu

Distribution

Disinfectant is free. We encourage you to make and distribute as many copies of the program as you want, for whomever you want, as long as it is not for profit.

Disinfectant is distributed electronically. When a new virus is discovered, we usually release a new version of Disinfectant to recognize the virus within a few days. New versions are posted to CompuServe, GEnie, America Online, Calvacom, Delphi, BIX, MacNet, ftp.acns.nwu.edu, sumex-aim.stanford.edu, rascal.ics.utexas.edu, and comp.binaries.mac.

Disinfectant is not a commercial product. We cannot offer typical commercial services such as telephone support, mailing lists, or upgrade services. Nonetheless, there are several ways you can keep abreast of the latest news about Macintosh viruses and new Disinfectant releases:

* Join a user group such as BMUG (Berkeley Macintosh User Group), BCS (Boston Computer Society), or a local user group.

* Join a Macintosh electronic bulletin board. Many user groups operate excellent bulletin boards for their members.

* Subscribe to a commercial on-line service such as America Online, CompuServe, or GEnie. Join the Macintosh forums.
DiskTop

What it is

DiskTop is something like the Finder in a desk accessory. Many of the functions you can perform in the Finder also can be done using DiskTop.

For example, if you need to delete some files to make space on your disk, DiskTop allows you to do that without returning to the Finder. You can even move files to another disk, and delete them from the original, in one operation—using the Move command. Or you can find the file that you know is somewhere on your hard disk.

DiskTop really shines when you use it for group operations. For example, you can search for a group of files with the same creation or modification date. After DiskTop finds the files, you can add them to the retain list and then copy, move, or delete them in a single group operation.

When you open DiskTop, you get a window that looks like the desktop you see when in the Finder, with the disks in the upper-right corner and the Trash icon on the left. We call this the desktop (note the lowercase).

DiskTop tells you what kind of disk each is (HFS or MFS), how many bytes are used on each disk, and how many bytes of storage remain on

Installation summary

Get DiskTop onto your hard drive using the Installer on Disk 1, as instructed at the beginning of this chapter. When the Installer's finished, a new Mac Secrets folder window will be open and waiting. Open the DiskTop folder, and then:

   Under System 7: Drag the DiskTop suitcase to your System folder. The contents are automatically placed in the Apple Menu Items folder.

2. Install the CEToolbox file by dragging it into your System folder. After rebooting, you can open DiskTop by choosing its name from the Apple menu.

3. Important: When asked, enter your name and the serial number 12578.

Who wrote it

DiskTop comes to you courtesy of PrairieSoft; it's the full working version 4.0.2. To upgrade to the full DiskTop package, which includes a redesigned, more flexible DiskTop, plus the GOfer 2.0 from Microlytics (a fast, flexible search desk accessory) and modules called DT Launch and DT Find (fast, powerful file-finding and file-launching directly from the Apple menu, without even having to open DiskTop), check the back pages of this book.

The publisher's instructions

Using DiskTop

DiskTop is something like the Finder in a desk accessory. Many of the functions you can perform in the Finder also can be done using DiskTop.

For example, if you need to delete some files to make space on your disk, DiskTop allows you to do that without returning to the Finder. You can even move files to another disk, and delete them from the original, in one operation—using the Move command. Or you can find the file that you know is somewhere on your hard disk.

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DiskTop tells you what kind of disk each is (HFS or MFS), how many bytes are used on each disk, and how many bytes of storage remain on

What you need

DiskTop works on a Macintosh 512KE or later running System 6 or later.

The Mac's Finder is a convenient file-management tool—but it's not the only one or even the most efficient one. Using DiskTop, a commercial desk accessory from PrairieSoft, you can delete, move, and rename files by clicking a button or with a simple keyboard command. You can perform amazing (and fast) multi-disk Finds. You can make icons invisible or visible, change their types and creators, and more! Welcome to DiskTop, the powerhouse file-management desk accessory.

Flip through the pages of this book and you find numerous references to DiskTop; it comes in handy for a huge number of Mac utility tasks.
each disk. There's also a padlock icon to indicate locked disks. This is the same information that the Finder provides, but you don't have to open each disk icon to get the information.

**Ejecting disks**

Like the Finder, DiskTop has an Eject command. But DiskTop's Eject is a button instead of a menu item. To eject a disk, select a floppy disk or cartridge icon and click Eject or press 88-E. The disk is ejected and its icon is dimmed. If you select a hard disk, the Eject button is always dimmed.

**Unmounting disks**

To eject a floppy disk and unmount it (remove its icon from the desktop and the disktop), drag the disk icon to DiskTop's Trash icon (you also can press 88-U or click the Unmount button).

You can unmount hard disks this way, but you must restart your Macintosh to remount them (or use SCSIProbe).

Whether it's a floppy disk or a hard disk, DiskTop warns you if there are open files on the disk. It's probably not a good idea to proceed because the files that are open could be damaged. DiskTop does not enable you to unmount the current System disk or the disk on which the current application is running.

**Renaming disks**

To rename a floppy disk or a hard disk, just select it and click Rename, or press 88-R.

**Erasing disks**

To erase a floppy disk or a hard disk, select it and click Erase. DiskTop asks you to verify your decision. If you go ahead, DiskTop erases all of the files on the disk. (DiskTop does not initialize the disk, so you cannot change a single-sided floppy into double-sided or vice versa, or format a blank disk.)

If the disk has open files, DiskTop warns you. Be very sure before you click OK. You can't erase the current System disk.

**Finding files I: You find it**

There are two ways to find a particular file or folder using DiskTop.

The first (and more difficult) way is to double-click a disk icon to open it — just like you would in the Finder. You also can select the disk and then press Return or Enter, or select the disk and press 88-O to open the disk icon. After doing this, you get a window that looks like a Finder "View by Name" window, which we call the Files Window. You can locate files or folders by viewing and using the scroll bar on the right side. You also can locate files/folders by typing the first few characters of the name of the file/folder to bring that file/folder to the top of the Files Window. Open folders by double-clicking them (or selecting them and then pressing Return or Enter).

Moving backwards up the folder hierarchy works in the same fashion as the dialog boxes for Open and Save in most applications. Just click the folder name at top center in the window, and use the resulting pop-up menu to move down (which is actually up) the list of folders to the folder you want — or to the main disk directory.

You also can click the disk icon next to the disk name in the upper-right corner of Files Window to move up a level at a time. Or you can press 88-B or 88-up arrow to move up one level at a time.

**Finding files II: Let DiskTop find it**

To find something, click the Find button (in the lower-left corner on the disktop or the upper-left of the DiskTop Files Window) or press 88-F. The Find Criteria dialog box opens.

To begin a search, you enter the criteria by which you want DiskTop to look for the file(s) or folder(s). You can choose one or more options in the Find Criteria dialog box.

*Name* lets you enter text which the file or folder name contains, starts with, ends with, or matches. Use the pop-up menu between Name and the text entry box to select one of these options.

*Type* lets you enter a file type (APPL for applications, PICT for Draw files, and so on) that either is or is not to be matched. The pop-up menu between the Type check box and the text entry box lets you select either of these
options. In the text entry box, you can enter the four-letter code for the file type. The pop-up menu to the right of the text entry box lets you automatically enter the file types for applications (APPL), Paint files (PNTG), Draw files (PICT), text files (TEXT) and others. If the file type is not on this menu, you can select the “Same Type as...” option, and DiskTop opens a dialog box where you can select a file that is the same type as the one you are looking for. You also have the option of simply entering the type in the box. (Folders do not have a type.)

Creator lets you enter the four-letter code (e.g., MACA for MacWrite, or MSWD for MS Word) for the creator of the file that either is or is not to be matched. The pop-up menu between the Creator checkbox and the text entry box lets you select either option. In the text entry box, you enter the four-letter code for the file creator. The pop-up menu to the right of the text entry box lets you select the four character creator for MacWrite (MACA), MS Word (MSWD), Fonts and Desk Accessories files (DMOV), and others. If the file creator is not on this menu, you can select the “Same Creator as...” option, and DiskTop opens a dialog box where you can select a file that was created by the same application as the file you are looking for. You also have the option of simply entering the creator in the box. (Folders do not have a creator.)

Created lets you select a time period to find all files and folders created during a particular period. Enter the two dates in MM/DD/YY format. For example, you would enter 10/01/89 and 10/07/89 to find all of the files created during the first week in October of 1989.

Modified lets you select a time period to find all files and folders modified during that period. As above, enter the two dates in MM/DD/YY format.

Size lets you specify a range of sizes of files to find. (DiskTop finds folders if the size range is set from 0K to 0K.)

When the Find Criteria box first opens, any disks currently mounted are displayed in the list in the upper-right corner. Clicking one disk deselects the other disks. Shift-click to select multiple disks to search. You also can use the Where button in the lower-right part of the dialog box to specify the folder for DiskTop to search.

Once you’ve entered the search criteria and selected the disks you want to search, click Find (or press Return or Enter) and DiskTop begins searching the currently selected disk(s). Two lists appear on the left side of the box, and a small clock at the lower right shows the progress of the search. (The disk being searched is highlighted in the window in the upper-right corner.) When DiskTop finds a file or folder with the matching criteria, the file or folder names appear in the top list. As the search continues, it displays each new disk, followed by any files or folders found on that disk that match the criteria.

To stop the search, press any key, or click the mouse button. To resume, click Continue (or press Return or Enter).

After DiskTop finishes searching all of the disks, or when you pause the search, you can show the location of a listed file or folder by clicking its name in the top list. The location of the file or folder appears in the bottom list (along with the path to get to it).

Remember: don’t be too specific when you search; you may accidentally exclude the file that you are looking for. It is better to search for keyboard than the more specific keyboard.ps. You may get more items, but you are assured of finding the file you are looking for.

Once you have found the file or folder you are seeking, clicking Open makes DiskTop try to open the file. Clicking Go To (or pressing $G$) causes DiskTop to open the Files Window to the folder containing the file you found, where you can perform any of the functions described later in this section. Clicking Define (or pressing $D$) lets you define new search criteria. Clicking Cancel (or pressing $R$) closes the Find dialog.

You can save the results of your search by clicking the Retain button or pressing $R$. The files and folders that you have found are placed in a Found Window where you can Copy, Move, Delete, Rename, or get the Sizes for them as a group. For example, you can search for all of the copies of TeachText on your hard drive. Once DiskTop finishes the search, you can click the Retain button to add them to the Found window. From here you can delete all but one copy.

Clicking the Find button in the Found Window takes you back to the Find Criteria dialog box.
Clicking the Append to Retain button or pressing ⌘-A allows you to add the results of subsequent searches to the files that you have already found. The contents of the Found window are lost when you return to DiskTop's Files Window.

**Selecting files and folders**

Besides handling disks and being able to find things, DiskTop provides most of the same file and folder maintenance functions as the Finder.

DiskTop performs many operations on files and/or folders, but you always begin by selecting the file(s) and/or folder(s) you want. This is a three-step process.

First, you need to be in the Files Window. Second, you need to locate the file(s) or folder(s) you want to select. Third, you need to select the file(s) and/or folder(s). You can use the up and down arrows to move up and down in the Files Window until you highlight a file or folder. Also, you can Shift-click to select multiple files or folders. (Shift-clicking an already selected file or folder deselects it.) To select several files and folders in a row, hold down the Shift key and drag through the names. To select all files and folders in the current window, press ⌘-A.

**Creating folders**

You can create new folders on HFS disks with DiskTop. Select the location in which you want the new folder to appear and select New Folder from the DiskTop menu (or press ⌘-N). Type the name for the folder. Click Create (or press Return or Enter) to add a new folder to your disk at the current level or directory.

**Setting the default folder/disk**

The default folder is where some applications look for files and save temporary files. It is usually set to the same folder/disk as the current application. But there are occasions when you would like the application to look elsewhere or save files elsewhere, and DiskTop can handle it.

The current default disk has its information in bold on the desktop. The current default folder is displayed in bold in the Files Window.

To set the default, select the disk (on the desktop) or the folder (in the Files Window), and then select Set Default from the DiskTop menu. The selected disk information (on the desktop) or folder name (in the Files Window) becomes bold to confirm that the default has been set.

**Copying files/folders**

You can copy files or folders from one disk to another or from one folder to another on the same HFS disk. The procedure described here is much less complicated than it sounds.

Select the files and/or folders you want to copy and click the Copy button (or press ⌘-C). DiskTop lets you choose where to copy the selected file(s) and/or folder(s) with this dialog box:

In the upper-right corner is the name of the disk and the free space on the disk, as well as the space needed to copy the selected file(s)/folder(s).

On the left, the upper window shows the folders in the selected disk/folder. In the lower window are any files in the selected disk/folder. Use the buttons and menus to locate the folder where you want the copies to go. (You can also use the arrow keys to move between folders.) Click the top button in the "Copy to" box (or press Enter) to copy those files to the selected disk/folder. Click the second button in the "Copy to" box (or press ⌘-Return) to copy the files to the folder highlighted in the top window.

If you want to put the file(s) you copy into a new folder, click the New Folder button or press ⌘-N. If you change your mind, just click Cancel.

If the disk is locked, the buttons are dimmed and a small padlock indicates that you cannot copy files to the disk.
DiskTop displays a dialog box telling you which file it is copying, with a bar to indicate its progress. When DiskTop finishes copying all the files and/or folders, you return to the Files Window.

**Replacing Files/Folders with the Same Names**

When copying, if a file or folder with the same name already is present in the folder or on the disk to which you are copying, DiskTop warns you with a dialog box.

If you want to replace the same-named item, click OK or press Return. If not, click Cancel. If you click Replace All, DiskTop does not ask again if another selected file or folder has the same name as a file or folder in the target folder or disk. If you hold down the Option key when you click the Copy button, DiskTop does not show the warning dialog box at all, and automatically replaces the file/folder with the selected file/folder. (You can also press Option-C to start the copy and bypass the dialog box.)

**Important Note:** DiskTop replaces folders with files, so be very careful when replacing. Also, folders replace folders completely, so if there is a file in the folder being replaced that is not in the folder being copied, that file is lost.

**Duplicating files/folders**

If you copy a file or folder without specifying a new location for the copy, DiskTop appends Copy of to the beginning of the name of the file or folder that it creates and places it in the same folder or disk as the original. The files inside a copied folder retain their original names (that is, the folder has Copy of added to its name, but the files inside it do not). In this manner you can duplicate files.

**When there’s not enough room**

If you try to copy items to a disk that doesn’t have enough room, DiskTop starts copying in the order the selected files/folders appear in the Files Window. When it gets to a file or folder that won’t fit, then DiskTop lets you know by displaying a dialog box.

If you click Continue (or press Return), DiskTop tries to continue. If what doesn’t fit is a file, it skips it and tries the next selected item. If what doesn’t fit is a folder, it copies as many files in the folder as it can until the free space on the destination disk is exhausted.

If you only want to Copy the files and/or folders if they fit on the destination volume, select them and click Sizes (or press ⌘-S). DiskTop shows you this dialog box:

```
Selected item(s) : 4
File(s) : 4
Size on disk : 62K
OK
```

The size displayed includes all the files in any selected folders, no matter how many folders deep they are. Check this size against the available space on the target disk.

You also can determine the space required to copy the files in the Copy dialog box by looking just below the disk name.

**Moving files and folders**

Moving files and folders from one disk to another works exactly the same way copying does; see the section above on Copying Files/Folders for a discussion of the options and dialog boxes available to you.

Copy and Move have one big difference, though: when you Move, after the files and/or folders have been copied to the new disk, the old copies are deleted. (DiskTop asks for confirmation before deleting folders.) (Moving files and folders from one folder to another on the same disk is very fast; only the items’ internal disk address is changed, and the files aren’t actually moved on the disk.)

Select the files and/or folders you want to move and click the Move button (or press ⌘-M). You’re shown the dialog box pictured above (under “Copying Files/Folders”).

If you are moving files or folders from one volume to another, DiskTop displays a dialog box telling you which file it is currently moving, with a bar indicating its progress. If you are moving files or folders on the same volume,
DiskTop shows you the number of files and folders left to move. You are asked if you want to replace files and folders with the same name, and you have the option to replace all. You also can use the Option key, as you did with Copy, to bypass the replace warnings and immediately replace the files.

Move behaves like Copy: if there is not enough room to move all the selected files/folders, it does not delete any files or folders not moved.

**Note:** If you tell DiskTop to continue moving a folder when there is insufficient space, it creates the folder on the target volume first. So when it checks after the Move step, it sees that the folder was moved but that the move was incomplete, so it asks if you want to delete the original folder (and tells you how many files remain in it). Be very sure you want to delete the file before you click OK or press Return.

The only other difference between Copy and Move is that you cannot move a file to the folder it is already in. Duplicating files must be done with Copy.

### Deleting files and folders

You can delete files and folders with DiskTop. Just select the files and/or folders you want to delete and then click Delete (or press ⌘-D). DiskTop confirms the deletes with this dialog:

```
Are you sure you want to delete "Widgets"?
```

Click OK (or press Return or Enter) to delete the file/folder, or click Cancel to not delete it. If you have multiple files/folders selected, you can click the Delete All button to skip the confirming dialogs on subsequent deletes. You can also skip all the confirm delete dialogs by holding down the Option key when clicking the Delete button (or press ⌘-Option-D).

### Get Info

You can get (and change) information about files and folders with DiskTop. Just select the file(s) and/or folder(s) you want information about then select Get Info from the DiskTop menu (or press ⌘-I) and DiskTop displays the Normal level or Technical level dialog box.

#### Normal level

In the upper-left corner of the Get Info box is the icon, name, kind and size, volume location, creation date and time, modification date and time, and the version information of the file or folder.

At the bottom of the dialog box is the Comments box. This is the same box that you see in the Finder when you click a file or folder and then select Get Info from the File menu. Above it are two buttons: CE Info and Apple Info. You can enter information about the file in this box. Though you cannot enter CE Info about folders, you can enter Apple Info about folders. If you click the CE Info button and enter information in the Comments box, you are unable to read that information from the Finder. So what’s the advantage of using CE info? Unlike comments entered in the Finder’s Get Info box, this information isn’t lost if you rebuild your desktop.

#### Technical level

If you selected the Technical level in the Preferences dialog, selecting file(s) and/or folder(s) and then choosing Get Info (or pressing ⌘-I) displays the following dialog box:

On the right side of the box are the Type and Creator of the file. (Folders do not have Types or Creators.) You can change the Type or Creator for any file. To change the Type or Creator, enter the four-letter code in the box.

Also on the right side are various attributes for files and folders. To change any of the attributes, click in the box next to the attribute you want to set or clear. It is not generally a good idea to change any of these attributes unless you know what you’re doing.
Print list
Like the Finder, DiskTop can print a list of the files on your disk and it can get the privileges for a folder on an AppleShare server.

To print a list, select Print List from the DiskTop menu or press ⌘-P.

Save list
You also can create a text listing of the current contents of the Files Window.

To save a list, select Save List from the DiskTop menu. DiskTop displays a Save As dialog box where you can name the list and save it to disk.

Path
If you want to see a graphic representation of a file's or folder's location on your disk, select the file(s) and/or folder(s) in the Files Window. Select Path from the DiskTop menu or press ⌘-L. A dialog box appears with the path to the file(s) and/or folder(s).

Getting privileges
The Get Privileges command for System 6 adds the functions of the Get Privileges command in the Finder or the Get Privileges desk accessory to DiskTop. This lets you see and change the privileges for folders on AppleShare servers or compatibles without quitting your current application.

If you have an AppleShare Server volume mounted, choose one of the folders on it and then select Get Privileges from the DiskTop menu. The Privileges Box shows you all of the information about the folder.

If you are the owner of the folder for which you have gotten the privileges, you can make changes to the privileges and save your changes by clicking the Save button. If you are not the owner of the folder for which you have gotten the privileges, you cannot make any changes to the privileges. Notice that the Save button is an OK button if you are not the owner.

Restarting and shutting down
Like the Finder, DiskTop also has Restart and Shut Down commands. Choosing Restart from the DiskTop menu causes DiskTop to quit the current application and close all open DAs — giving you an opportunity to save your work — and then it restarts your Macintosh.
opens to the current folder (the same folder that would show if you selected Open in the current application).

If you select Files, but not Current location when you open DiskTop, you are in the Files Window showing the main disk directory of the default drive. If you select Files and Current location, DiskTop opens to the Files Window showing the current folder.

Level

Level lets you choose the amount of file and folder information you see in DiskTop.

Technical shows you the type and creator for each file and lets you modify the file attributes of the individual files in the Get Info window. Invisible files, like the Desktop, also are shown.

Normal shows you Finder-like information in the Files Window but does not let you see or modify the file attributes.

Note: Locked Normal was suggested by a network manager who did not want typical users modifying the files on the network server.

Important Note: If you accidentally select Locked Normal and Save it, remove the DiskTop.Prefs file from the Preferences folder in the System folder. Then open and close DiskTop to change the settings.

Show size

Show size lets you choose how sizes and space are displayed, in bytes or in K (kilobytes: thousands of bytes). In the Files Window, you can toggle between these two by Option-clicking Size (if in Normal level) or Data Resource (when in Technical level).

Show dates

Show dates lets you choose whether DiskTop shows the dates that files and folders were modified or the dates they were created. In the Files Window, you can toggle between these two by Option-clicking Modified/Created.

Show Info

Show Info lets you choose whether DiskTop shows you the information from the Finder's Comments box or the CE Comments box.

Launching from the files window

You can launch any application or document by double-clicking it in the Files Window or by pressing `⌘-O` after highlighting the item. If it is an application (which you can see by the APPL file type in the Files Window), DiskTop launches it. If it is a document, DiskTop searches the disk for the application that created the file. Selecting multiple items under MultiFinder and pressing `⌘-O` opens all selected files and applications if there is enough available memory.

If DiskTop cannot find the application, it asks you to find it.

Extensions Manager

What it is

It's an old story: your Macintosh crashes, and you start the tedious process of pulling your extensions and control panels out of the System folder to see which one is the source of your problems. With Extensions Manager (by Apple's Ricardo Batista), you press the Space bar as the Mac is starting up. A window appears, listing all of your extensions and control panels. All it takes is a single click to turn one on or off. (You don't have to drag icons in and out of your System folder.)
Extensions Manager can even turn sets of fonts on or off at startup time. If you have a PowerBook, Extensions Manager is smart enough to detect whether or not it’s plugged into a network, and, if so, it automatically turns on the set of extensions you need for File Sharing.

**What you need**

Extensions Manager should work on any Macintosh running System 4.2 or later.

**Installation summary**

Get Extensions Manager onto your hard drive using the Installer on Disk 1, as instructed at the beginning of this chapter. When the Installer’s finished, a new Mac Secrets folder window will be open and waiting. Open the Extensions Manager folder, and drag both the Extensions Manager and EM Extension icons onto your System folder icon. Restart the Mac.

**The manual**

The Extensions Manager user guide is a TeachText document. You’ll find it inside the Extensions Manager folder. If TeachText or SimpleText is on your hard drive, double-click this document to open it. Otherwise, use your word processor’s Open command to read it.

**Flash-It**

**What it is**

Flash-It is a shareware screen-capture utility. It’s a combination extension/control panel. Flash-It defines up to five screen-capture key combinations (called HotKeys). Each HotKey performs one of the following functions:

- Captures a portion of (or the entire) monitor screen image to the Clipboard.
- Leaves the captured image in the Clipboard and quits, or saves it to a PICT-based disk file, or to the Scrapbook desk accessory, or sends it to the printer.
- Optionally scales the image by a pre-specified factor.
- Lets you choose the destination of the image on the fly.

Flash-It also offers all of these features:

- It works even while pull-down or pop-up menus are being displayed.
- It can capture only the front-most window (or alert/dialog box), or only the displayed menu.
- If you want, you can capture the pointer (or cursor) as part of the image.
- Flash-It can scale up or down the captured image from 5 to 3200 percent, in 5 percent steps.
- Flash-It works with multiple monitors.
- You can specify the document creator for the PICT-based disk files.

**What you need**

Flash-It requires System 6.0.3 or later (6.0.5 or later is recommended).

**Installation summary**

Get Flash-It onto your hard drive using the Installer on Disk 1, as instructed at the beginning of this chapter. When the Installer’s finished, a new Mac Secrets folder window will be open and waiting. Drag the Flash-It icon to your System folder. Restart your Mac.

(If you hold down the mouse button when booting the system, Flash-It does not install itself, which may be a handy feature in some cases.)
The manual

Flash-It's manual comes in the form of a MacWrite document (in the Flash-It folder). If you own MacWrite, double-click the document. If not, launch your word processor; then choose Open from the File menu to import the manual.

Who wrote it

Nobu Toge tells us, "Since 1980 I have been through computer systems like DEC RT11, RSX11, VAX/VMS and IBM VM/CMS. I started learning Macintosh programming as a hobby in 1989 when I was a physicist at Stanford Linear Accelerator Center. The first version of Flash-It came out in 1990, as a seriously skanky INIT. Later in the same year I converted it into a control panel (v.1.3). By mid-1991 it became a relatively stable System 7-compatible thing (v.2.2). After a blank over a year, I managed to release a major update (v.3.0.2) in April of 1993. Presently I am an associate professor in the Accelerator Division of National Laboratory in High Energy Physics, Japan (I still keep my U.S. mail address)."

Shareware notice

Flash-It v.3.0.2 is shareware software. If you like it and decide to keep it for your use, please send in your shareware fee of U.S. $15 per copy to:

Nobu Toge, 2425B Channing Way, Suite #314, Berkeley, CA 94704-2209, USA

Checks must be cashable at U.S. banks. International postal money orders in U.S. dollars are acceptable. Site licenses are available (please contact me for details). Electronic mail can be sent to me at:

CompuServe: 76334,650
Internet: 76334,650@compuserve.com

Registered users will receive an acknowledgment of payment from me, and a notice (either a postcard or electronic mail) whenever a major upgrade is released. Site-license users (also, individual users who send extra U.S. $5 per copy) will receive a floppy disk update when there is a major upgrade.

Kaboom! Sounds

What it is

When you grow bored of the simple beep or the other spare sounds that come with your Mac System software, it's time for a change. And we've got it for you, in the form of several saucy, sassy sound files from the award-winning Kaboom! collection of Mac sound effects from Nova Development. The back pages of this book contain special offers for the complete Kaboom! package.

What you need

Any System 7 Mac, or a System 6 Mac with a program like SoundMover or ResEdit to convert it to a System 6-compatible format.

Installation summary

Get the Kaboom! folder onto your hard drive using the Installer on Disk 1, as instructed at the beginning of this chapter. When the Installer's finished, a new Mac Secrets folder window will be open and waiting. Open the Kaboom! Sounds folder, and then:

System 7: Just double-click to hear a sound. Or drop it onto your System folder icon to install it into your system. See Chapter 23 for instructions on what to do next.

System 6: Launch ResEdit (included with this book). To install these sounds into your System file, open each with ResEdit. Copy the snd resource and paste it into the open snd window of your System file. (See Chapter 21 for more on copying sounds among programs.) You can also use shareware programs like SoundMover to install them.
Who wrote it

This special collection of Kaboom Sounds is brought to you by special arrangement with Nova Development.

The publisher’s instructions

Kaboom Sounds is just a sample of the more than 150 unique sounds that come with the complete Kaboom! package. Kaboom! allows you to play the sound of your choice for various Mac functions, such as starting up your computer, opening or closing a window, or even emptying the Trash.

Kaboom! includes Kaboom Factory, a program that lets you edit your sounds and add special effects just as easily and quickly as you edit text in a word processing program. Kaboom Factory even lets you edit sounds you’ve recorded yourself with your Macintosh microphone.

Label Secrets

What it is

Label Secrets is a completely original and exclusive program, and nobody has it but you (and your fellow SECRETS buyers).

Your cheerful authors dreamed up the idea for Label Secrets when writing Chapter 2, which deals with the utter pointlessness of the Label menu in System 7. We thought: if only it could be made to do something useful!

Now it does. Each time you turn on your Mac, the Label menu at your Finder desktop displays a different message containing one of the Macintosh Secrets from this book. It’s a lot like the word-a-day calendars you find in bookstores — but Label Secrets is much more useful, because it shows an actual Macintosh Secret every day for a year, right on your Mac screen!

What you need

Label Secrets works on any Macintosh running System 7.0 or later.

Installation summary

Get Label Secrets onto your hard drive using the Installer on Disk 1, as instructed at the beginning of this chapter. When the Installer’s finished, a new Mac Secrets folder window will be open and waiting. Drag the Label Secrets icon onto your System folder icon. Restart the Mac.

Who wrote it

Your cheerful authors designed it. Apple programmer/boy genius Jeffrey Robbin (author of Casady & Greene’s Conflict Catcher) did the programming. He insisted that he could write the entire program in seven minutes. Almost did, too. (See the description for Color Coordinator, earlier in this chapter, for Jeff’s bio.)

The authors’ instructions

About Label Secrets

Label Secrets is a simple control panel for users of System 7. After it’s installed, your Label menu in the Finder changes every single day. Here’s an example of what you might see:

Configuring Label Secrets is very simple. Double-click the control panel icon and decide how your want your secrets displayed. Normally they’re displayed in order, a different
secret at each restart. Or you can select the checkbox in the middle to activate the Randomize function, which displays the Labels out of sequence each time you start up the Mac instead of in the order we wrote them in.

We couldn't see putting together disks of the greatest software without including at least one great arcade game. Macman Classic Pro (isn't that an oxymoron?) is loosely based on the original Pacman arcade game. It uses only a small amount of memory, looks great in color, and, best of all (for those of you who aren't video-game wizards), has a cheat mode. 'Nuff said.

What you need

Macman Classic Pro runs requires a Mac Plus or better, and System 6.0.7 or later. A minor incompatibility with the Sound Manager prevents Mac Plus users from turning the sound on.

To play in color, set your monitor to 16 colors or 256 colors before launching (or configure Color Coordinator, also included with this book, to do it for you). Changing monitor settings after launching results in an unacceptable display. (Note: Setting your monitor to thousands or millions of colors causes the game to run in black & white.)

Installation summary

Get MacMan onto your hard drive using the Installer on Disk 1, as instructed at the beginning of this chapter. When the Installer's finished, a new Mac Secrets folder window will be open and waiting. To launch Macman Classic Pro, open its folder, double-click the icon, and get ready to have fun.

The manual

The Macman user guide is a TeachText document. You'll find it inside the Macman folder. If TeachText or SimpleText is on your hard drive, double-click this document to open it. Otherwise, use your word processor's Open command to read it.

Who wrote it

John Butler grew up in Memphis, Tennessee, where he bought his first computer, a Sinclair ZX81, at the age of 10. Soon after, he bought a Texas Instruments 99/4A, for which he wrote hundreds of programs, mostly games, in BASIC.
High school and college kept him away from computers. But, leaving college for something more satisfying, he taught himself C and wrote his first Macintosh shareware game. When the response to the game was overwhelming, he knew that he was onto something.

Today he works as a programmer and systems analyst at a large company in Memphis, finally getting paid for doing what he'd always done for nothing. He continues to write applications for the Macintosh in his spare time.

Shareware notice

This game is shareware. If you like it and decide to keep it, please send U.S. $10 to: John Butler, 2061 Vinton Avenue, Memphis, TN 38104 (USA)

Please indicate the version (Macman Classic Pro 1.0). Shareware is meant to be shared, so share this game with whomever you like but please do not distribute altered versions.

Macman Classic Pro is ©1992, 1993 John Butler. If you would like to distribute Macman Classic Pro, please write to obtain permission. Macman Classic Pro is supplied as is. The author makes no warranties, either express or implied, and will not be liable for any special, incidental, consequential, or indirect damages, including loss of data. The person using this software bears all risk as to its quality and performance. In short, play Macman Classic Pro at your own risk.

MenuChoice

What it is

MenuChoice is a shareware control panel that enables hierarchical menus under the Apple menu. With it you can open applications, control panel devices, and documents of all kinds quickly and easily using your Apple menu. It's so useful that Apple incorporated it into System 7.5. (We include it here in case you're using some previous version of System 7.)

With MenuChoice installed, every folder stored in your Apple Menu Items folder shows up as a submenu under the Apple menu. You can easily launch applications and open documents anywhere in the folders you create. You can also use aliases to point to folders that already exist elsewhere on your hard disk.

You can open folders as well as applications and documents. Even though every folder appears with a submenu beside it, you can release the mouse while it is above the folder's name and the folder opens.

If a volume is off-line (such as another disk on the network), a submenu shows beside it with a single disabled item Volume Off-Line. Releasing the mouse above the name of the volume causes it to auto-mount.

When you select an item from a submenu, it is added to a list of the ten most recent items used. This list is always available at the top of the Apple menu as a submenu called Recent.

You can even put an alias of your hard disk in the Apple Menu. With it you can access any item on your disk from the Apple Menu. As you can imagine, dealing with submenus that go as deep as your folders can be unwieldy. For this reason, and because the Macintosh operating system is limited to five simultaneous menus, MenuChoice has a feature called Deeper Menus that lets you access menus as deep as you care to go.

What you need

Any Macintosh running System 7.

Installation summary

Get MenuChoice onto your hard drive using the Installer on Disk 1, as instructed at the beginning of this chapter. When the Installer's finished, a new Mac Secrets folder window will be open and waiting. Open the MenuChoice folder, drop the MenuChoice file onto your System folder icon, and click OK. You can
immediately use the control panel device to set your preferences, but hierarchical menus do not appear under your Apple menu until you reboot.

The manual

MenuChoice's user guide is a double-clickable electronic manual. You'll find it inside the MenuChoice folder.

Who wrote it

Kerry Clendinning's software experience is primarily SQL database design, data communications, and wide-area telecommunications. He began programming on the Macintosh in 1989, working for a long-distance carrier where he developed a network management system for a nationwide high-speed (T1) network. He has lived in Austin, Texas most of his life, and graduated from UT Austin in 1988 with a BSCS degree.

Shareware notice

MenuChoice is shareware and costs $15. Send a U.S. check or money order to the address below. Please indicate the product and version number you are registering, and specify your name and return address. Once you have registered, select the “I have paid” button in the help screen to disable the “Not Registered” message on the MenuChoice startup icon.

Kerry Clendinning, PO Box 26061, Austin, TX 78755
CIS: 76424,2214
ALink: KerryC

MultiClip Lite

What it is

MultiClip is the original “smart” Clipboard and super-Scrapbook. In other words, it's like a Clipboard that can hold more than one item — or like a Scrapbook that lets you view “thumbnails” of all Scrapbook “pages” at once.

Actually, you can do more than just view them. You can also rearrange, browse, delete, and even edit the Scrapbook material. MultiClip can handle formatted text, PICT and EPS graphics, QuickTime movies, sounds, you name it — anything you can legally store in a Macintosh can be stored in a “clipframe.”

What you need

MultiClip Lite requires System 7 and at least 1MB of free memory. If you will be using memory-intensive elements such as complex graphics or QuickTime movies, assign more memory to MultiClip (use the Get Info command, as described in Chapter 8).

Installation summary

Use the Installer on Disk 1, as instructed at the beginning of this chapter. When the Installer’s finished, a new Mac Secrets folder window will be open and waiting.

Who wrote it

MultiClip Lite is provided courtesy of Olduvai Software. When using the program, you’ll sometimes be told that a certain feature is only available in the more advanced version, called MultiClip Pro; if you decide to upgrade, the coupon in the back of the book makes it easy and inexpensive ($29).

Here, for your convenience, are the six menu commands that don’t work in the Lite version. Each of these commands displays, instead, an upgrade message — but then shows you the dialog box or controls you would get if you were using the Pro version:

File menu: Preferences; Hot Keys.
Edit menu: Subscribe To.
Collection menu: MultiClipboard Options; Set Default.
Clipframe menu: The Freeze and In Application submenus of the Edit command.

All features in the other menus are fully functional.
OLDUVAI Technical Support

If you have any questions, our Technical Support Group is available Monday-Friday, 10 a.m. to 6 p.m. Eastern time at (305) 670-1112.

The Technical Support Group may also be reached via:

- fax, at (305) 670-1992
- AppleLink: D0283
- CompuServe: 76004,2077 (to reach Olduvai's forum, type: Go Mac B Ven)
- America Online: OLDUVAI (to reach Olduvai's forum, use keyword: Olduvai)

The publisher's instructions

How to use MultiClip Lite

The basic components of MultiClip are Clipframes, the MultiClipboard, and Collections.

A Clipframe holds what you cut or copy, just like a page in the Scrapbook. Unlike the standard Scrapbook, a Clipframe can contain text, a picture, a sound, a movie, an alias (a memory-saving pointer to a bulky graphic or other file), an edition (using Apple's Publish and Subscribe feature), or even combinations of types of data pasted in as one block.

Double-click the body of the clipframe to see its full contents displayed in a window. You can edit text as in any Macintosh program, crop and scale graphics, and play sounds or QuickTime movies stored in clipframes.

Clipframes are organized into Collections, which you save as files on disk. Collections allow you to group your stored objects logically, and to see and move a number of different Clipframes at once. A collection looks like this:

One collection is always present: it's MultiClip's enhanced clipboard, known as - what else? - the MultiClipboard. It's like the workbench in this shop, where you have at hand whatever you're presently working on. When you open MultiClip, it always opens the MultiClipboard first.

Note: You can create an infinite number of Collections; MultiClip Lite, however, only lets you have two open at a time — the MultiClipboard and one other Collection. (MultiClip Pro lets you have many open Collections.)

Working with Clipframes

You can move Clipframes within a window or between collections by simply dragging them. Drag one Clipframe over another to swap the two. Drag a Clipframe until the pointer is between two Clipframes to insert it at that position. (If you press Option while dragging, you make a copy of the original.)

To see the full view of a Clipframe in an Editor window, double-click the body of the Clipframe. When you're editing a Clipframe:

- Text can be edited and styled as usual (use the Tools menu that appears).
- Graphics can be cropped and scaled. (Again, use the Tools menu.)
- Sounds and movies will play, but cannot be edited.

To select a Clipframe, click it. To add other Clipframes to the selection, Shift-click them (or drag-select). To deselect a Clipframe, Shift-click it again. To deselect all, click in the window background, behind the Clipframes.

Get info on Clipframes

To see a Clipframe's Get Info box, double-click its title bar. In the resulting window, you can change the Clipframe's name, change the magnification level, see the total size of a number of selected Clipframes, see the created/modified dates and creating application of a single selected Clipframe, see the Expert Options (to set or remove formats and apply or remove keywords), or add comments to that Clipframe.
The Preview box shows this Clipframe at its current reduction level. Change the size for your Collection display using the pop-up menu. Fit in Frame reduces as necessary to fit the entire image in the current size of the Clipframe; the Don't Show option hides the image and prints the words “Don't Show” in the center of the Clipframe (an option you may want if your Mac is taking too long to redraw the screen).

The expert options allow you to edit Clipframe format(s) and keywords. You can show or remove formats from this Clipframe, and add or remove keywords. The formats are listed when a Clipframe contains multiple data types. To change the Preferred Format, the format that will be viewed in that Clipframe, select one from the list and click Show. To delete a format (and the information for that format) in a Clipframe, click Remove. Warning: Make sure that's what you want to do before you click the Remove button, because it erases all the information of that format in the Clipframe.

The “Windowsill”

At the bottom edge of each Collection window is a row of useful buttons.

[3] and [4]: These pop-up menus govern how many Clipframes you’d like displayed vertically and horizontally, respectively, in the Collection window. (This pop-up is unavailable in List view.)

Edit: Opens the selected Clipframe(s) for editing with the appropriate editor. If the Clipframe contains a sound, clicking this button will play the sound.

? : Displays the Get Info dialog for the selected Clipframe(s), as described above.

Find: Displays the Find dialog box, described below, allowing you to search for Clipframes by various criteria.

These icons activate Clipframe view and List view, respectively. A List view looks like this:

You can also use the View menu to control the views; and, as in the Finder, you can click the column headings (Size, Kind, etc.) to change the sort order in a list view.

These icons control whether or not each Clipframe has a title bar.

Positions the first currently selected Clipframe in the visible portion of the collection window.

Selects all of the Clipframes in the collection.

The farthest-right button on a Collection window is Bring MultiClipboard to Front (the MultiClipboard is always open).

Changing the Collection view

You can change the view for an entire collection by using the row of buttons on the “windowsill,” or by selecting options from the Collection menu.

You can control, among others:
- the choice of thumbnail or List views
- how many Clipframes a window displays across and down
- the default reduction size for new Clipframes
- the display of names and numbers in their title bars
- font and style of text in Clipframes
- colors of backgrounds and shadows.

To access these options, choose Layout from the Collection menu.
Printing Clipframes and Collections

To print the contents of a Clipframe, double-click the display area of that Clipframe to open its Editor. Note: If you can't edit it, you can't print it (sounds, for example).

With the Editor window open, select Print from the File menu. The Print dialog box is displayed. Select any options you wish to print the contents of the Clipframe with, and click OK.

To print thumbnails of a collection, select Print from the File menu with that collection window active and in Clipframe view. MultiClip prints what you see (as selected from the View menu), either Clipframes or a list. To print thumbnails, you must first have Clipframe view displayed.

To print a list view, first select a list view from the Collection menu’s View submenu. Select Print as with the others, above.

MultiClip’s Printing Options

MultiClip adds these options:

As displayed: MultiClip prints Clipframes with the reduction level you chose for them in the collection.

Scale to fit: Resizes the image to fit in the printing area, either on the page or in the thumbnail.

Scale proportional: Like the Scale to Fit option, resizes the image to fit either on the page or in the thumbnail, but proportionally, in which the sides and proportions have the same relations as in the original size. The picture will look the same, whereas the Scale to Fit option may distort the picture either horizontally or vertically.

Scale best & crop: This option first proportionally scales the picture to the optimal reduction for the best quality image from your printer, and second, crops the scaled picture to fit on the page or in the thumbnail.

Labeling Clipframes: You can add other information to your printed Clipframes such as Clipframe name, number, size, and type.

Naming Clipframes

Clipframes can be named two ways:

- You can type a name for a Clipframe on the Clipframe menu’s Get Info dialog.
- MultiClip will Auto-name Clipframes for you, depending on the Autoname options on the Collection menu’s AutoNaming Options dialog.

Paste in Application

One powerful feature of MultiClip Lite is the Paste in (Application) command on the Clipframes menu. You can use it to send the contents of the selected Clipframe(s) to the insertion point of the active document in that application.

First, in the application you want to paste a Clipframe into, place the insertion point where you want to paste the Clipframe(s). Then open or switch to MultiClip.

Select a Clipframe (or Shift-select any number of them). Now, to paste the selected material by remote control, choose the desired target application’s name from this submenu.

The selected Clipframe(s) are pasted at the insertion point in that application’s active document.

If there is no open document in that application (or if the application has some nonstandard aspect that makes it incompatible with MultiClip), the system beep sounds. If you’ve selected multiple text Clipframes, MultiClip will paste all of them, in their current order, at the document’s insertion point, adding the Paste Separator (usually a Return) between text Clipframes.
Editing text

You can actually edit a text Clipframe right within MultiClip. Simply double-click it; the Text Editor appears.

In the Text Editor, the Tools menu appears. **Find/Replace** finds or changes any text you specify.

**Capitalization** converts the selected text to one of the following:
- All Uppercase (e.g. Converts “Olduvai” to “OLDUVAI”)
- All Lowercase (e.g. Converts “OLDUVAI” to “olduvai”)
- Word Caps (e.g. Converts “great job!” to “Great Job!”)
- Sentence Caps (e.g. Converts “a smart guy” to “A smart guy.”)

**Font, Size, Style**: These change the selected text’s type attributes as they would in any Mac application.

Editing graphics

When you double-click a PICT or bitmapped graphics thumbnail, the Image Editor appears. The Image Editor allows you to view the entire picture.

In the Image Editor, the window has a row of buttons along its bottom edge, and the menu bar changes: the Tools menu is added. The Image Editor five buttons include three Selection tools: Marquee, Polygonal, and Lasso; an Eraser tool, and a Crop button (only available when there is a selection).

The Tools menu contains: **Crop** allows you to “trim off” unwanted portions of an image from the Clipframe. With the Image Editor of a Clipframe open, click any Selection tool (the first three buttons): select the area of the image that you want to preserve, and choose Crop from the Tools menu (or click the last button, Crop). The Clipframe now holds only that selected area.

**Scale** reduces or enlarges a graphic clipframe. Pick the units of scaling from the Units menu (the default is %, percent).

Check Proportional Scaling to keep the same aspect ratio as the original graphic. With Proportional Scaling checked, whatever number you type in one box is automatically calculated in the other.

When you next open this dialog for this Clipframe, you’ll see Horizontal and Vertical both reading 100%, regardless of whether you’ve previously changed the scale from its original. Moral: make copies of the Clipframe in its original scale and only Scale a copy, leaving the original unaltered.

To Import Files

You can receive and send disk files in MultiClip by using the File menu’s Import and Export commands.

**Import** allows you to open a file created by another application and bring its contents into the active collection. Tip: MultiClip assumes that you want to import a number of files into Clipframes and stays open when you click Import. You can also close the dialog by holding the Option key when you click Import.

Exporting a Clipframe to a Disk File

You can save the contents of a Clipframe to a file on disk, which can be opened by another application. Just select one or any number of Clipframes and choose Export from the File menu.

A dialog appears from which you can select a destination folder and a name for the new file. The file type (Text, PICT, Snf, etc.) is shown above the name. If it contains multiple formats, the Preferred Format is shown.

The Export All button sends all of the Clipframes you have selected in the list to disk files, each saved separately with its default name.

Notes: You must usually open exported files from within the destination program, rather than from the Desktop. Also, if you are exporting Clipframes with more than one format, check to make sure that the application you’re exporting to can recognize all of those formats. Otherwise, it will only display the information in the formats it understands.
Keywords
A *keyword* is a word you use to describe or identify a Clipframe. A Clipframe can have many keywords attached to it, and a keyword can be used with as many Clipframes as convenient.

**Creating:** To create a keyword, select one or more clipframes. Choose Edit from the Keywords menu. The Keywords Editor opens, in which you can create new keywords (type into the text box and then click Add).

**Applying:** You can also assign an existing keyword to a Clipframe simply by selecting the Clipframe and then choosing from the Keywords menu's Apply submenu.

**Finding:** To use keywords to search for related Clipframes, choose Select from the Keywords menu and choose a keyword from the submenu listing all the ones assigned to this collection. When you choose a keyword, MultiClip highlights all of the Clipframes you've applied this keyword to.

**Importing from other collections:** You can extract keywords from other collections and add them to the current collection. The Keywords menu's Extract command allows you to selectively add keywords contained in other collections.

Finding Clipframes
From the Find Clipframes command's dialog, you can search for Clipframes by text, format, and/or keywords. You summon the Find Clipframes dialog by either clicking the collection window's Find button or by choosing Find from the Clipframes menu (§6-F).

Once you've specified what you're looking for in the Find dialog box, click the Find button. The first Clipframe that matches the criteria you chose in this dialog will be highlighted in the collection window. To find the next Clipframe that matches the same criteria, select Find Again (§6-G).

Click Find All to highlight all of the matching Clipframes.

**To Search for text**
Use the Find command. Type any series of characters in the text box that you know is part of the Clipframe(s) you want to locate. Click in the appropriate box to have MultiClip search for these characters in the body of text Clipframes, names, comments, or aliases.

QuickTime movies
MultiClip Pro lets you store QuickTime movies in Clipframes and play them back with its built-in Player and Editor. You may also copy a movie or any section of it. You store a QuickTime movie in a Clipframe as you do any other information, by Pasting or Importing.

To watch a movie, simply double-click the body of the Clipframe. The movie is displayed at its full size in the QuickTime Editor. The QuickTime player has many features, all of which are identical to those found in the Simple Player (see Chapter 23).

Slide Show
The Slide Show function of MultiClip allows you to put together a timed, in-motion presentation of selected Clipframes in a collection. When you consider MultiClip's capability to store and display high resolution graphics and play sounds and QuickTime movies, you've got a very versatile and ridiculously easy-to-use tool to create pretty slick presentations.

Create a Slide Show by selecting the clipframes you'll want and dragging them into the order you want them flashed. Then select Slide Show from the Clipframe menu. The Slide Show dialog appears.

The window displays the first in line of the Clipframes you selected. Set the amount of time you want every Clipframe to be displayed with the Options button; run the live presentation with the Control buttons.
Loop: Plays the slide show continuously until you press the Stop button.
Back to Start: "Rewinds" the slide show to the first Clipframe.
Back One: Steps the slide show back to display the previous Clipframe in order.
Stop: Stops the playing of the slide show.
Play: Starts the slide show from the Clipframe that is displayed.
Fast Forward: Steps the slide show forward to display the next Clipframe in order.
Options: You set the amount of time you want every Clipframe to be displayed with the Options button. You can also choose whether to show the Clipframe's title in the slide show, hide the controls when viewing it with your full screen, and whether the slide show should recognize a mouse click anywhere as a command to continue the show.

Olduvai Fonts & Sounds

What it is
Eeps, quacks, and Simple Beeps are never enough. Here's a useful sampler from Olduvai Software's commercial Sound Clips sound-effects collection. As an added bonus, here's a handful of striking, unusual, fun TrueType fonts from Olduvai's BrushFonts, CoolFonts, and ArtFonts typeface collections.

What you need
TrueType fonts work on any Mac running System 6.0.7 or later. (If you don't have System 7, you also need Apple's TrueType INIT and Font/DA Mover 4.1, both available from Apple dealers, user groups, and on-line services.)
The sounds work great in System 7; for System 6, they require ResEdit or a program like SoundMover to do anything useful.

Installation summary
Get the fonts and sounds onto your hard drive using the Installer on Disk 1, as instructed at the beginning of this chapter. When the Installer's finished, a new Mac Secrets folder window will be open and waiting.

Fonts: Then, to install TrueType fonts under System 6: Use Font/DA Mover 4.1 to install the font suitcase contents into your System file.

To install TrueType fonts under System 7: Quit all open applications. Drag the Olduvai font suitcases onto your System folder icon. Click OK.

If you use Suitcase or MasterJuggler, check your manual for font installation instructions. See Chapter 24 for more on fonts.

Sounds: In System 7: Just double-click to hear a sound. Or drop it onto your System folder icon to install it into your system. See Chapter 23 for instructions on what to do next.

System 6: Launch ResEdit (included with this book). To install these sounds into your System file, open each with ResEdit. Copy the snd resource and paste it into the open snd window of your System file. (See Chapter 21 for more on copying sounds among programs.) You can also use shareware programs like SoundMover to install them.

Who wrote it
These fonts and sounds are included here courtesy of Olduvai Software. To order the full font and sound collections at a big discount, use the coupons in the back of this book.

Open-Wide

What it is

![Open-Wide screenshot](image_url)
One of the persistent annoyances about the Macintosh user interface is that, although file names can be up to 31 characters long, the Standard File dialog boxes (produced by choosing Open or Save from the File menu) do not display that many characters. In System 7, long file names are displayed in compressed type, but that's not a very satisfactory solution.

Open-Wide is a freeware (well, postcard-ware) control panel that widens the Standard File dialog boxes, and, if you want, can also increase the vertical size of the file list. Open-Wide recenters all Standard File dialogs.

What you need

Any Macintosh running 6.0.4 or later.

Installation summary

Get Open-Wide onto your hard drive using the Installer on Disk 1, as instructed at the beginning of this chapter. When the Installer’s finished, a new Mac Secrets folder window will be open and waiting. Open the Open-Wide folder and drag the Open-Wide control panel onto your System folder icon. Restart the Mac.

The manual

Open-Wide’s manual comes in the form of a MacWrite document (in the Open-Wide folder). If you own MacWrite, double-click the document. If not, launch your word processor; then choose Open from the File menu to import the manual.

Who wrote it

James W. Walker grew up in northern Virginia and studied mathematics and computer science at Virginia Tech. He went on to earn a Ph. D. in mathematics at M.I.T. Since 1983, he has been teaching mathematics at the University of South Carolina. His involvement in Mac programming began when he needed to print output from the TeX typesetting language on his ImageWriter, and no available software would do it.

Postcard-ware notice

Please let me (the programmer) know what you like or don't like about Open-Wide. And remember that Open-Wide is postcard-ware! Here are some addresses:

E-mail (for bug reports, enhancement requests, and questions):

CompuServe 76367,2271
Internet JWWalker@AOL.com
America Online JWWalker

U.S. mail (for postcards):

James W. Walker, 3200 Heyward Street,
Columbia, SC 29205

James W. Walker, Department of Mathematics,
University of South Carolina, Columbia, SC 29208

PopChar

What it is

Suppose you’re working with MacWrite, and you want to insert the character $\diamond$ into your document. Looking it up with the Key Caps desk accessory can become cumbersome, especially when the character you’re looking for can only be generated by first pressing Option-$n$.

Now there's a more convenient way to do this. Once you have PopChar installed, you see a small square with a P in it in the top-left corner of the screen:

All you have to do is to click this square. A menu with all characters available in the current font pops up. Simply move the cursor over the character you want and release the mouse button. The character gets inserted in your text as if you had typed the proper key combination on the keyboard.
**What you need**

Mac 512K or better. A program in which you can type text.

**Installation summary**

Get PopChar onto your hard drive using the Installer on Disk 1, as instructed at the beginning of this chapter. When the Installer's finished, a new Mac Secrets folder window will be open and waiting. Open the PopChar folder and drag the PopChar icon onto your System folder icon. Restart the Mac.

When PopChar is installed, it takes up 13K of memory. To temporarily disable it, hold down the mouse button during restart. To permanently remove it, drag it out of your System folder.

**The manual**

PopChar's manual comes in the form of a MacWrite document (in the PopChar folder). If you own MacWrite, double-click the document. If not, launch your word processor; then choose Open from the File menu to import the manual.

**Who wrote it**

Says Günther Blaschek: "I am what you would call an assistant professor at the software department of the Institute of Computer Science at the Johannes Kepler University (JKU) of Linz [Austria]. My primary interests are in human/computer interaction, object-oriented programming, programming languages, and compilers.

"I gathered my first experiences with nowadays' user interfaces when working in Modula-2 on a Lilith computer (developed by Prof. Wirth at the ETH in Zurich) in 1980. When the Mac appeared on the market in 1984, it was only natural to start working with this machine. Since 1987, I have been actively programming the Mac (now in Think Pascal). Numerous products evolved since then, most of them available as shareware or freeware: AppleDraw, PopChar, ClockAdjust, QuickBack, Stylus."

**Distribution**

PopChar is free, but I reserve all rights to it. This means that you may use it without paying for it, and that you may give it to others without charging for it — nothing more and nothing less. If you like PopChar very much, just send me a picture postcard of your hometown with some nice words on it. It is this sort of feedback that keeps me publishing utilities like this one for free. By the way, it would also be great if you could find some unusual stamps. My son collects them all.

If you have any comments, contact at:

Günther Blaschek, Petzoldstr. 31, A-4020 Linz, Austria/Europe

Internet: <gue@soft.uni-linz.ac.at>
BITNET: <Blaschek@ALIJKU>

**Power To Go**

**What it is**

Depending on your PowerBook model, you may discover that Apple left out a few things, like flexible tools to eke out some more battery life, a way to find those submarining (disappearing) cursors that plague passive-matrix screens, a decent screen saver, a way to ease the passage through airport security gates.

You find all this and much more in Power To Go, a commercial Claris Clear Choice product. By special arrangement with Claris, we've included three of the best modules from that program with this book. Power Module automatically adjusts your hard drive and system-sleep to maximize performance (when the PowerBook is plugged in) or battery life (when unplugged). The Cursor Module means you'll never lose your cursor on an LCD screen again — just twitch the mouse (or press a keystroke), and a vivid animation draws your eye immediately to the cursor. (Even Apple's Control Strip can't do that!) Finally, the Screen Saver module doesn't just blank your screen after a specified time period; it can even bounce around a message or a graphic of your choice.
If you like what you see, check the back pages to buy the full package at a special bargain price.

What you need
Claris Power To Go requires a PowerBook or Duo running System 7.1 or later.

Installation summary
Get Power To Go onto your hard drive using the Installer on Disk 1, as instructed at the beginning of this chapter. When the Installer's finished, a new Mac Secrets folder window will be open and waiting. Open the Power To Go folder; drag the Power To Go icon and the Power To Go Modules folder onto your System folder icon.

Restart your Mac.

Note: When you first open the Power To Go control panel, you are asked to type your name. You don't have to enter a registration number.

Who wrote it
Power To Go is a part of Claris' Clear Choice line. Claris Clear Choice publishes state-of-the-art programs from independent developers. These products represent superior functionality, value, and quality for its customers.

The publisher's instructions
Welcome to Power To Go
The Power To Go software utility makes your PowerBook easier to use and your work time more productive. Power To Go manages power consumption, increases battery lifetime, improves screen displays, and provides several security features. The complete version of Power To Go 2.0 also comes with the Aladdin StuffIt SpaceSaver program for file compression. SpaceSaver can double the storage space of your PowerBook hard drive.

Power To Go features
* Extends the life of your battery.
* Regulates your screen's brightness.
* Displays the current vital signs of your PowerBook, such as charging status, battery level, estimated battery time remaining, date and time, and current processor speed on the Power Gauge.
* Uses a special screen saver to protect a Liquid Crystal Display (LCD) screen.
* Provides special keystrokes to put your hard disk and system to sleep instantly.
* Employs an animated cursor to make your cursor more visible.
* Speeds you through airport security checkpoints by replacing the full startup sequence with an instant screen display.
* Indicates when you are using the internal modem in your PowerBook.
* Provides settings for various working environments, users, and either A/C or battery power consumption.

Power To Go quick start
Power To Go is a control panel — it runs in the background of your system. To access its settings, you need to open the Power To Go window.

1. Open the Control Panels alias in your Apple menu or open the Control Panels folder in your System folder.

2. Select the Power To Go icon and double-click it. You see the Power To Go control panel.

Understanding Power To Go modules
Power To Go is divided into ten modules (sets of options), each of which handles a specialized PowerBook function. When you first open Power To Go, you see the Power Management module.

To open another module, choose its name from the Module pop-up menu (below the Power To Go logo). The current module is marked with a bullet.
Understanding sets and users
Power To Go remembers the settings of all its modules and stores them as a set. If you use your PowerBook in different places and under different working conditions, you will want to have more than one set. For example, on a long airplane ride with nowhere to recharge your PowerBook batteries, you would use the Travel set. Working at home or in a hotel with access to electricity, you would use the Home set.

To change to another set, choose its name from the Set pop-up menu.

Power To Go can store many users, each with their own sets. The ability to define users and sets makes it easier for different people to use the same PowerBook and helps prevent unauthorized people from using it.

To change to another user, choose the name from the User pop-up menu. If you haven’t added any new users, Power To Go shows only one user when you open this pop-up menu: User Name. This is the default user name. The default user has four sets that have been pre-configured to be most effective at power-conservation in the working environments they’re named after: Office, Home, Travel, and Drain.

To create a set with your name:
1. Choose Duplicate User from the User pop-up menu.
2. Enter your name.
3. Enter a user password. You must use at least two letters or numbers, and less than 21.

Using the Power Management module
The Power Management module controls how your microprocessor, display screen, and hard disk use power. To open this module, choose Power Management from the Module pop-up menu.

You see the Power Management module window.

Know the current set: Every time you make a change, it’s saved in the currently active set (such as Office or Travel). Make sure you’re making your changes to the intended set.

To quickly set options for the Power Management module:
1. Choose the correct set from the Set pop-up menu (Home, Travel, Office, or whatever).
2. Click On.
3. Set the way you want power to be managed.
   * Select Battery or A/C options. These indicate whether the settings shown are for battery operation or for operation when the PowerBook is plugged into an A/C socket. When your PowerBook turns on, it figures out whether it’s on battery or A/C power and then tells Power To Go which of the two different control settings to use.
   * Use the Easy Adjust slider bar to set how efficiently the battery uses power. Using the Easy Adjust slider bar automatically sets other options in the Power Management module. Drag the control down to prolong battery life or up to use the full capability of your PowerBook.

The Cursor module
The object that moves most rapidly on your screen is your cursor. If you have a passive-matrix display (see Chapter 12), the cursor, when moved quickly, can disappear for a second or two. This is a phenomenon known as submarining.
The Cursor module helps you locate that lost submarine by animating the cursor, using a graphic pattern that moves in a repeating cycle. The animation only continues long enough for you to find the cursor.

You can animate the cursor in two ways:
* Automatically, letting the Cursor module monitor your cursor's activity and turning the animation on when you need it.
* Manually, by pressing the key command ⌘-Option-Enter.

**Using the Cursor module window**

To open the Cursor module window:
1. Open the Power To Go control panel.
2. Choose the Cursor module from the Module pop-up menu. You see the Cursor module window.

The Cursor window has four parts:
* **Animated Cursor list**: A list of animated cursor types you can choose from.
* **Duration, Speed, and Sensitivity slider bars**: Control how long, how fast, and how sensitive the cursor animation is.
* **Cursor module options**: Four checkboxes that select other cursor functions.
* **Change Key Command button**: Click to change the key command used to animate the cursor manually.

**Choosing an animated cursor**

You can choose from among many types of animated cursors, found on the scrolling Animated Cursor list. Different cursor shapes and animation patterns suit different PowerBook displays.

Check the buttons at the top right of the panel and make sure the On button is selected. Also make sure the Monitor Cursor Movement checkbox is selected.

1. From the listing of animated cursors at the top center of the Cursor window, choose one. You can use the scroll bar to move to cursors above or below.
2. To view this animation, press ⌘-Option-Enter.

You can also move the trackball (or your finger on the Trackpad) rapidly to see the animation. You see a burst of animated activity for a second or so then your cursor returns to its normal state.

**Adjusting the animation control slider bars**

You can fine-tune the animation by using the three slider bars at the right of the Cursor module window.

**Duration of Animation**: This slider controls the length of time the cursor remains animated. A typical setting is between 35 and 55, but slower screens may need longer times.

**Speed of Animation**: This slider controls how fast the cursor is animated. Set this so that the cursor animation is fast enough for you to locate it quickly, but not so fast that it blurs in your LCD display. A typical setting is between 4 and 7.

**Sensitivity of Animation**: The Cursor Monitoring Sensitivity slider controls how much cursor movement is required to set the cursor animation process in motion. A high setting means even very small or slow cursor movements set off the animation. A low setting means only a dramatic cursor movement triggers it. A typical setting is between 30 and 40, but slower screens may need higher sensitivity.

Note: Be sure the checkbox labeled "Monitor cursor movement" is selected when setting the Sensitivity slider bar.
Controlling when and how cursor monitoring is used

You can set the cursor animation so that it only turns on manually with the key command. You can also use an option that keeps the cursor from being animated if the trackball button is pressed while the cursor is moving. These are set in the checkboxes just below the list of Animated Cursors.

- Monitor cursor movement
- Don't animate if button pressed
- Enlarge I-beam (edit) cursor
- Show hard disk spin-up cursor

To turn the automated cursor monitoring system off:

1. Deselect the Monitor Cursor Movement checkbox.

Turning off cursor animation while dragging

You can set the Cursor module to prevent cursor animation from coming on while an object is being dragged quickly. To do this, deselect "Don't animate if button pressed."

Using special cursors

There are two other cursors that can be useful.

The familiar text-editing I-beam can be too thin to locate easily on certain LCD displays. To help you find this type of cursor, you can make it thicker. Just select the "Enlarge I-beam (edit) cursor" checkbox. Thereafter, whenever your cursor is placed over editable text, the I-beam edit cursor is thicker.

Showing the hard disk spin-up cursor

You can use a special animated cursor to tell you when your hard disk is starting up again after a period of hard disk sleep (also known as spin-up). Your PowerBook responds sluggishly when your hard disk is spinning up, and the spin-up cursor lets you know why.

To show the hard disk spin-up cursor on spin-up, select the "Show hard disk spin-up cursor" checkbox.

Resetting the Key Command

The Cursor module uses a special keystroke sequence to animate the cursor. ⌘-Option-Enter is the default.

Using the Screen Saver module

Power To Go provides an effective and compact screen saver that clears your screen and turns off its backlighting. As you'll discover, the Screen Saver module offers more features and flexibility than Apple's built-in screen controls.

Understanding the Screen Saver module

Your desktop Macintosh may use a full-color screen saver with impressive graphics, but your PowerBook has a lot less RAM, disk space, and battery power to waste on such luxuries. Power To Go provides a useful no-frills screen saver that uses no perceptible CPU time, yet can still protect your LCD display from the ghosting that occurs when the screen image remains the same too long.

Opening the Screen Saver module window

To bring up the Power To Go Screen Saver module, choose the Screen Saver module from the control panel's Module pop-up menu.
The elements of the Screen Saver module screen are:

* **Choose the mouse-sensitive corners** buttons: Let you place your cursor in one of two screen corners to tell the Screen Saver to do one of the following:
  * **Never Save**: Don't turn the screen saver on, no matter how long the period of user inactivity.
  * **Immediately Save**: Turn the screen saver on immediately.
  * **Saver Options button**: Opens a dialog box that lets you customize your screen saver. The options are explained later in this chapter.

**Using the screen saver**

The Screen Saver module uses the corners of your LCD to let you give it commands.

To activate the screen saver immediately, note which corner of the screen is selected as the Immediately Save mouse-sensitive corner. The default corner is the upper left. Move the cursor to that corner of the screen. You don’t have to click — just make sure your cursor goes outside the lit-up part of the screen.

To bring your desktop back from the screen saver, move your trackball or hit a key on the keyboard. Your previous screen returns intact. Any hard disk or floppy disk activity also returns your screen to normal.

To change which of the three available screen corners is used to invoke the Immediately Save command, click the button next to the screen corner you want to use in the rectangle labeled Immediately Save.

**Using Never Save**

The other rectangle on this screen does the exact opposite: it tells Power To Go not to use the screen saver. It stays off even if you've set up a timed delay to activate the screen saver.

To activate the Never Save command, note which corner of the screen is selected as the Never Save mouse-sensitive corner. The default corner is the upper right. Move the cursor to that corner of the screen.

To change which of the three available screen corners is used to invoke the Never Save command, click the button next to the screen corner you want to use in the rectangle labeled Never Save.

**Customizing your screen saver**

The button labeled Saver Options accesses the options for displaying a message or a picture and screen blanking delay. These are the Saver Options:

* **Picture or Message buttons**: Switches between a text message and a graphic display.
* **Delay for Screen Saving arrows**: Specifies the period of inactivity before the screen saver is activated.
* **Message Font pop-up menu**: Chooses a font for your message.
* **Message Type Size pop-up menu**: Opens to a list of available type sizes.
* **Message Font Style checkboxes**: Selects a typeface style.
* **External monitor brightness slider bar**: (Only shows when an external monitor is connected.) Controls the brightness level of an external monitor connected to your PowerBook.
Setting the time delay

To change the screen saver’s time delay:

1. Click Saver Options. You see the Saver Options dialog box.
2. Set the time delay for the screen saver. Click the up arrow to increase the number of minutes. Click the down arrow to decrease the time. Click Save.

Changing your screen saver message

In the Saver Option dialog box, type the message that the LCD shows while the backlighting is off. Use any of your available fonts to set this message and specify the type styles (such as bold, outline, italic, and so on).

To change the message and how it appears on the screen:

1. From the Screen Saver window, click Saver Options. Notice the two buttons at the top of the Options dialog box, Picture and Message.
2. Click the Message button.
3. Enter a new message, which automatically replaces the selected text in the field just below the Message button. Enter or edit your message just as you would in any Macintosh text-editing environment. Fill up the entire box of text with your message if you so desire, but depending on the font size, not all of it may fit on the screen.

Changing the message’s type style

Use the pop-up menu box just below the words Message Font to select a new typeface. Use the pop-up menu to its right to select a point size and use the checkboxes below to select a style. Click Save when you’re done.

Different Messages for Different Sets: Changing the messages for different preference sets can be useful. Leave a helpful message when you’re temporarily away from your desk. Consider using a “Reward for return to owner at this address” message when you travel.

Using a picture in the screen saver

To use a graphic with your screen saver instead of a message:

1. Click the Saver Options button in the Screen Saver module window. You see the Saver Options dialog box.
2. Click the Picture button. The dotted line around the Power To Go logo becomes solid.
3. Click Save. The next time the screen saver turns on, you see the Power To Go picture.

You can use your own graphic image instead of the one Power To Go supplies. The graphic is automatically placed in the box and resized to fit.

Using the Screen Saver module with an external monitor

There is a miniature video-out port on most recent PowerBook models. Into this port (which requires an adapter cable for full-sized PowerBooks) you can plug in any Macintosh-compatible monitor.

To use the cursor-sensitive corners to give Power To Go commands, move your cursor into the external screen’s corners. The Power To Go icons that show hard disk and modem activity appear in the menu bar of the new screen.

The Screen Saver module can control this external monitor, saving its screen to prevent pixel burn-in. When the Screen Saver blanks an external monitor, it first tries to dim the screen by turning down the monitor’s brightness. This is the method that requires the least processing overhead. If the Screen Saver module can’t save the external monitor’s screen by turning its brightness down, it simply makes the screen black. If this second method is used, you see the picture or message you have chosen, but if the brightness control method has been used, you won’t see anything on your external monitor when the screen is being saved.
If you have a monitor screen that can be blanked by turning down the monitor brightness, the Save Options dialog box has an additional element, the External Monitor Brightness slider bar. By dragging this to the left or right, you can control how bright the external monitor is when the screen saver turns on. The monitor changes to the brightness level specified by the slider bar while you’re dragging it, but returns to its normal brightness once the slider bar is released.

**Exploring Power To Go further**

The three sample modules we’ve included with this book show you the kind of powerful, easy-to-use features Power To Go brings you. We hope you find them as useful and flexible as we did. We’re honesty-bound to point out, however, that having the remaining seven modules is even better!

Here’s what you get when you use the discount coupon to upgrade to the full version:

**Power Gauge**

The Power Gauge is a floating, resizable palette that gives you power, time, and date information. (You may recognize this palette as the inspiration for Apple’s Control Strip, which was introduced with Apple’s PowerBook 500 series.)

Using the Power Gauge module, you can control exactly which displays you want on the Power Gauge by choosing any of the following displays:

- Estimated Time Remaining battery gauge
- The current time or date
- A countdown to hard drive or system sleep
- An Instant Sleep button
- CPU speed

* A close box and drag bar

You can specify whether the Power Gauge window should appear automatically on startup, at the press of a keystroke, or both.

**The Sleep module**

The Sleep module lets you put your PowerBook instantly to sleep just by moving your pointer into a corner of the screen.

**The Airport module**

The Airport module gives you an abbreviated power-up routine to get through Airport security faster. Switch on the PowerBook and press a keystroke of your choice; a window appears, displaying a message of your choice to satisfy the security checkpoint personnel.

**The Disk module**

The number one consumer of battery power is your laptop’s hard drive. Using the Disk module, however, you can make the drive stop spinning on your command simply by pressing a keystroke of your choice.

**The Security module**

The Security module prevents unauthorized access to your PowerBook by requiring a password before it can be used. After three unsuccessful attempts at typing the password, the PowerBook makes a loud noise and the screen goes blank again — a sure way to discourage unauthorized data burglars.

**The Menu module**

Using the PowerBook trackball or trackpad can be tricky when you’re trying to make fine movements in a bumpy bus or plane, especially when you’re trying to choose a menu item. The Menu module solves the problem. It makes menus drop down *without* your having to keep the mouse button pressed. All you have to do is point at the menu title.

**The Modem module**

If your PowerBook is equipped with an internal modem, Power To Go’s Modem module uses the menu bar to display critical information: when data or faxes are coming in or going out and whether the modem is on or off. (Apple’s
Express Modem, for example, gives you absolutely no indication as to whether or not there's modem activity.)

**SpaceSaver**

You also get Stuffit SpaceSaver, from Aladdin Systems, when you upgrade to the full version of Power To Go. SpaceSaver helps you save disk space on your PowerBook by compressing files and folders and allowing you to use them at any time.

**PwrSwitcher**

**What it is**

Once you've turned on the Mac, what good is the power key on your keyboard? With PwrSwitcher, a freeware control panel, it does a lot of good: one tap switches you to the next open program. You don't even have to fumble for the Application menu anymore. You can even configure PwrSwitcher to use the Esc key on a Portable or PowerBook.

**What you need**

PwrSwitcher requires System 7 and enough RAM to open more than one application at a time. It doesn't work on Macs where the Power On key also turns the computer off, such as the Color Classic.

**Installation summary**

Get PwrSwitcher onto your hard drive using the Installer on Disk 1, as instructed at the beginning of this chapter. When the Installer's finished, a new Mac Secrets folder window will be open and waiting. Open the PwrSwitcher folder and drag the PwrSwitcher control panel onto your System folder icon. Restart your Mac.

**The manual**

The PwrSwitcher user guide is a TeachText document. You'll find it inside the PwrSwitcher folder. If TeachText or SimpleText is on your hard drive, double-click this document to open it. Otherwise, use your word processor's Open command to read it.

**Who wrote it**

David Lamkins was born in Watervliet, New York. Very little is known about his childhood except that he started taking things apart as soon as he could hold a screwdriver. It wasn't until David reached the age of twelve that he started putting things back together.

David's favorite movie is *The Empire Strikes Back*, and his favorite pastime (when not trying to find the precise blend of science fiction, heavy metal music, AI technology, and Mac programming technique to create the Ultimate Macintosh Application) is to study the effect of industrial-age mindsets on the organization and performance of information-age enterprises.

**Shareware notice**

PwrSwitcher is a freeware product. I never planned to sell PwrSwitcher — I consider it a simple hack (well, it was simple once) — and am loath to take advantage of people's good intentions. If you want to make a contribution to express your appreciation of PwrSwitcher, please consider a charitable donation to Beverly Hospital, Beverly, MA 01915 (USA), in memory of Dr. Burnham E. Lamkins. The decision to do so is entirely at your discretion.

PwrSwitcher is absolutely free. PwrSwitcher may be distributed so long as it includes this documentation. PwrSwitcher may not be sold. I retain all rights to PwrSwitcher. The user must assume all risk of loss resulting from use of PwrSwitcher.
QuickDEX

The actual, classic, famous, commercial address book/phone dialer from Casady & Greene! Guaranteed to be the fastest address book you've ever used. Slick and handy! (Includes coupon for the complete Super QuickDEX package.)

What you need

QuickDEX requires a Mac Plus or later.

Installation summary

Get QuickDEX onto your hard drive using the Installer on Disk 1, as instructed at the beginning of this chapter. When the Installer's finished, a new Mac Secrets folder window will be open and waiting. Open the QuickDEX folder, and then:

For System 6 users: Install QuickDEX into your System file with the Font/DA Mover.

For System 7 users: Drag the QuickDEX suitcase to the System folder icon. Click OK.

Important Note: In either case, you should also put the two starter data files we've included — QuickDEX Data and Macintosh Marketing Who's Who — into a folder where you'll be able to find them again. Your System folder is a good bet.

Who wrote it

QuickDEX comes to you by special arrangement with Casady & Greene, Inc.

The publisher's instructions

About QuickDEX

QuickDEX is the easiest and fastest free-form database for the Macintosh. It instantly allows you to find anything that you have stored in a QuickDEX card deck. It's a desk accessory, so it is available from within most Macintosh programs. In addition, you can use QuickDEX to dial a phone number using either your Macintosh speaker or a modem.

As you read these instructions, think of QuickDEX as a tool for manipulating several index card decks simultaneously. QuickDEX shows you the topmost card and hides the remaining ones. As you move from card to card within a deck, QuickDEX moves the topmost card to the bottom of the pile and displays the one beneath.

Using QuickDEX

Select QuickDEX from the Apple menu. The first time you open it, you are prompted to locate a QuickDEX data file. We've provided two with this special version: one called Mac Marketing Who's Who and one called QuickDEX Data. (You can modify these or create your own new decks.)

1. Open the file named QuickDEX Data.

2. The first card in the QuickDEX Data deck appears on the screen, and a \ symbol appears on the menu bar.

Entering data into a card deck

Let's add a new, blank card to the deck and then fill it out.

1. Select "Add a new card" from the \ menu or press 66-A. A blank card appears. The large empty area on the card is called the Text Area.
2. Type the following information into the Text Area of the card:

IDG Books
155 Bovet Rd. #310
San Mateo, CA 94402
800-434-3422

3. Select Save Card Deck from the  menu or press ??-S.

Congratulations! You've just entered and saved your first card. To close QuickDEX, click the close box or press ??-W.

Finding data in a card deck

Open QuickDEX. Notice that the cursor is already located in the Find Box at the top of the card. You may use the Tab key to move the cursor back and forth between the Find Box and Text Area. Type IDG in the Find Box and press Return. (Capitalization is not important to QuickDEX.) QuickDEX instantly displays the card with IDG Books' name on it.

To delete this card, press ??-K. Click OK to acknowledge that you really do want to delete the card.

QuickDEX  menu commands

The upper portion of this menu varies in appearance, depending on which and how many card decks you have instructed QuickDEX to locate and open. The names of those decks are added to the bottom of the menu.

About QuickDEX: A single screen appears, giving information about the special edition of QuickDEX provided with this book.

New Card Deck: When you select this command, the standard Macintosh Save As dialog box appears. Type in a name for the new deck, indicate where you want the new deck to be stored, and then click Save.

Open Card Deck: When you select this command, an Open File box appears. Locate the card deck you want to open and click Open. The card deck appears on the screen, and its name is added to the bottom of the  menu.

Remove... from menu: Use this command to remove card decks from the list of open card decks at the bottom of the  menu. The only card deck you can remove from the menu is the one in the foreground on the screen.

When you select this command, two things happen. The name of the card disappears from the bottom of the  menu, and the word Remove on the menu changes to Add. Adding the deck name to the menu places the name at the end of the list of card decks QuickDEX knows about. This is useful for rearranging the order of the names on the menu.

Removing a card deck only removes its name from the bottom of the  menu. It does not remove the card deck from the hard disk. Use the Trash Icon to remove a deck from the hard disk.

Save Card Deck: Use this command when you want to save changes you have made, but you do not want to close the deck.

Save Card Deck as...: Use this command to save an existing card deck under a new name. This is a convenient way to make a backup copy of a card deck. In order for this command to work, the card deck you want to duplicate must be open and active (in the foreground) on the screen.

Close Card Deck: Select this command when you want to close the active card deck. If only one card deck is displayed on the screen, the Close Card Deck command also closes QuickDEX. If you have made changes to the deck, you are asked if you want to save them.

Auto-Dial Settings: When you select this command, a dialog box appears. Use it to establish the basic rules that QuickDEX follows when placing a phone call. For more information, see the "Automatic dialing with QuickDEX" section in the pages that follow.
Add a new card: If a card deck is open and active, you can add a new (blank) card to it by selecting this command.

Delete card: This is the command you use to delete a displayed card from an active deck. You're asked to confirm the deletion.

Print: When you select this command, QuickDEX prints a copy of the currently displayed card.

Quit QuickDEX: Use this command to close all open card decks and close QuickDEX.

The Return key

When you want to see a specific card in the active deck, make sure that the cursor is in the Find Box. If it is in the Text area instead, press Tab and the cursor moves to the Find Box. Type in a key word or part of a word that you know appears on the card you want to find. It could be a name, a phone number, or any bit of information that is recorded on the card. Press Return.

QuickDEX searches the card deck for the contents of the Find Box. If it finds them, it displays the card and highlights the item you are looking for by placing a square around it. If you press Return again, QuickDEX looks for the next occurrence of the term you typed in the Find Box.

If QuickDEX cannot find the card you want in the active deck, it beeps.

If the Find Box is empty when you press Return, QuickDEX displays the next card in the deck. By repeatedly pressing Return, you can thumb forward through the entire deck. If you want to see the previous card, press Shift-Return.

Pressing Tab moves the cursor back and forth between the Text Area and the Find Box. Pressing Option-Tab when the cursor is in the Find Box highlights the found text.

Working with more than one card deck

QuickDEX allows you to open more than one card deck at a time. Use one for names and addresses, another to store faxes, another for memos, and so on. You can use the eight card decks to store anything you want.

Tips on using QuickDEX

Changing the default card deck

When you select QuickDEX from the Apple menu, it automatically opens the first card deck listed at the bottom of the  menu. This deck is called the default deck.

If you want to change the default deck, use the Remove [card check name] from menu command on the menu. For example, suppose you only have two card decks at the bottom of the menu, the first one called Personal and the other one called Business. When you start QuickDEX, it automatically opens the first one.

If you would prefer QuickDEX to open your Business deck instead, activate your Personal deck and select Remove Personal from menu on the menu. Then select "Add Personal to menu" on the menu.

Now look at the menu. The card deck names have switched positions. Because the card deck that appears first at the bottom of the menu is always the default card deck, the next time you start QuickDEX, it automatically opens your Business deck first.

Choosing the first card in a deck

When you open QuickDEX, the first card of the default deck automatically appears. If you would like specific information such as a To Do list to appear every time you open QuickDEX, it must be placed on this card.

Laying out information in a logical pattern

When you enter a name and an address on a new card, we suggest that you place a blank line between the end of the individual's address and his or her phone number.

To create the blank line, press Return twice following the address.

Using cut, copy, and paste

QuickDEX supports the Clipboard. This means that you can easily copy data from one card to another. You can also copy text to and from a QuickDEX card and a document in another application, such as a word processor.
Using a To Do list

If you turn the top card of your default deck into a To Do list, it's the first card that you see whenever you start up QuickDex. Suppose you're talking with someone on the phone and taking notes on his card. You can copy anything you write down there and paste it into your To Do list.

Using WCB and TBC

If you call someone only to get the message, "She will call you back," type the label wcb (will call back) at the bottom of her card. When you have a moment, start QuickDex and type wcb in the Find Box. When you press Return, her card appears reminding you that she is going to call you back. If you have typed wcb on several cards, a different one appears each time you press Return.

Use the same technique to remind yourself whom you want to call. Type tbc (to be called) instead of wcb.

Retrieving client information quickly

The phone rings and the caller says, "Hi! This is Tom Jinks." While he rambles on, you try to remember who he is so you don't make a fool of yourself. You open the appropriate QuickDex deck and type Tom J in the Find Box, then press Return. Tom's card appears. It can not only remind you who he is, but it can also remind you what you talked about the last time you spoke and when that was!

Automatic dialing with QuickDex

The dialing capabilities of QuickDex are powerful and convenient. Once you understand how to program QuickDex to meet your phone needs, you can transport it from one location to another, from one area code to another, and reconfigure it to conform to local dialing conditions in a matter of seconds.

Establishing dialing rules

You can establish several directly accessible dialing rules at a time, but you may only need to establish one. You enter the three rules by selecting the Auto-Dial Settings item in the i menu.

After you select this command, you see the following dialog box:

Pay attention to the first part if you plan to dial QuickDex phone numbers using your modem. If you are using the Mac's speaker dialing capability, the first box and last boxes may be left blank.

If you are using a modem, the following commands in the "Always start a call with:" box work with a Hayes-compatible modem (It doesn't matter whether you use upper- or lowercase):

* ATDT: Dial the phone using touch-tone signaling.
* ATDP: Dial the phone using pulses. (Old fashioned Rotary service.)
* ATX0DT: The X0 (zero) tells the modem not to wait for a dial tone. Use for voice mail.
* ATM0DT: The M0 (zero) tells the modem to silence the speaker.
* ATM1DT: The M1 (one) tells the modem to audibly dial.
* ATX0M1DT: Tells the modem to audibly dial even if there is no dial tone.
* ATX0M1s11=50DT: Tells the modem to audibly dial very quickly, even if there is no dial tone.

If you are using a modem, the final box — "Terminate the call with:" — works with a Hayes-compatible modem.

The characters ;H in the "Terminate" box disconnect the modem as soon as the number is dialed. If the H is omitted, you must tell
QuickDEX when to disconnect the modem by clicking the mouse or pressing a key. Use this technique to facilitate hands-off dialing with a modem that has a speaker. You can dial a number, listen to call progress, and then pick up the phone when the other party answers. After picking up the phone, click your mouse button to disconnect the modem.

The next part of the Auto Dial Settings dialog box determines how QuickDEX helps to place long-distance calls. Placing a number 1 in the "If Dial+, precede this call with:" box causes QuickDEX to dial a 1 in front of all long-distance numbers. Most users want to do this.

If your phone system requires a special access code with which to dial an outside line, use the "If Option-Dial, precede with:" option. The standard entry, 9, is the usual outside access number, which you can change to your special requirements.

The next selection, "If Option-Dial +," allows you to create a combination of the previous two entries. So, for example, you can enter your outside access code (9), followed by a comma, followed by your long-distance access number (1).

The right side of the Auto-Dial Settings dialog box provides a way for you to tell QuickDEX what hardware is used to dial the phone. To use a modem to dial the phone, click Modern Port or Printer Port, as appropriate for your setup.

Mac speaker dialing

The Macintosh Speaker button should be checked if you want to use the Macintosh sound capability to dial the phone. The Speaker Dialing Volume box provides a way to control how loud the speaker dialing should be. Some tips on using the speaker for dialing:

* Lift the telephone handset and listen for a dial tone.
* Hold the mouthpiece next to the Macintosh speaker.
* If you are unsuccessful in getting the speaker to dial your phone, try adjusting the Speaker Dialing Volume. Some Macintosh speakers are not loud enough for the telephone to respond. If this is the case for you, you may want to connect a desktop speaker to the earphone port on the back of your Mac. You can obtain such a speaker from Radio Shack.

* Contrary to what you may expect, the loudest setting is not always best. Some Macs produce better quality tones at lower volumes.

The next entry in the Auto Dial Settings dialog box allows for insertion of your area code. Whenever a phone number is encountered using this area code, QuickDEX defaults to your local dialing setup.

The final entry, "Always use Dial+ on Long Distance," works in tandem with the entry above. Whenever you dial a number out-side your local area code, the Dial+ function is activated.

Issuing dialing commands

QuickDEX can dial any phone number that appears on an active card. To call Michael Greene, type gree and press Return in the Find Box and press 38-D. QuickDEX does the rest. If there are two numbers on a card and you want to dial the second one, click between the first and second numbers and then issue a dial command.

Click the Dial button (38-D) to dial the number normally. Click the Dial+ button (38-comma) to dial the number with whatever long-distance prefix you entered in the Auto-Dial Settings box. Press Option while clicking either button to dial the corresponding sequences in the Auto-Dial Settings box.

What you have to look forward to

If you upgrade to Super QuickDEX II using the coupon in the back of this book, you get all the speed and simplicity of QuickDEX, with these added features:

* Scrolling text on each card
* Much more sophisticated dialing features, including support for credit card sequences and flexible pauses for dialing extension numbers and navigating voice mail systems
* QuickElope, an instant envelope-printing utility
PrintD EX, for printing mailing labels with speed and efficiency

Time- and date-stamping; card-counting; your choice of font and style; and much, much more!

Remember?

What it is

Remember? is an incredibly flexible, colorful, and powerful on-screen calendar. It shows you what you've got coming up when you turn on the Mac each morning and can even remind you during the day as each appointment comes up.

The manual

Remember's user guide is a series of text files that you'll find in the Remember? folder once it's decompressed. You can read them using TeachText, included on Disk 1, or by using any word processor's Open command.

Who wrote it

Dave Warker tells us: "I started fiddling with computers back in the days of CP/M and S-100. I'm now a consultant writing embedded PC and Mac software. When not beating on a keyboard, I'm usually dodging traffic on a bicycle or augmenting the income of local record stores. I originally wrote Remember? for purely personal use, having a memory for birthdays and such that rates marginally above 'amnesiac.' The response was, and continues to be, surprising and very much appreciated."

ResEdit

What it is

ResEdit, which is discussed at length and in detail in Chapter 21, is Apple Computer's famous resource editor. It lets you literally examine the guts of a program and make changes to alert messages, command key equivalents, icons, what the menus say, and much more.
Here are a few basic instructions. However, Chapter 21 is a much better and more useful introduction.

**What you need**

ResEdit requires a Mac Plus or better with at least 1MB of RAM installed, running System 6.0.2 or later.

**Installation summary**

Get ResEdit onto your hard drive using the Installer on Disk 1, as instructed at the beginning of this chapter. When the Installer's finished, a new Mac Secrets folder window will be open and waiting, with ResEdit inside.

**Who wrote it**

ResEdit comes to you courtesy of the Apple Programmers and Developers Association (APDA).

**The publisher’s instructions**

If you'd like additional documentation for ResEdit, the ResEdit Reference is available from the Apple Programmers and Developers Association.

Here are the telephone numbers you can use to contact APDA:

- U.S.: 800-282-2732
- Canada: 800-637-0029
- International: 408-562-3910

*ResEdit Reference* is also distributed to bookstores worldwide by the Addison-Wesley Publishing Company. Ask for it at your favorite bookstore!

**Editing System 7 while running System 6**

Because of the wide variety of changes made for System software version 7.0, it can be dangerous to open the System 7 System file while running System 6. If you need to open the System 7 System file, make any necessary changes and immediately close and save the file. There are known problems in the following cases:

- Printing and Page Setup bomb because they try to use information from the System 7 System file instead of the active system.
- Any standard file dialog bombs if you are using Boomerang or Super Boomerang.

Editing the System 7 System file while System 7 itself is running shouldn't cause any problems.

**SCSIProbe**

**What it is**

SCSIProbe is a control panel (cdev) useful for identifying and mounting devices connected to your SCSI bus. With SCSIProbe you can determine the device type, vendor, product, and version for every device connected to your bus. SCSIProbe also includes a startup extension (INIT) that, when enabled, can mount volumes without having to access the cdev. SCSIProbe is System 7 compatible, and balloon help is available for assistance.

As we explained in Chapter 29, keeping tabs on the SCSI chain is often half legerdemain and half blind luck. SCSIProbe is an indispensable tool that helps you manage the complexities of your SCSI setup. It even helps you mount removable devices by a simple keyboard command.
What you need

SCSIProbe requires a Macintosh Plus or later.

Installation summary

Get SCSIProbe onto your hard drive using the Installer on Disk 1, as instructed at the beginning of this chapter. When the Installer's finished, a new Mac Secrets folder window will be open and waiting. Open the SCSIProbe folder and drag the SCSIProbe control panel onto your System folder icon.

The manual

The SCSIProbe user guide is a TeachText document. You'll find it inside the SCSIProbe folder. If TeachText or SimpleText is on your hard drive, double-click this document to open it. Otherwise, use your word processor's Open command to read it.

SCSIProbe is Copyright © 1992 by Robert Pollic. This software is free for all noncommercial distribution. For information about licensing SCSIProbe for commercial distribution, please contact me through:

AppleLink: POLIC
American Online: POLIC

SmartKeys

What it is

SmartKeys 2.1 is a freeware control panel designed to assist Macintosh typists by enabling them to type on the Macintosh as if it were a typewriter. (See Chapter 24 for details on why a typewriter is not a Mac.) Specifically, SmartKeys can perform six different tasks, as follows:

- **Space**: Prevents typing of more than one space.
- **Dash**: Converts two consecutively typed hyphens into a dash.
- **Quote**: Converts typewriter quote marks into true quotation marks.
- **Ligatures**: Converts the character components of a ligature into one.
- **Kill Doubled Caps**: Converts the second of two consecutively typed capitals into a lowercase letter when the second capital is followed by a lowercase letter.
- **Shifted Punctuation**: Converts the less than (<) and the greater than (>) math symbols into the comma and period.

What you need

SmartKeys 2.1 runs with System 6.0.2 or later; however, 6.0.4 or later is recommended. The U.S. keyboard layout is required.

Installation summary

Get SmartKeys onto your hard drive using the Installer on Disk 1, as instructed at the beginning of this chapter. When the Installer's finished, a new Mac Secrets folder window will be open and waiting. Open the SmartKeys folder and drag the SmartKeys control panel onto the System folder icon. Restart your Macintosh.

The manual

SmartKeys' manual comes in the form of a MacWrite document (in the SmartKeys folder). If you own MacWrite, double-click the document. If not, launch your word processor; then choose Open from the File menu to import the manual.
Who wrote it

Maurice Volaski tells us: "I got my start doing an independent study project as an undergraduate biology major. I needed a way to produce maps for the project, and our department in Brooklyn College had a Mac 512K. The rest, you could say, was history.

"For the first few years, I spent a lot of time in MacDraw and PageMaker on the project. The next turning point came with HyperCard. I started doing scripts and seeing how easy it was, I kept on going until I progressed to XCMDs. I did these for a while until I started getting interested into the guts of the machine. I was really bugged at being able to tell that a document was done on a Mac because of the fake quotes or the double spaces between sentences. I felt that there had to be something I could do to teach people the right way. This was how I got involved with INITs. I really got a kick out of being able to change the fundamental behavior of the machine to enhance its capabilities."

Distribution/Contact info

SmartKeys 2.1 (and this documentation) is meant to be made available to the entire Macintosh community for free. However, SmartKeys 2.1 is not in the public domain, and all copyright rights except free distribution are reserved.

It is the author's intention to fix bugs and keep SmartKeys 2.1 updated. Please report bugs and comments to the author at:

Maurice Volaski, 173 Princeton Ave. Apt. #2, Amherst, NY 14226-5006

Internet: volaski@contra.med.buffalo.edu
America Online: Mauric9278

What it is

As you know from reading Chapter 7, one hazard of being an active Mac user is hard-disk fragmentation. Over time, the files on every hard drive become broken into pieces and scattered across the disk surface. As the disk fills, you'll feel a noticeable slowdown.

Speed Disk (part of Norton Utilities) is a fast, intelligent defragmenter. Besides making your Mac's disk faster, optimizing your drive makes your files safer; once a file is in one piece again, in the event of a hard-disk failure, a recovery program will be more likely to salvage it completely.

But Speed Disk isn't just a defragmenter; it's also an optimizer. It prioritizes the placement of files so that infrequently modified files, like system files, are at the beginning of the disk, where they'll remain in one contiguous chunk. Frequently modified files — such as the Desktop file, which is constantly changing — are best placed at the end of the disk, so they'll have room to grow and shrink without causing fragmentation to other files.

What you need

Speed Disk requires a Mac Plus or later running System 6.0.4 or later.

Installation summary

Get Speed Disk onto your hard drive using the Installer on Disk 1, as instructed at the beginning of this chapter. When the Installer's finished, a new Mac Secrets folder window will be open and waiting. Double-click Speed Disk to launch it.

Important: Read these instructions before using Speed Disk.

The publisher's instructions

When to use Speed Disk

Optimizing a disk not only increases software speed; it also decreases hardware wear and tear by reducing the amount of drive head movement.
Speed Disk is smart and safe about optimizing your disk. Its two levels of operations, Easy and Expert, make it easy for beginners or extra flexible for power users.

**Before you begin**

Do some housekeeping; back up or throw away files you haven’t used in ages. The extra free space will make Speed Disk work faster.

Back up your disk. Speed Disk is very safe, but some of your files might not be.

De-install any copy-protected software. You’ll have to re-install them after the optimization.

Speed Disk can defragment, but *not optimize*, the files on the startup disk — or the disk Speed Disk is on. *(Defragment: make all files whole. Optimize: use some intelligence about where to put the defragmented files so they’ll be less likely to fragment again).*

To *optimize* your usual startup disk, therefore, you must boot the Mac from *another* disk.

**Tip:** If you don’t have a second hard drive or a cartridge to start up from, make a Speed Disk startup floppy. It should contain a System folder (use the tiny System folder from the Disk Tools or Utilities disk that came with your Mac) and Speed Disk itself.

Give Speed Disk more memory (in its Get Info box) if you want it to run faster.

If you’re using Expert level (described below), make sure Verify Media and Verify Data are checked in the Options menu *before* you optimize.

Allow some time. Speed Disk may take 30 minutes or more to complete its task, depending on the size of your drive, the degree of fragmentation, and so on.

**The Speed Disk screen**

The top part of the Speed Disk window shows a map of your hard drive’s sectors. The white parts indicate free space on your drive; the black or colored parts show your files. In the lower left is the logo/progress area; during the optimization process, this area shows a progress bar and messages.

The Check Drive button makes Speed Disk investigate the drive’s fragmentation status and report back to you. (Select the drive or partition you want to work by clicking the big right-arrow or left-arrow button, or by pressing Tab.) You can safely interrupt the drive check at any time by clicking Stop. If you let Speed Disk continue, you’ll be told how badly fragmented your disk is.

If you decide to optimize the drive, click Optimize. Speed Disk will begin its work, moving files from one place to another, reassembling the fragments and putting them in smarter locations.

**Expert mode**

If you choose Go to Expert from the Options menu, the display changes. The cursor will become a magnifying glass; as you move it over the map display, the lower-left area of the window shows an enlarged view of the disk surface as you move the mouse. The color codes show you what kinds of files you’re looking at — System files, programs, and so on. *(If you double-click a file type in the legend area, you can change the color associated with that data type.)*

During optimization, you’ll be shown additional displays of information. If you’ve turned on the Show Pencil command (Options menu), you’ll see a little animated pencil rewriting the big disk map.

**The Options menu**

Most of these commands are only available in Expert mode.

**Go to Expert (Go to Easy):** Switches from Easy mode to Expert mode.

**Show Pencil:** Shows or hides the animated pencil during optimization.

**Prioritize Files:** When checked, this option makes Speed Disk arrange the files on your disk in an intelligent, consistent way, in an attempt to prevent future fragmentation. Optimization will take longer, but you’ll notice more speed gains afterward, particularly in the Finder.

**Verify Media:** This option makes Speed Disk inspect the sectors of the disk before it works with them. If it finds defects, it blocks them from being used by the Mac. We recommend you leave this option on for safety.
Verify Data: This command makes Speed Disk double-check your hard drive's directory before optimizing, making sure that the information there actually corresponds to the files on the disk. We urge you to leave this option on; if Speed Disk finds problems, you should use the Disk Doctor portion of Norton Utilities (not included with this book) to cure them before proceeding.

TurboCharge: When selected, this option turns off the Speed Disk animation and provides only limited visual feedback. This increases the speed of optimizing, since the Mac can devote all its efforts to optimizing.

The Explore menu
This menu only appears in Expert mode.

Check Drive: Does the same as clicking the Check Drive button.

Check Media: The same as Verify Media — except that this command lets you check the media without going through the whole optimization process.

Check Files: The same as Verify Data — except that this command lets you check the files without going through the whole optimization process.

Largest Free Contiguous: Calculates the largest whole piece of free space on a disk. This information could be useful if you're using certain virtual-memory software.

The Utilities menu
This menu does nothing if you're using Speed Disk alone. If you have the whole Norton Utilities collection, these commands would let you transfer to the other programs in the suite.

Where to go for tech support
If you have trouble with Speed Disk — which we consider very unlikely — call IDG Books Tech Support at 800-434-3422. (When Symantec gave us permission to include Speed Disk free with this book, we promised that our readers wouldn't tie up their tech-support personnel!)

Sunset

What it is
Sunset is a commercial control panel that gives you a set of entertaining screen savers. They blank out your screen when your Macintosh is on but idle for a specified period of time, entertaining you with creative graphical displays, some with sound.

Sunset is a part of the QuickTools (QT) package from Advanced Software. We've included several fun modules for Sunset with this book; you get many more if you decide to upgrade to the full package — so check the back pages for the special offer.

What you need
QT/Sunset requires a Mac running System 6.0 or later.

Installation summary
Get Sunset onto your hard drive using the Installer on Disk 1, as instructed at the beginning of this chapter. When the Installer's finished, a new Mac Secrets folder window will be open and waiting. Open the Sunset Screen Saver folder and drag both the QT/Sunset ion and the Sunset Folder onto your System folder icon. Restart your Mac.

The Sunset Folder contains all the different screen saver modules used by Sunset. If the Sunset folder isn't in the System folder, or if you change its name, Sunset can run only Kaleidoscope, the default module.

Once the Sunset folder is in your System folder, you can choose which screen saver modules to keep in this folder. You can remove modules if you don't like them or if you need extra disk space.
Who wrote it

Andrew Welch has never figured out, and hopes he never will figure out, exactly what he wants to do in life. After all, once you find the answer, you stop searching. His current path is twofold: while studying photojournalism, he has been writing dozens of shareware programs designed to make using the Macintosh more enjoyable.

QT/Sunset comes to you by arrangement with Advanced Software, Inc., a division of Prairie Soft, 515-225-3720.

The publisher’s instructions

Customizing Sunset

You have many options for customizing Sunset’s operation. To view these options, open the QT/Sunset control panel.

Customize: Allows you to customize the current screen saver. See “Customizing Screen Saver modules” on the pages that follow.

Try it: Allows you to try out the current screen saver without waiting for your Macintosh to go to sleep. Any keyboard or mouse activity brings you back to the control panel.

Sunset preferences

Once you have opened the Sunset control panel, click the Prefs button and a dialog box appears:

Here is a description of each option in the Sunset Prefs dialog box:

Sleep Rectangle: The Sleep Rectangle is a small rectangular position on the screen where the mouse can be moved to invoke Sunset instantly. Click the Sleep Rectangle button to position the rectangle on the screen. Choose a position that won’t interfere with other applications or programs.

Awake Rectangle: The Awake Rectangle is a rectangular position on the screen where the mouse can be moved to prevent Sunset from being invoked when your Macintosh is idle.

Exclude: Some applications may be incompatible with screen savers, or you may want to remove Sunset from a telecommunications program so it doesn’t activate when you’re doing a modem transfer. You can prevent Sunset from invoking in a given application by clicking the Exclude button. To exclude an application, see the section “Excluding an application” later in this section.
Sleep Hot Key: Click this button to select a Hot Key to instantly invoke Sunset. The default Hot Key is  ⌘-Shift-Tab. If you want to change the Hot Key, click the Sleep Hot Key button. This allows you to select a new Hot Key, using a maximum of six keys. As soon as you select any key other than Shift, Option, Control, Caps Lock, or ⌘, Sunset stops the selection process and takes that selection as the new Hot Key. For example, ⌘-Option-X is an acceptable Hot Key combination.

Use the Chosen Screen Saver: If this option is selected, only the single screen saver module selected in the Saver pop-up menu appears whenever Sunset is invoked.

Surprise Me! If this option is selected, Sunset randomly selects screen savers each time it is invoked.

Cycle Through the Screen Savers: If this option is selected, Sunset brings up the next screen saver from the list each time it is invoked. When Sunset reaches the end of the list, it starts again at the beginning.

Use One Screen Saver Each Invocation: This option is automatically invoked when you select Use the Chosen Screen Saver. You can also select it in combination with Surprise Me; when Sunset is invoked, it keeps a single screen saver on the screen until the Macintosh is awakened, as opposed to the option New Screen Saver Every: ? Seconds listed next.

New Screen Saver Every ? Seconds: This option works with Surprise Me! and with Cycle Through the Screen Savers. With this option, you can choose how long you want a single screen saver to show on the screen before automatically changing to another one.

White Background: Be certain that this box is checked if you use Sunset on a Macintosh Portable. If you don’t select this option, your Macintosh has to draw a black background, which puts extra wear on your battery and screen. If you don’t have a Portable—or you use a PowerBook or Duo—you may still want to see the effect of some of the modules with this option selected.

Excluding an application
1. Click Exclude in the Sunset Presf screen; a dialog box appears.
2. Click “Add applications to list” to bring up a standard file selection dialog box.
3. Locate the first selection in which you want Sunset disabled. Once selected, click Add.
4. Locate the next and any subsequent applications in which you want Sunset disabled, clicking Add between each one.
5. Once you have completed your selections, click Done.
6. Click the Save button to save any changes or the Cancel button to cancel any changes.

To remove an application from the list, click the application name to highlight it and then click “Remove selected.”

Click Save to save any changes you make to the list. Click Cancel to ignore any changes you make to the list.

Customizing Screen Saver modules
To decide which Screen Saver modules you want to use with Sunset and to customize each to meet your needs, do the following.

1. Open the Sunset control panel.
2. Choose the first module from the pop-up Saver menu.
3. Click the Try it button to see how the screen saver looks and works. Move the mouse to return to the Sunset window.
4. Click Customize to see all the customizing options associated with the selected module.
5. If you make any changes in the Customize dialog box, click the Try it button again to see the effect of the changes.

Programmers’ tutorial for writing Screen Saver modules
If you would like to program your own Sunset screen savers, you may examine the Sunset Programmers’ Tutorial Folder that comes with the full QuickTools package, or contact Advanced Software for further information.
Part V: The SECRETS Software Vault

SuperClock!

What it is

SuperClock! displays the time and date, in your choice of font and style, near the right end of the menu bar. It can show the date or can turn into a stopwatch with a single click. If you’re using a portable Macintosh, it also displays the battery level; the battery icon includes a little lightning bolt when the battery is charging. This program became so popular Apple incorporated it into the system software (7.5); we’ve included it here in case you’re running any previous version of the system software.

What you need

SuperClock! requires System 6.0.7 or later.

Installation summary

Get SuperClock onto your hard drive using the Installer on Disk 1, as instructed at the beginning of this chapter. When the Installer’s finished, a new Mac Secrets folder window will be open and waiting. Open the SuperClock folder and drag the SuperClock! control panel onto the System folder icon. Then restart the Macintosh.

The manual

The SuperClock user guide is a TeachText document. You’ll find it inside the SuperClock folder. If TeachText or SimpleText is on your hard drive, double-click this document to open it. Otherwise, use your word processor’s Open command to read it.

Who wrote it

Steve Christensen tells us: “I started at Apple (a number of years ago) writing hard disk diagnostics on the Apple III and Lisa. When the Mac showed up in 1984, I started learning about the little beastie (ever written Mac code in Pascal on a Lisa?). I wrote the Mac driver support for the original Hard Disk 20, followed by the software for SuperDrive.

“By this point, I’d had my fill of disk drive work, so I latched onto the Mac IIfx as the software project lead and shipped Apple’s then-fastest Mac in 1990. Not long after that, I started working on what would eventually become the PowerBook Duo. My day job now consists of working out architectural issues in portables, as well as working on nifty stuff for future PowerBooks, such as writing the Control Strip. When I have the time and inclination, I work on software projects of my own (SuperClock!, MountImage, and so on) so that I can get people to write to me (usually it’s when something doesn’t work right).”

Freeware/Contact info

SuperClock! is free, but I reserve all rights to it. Give it to your friends if you like. It may not be distributed commercially (public domain and shareware disks come to mind); however, user’s groups and on-line services may distribute it as long as any costs are for the service (that is, connect time or media costs), and it’s accompanied by this documentation.

If you really feel an urge to send me something, don’t. I do this for the fun of it. If the urge just won’t go away, send a donation to the Stanford Children’s Hospital instead, because they’re always happy to receive donations from people like you for software like this. Their address is:

The Lucile Salter Packard Children’s Hospital at Stanford, 725 Welch Road, Palo Alto, California 94304

I hope you like SuperClock! If you have any suggestions or find a bug, please let me know. I do occasionally get a new release out to fix things (this one only took a couple of years)...

America Online: stevec44
CompuServe: 76174.1712
System 7 Pack!

What it is

The System 7 Pack! is a System 7 customizer and accelerator. With the System 7 Pack!, you can do all of the following:

- Increase the speed of Finder file copies by 300 percent (System 7.0 through 7.1 only).
- Change Command Keys in System 7 Finder.
- Add your own links between applications and documents. (For example, double-clicking a MacWrite document could automatically run MS Word.)
- Remove the annoying application-substitution dialog box.
- Remove the annoying unmounting “I'll be back” dialog box.
- Change names of some menu items (for example, Empty Trash to Flush Toilet).
- Add a Quit Menu so that you can quit the Finder.
- Remove ZoomRects to speed up opening windows in the Finder.
- Get rid of the annoying rename delay.
- Make the Finder use the 3/9/95 date format.
- Change or eliminate the word alias on every alias you make.
- And much more!

Adam Stein's System 7 Pack! started out (at the suggestion of one of your cheerful authors) as a tool to add some more §§-key equivalents to the System 7 Finder. Adam took that idea and went with it, then built upon it, and here's the result.

What you need

System 7 Pack requires a Macintosh running system 7.0, 7.0.1, or 7.1. A few features (faster Finder copies, window zooming, rename delay) may not work on later System versions, but most of the good stuff (application-document linking, Finder menu command keys, quit menu, etc.) still does.

Installation summary

Get System 7 Pack onto your hard drive using the Installer on Disk 1, as instructed at the beginning of this chapter. When the Installer's finished, a new Mac Secrets folder window will be open and waiting. Open the System 7 Pack folder. To launch System 7 Pack!, just double-click its icon. Note, however, that you should turn off your virus programs when you use System 7 Pack! to make changes.

You may want to copy your Finder onto a floppy before you use the System 7 Pack!. (Even easier, simply go to the System folder, select the Finder file, and press -D to duplicate it. Then you'll have a Finder copy that you can always use as a replacement in the rare event that something goes wrong.)

The manual

System 7 Pack's user guide is a double-clickable electronic manual. You'll find it inside the System 7 Pack folder.
Part V: The SECRETS Software Vault

Who wrote it

Adam Stein writes: “Insanely Great Software was founded in 1988 by myself while I was a freshman in high school. (I'm currently studying entrepreneurial management at the Wharton School of Business at the University of Pennsylvania.) The name comes from Steve Jobs, who often called things he really liked ‘insanely great.’ It's also our motto — and our standard. We aim to make your experience with us one worthy of our name: from product quality to technical support.

"We also aim to bring you the advantages of a small company without sacrificing the professionalism of a large corporation. So you'll be able to talk to me personally whenever you'd like (try talking to the President or author in large companies like Microsoft or Claris!), but you can also order by credit card 24 hours a day, 7 days a week, from our toll-free 800 order lines. (As well as fax, e-mail, and regular mail!) And we ship within 24 hours, so that you won't have to wait for your products any longer than necessary!"

Shareware/Contact info

The System 7 Pack! is shareware — or try before you buy software — which means that you can freely distribute the System 7 Pack!, but that you have to pay the registration fee if you use it.

After 30 days, you must either pay us the registration fee or delete all copies of the System 7 Pack! you have and remove all the enhancements made by the System 7 Pack! on your System.

Read the disk-based manual to find out what other goodies you'll get when you register.

You can call the author direct at 908-548-5107. Ask for Adam Stein and he'll be glad to be of service. He still believes in old-fashioned service with a smile!

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TempoEZ

What it is

Tempo is a commercial macro utility, as described in Chapter 22. A macro is a chain of tasks that your Mac performs automatically — when you press a single key. One might type out your return address; another could launch America Online, type in your password, and sign on; another might choose boldface Helvetica 18-point. For more uses for macros, see Chapter 22.

A Tempo macro may include keystrokes, menu selections, button clicks, file selections, window drags, a series of steps, and much more. Plus, you can teach Tempo to pause, branch to other macros, repeat macros, and switch to other applications and files.

There are two versions of Tempo: the full-fledged Tempo II Plus and the easier to use, simper TempoEZ; both are sold by Affinity. With this book, you get a special version of TempoEZ that comes with a number of useful ready-to-use macros. You can create five macros of your own per application you use in your work, plus ten macros of your own that work in every program.

Usually, you play a macro by pressing a key or key combination, such as F1 or $F-A. In Tempo, these trigger keystrokes are called key codes.

What you need

TempoEZ requires System 6.0.2 or later.

Installation summary

Use the Installer on Disk 1, as instructed at the beginning of this chapter. When the Installer is finished, you'll find these files in your System 7 System folder:

- System Folder: TempoEZ Demo Macros
- Apple Menu Items: Tempo
- Extensions Folder: TempoEZ Demo
• **Startup Items Folder:** Tempo Assist

If you have System 6, you get all of the following in your System folder: TempoEZ Demo Macros, TempoEZ Demo, Tempo (the DA), and TempoEZ.Kickinit.

After installing Tempo, restart the Mac.

(Note: TempoEZ has a minor conflict with Typelt4Me, also included with this book. If you want to use them both, simply drag the TempoEZ Demo file out of your Extensions folder — and leave it loose in your System folder. That solves the conflict.)

In addition to the files named above, you get a TempoEZ Demo Folder. It contains a selection of extremely useful ready-made macro files; by switching these files with your own macro files, you can swap the canned set for the ones you've made yourself. A TempoEZ Demo Manual is also in this folder; it explains how to do the swapping (to get around the 5/10 macro limit) and how to use the amazing Photoshop Magic macros also included in your TempoEZ Demo Folder.

**Tempo tech support:** If you have a question about TempoEZ, call Affinity's tech support number, 303-442-4840.

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### The publisher's instructions

#### Making a Macro

Recording a Tempo macro is easy.

1. **Choose Start Recording** from the Tempo menu. The Tempo menu changes from the ⌘ menu symbol to an R for Recording. (Tempo places its menu at the right of your menu bar.)

2. Once you start recording, **perform the actions** you want Tempo to remember and, later, play back for you. Tempo records everything you do: mouse clicks and drags, menu selections, typing, and more.

   For now, try teaching Tempo to open the Note Pad desk accessory — in other words, once Tempo is recording, choose Note Pad from the Apple menu...and then type *Look, Ma, no hands!*

3. Choose **Stop Recording** from the Tempo menu (which is now an R).

4. Now the Save Macro dialog box appears. First, teach Tempo the **key code** (keyboard shortcut) you'll want to trigger playback of your macro: **press a key or key combination**. Tempo will write it down in the lower half of the box.

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### About Tempo's macro files

Tempo stores its macros in a *macro file*. One macro file can hold all the macros for every application, plus Universal macros. TempoEZ's default macro file is called TempoEZ Demo Macros.

The first time you use Tempo, it will look for a "TempoEZ Demo Macros" file in the System Folder or in the Tempo+ Folder on your startup drive. If there is none, Tempo will ask you to select a macro file or create a new macro file. It's best to store your Tempo macro files directly in the System Folder. If you create your own new macro file, be sure to check the "Use as default macro file" checkbox (you'll know it when you see it).

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### Who wrote it

Tempo is provided with this book courtesy of Affinity Microsystems.
A key code can be any combination of the modifier keys — Command, Option, or Control keys — plus a letter key. You can also use the function keys (F1, F2, etc.) and special keys (Help, Home, Page Up, etc.), with or without modifier keys. You may also include Shift with the other modifiers. Character keys entered from the numeric keypad are designated by \textit{(kp)} to distinguish them from number keys on the standard keyboard.

If you're following the Note Pad example, try Control-N as the key code.

5. Name your macro simply by typing. The name will appear in the Macro Name entry line. Choose a descriptive name, such as Launch Note Pad.

6. Select the Save as Universal macro checkbox, if desired. If you do this, your macro will be "universal" — available no matter what program you're working in. Otherwise your macro will be "local" and will only work when you're in the application that was active when you started recording.

That's a useful distinction, because it means that you can use the same key code to do different things in different programs. Control-E, for example, could empty the trash in the Finder — but apply a filter in Photoshop.

7. Select the Macro Menu checkbox, if desired. If you do so, you won't have to memorize your keystroke. When this checkbox is selected, the macro will be listed in Tempo's drop-down Macro Menu. This menu appears as a downward-pointing triangle at the far ends of the menu bar; you can play back any macro simply by choosing its name from this menu.

8. Click Save.

That's it! You've taught your Mac to do something without any help from you.

If you've been using the Note Pad example, now's the fun part. Delete whatever you typed into the Note Pad, and close it. Then press Control-N — and watch the Mac macro ghost do its thing!

You can teach TempoEZ five macros of your own for each program you use. Your macros may include the ten ready-made, universal macros that come with TempoEZ. Any macros you create will work fine if you ever decide to upgrade to the more sophisticated Tempo II Plus program (see coupon at back of book).

### Launching applications and files

One of the most handy uses of a macro program is to launch files. For example, simply by pressing Control-F, you can launch FileMaker, wherever it may be on your hard drive, no matter how many folders deep it's buried. And if FileMaker is already running, you can switch to it using the exact same keystroke.

Your first instinct may be to record a macro that opens a file by double-clicking its icon. However, if the icon or folder is moved, the macro will no longer work. Use Tempo's Launch options instead. Here's an example.

Note that, in step 2, you'll use Tempo's Options command — one of the few cases where you create a macro step by \textit{telling} Tempo what to do instead of \textit{showing} it.

### File-launching example

Let's create a macro to launch your word processing program (or any other program you prefer).

1. Choose \textit{Start Recording} from the Tempo menu.
2. Choose \textit{Options} from the Tempo \textit{R} menu.
3. Click the \textit{Launch Application} button. (If you want this macro to auto-open a specific document or a desk accessory, click \textit{Launch File} instead.)
4. Find and \textbf{double-click the name of the application} you want to open. Wait while the program launches.
5. Choose \textit{Stop Recording} from the Tempo menu. Name the macro the same as your application, or use an abbreviation for it, and assign it a key code such as Control-W or F5. Check the Universal and Macro Menu checkboxes and then click Save.
Quit the application, and then play the macro to see how it works. Create launch macros for the files and applications you use every day.

**How Tempo thinks**

Tempo records keystrokes and mouse clicks as you perform them. However, Tempo's "smart" features actually record the results of the keystrokes and mouse clicks. For example, Tempo records button clicks and menu selections by name, rather than position. If you record a macro that clicks on a No button or selects Times from the Fonts menu, Tempo will click No in any dialog box or select Times from any Fonts menu (even if you add or remove fonts occasionally). (You can, if you wish, turn off these "smart" features; read on.)

**Windows:** Tempo can even remember the name of the window where a mouse click took place, so even if the window has moved, the macro will still work. That makes Tempo great for selecting tools on tool palettes like PageMaker's: try Control-A for the Arrow tool and so on.

Similarly, if you record a macro that moves a window to the upper-left corner of the screen, Tempo will find the window, wherever it is, and drag it to that same spot. If you dragged the left end of the window's title bar, Tempo will position the upper-left corner of the window at the position you recorded. If you dragged the right end, Tempo will position the upper-right corner of the window.

Try making one macro that drags the top window all the way to the bottom of the screen — and another to drag it back up again, so you can grab a quick peek at what's behind.

**Typing:** Tempo also records everything you type, such as characters, modified keystrokes like Command-C for Copy, Returns, and cursor-key presses. For example, if you record Option-u followed by an ő, Tempo replays ő, just as the Macintosh does. Try this: Choose **Start Recording** from the Tempo menu; type your return address; choose **Stop Recording**; name your macro **Return Address**, and be sure to click the Macro Menu checkbox. From now on, just choose Return Address from the Macro menu whenever you want it typed!

**Checkboxes:** If you record a click in a checkbox, Tempo remembers the name of the checkbox. Tempo's Smart Checkboxes feature makes Tempo remember whether you selected or deselected the checkbox, and will play your macro the way you recorded it. If you turn the Smart Checkboxes feature off (choose Recording Options from the Tempo menu), the recorded checkbox click will simply click the checkbox blindly, turning it alternately on or off each time the macro plays.

**Scroll bars:** Tempo remembers individual clicks on the scroll-bar arrows, as well as clicks in the gray bars above or below the scroll box. Tempo will find the scroll bar and replay the macro properly even if you move or resize a window. Tempo doesn't record sustained presses on the arrows or scroll bars, however, so be sure you record multiple clicks instead of sustained presses if that's what you need.

**A few great Tempo examples**

**Instant quotes:** Here's a quick way to insert quotes around a word or sentence. (The same steps would work for parentheses or brackets.) This example shows that in some cases you need to record a task in a slightly different method than you would perform it manually.

1. Type a word or phrase, such as, *I'll be back*. Now highlight the words you want to be enclosed in quotes.
2. Start recording, press Command-X to cut, type a left quote, press Command-V to paste, and type right quote.
3. Stop recording, name the macro, and assign a key code (Control-quote is a good one). Make it a universal macro, assign it to the Macro Menu, and finally save it.
4. Now to play the macro, first highlight the word or phrase you want to put in quotations — and then play the macro.

**Select Finder and hide others:** Whenever you switch to the Finder from another program, you're usually confronted by a rat's nest of overlapping application windows. Wouldn't it be nice if Tempo could switch to the Finder — and hide all those background-program windows automatically?

1. Start Recording.
2. Choose Finder from the Application menu.
3. Because of the way the Hide Others command works, you need to temporarily turn off Tempo's "smart" features before performing step 4. Choose Recording Settings from the Tempo menu. Click "Disable smart features" and click Temporary.

4. Choose Hide Others from the Application Menu.

5. Stop recording; name and save the sequence as a universal macro.

To fully appreciate this macro, open several files in different applications then play the macro. In an instant, you're at the Finder with all other windows hidden.

**Scrolling to the top and bottom:** Because not every application works with the Home and End keyboard keys, or you may not have an extended keyboard, let's create a macro that scrolls the window to the very top.

Start recording, click on the scroll bar elevator (the small square in the scroll bar), drag it to the top, and release it. Stop recording, name the macro Home, assign a key code, and save it as a universal macro. (You could do the same — but drag the scroll box to the bottom — if you wanted to create an End macro.)

When you play these macros, they will scroll to the top or bottom of the file, even if the window has moved or changed sizes. And because the macros were saved as universal, they will work in all applications including the Finder.

**Five EZ ways to play macros**

As we've mentioned, you can play a macro back by pressing a certain key code. But that's not the only way.

**Macro Menu:** You can list any macro in the inverted-triangle menu at the far end of your screen for quick selection.

**Play by Name:** Select Play by Name from the Tempo menu. A dialog box appears; type the first couple letters of your macro's name to select it; press Return to play it.

**Tempo Command:** Choose Tempo Command from the TempoEZ menu; in the dialog box that appears, double-click the name of a macro.

**Autoboot:** Specify that you want a certain macro to play as soon as you turn on the Mac. Here’s how to set up the startup macro. In the TempoEZ folder on your hard drive, there's a folder called Autoboots. Inside, there are two icons: Tempo Autoboot (which rests for six seconds after your Mac is running before taking action) and Tempo Fast Autoboot (which doesn’t).

While pressing &, double-click one of these icons. Hold the & key down until you see your list of existing macros; simply double-click the one you'd like to play at startup.

Finally, put the "loaded" Autoboot icon into your Startup Items folder (in the System folder). When you restart, the selected macro will play. If you make copies of these Autoboot files, you can program each to play a different macro at startup.

(System 6: Highlight the Autoboot icon; from the Special menu, choose Set Startup; select Autoboot and click OK.)

**Two Ways to Stop a Macro**

Once a macro is running, you can cancel it in midstream by pressing &-period. You can also interrupt it by pressing &-comma (or by clicking the mouse).

And once you've interrupted the macro, you can make it resume from where you left off by pressing &-comma again (or by choosing Resume Playback from the Tempo menu).

**The TempoEZ Main Menu**

Tempo places its & menu to the right of the current application's menus. If it ever seems squeezed off the right edge of a menu bar, you can also make it pop up anywhere on the screen by pressing the Control key and clicking the mouse. (You can change that setting; see Playback Preferences later in this section).

We'll describe the Tempo main menu commands in order.
Start Recording

Turns on Tempo's record mode. The Tempo menu changes to an R, Start Recording changes to say Stop Recording, and your actions are recorded.

Autopaste

Pastes a predefined graphic or block of text into a document.

To create an Autopaste macro, start by selecting some text (up to 32,000 characters), a graphic, or any other material that may be copied in your program. Then choose Autopaste from the Tempo menu. Tempo will copy the selected item to the Clipboard and then bring up the Save Macro dialog box.

Enter a name and key code for your new macro, and click the Save button as usual. From now on, you can play this macro in any of the usual ways, and the stored material will be automatically pasted at the insertion point. (Two notes: The program must actually have a Paste command, and creating or using an Autopaste macro replaces what's on the Clipboard already.

Tempo Command

The Tempo Command window lists all your macros. It shows the name and key code you've given each one and offers several useful buttons.

Macros "local" to the current application are always listed first, followed by Universal macros. The Sort By control lets you view the macros either alphabetically by name (click Name), by key code (click Key Code), or by modifier key (Option-click Key Code).

The list of macros has some hidden features, too. For example, you can type a letter to scroll the list to the first macro whose name begins with that character. Press $ up arrow and $ down arrow move between Universal and local macros. Press the Page Up and Page Down keys to scroll the list.

The row of buttons should be fairly self-explanatory, particularly Play, Delete, and Close (the dialog box). The Edit button displays the TempoEZ editor, described later, in which you may change, delete, or insert steps. The Rename button lets you change the name or key code of the selected macro, switch its status between Universal and local, and change its Macro Menu assignment.

The Copy Macros button lets you copy macros between Tempo macro files. Begin by clicking Copy Macros; then select macros to copy. (Shift-click to select several in a row, or Option-click to select individual macros.) Then, to copy macros to another file, click Copy and select the destination file. To copy macros from another file, click Copy Macros, click Change File, select the donor file, and then select the macros to copy (click All to see a list of all applications in the macro file, or Option-click All to expand the list to show macros for all applications). Once the macros are selected, click Copy Macros, and then select the destination file. Click Open to copy the macros you have selected into the selected macro file.

The Change File button lets you work with the macros in another Tempo macro file. You may have multiple macro files, named as you please, and may run Tempo macros from macro files on other disks. You may also establish any macro file as the default file by checking the Save as Default Macro File checkbox.

The List Macros button creates a text file that lists your macros and their key codes, which you can open in any word processor or database.

Play by Name

This command opens the Play By Name dialog box, as described earlier.
Playback Preferences...

The Playback Preferences dialog box lets you change a variety of Tempo settings. Preferences are saved in the macro file, so the settings may change when you switch macro files. Some changes require switching applications or quitting and reopening Tempo to take effect.

Playback Preferences for: Let you specify whether the settings you changing affects the Universal macros or just the current, "local" application’s.

Revert to Universal: Removes an application’s individually-set Preferences, adopting those of the Universal set.

Macro Menu Location: Places the Macro Menu on the left, right, both, or neither side(s) of the menu bar.

Return cursor after play: When this checkbox is selected, the cursor location is noted when a macro starts and is returned to that exact spot when the macro ends.

Playback speed: Lets you slow down a macro’s playback; may help on certain Macs or in certain applications.

Prevent mouse click from interrupting playback: This option serves two purposes: 1) Prevents a user from accidentally interrupting macro playback by tapping the mouse button and 2) assists a macro that includes a click on another program’s window (which would otherwise interrupt itself).

Popup Menu Keys: You can make the Tempo menu appear anywhere when you hold down the specified keys and press the mouse button. To define the Popup Menu key code, hold down any combination of the Control, Shift, and Option keys and click anywhere.

When using this feature, the Tempo menu appears under the cursor. As long as the mouse button is pressed, you can scroll up and down the Tempo menu and release on the item you need.

Play by Name Keys: Lets you change the keystroke that summons Tempo’s Play by Name dialog box.

Macro Menu Keys: Lets you change the keys that, when pressed while you click anywhere in the menu bar, make the Macro menu appear.

Recording Settings

Tempo’s Recording Settings affect the information Tempo stores while you record a macro. You may select Recording Settings either before or during a recording “session.”

Recording Settings changes affect the current application only. However, changes made while the Finder is the current application become the default settings for all applications.

High Speed vs. Real Time Recording: Tempo normally records only the results of mouse movements — not literal mouse movements like loops and circles. You can turn Real Time on during recording by selecting it from Tempo’s Recording menu, however, if you want an actual mouse movement recorded (such as when you need to draw a circle in a painting program).

In Real Time mode, all other smart features are turned off, thus dimming the other options in the Recording Settings box.

Enable/Disable smart features: With Smart features enabled, Tempo is “smart” about the actions you record. For example:

- Clicks and drags inside a window are recorded relative to the upper-left corner of that window. If the window itself is in a different position when the macro plays back, the macro still works.
Tempo invokes menu commands without actually pulling down the menu. Select "Disable smart features" before selecting a menu item if, during playback, you'll want to see the menu being pulled down.

Tempo records the moving and resizing of windows either as an offset of the window’s location (window-relative) or as a move to a specific screen location (desktop-relative).

Tempo records intelligent operations on buttons, scroll bars, and checkboxes (instead of blindly recording the location of a mouse click).

Note: Some programs have “hidden” windows, which may cause a universal close box or zoom macro to click in the wrong window. In those cases, record the same macro and save it as local. It should perform properly in that application. Examples of such exceptions are spreadsheets, in which the formula bar may actually be a window, and graphics programs, in which tool palettes may be windows.

Menu selections by name or by position: When “by name” is selected, Tempo chooses menu commands by name. If “by position” is on instead, Tempo chooses commands depending on their position in the menu (top of the list, for example). Use this if a menu command’s position remains the same, but its name can change (Lock/Unlock, Hide Ruler/Show Ruler, etc.).

Size and move windows relative to the desktop/to windows: These settings affect moving a window and changing a window’s size. When “desktop” is selected, Tempo stores the window’s new position or size relative to the desktop (your Mac screen). When “window” is selected instead, Tempo stores the window’s new condition relative to its previous size and location.

Enable/Disable Control Intelligence: Control intelligence ensures that macros that click on buttons and other controls in various dialog boxes will play properly, regardless of button locations. When this option is off, Tempo simply records the locations of clicks, not the buttons or checkboxes you actually clicked.

Smart Checkboxes: With this feature enabled, a macro that selects a checkbox will always select the checkbox, regardless of its setting when the macro begins playback. Otherwise, the macro will simply toggle the checkbox on or off, reversing its condition each time.

Permanent/Temporary/Cancel: If you change Recording Settings and click Permanent, the settings become the default for your current application. If you click Temporary, the settings are remembered only for the current or next macro. If you click Cancel, your changes are not retained.

Disable Popup Menu

When checked, temporarily turns off the Tempo popup menu in the current application. Use this if the program you’re working in uses the key code you have assigned to bring up the Tempo popup menu.

Quit TempoEZ

Use Quit TempoEZ to turn off Tempo’s record and playback capabilities. When Tempo is turned off, it will no longer respond to key codes. Reopen Tempo by choosing its name from the Apple menu.

The Tempo EZ Recording Menu

Stop Recording
Suspend Recording
Options...
Real Time
Recording Settings...
Disable Popup Menu
Cancel Recording Session

When you choose Start Recording, the Tempo Main Menu becomes the Recording Menu. Two of its commands, Recording Settings and Disable Popup Menu, were described in the previous section.
Suspend Recording

You can suspend recording of a macro while you take some steps you don't want included in the macro. When you suspend recording, the R menu changes to an S. In Suspend mode, only selections you make using the Options command (described next) are inserted into the macro. (You don't, however, have to suspend recording to insert an Option.)

Options

This command opens the powerful Options dialog box, in which you can give your macro added flexibility. You'll usually access this box while in the process of recording a macro; it lets you insert several kinds of intelligent steps.

- **Launch application** and **Launch file** make the macro-in-progress switch to a certain program or open a certain file.

- **Branch** lets you link macros together. To make this work, you must make the second macro before creating the first. When you select Branch, you'll be asked to select the name of the next macro to be played.

- If you insert a **Pause** into the macro you're making, Tempo will halt playback at that spot. Three types of pauses are available: Pause for user entry halts the macro while the user enters information, makes a selection, or reads instructions provided by you. Pause for interval waits a specific amount of time, and then continues. Pause until waits until a specified time, and then resumes — a useful option for launching late-night fax or modem sessions, for example.

  The "Pause for user entry options" are particularly powerful. For example, if you select Include Dialog Box, you can even type some text that you'll want Tempo to display in an on-screen message (at that point in the macro playback). This figure shows you how.

- **Repeat** repeats a macro a certain number of times. This option is always the last step in a macro, since the Repeat command affects the entire series of steps recorded in that macro.

Real Time

Unlike high-speed recording, Tempo's default recording mode, Real Time records absolutely everything you do, even if you do nothing. On playback, the mouse will move around the screen just as you moved it, and words are typed exactly as fast as you typed them.

Real Time recording can create self-running demonstrations, record drawings where the path of a mouse drag is important, and select certain popup and hierarchical menus that Tempo cannot record in high-speed mode.

Because the Real Time option records not only every movement, but clock ticks as well, it builds large macro files. For that reason, it's best to use Real Time sparingly. However, you can enter and leave Real Time as often as you need while recording a macro. (Tempo's smart enough not to record your cursor's actual trip to the Tempo menu to turn Real Time on or off!)
Cancel Recording Session
Use this command when you've been recording a macro, but change your mind and decide to discard the whole thing.

How to Edit a Macro
From time to time, you may want to edit the individual steps that constitute one of your macros — to correct a mistake, for example. For this, you use the Tempo Editor. You can even "script" a macro entirely within the Editor (start by creating an empty "dummy" macro, which you can create by recording a macro with no steps). However, recording a macro in "watch-me" mode is preferred to scripting a macro, because many of the activities that Tempo records are difficult to anticipate.

To open the Editor: from the $ menu, choose Tempo Command. Select the macro you want to edit, and then click the Edit button. The Edit window appears, listing every step of your macro.

If you double-click a step, you'll be guided through changing that step.

Select from the Insert popup list items to add a step before the currently highlighted step.

Click Done to save the edited macro. If you leave the name and key code the same, clicking Save will replace the original macro. If you change the name, key code, or local/universal status, it will Save As, leaving the original macro unchanged and creating a new macro.

Editing and inserting steps in a macro
Several of the Insert menu's items, such as Launch File and Pause, were described earlier. The others include:

Application Menu (System 7 only): Lets you insert a "switch to" command involving one of the programs listed in the Application menu, such as "switch to Finder." Be sure to enter an application's name as it appears in the Application Menu. (Note: To record Hide Application, Hide Others, or Show All from the Application menu, don't use the Editor. Instead, record the menu selection normally — but first select "Disable Smart Features" in the Recording Settings dialog box, and then record the selection. If there are more steps to the macro, re-enable Smart Features and continue.)

Balloon Help (System 7 only): Inserts a command that turns Balloon Help on or off.

Button Click: If your macro clicks on a checkbox or radio button, insert this item into your macro. It lets you change the button's name, specify that the button turns on or off, or opt to toggle the button on and off each time the macro plays.

Comment: Inserts a comment into your macro, good for annotating your work. Comments only appear in the Editor and don't affect playback.

FKey: Lets you add or change an FKey step into your macro without actually playing that FKey. Type a number 0-9; when Tempo plays that step in the macro, it will add the $-Shift modifier to the number. (An FKey is a special Mac built-in $-Shift-number function, such as the one that takes a screen shot [$-Shift-3]).

Keystroke: Inserts a single keystroke, such as Enter, down arrow, $-O, Control-Shift-Q, or any other single keystroke.

Menu Choice: Specifies how the way TempoEZ makes a menu selection. For example, use this option to make the macro choose a command by position instead of name. You can also specify a modifier key to be "pressed" by the macro while selecting the menu item.

Text: Inserts typing into your macro. When the macro plays, the keystrokes (with their Shift or Option modifiers, if any) will be "typed" just as though you had typed them while recording the macro.
Typelt4Me

Before: Altho JOS ply didn't want a Mc, s tk it bc it  was her bday.

After: Although Jennifer O'Sullivan, MD, probably didn't want a Macintosh, she took it because it was her birthday.

What it is

Typelt4Me is a typing saver. Your cheerful authors used it to write this book, and in the process only had to type about 700 of the 1100 pages in your hands. Typelt4Me did the rest — by expanding abbreviations as we typed.

And where, you may ask, did these abbreviations come from? As you go about your daily life, you teach Typelt4Me. You make up your own abbreviations for words you use a lot: you might use Mc for Macintosh, bc for because, aol for America Online, and so on. Over time, your word list grows, and the amount of typing you save grows! It's good for people with repetitive-stress disorders, it's good for people who want to speed up their typing (and increase accuracy), it's great for people in technical fields, and it's a blessing for anyone who uses the Mac for typing.

What you need

Typelt4Me works on System 4.1 or later, but System 7 or later is recommended.

Installation summary

Get Typelt4Me onto your hard drive using the Installer on Disk 1, as instructed at the beginning of this chapter. When the installer's finished, a new Mac Secrets folder window will be open and waiting. Drag the Typelt4Me icon onto your System folder icon.

Restart your Mac.

The manual

Typelt4Me's complete manual is built right into the program. Open the control panel and click Help.

Shareware notice

From the author: If you decide to keep Typelt4Me in your software collection, I ask that you abide by the shareware code of honor and pay for it. The license fee is a very modest $30. I'll acknowledge your payment by sending you a disk crammed with the latest version of this program and as many of my other shareware and freeware programs as will fit on it.

Thank you in advance for keeping the shareware spirit alive!

Riccardo Ettore, Attn. Typelt4Me, 67 rue de la limite, 1970 W-Oppem, Belgium

(If paying by credit card, you may also fax it to +32 2 7679217 or E-mail it to CompuServe 72277.1344 or INTERNET:72277.1344@compuserve.com.)

WYSIWYG Menus

What it is

WYSIWYG Menus, a component of the commercial bestseller Now Utilities, helps you quickly select the perfect fonts for your documents by displaying fonts in their own typefaces and uniting font families. It lets you:

* Rearrange the order of fonts listed in your Font menus.
* Change the color or size of fonts displayed in the Font menus.
* Assign a keyboard shortcut to a font, style, or size.
* Modify a font's family name and style name.
* Create different custom Font menus for each of your applications.
* Display certain font names (such as Symbol and Dingbats) not in their own fonts, so you can read their names.

WYSIWYG Menus is compatible with outline and bitmap screen fonts, TrueType fonts, Type 1 and Type 3 PostScript fonts, Adobe Multiple Master fonts, Adobe Type Manager, Master-Juggler, and Suitcase. (See Chapter 24 for details on these terms.)

WYSIWYG Menus works in applications that use pull-down or pop-up Font menus but has no effect on applications that use a scrolling list to select fonts.

**What you need**

WYSIWYG Menus requires a Mac Plus or better running System 7.0 or later.

**Installation summary**

Get WYSIWYG Menus onto your hard drive using the Installer on Disk 1, as instructed at the beginning of this chapter. When the Installer's finished, a new Mac Secrets folder window will be open and waiting. Open the WYSIWYG Menus folder and drag both the Now Toolbox and WYSIWYG Menus icons onto your System folder icon. Restart your Mac.

**Who wrote it**

WYSIWYG Menus and Now Toolbox are components of Now Utilities; they're included with this book as a courtesy of Now Software. To order the full Now Utilities package, check out the special offer at the end of this book.

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**The publisher's instructions**

**Before**

- 2Stone Sans
- Beramond
- Beramond Italic
- Beramond Semibold
- Beramond Semibold Italic
- B Franklin Gothic Demi
- B 2Stone Sans Bold Italic
- Chicago
- Courier
- Franklin Gothic
- Geneva
- Helvetica
- I 2Stone Sans italic
- Monaco
- New York
- Palatino
- Sb 2Stone Sans Semibold
- Sbi 2Stone Sans Semibold Italic
- Symbol
- Times
- Uni NewswCommpIt
- Zapf Dingbats

**After**

- Agaramond
- Chicago
- Courier
- Franklin Gothic
- Geneva
- Helvetica
- Times
- Uni 2Stone Sans
- Zapf Dingbats

WYSIWYG Menus shows each font's name in that font. It also displays the numbers representing the available point sizes in the Size menu appear in their actual point sizes. For example, if the currently selected font is Times, the point size number for 24-point appears in Times 24-point. Finally, the standard Style menu displays all of the styles in Chicago 12-point. With WYSIWYG Menus, the font styles in the Style menu appear in the currently selected typeface with the style applied (bold, italic, and so on).
Reunited font families

The standard Font menu lists each of a font's styles (Plain, Bold, Semibold, and so on) separately in the main Font menu. Styles of the same font are often scattered throughout the main Font menu because of naming variations.

WYSIWYG Menus creates a submenu for those fonts with more than one style installed. For example, with WYSIWYG Menus installed, the styles of Stone Sans (Plain, Bold, Bold Italic, Italic, Semibold, and Semibold Italic) are listed in the submenu of Stone Sans. This shortens the Font menu and makes it easier to locate a particular style.

Note: When you're choosing style variations of a font, such as Bold and Italic; you can usually choose them in one of two ways: you can apply Bold or Italic from the Style menu, or you can choose a font variation direction from the Font menu (such as I Palatino Italic). For best results, specify styles in the latter method, if possible (choose Palatino Italic instead of applying the Italic style to plain Palatino). This ensures that the printer font, rather than the bitmap version, is selected for use in the document.

Tip: When any font name is highlighted in the Font menu and you press Enter or Return, the currently checked font becomes highlighted. Use this trick to avoid hunting for the current font in a long list.

Customizing Font menus for all applications

You can easily change the appearance of Font menus for all applications using the WYSIWYG Menus control panel. You can rearrange the order in which font names appear, change the font size, determine whether or not a particular font appears in its native typeface, change the font Family and Style Name, assign a keyboard shortcut to a font name, and specify which font names and font colors appear.

To customize Font menus for all applications:

1. Open the WYSIWYG Menus control panel.

   A list of font families currently installed in the System appears in the Font Family list on the left side of the control panel.

2. To rearrange the order of fonts in the Font menu, drag a font name up or down to a new location in the list.

3. To change the font size for a font's display, select a font name, and choose a size from the Size pop-up menu.

4. To determine whether or not a font appears in its native typeface, select a font name and font style and click the Draw WYSIWYG box.

You may want to deselect this check box for fonts composed primarily of symbols, such as Zapf Dingbats, Universe, or Symbol fonts.
5. To specify which fonts you would like in the Font menus for all applications except those configured for custom Font menus, make sure Global is selected in the Applications pop-up menu and click to the left of a font name.

A check mark alongside a font name indicates that it is in the Font menu; no check mark indicates that it is not in the Font menu.

6. To specify which font colors you would like in the Font menus for all applications, make sure Global is selected in the Applications pop-up menu, select a font name, and choose a color from the Color pop-up menu.

This option is not available on black-and-white Macs.

7. Close the WYSIWYG Menus control panel and launch an application that has a Font menu to view the settings you have configured.

Customizing Font menus for individual applications

You can also create different custom Font menus for each individual application. The customized Font menu only appears when a particular application is opened. For example, you can create a Font menu for MacPaint that only contains Helvetica and Symbol fonts.

For each custom Font menu, you can specify which font names and font colors appear. All of the other settings in the WYSIWYG Menus control panel apply to the Font menus for all applications.

You cannot create different custom Font menus for desk accessories. WYSIWYG Menus applies the Global Font menu settings to all desk accessories.

To create a custom font menu for a particular application:

1. Open the WYSIWYG Menus control panel.
2. Choose Settings from the Applications pop-up menu.
3. Click New to display a directory dialog box. Select an application and click Open. The application name appears in the Applications list.

3. Click OK to return to the WYSIWYG Menus control panel. The application you added to the list is selected in the Applications pop-up menu.

4. Specify which fonts you would like in the application’s custom Font menu by selecting or deselecting fonts. A check mark alongside a font indicates that it is in the Font menu; no check mark indicates that it is not in the Font menu.

5. Specify which font colors you would like in the application’s custom Font menu by selecting a font name and choosing a color from the Color pop-up menu.

6. Close the WYSIWYG Menus control panel and launch the application for which you changed the Font menu configuration to view the new settings.

To modify the WYSIWYG Menus custom application list:

1. Open the WYSIWYG Menus control panel.
2. Choose the Settings command from the Applications pop-up menu to display the WYSIWYG Menus Applications list.
3. Click New to display a directory dialog box by clicking the Applications button.
4. To add an application to the list: Click New to display a directory dialog box. Then select a new application and click Open. The global Font menu settings are applied to the new application.

Note: You can also reach this dialog box from the WYSIWYG Menus Preferences dialog box by clicking the Applications button.
4. To add an application to the list while copying the custom Font menu settings from another application:
   a. Select the application containing the custom Font menu settings that you want to copy from the list.
   b. Click Duplicate to display a directory dialog box.
   c. Select the new application and click Open. The Font menu settings are applied to the new application.

5. To delete an application from the list, select an application and click Delete. (You cannot delete the Global listing.)

6. Click OK to return to the WYSIWYG Menus control panel.

The Applications pop-up menu reflects changes made to the Applications list.

**A custom Font menu example**

In this example, a custom Font menu that contains only Helvetica and Symbol fonts is created for MacPaint.

1. Open the WYSIWYG Menus control panel.
2. Choose the Settings command from the Applications pop-up menu to display the WYSIWYG Menus Applications list.
3. Click New to display a directory dialog box.
4. Select MacPaint and click Open. MacPaint now appears in the Applications list.
5. Click OK to return to the WYSIWYG Menus control panel.
6. Deselect all fonts except Helvetica and Symbol.

7. Close the WYSIWYG Menus control panel.
8. Open MacPaint and pull down the Font menu. Notice that only Helvetica and Symbol appear in the menu.

**Temporarily disabling WYSIWYG Menus within an application**

You can temporarily disable WYSIWYG Menus and display the standard Font menus in an application. (If you never want to see WYSIWYG Menus in a particular application, use the Exclude option in the control panel; we’ll cover this later in this section.)

To temporarily disable WYSIWYG Menus within an application, hold down the key while using a Font, Font Size, or Font Style menu. The items in the menu are displayed in Chicago 12-point type.

**Note:** You can change the keyboard combination used to temporarily disable the Font menus.

**Excluding applications from using WYSIWYG Menus**

By default, WYSIWYG Menus creates enhanced Font menus for all applications. You may, however, want to always display standard Font menus for particular applications. The Exclude option lets you maintain a list of applications you don’t want to use with WYSIWYG Menus. Once you exclude an application, the standard Font menus are displayed whenever the application is opened.

To exclude applications from using WYSIWYG Menus:

1. Open the WYSIWYG Menus control panel.
2. Click Preferences to display the Preferences dialog box.
3. Click Exclude to display a list of excluded applications.
4. To add an application to the list, click Add. A directory dialog box appears.
5. Select an application and click Open to add it to the list. Repeat this step to include additional applications on the list.
6. To delete an application from the list, select the application and click Delete. (This command affects only the names that appear in the Exclude list; it does not delete the application from your hard disk.)

7. Click OK to return to the Preferences dialog box.

The next time you open the excluded application, the Font, Size, and Style menus appear in the System font.

Changing the font family and style names

This example describes how to change the font names so that two monospaced fonts (Courier and Monaco) appear in a submenu under the font name "Monospaced."

1. Open the WYSIWYG Menus control panel.
2. Select Courier and click Font Info.
3. Change the font family name to "Monospaced" and the font style name to "Courier."

7. Click OK to return to the WYSIWYG Menus control panel.

8. Close the WYSIWYG Menus control panel.

9. Open an application and pull down the Font menu.

Notice that the Monospaced name appears in the menu, and a submenu with Courier and Monaco appears when you highlight Monospaced.

Customizing the available font colors

If you are using a color Macintosh, you can customize the eight system colors and names using this feature.

1. Open the WYSIWYG Menus control panel.
2. Click the Preferences button to display the Preferences dialog box.
3. Click Colors to display the Colors dialog box.
4. To change the name of a color, select a box and type.
5. To change the colors, click a color square to display the color wheel. Then select a new color and click OK.
6. Click OK to return to the Preferences dialog box.

You can select the Font colors from the Color pop-up menu in the WYSIWYG Menus control panel.
Identifying Font menu names

Many applications display fonts in menus named Font, Size, and Style. Others name their font menus differently: for example, Text, Format, and Display Size. WYSIWYG Menus needs to know the names of the menus in order to display custom Font menus.

A list of frequently used pull-down and pop-up menu names is included with WYSIWYG Menus. You can help WYSIWYG Menus identify other Font menu names by adding them to this list. Follow these steps:

1. Click Names in the Preferences dialog box to display a list of Font menu names.

   ![Menu Names](image)

2. To add a menu name, click Add.
3. Enter the menu name that you want to add and click OK. Repeat this step to add more menu names to the list.
4. To delete a menu name, select the name and click Delete.
5. Click OK to return to the Preferences dialog box.

Isolating damaged fonts

For a variety of reasons, fonts can become damaged and cause system errors. WYSIWYG Menus constantly monitors the fonts in your system and helps you isolate damaged fonts. Should a system error occur when loading a font at startup or at another time, WYSIWYG Menus isolates and disables it. If the font is in a suitcase file, all other fonts in the suitcase file are also disabled. The next time you restart your Macintosh, WYSIWYG Menus tells you the name of the damaged font. You should then remove or replace the damaged font to avoid another system error.

ZTerm

What it is

ZTerm is an excellent shareware telecommunications program, which you can use to dial bulletin boards or other Macs. Technically speaking, ZTerm offers ZModem, YModem, XModem, and CIS B-Plus/Quick-B file transfers, VT100 & ANSI-BBS emulation, including colors, and an efficient scroll back buffer (size is limited by available memory). It uses a Phone List file to hold many Dialing setups. Each setup contains the phone number, port settings, and many other settings. Each dial setup appears in the Dial menu to allow easy connection to all of the services you connect to. It is MultiFinder friendly. It supports 9- and 12-point text and a resizable terminal window.

What you need

ZTerm runs on Mac 512KE or later and System 4.1 or later.

Installation summary

Get ZTerm onto your hard drive using the Installer on Disk 1, as instructed at the beginning of this chapter. When the Installer's finished, a new Mac Secrets folder window will be open and waiting. To use ZTerm, simply double-click its icon.

The manual

ZTerm’s manual comes in the form of a MacWrite document (in the ZTerm folder). If you own MacWrite, double-click the document. If not, launch your word processor; then choose Open from the File menu to import the manual.
Who wrote it

David P. Alverson tells us: “I first started using computers when my brothers built a TVT video terminal in the mid-70s. We used it to call the university computer system. Then we got an IMSAI 8080 with dual eight-inch floppy drives! I wrote a simple educational program in BASIC and had it published in Kilobaud magazine. Just when I was ready to buy a newer CP/M machine, the IBM PC came out and I got one. I programmed and played with it for a few years. Then the Mac came out and I had to get one. I started out programming in BASIC, working on a disk sector editor, a hex resource editor, a disassembler (my brother Bob did most of the disassembler part, I did the resource stuff), and making modifications to MacTEP for my own use. I wrote a program called ReadLisa that could read diskettes from the Lisa computer and print or copy them to a Mac disk. I uploaded this and actually received three payments for it.

“I decided to write ZTerm because I spent a lot of time telecommunicating, but I didn’t really like the software that was available. Also, none at that time supported ZModem, which appeared to be the best thing to be using. Thus began the never-ending journey of ZTerm.”

International users

Registration must be made in U.S. funds. An International Money Order, a check drawn on a U.S. bank, or U.S. currency are all acceptable. At this time, I cannot accept payment by VISA or other credit cards. Also, I have received a few checks with “Not Negotiable” written on them. Please don’t do this. To U.S. banks, this means “Do not honor this check.” You can put “Not Transferable” on them.

Support

GEnie: ZTERM
CompuServe: 72155,1560
America Online: ‘Dave ZTerm’
Internet: davea@xetron.com
AppleLink: ALVERSON.SW

Support is currently available by leaving me a message on GEnie, in the Mac RT Bulletin Board, Category 5, Topic 8. On CompuServe, leave a message in the MacComm forum, section 3 (Term Programs) to 72155,1560. On America Online, leave a message in the ZTerm folder in the Communications & Networking forum. On USENET, I try to read the comp.sys.mac.comm group when I can. Registered users will get my phone number for support.

The latest version of ZTerm will always be available in the Mac RT on GEnie, in CompuServe’s MacComm forum, and the Communications forum on America Online.

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Shareware/Contact info

After using ZTerm for 30 days, you must either register or delete any copies that you have. Registration has the following benefits: support of the development of quality Mac software, use of ZTerm without a guilty conscience, details of future plans, and telephone support.

Registration only is U.S. $30; Registration with disk of current release is U.S. $40. Purchase orders must order the registration with disk (most companies like to receive something before paying the bill). All payments must be made in U.S. funds. If you don’t have the registration form (ZTerm Registration), just send your check, your name, and your address to:

David P. Alverson,
Alverson Software,
5635 Cross Creek Court,
Mason, OH 45040-2448.
A final dialogue

JS: David, do you realize the two of us have been practically chained to our Macs for months, cranking out more than a thousand pages of Macintosh Secrets and undocumented tips...?

DP: It wasn't easy, was it? Those round-the-clock work sessions. The late-night Pork Chow Mein dinners. The gallons of instant coffee...

JS: But you have to admit, it was worth all the agony. Isn't it a kick getting to reveal to the world all this never-before-published dirt about the Mac's System software?

DP: I loved your ResEdit trick about colorizing the Calculator...

JS: What about those step-by-step sessions on recovering the hidden five megs on a hard drive? Great stuff.

DP: And my personal favorite, that part where we told how to replace the About the Finder dialog box with a scanned photo of your mother-in-law.

JS: Hey, now that we've got ourselves a book, what do you say we put this all aside and relax a little...?

DP: Great idea. I know just the thing: we can play a little SuperTetris, maybe break out the SimCity Supreme...

JS: Uh...

DP: In fact, I've got the new Terrain Editor.

JS: Actually, David, I was thinking more of, you know, really relaxing. I mean, actually doing something.

DP: Doing something? Such as...?

JS: Interacting with real human beings.

DP: Gotcha. And you're absolutely right. We've been isolated for weeks...

JS: Exactly.

DP: We'll fire up the old modem and see who's chatting on America Online.

JS: No! David — let me be blunt: my body is beginning to atrophy. Your eyes are bloodshot. We have both lost touch with our friends and loved ones. My wife and daughter barely know me anymore. We need to get out of here. I mean, there's a big, bright, wonderful world out there — a world where the sun shines and birds sing. A world filled with music and sound and color.

DP: Oh, oh, oh! I see what you mean...

JS: You get the idea?

DP: Absolutely. You want to make a QuickTime movie.

JS: No!

DP: But sound and color...

JS: Look, just turn off your Mac.

DP: What?

JS: Turn it off.

DP: Joe —

JS: Let's go outside. We'll play tennis. We'll...throw a Frisbee. We'll work up a sweat.

DP: You mean — like — we'll go outside?

JS: You'll feel like a new man.

DP: You sure about this?

JS: Come on!

DP: Um...should I bring my PowerBook?
A/UX Apple’s version of UNIX. See UNIX.

accelerator An expansion board that speeds up performance by replacing the functions of the CPU or providing accelerated video.

access privileges Rights of a network user to access shared files on another Mac.

access time A measurement of the performance of a hard drive or other storage device. The amount of time it takes to locate a file.

active program The foreground application; the program whose windows are in front.

active window The window in front; the currently selected window.

ADB Acronym for Apple Desktop Bus. This is the socket (on some Macs it’s two sockets) into which you can plug your keyboard, mouse, and other input devices (even some modems).

alert (alert box) A message that appears on the screen, usually to tell you that something has gone wrong.

algorithm The code that describes how a particular function in a program is to be performed; often used to describe the technique compression programs use to reduce the size of a file.

alias An icon, consuming almost no disk space, that serves as a double-clickable pointer or reference to the original file/folder/disk. A feature unique to Macintosh System 7.

alpha testing The first stage, before beta testing, in which early versions of a software or hardware product are evaluated for bugs and performance.

alpha version The early developer version of a software or hardware product.

ANSI Acronym for American National Standards Institute.

antialiasing Smoothing bitmapped images by varying the color or shades of gray at the edges.

Apple Events A part of System 7’s interapplication communications feature. These are instructions one application may give to another; for example, to open or save a document.

Apple menu The menu at the left side of the menu bar. For System 6 users, it’s a repository for desk accessories. For System 7 users, it’s a catch-all launching pad for desk accessories, aliases, programs, documents, or folders (up to 50 items).

AppleShare 1. The extension provided with Apple’s System software to access other Macs across a network. 2. Apple’s networking software.

AppleTalk The trademark for Apple’s communications protocol, which allows one Mac to network with another Mac or a printer.

application Apple’s designation for a program in which you actually do your work, as opposed to support-oriented programs (such as control panels and extensions).

application menu For System 7 users, this menu at the right side of the menu bar displays the icon of the program you’re currently using. Pulling down the menu allows you to select another application (if another is running) or hide specified applications.
**arrow keys** The keys on your keyboard that direct the movement of the cursor.

**arrow pointer** The shape that the cursor assumes when you move it across the screen with your mouse.

**ascender** In typography, the part of a character that extends above the mean line (such as the upper part of letters h or k).

**ASCII** Acronym for American Standard Code for Information Interchange, pronounced asskey. It's a standard that identifies the letters of the alphabet, numbers, and various symbols by code numbers. Often used in the expression ASCII text, designating a plain text file.

**ATM** Acronym for Adobe Type Manager, a program that allows PostScript Type 1 fonts to appear smooth-edged at any size on your Macintosh screen and allows them to print on non-PostScript printers.

**background (in the background)** Part of the Macintosh's multitasking capability. A program in the background continues to run, carrying out a time-consuming task you've specified, while you are working in another program (which is in the foreground — that is, its windows are in front).

**background printing** A feature of Apple System software that allows your computer to process a document for your printer while you continue to do work on the Macintosh.

**backup** A copy of a file or disk that you make for archiving purposes or for safety in case the original is damaged or lost.

**Balloon Help** System 7's method of on-line help. Choose Show Balloons from the Help menu and point at objects on the screen; small help windows appear that explain how to use each object.

**baseline** In typography, the imaginary line on which the letters and numbers in a typeface lie.

**baud rate** An expression of the data transfer speed of a modem; it's usually (and incorrectly) equated with bits per second, such as 2400 baud, 9600 baud, 14,400 baud. See also bps.

**BBS** Acronym for Bulletin Board System. Generally akin to an on-line service (reachable by modem), but often run locally by an individual. You can use it to exchange messages or files with other Mac users.

**benchmark** A number used to compare speed results of different tested devices or systems, or the test itself; a standardized performance rating for hardware or software.

**beta testing** The process of testing software or hardware for bugs and other problems before final release.

**Bézier curves** In drawing programs, lines that are generated by mathematical computation; they consist of four control points to allow for precise manipulation. Used for high-quality, complex graphics.

**binary** A number system used by computers; base two, as opposed to the base ten numerical system that many people use.

**bit** The smallest piece of computer information, derived from binary digit. In computer language, a zero or one.

**bitmap** An image that the computer stores as a specific arrangement of screen dots.

**bitmapped font** A font in which the computer stores each character as a specific arrangement of individual screen dots, used most often for screen display. See Chapter 24.

**bomb** A system crash, or the bomb-shaped signal that appears on the screen to let you know that a crash has occurred.

**boot** To start up a computer.

**bps** Bits per second. The true measurement of a modem's speed. See Chapter 27.

**brightness** The overall color intensity of an image file or of a computer monitor.

**bug** A programming mistake that causes a program to behave in an unexpected way.

**bus** An electronic pathway through which data is transmitted between components on a computer.

**button** On your Macintosh screen, a small rectangle, circle, or oval you click to activate a command or make a selection.

**byte** A piece of computer information made up of eight bits. See also bit.

**cache** A holding or buffer area, generally RAM, in which frequently used data is stored for faster re-access.
CAD  Acronym for Computer-Assisted Design. A program used for drawing architectural or engineering plans, for example.

Caps Lock  A key on the keyboard that, when locked down, displays every typed letter as a capital. See Chapter 9.

card  A small, printed circuit board (such as a NuBus expansion board) that adds some new feature to the Mac.

carpal tunnel syndrome  A painful wrist disorder that may be caused by long or repetitive use of a computer keyboard and mouse.

cartridge drive  A storage device, similar to a hard drive, in which the storage medium is a cartridge that can be removed from the mechanism.

CDEV  In System 6, the acronym for Control Panel DEVice. A control panel.

CD-ROM  Acronym for Compact Disc Read-Only Memory. Derived from the audio compact disc. Stores data files that can be read from your computer, in the same way as data is stored on a hard drive. A typical CD holds 600 megs of information. See Chapter 28.

character  A single letter, number, space, or symbol.

chip  An integrated electronic circuit etched into a piece of silicon. Usually a RAM or ROM device, a chip is made up of thousands of microscopic electronic components.

Chooser  A desk accessory used to select a printer or other external device or to log onto a network.

Chooser extension  A device driver, usually for a printer or fax modem, whose icon appears in the Chooser.

click  The basic selection technique on the Macintosh, involving one press-and-release of the mouse button.

clip art  A collection of prepackaged drawings that can be pasted or imported into a document.

Clipboard  A portion of memory where the Mac stores information cut or copied from a document (for the purpose of pasting it elsewhere).

clock rate  The speed of a computer's computations, usually measured in megahertz (MHz). See Chapter 11.

close box  The little square at the upper left-hand corner of a window, which closes the window when clicked.

code  Generally refers to the actual programmer-written instructions in a computer program.

Color Picker  The special Macintosh dialog box that shows a circular palette of colors, from which you can select one (for your desktop shading or for painting in a graphics program, for example).

color separation  A color printing process. The colors used in a document are divided into four parts, each of which is printed separately. When the four plates are merged in the printing process, a full-color document is the result.

command  The act of giving an instruction to your Mac, either by menu choice or by keystroke.

Command key  The key on your keyboard that has the $\text{H}$ symbol on it. A modifier key, the Command key is used with another keystroke to activate some function on your Macintosh.

commercial software  A software product sold through mail order or computer stores by for-profit corporations. See also shareware.

compact Mac  The traditional desktop Macintosh design, in which the CPU and monitor are integrated into a single cabinet.

compiler  A program that converts programming code into a form that can be used by your Mac.

compression  A technique that reduces the size of a file by eliminating or encoding redundancies. See Chapter 22.

contrast  In image editing, the range between the lightest and darkest areas of an image file.

Control key  A seldom-used modifier key on the Macintosh.

control panel  A program, often with a single window, that allows you to change specific settings in a program or in the way your Mac looks and behaves.

coprocessor  See Math coprocessor.

copy protection  An encoding scheme for software that prevents its duplication. A copy-protected program usually won't run until its original floppy disk is inserted into the disk drive.
CPU  Acronym for Central Processing Unit. 1. The Motorola chip that is the brain of the Mac which funnels data to and from the rest of the computer's logic board. 2. The box portion of a Mac (as distinguished from the monitor).

crush  A system malfunction in which the computer stops working and requires restarting.

CRT  Acronym for Cathode Ray Tube, the picture tube in a monitor. See Chapter 10.

cursor  The pointer, usually arrow- or cross-shaped, the movement of which is controlled by the mouse.

DA  Acronym for Desk Accessory.

daisy chaining  The act of stringing together add-on appliances (such as SCSI devices) by plugging one into the next.

DAL  Acronym for Database Access Language, a method by which the Mac can access data from a mainframe computer.

data  The information processed by a computer.

database  An electronic list of information, such as a mailing list, that can be quickly sorted or searched for a specific item.

daughterboard  A small printed circuit board that attaches to a larger or main board (motherboard).

debug  To look for and eliminate bugs in software or hardware.

default  The original or proposed "factory settings" of your software or hardware.

defragment  To concatenate data that has been broken into pieces into contiguous chunks on the hard drive or in memory for space considerations. See Chapters 7 and 8.

descender  In typography, the part of a character that extends below the baseline, such as the bottom portion of the letters g, p, or y.

desktop  1. The Finder. 2. The actual colored or shaded backdrop of the screen.

Desktop file  The invisible file in which the Finder stores a database of information about files and icons. See Chapter 1.

desktop publishing  The process of designing printed documents electronically.

deselect  To make a highlighted (selected) item return to its pre-selected condition. Said of text, graphics, checkboxes, or other on-screen items.

dialog or dialog box  An on-screen message box that appears when the Mac requires additional information before completing a command.

DIP switch  An assembly containing tiny switches. When flipped into a specific order of up and down positions, these switches change a setting on a piece of equipment (for example, a SCSI address).

digitize  To convert linear, or analog, data into digital data that can be processed by a computer. Scanning and sound recording are two examples.

digitizing board  A circuit board that converts video or TV pictures into files on your Mac.

disk  A spinning platter, made of magnetic or optically etched material, on which data can be permanently stored, such as a floppy disk or hard drive.

disk cache  A portion of RAM in which frequently accessed data from the disk can be stored for faster subsequent access. A speed enhancement. See Chapter 8.

disk drive  The machinery that reads what's on a disk, or the slot for a floppy disk.

disk window  The window that displays the directory or contents of a disk.

document  The file that you create (database, illustration, spreadsheet, or text file, for example), as distinguished from the application program that creates it.

documentation  The manual.

dogcow  The unofficial Apple mascot, as pictured in the Print or Print Options dialog box.

DOS  Acronym for Disk Operating System; the operating system used in IBM PCs and compatibles.

dot-matrix printer  An impact printer, such as the ImageWriter, that produces an image by striking pins against a ribbon. See Chapter 25.

dots per inch  A gauge of visual clarity, both on printouts and on the screen. The Mac's screen became famous for having a high resolution — 72 dots per inch, or 72 dpi. A typical laser printer is much sharper, capable of printing at 300 dpi.
**double-click** Pressing the mouse button twice quickly without moving the mouse. Generally used to open an icon or select a single word.

**download** To transfer a file from one computer to another over the phone wires via modem. If you're on the receiving end, you download the file. If you're on the sending end, you upload the file.

**downloadable font** An outline font, either PostScript or TrueType, that is transferred to the printer before a document can be printed. See Chapter 24.

**dpi** Acronym for dots per inch. See also dots per inch.

**drag** To move the mouse while its button is being pressed.

**DRAM** Acronym for Dynamic Random-Access Memory, another name for the memory chips used in the Macintosh.

**drawing program** An object-oriented graphics program that creates individually selectable circles, squares, and lines. See also painting program and bitmap. See Chapter 20.

**driver** A file on your disk that tells the Mac how to communicate with, control, and run a specific piece of add-on equipment (such as a storage device, a printer, or a scanner).

**Easy Access** A program provided with the Mac's System software that permits keyboard control of typical mouse actions.

**eight-bit color** Describes a color or gray-scale image or monitor setting, in which no more than 256 different colors or shades may appear on-screen simultaneously.

**ELF** Extremely Low Frequency radiation; energy between 60Hz and 75Hz generated by computer monitors and other appliances that create magnetic fields; accused by some of posing a health hazard.

**e-mail** Electronic mail. Messages are read and/or written on-screen and sent across a network or through a modem.

**em dash** A long dash that is as wide as an em space; usually represented by two hyphens on a typewriter.

**em space** In typography, a space that matches the width of the capital M, usually the widest character in a typeface. The width of this character is generally as wide as the point size.

**en dash** A dash the same size as an en space, which usually signifies a range, as in 1945 – 1993; also used as a minus sign. See Chapter 22.

**en space** In typography, a space that is half the width of the letter M, such as a lowercase n. Sometimes refers to the width of a numeric character.

**EPS** Acronym for Encapsulated PostScript, an image file format. Contains two parts: invisible PostScript information for printing at a printer's maximum resolution and a PICT file for displaying a 72 dpi representation on the Mac's screen.

**Ethernet** A protocol for fast file transfer across a network. Generally requires the installation of NuBus expansion cards (except on high-end Mac models that include built-in Ethernet capability). See Chapter 31.

**EtherTalk** The network language used to transfer data between Ethernet-equipped devices.

**expansion slot** A connector inside your Macintosh into which you can plug a printed circuit board that provides new or enhanced functions for your computer, such as network communications, video display, SCSI acceleration, and so on.

**extended keyboard** An enhanced, 101-key keyboard that provides numeric and function keys; closely resembles keyboards of the standard enlarged DOS or AT-style keyboard.

**extension** A startup program installed into the System folder that enhances the functions of a Mac. Examples are screen savers, virus protectors, and type enhancements. See Chapter 3.

**fax/modem** A modem that includes the capability to send and receive a fax. See also modem. See Chapter 27.

**field** Computerese for blank, like a blank on a tax form.

**file** The generic word for an application, document, control panel, or other Macintosh data. See also program; control panel; extension; application; document.
file compression  See compression.

file server  A hardware or software mechanism that makes files centrally available for other Macs on a network.

File Sharing  A built-in feature of System 7, wherein any file, folder, or disk can be made available to other Macs across a network.

Finder  The cornerstone, home-base application of the Macintosh environment. The Finder regulates basic file-management functions of your Mac (copying, renaming, deleting) and serves as the principal launching pad for files.

fKey  A keystroke combination of 38-Shift and a number key that initiates an automated function, such as taking a screenshot.

flat-file database  A shopping list, mailing list, or phone book; a simple collection of information. Contrast with relational database.

floppy disk  The 3½-inch square, rigid object that contains magnetic media used to store data. (So named for the 5½-inch and 8-inch, truly flexible disks used by earlier computers.)

floppy disk drive  A mechanism used to read and write to floppy disks.

folder  In the Mac world, an electronic sub-directory, represented by a filing folder icon, which contains files and is used for organizational purposes. A double-clicked folder icon opens a window and reveals its contents.

font  A typeface; a file that contains the characters in an alphabet, numbers, or additional letterforms in a particular style. See Chapter 24.

Font/DA Mover  A program used to load fonts and desk accessories into the System file in versions before System 7.

footer  Text that appears at the bottom of each page of a document, such as a page number or date information.

footprint  The surface area of a table or desk occupied by a piece of equipment.

fragmentation  The breaking up of a file into many separate locations in memory or on disk for space considerations.

freeze  A system error in which the cursor locks in place on the screen and the Mac no longer responds.

function key  A key on the top row of a standard extended keyboard (F1, F2, and so on). Contrast with fKey. See Chapter 9.

Get Info  A Finder File menu command that presents an information window for a selected file icon.

gig  Short for gigabyte.

gigabyte  Equal to 1024 megabytes, a very large amount of space or memory (pronounced with a hard g).

gradient  A color effect in which the shade gradually changes as it proceeds across the image.

gray scale  An image or monitor in which the picture is composed solely of shades of gray.

grow box  Slang for resize box. See also resize box.

guest  In Macintosh networking, an unregistered user. See Chapter 31.

halftone  An image composed of variously sized black and white dots; used by black-and-white printers to represent continuous-tone color or gray-scale on-screen images.

handshake  A message, exchanged by modems or other communicating devices, that confirms that a connection has been made or that data has been received. See Chapter 27.

hang  Slang for a freeze.

hanging indent  In word processing and page layout, a paragraph in which the first line extends to the left of the rest of the paragraph body.

hard copy  A printout.

hard disk  A hard drive.

hard drive  A large-capacity data storage device made of multiple, spinning platters driven by motors and sealed inside a case.

hard space  In word processing and page layout, a space between two words that is not broken across a line break. (Created by pressing Option while typing a space.)

hardware  Computer equipment. Contrast with software.

head crash  The dangerous and extremely rare occurrence of a hard drive's read/write heads physically touching the surface of the spinning platter (when the drive is severely jarred, for example), often resulting in damage to data and drive.
header 1. Text that appears at the top of every page of a document. 2. The data written at the beginning of a file, such as a PostScript file, that identifies its type and contents to the computer.

Help menu The menu at the right of System 7's menu bar, symbolized by a question mark. Contains the Show Balloons command to turn Balloon Help off and on.

Hertz A single cycle or occurrence (abbreviated Hz).

HFS Acronym for Hierarchical Filing System; the current Macintosh disk-formatting scheme, whereby folders are nested in other folders.

high-density disk The 1.4MB floppy disk used in the Mac's Super Drive. See Chapter 7.

highlight To select, usually by clicking or dragging with the mouse. In the Mac world, text and icons usually indicate that they are selected, or highlighted, by turning black (or a highlighting color you've chosen).

hinting Subtle programming code in a TrueType or PostScript typeface designed to enhance its clarity on low-resolution printers, especially at smaller point sizes. See Chapter 24.

hot spot The single pixel of a pointer that serves as its clicking point for selecting an icon or button.

HyperCard A software construction kit program, once included free with every Macintosh. It represents a simply scripted programming language that can be used to create a customized Rolodex or on-screen presentation maker. See Chapter 23.

I-beam The cursor shape (I) that appears when editing text.

icon A cornerstone of the Mac's interface; a graphic symbol for a file, a folder, or a disk.

imagesetter A high-resolution PostScript or PostScript-compatible printer, usually rated at 1200 dpi or better, that outputs onto film or to paper-based photographic media.


incremental backup Making a backup copy only of those files that have changed since the previous backup.

INIT System 6's designation for a startup program that provides enhancements or changes to the way your Mac runs. See also extensions. See Chapter 3.

initialize To format a floppy disk and prepare it for use on your computer, or to replace the old directory file building with a new one on a hard drive or other storage device.

inkjet printer A printer that uses a reservoir of ink, usually a cartridge, and creates images on paper by spraying small jets of ink onto the page. See Chapter 25.

insertion point In word processing, the blinking, short, vertical line that's always somewhere in your text. It indicates where your next typing (or backspacing) will begin.

installer Software used to install a program onto a Macintosh hard drive.

interface The way a program interacts with the user.

interrupt button The button on the Mac programmer's switch assembly; a tool used by programmers that allows the Mac to enter a debugging mode. See Chapter 6.

invisible files Files designed not to appear on the Macintosh desktop, usually the desktop files or preference files created by a specific program. See Chapter 1.

jaggies Ragged or stair-step edges on type or graphics, appearing either on the Mac's screen or when printed.

K Short for kilobyte.

kerning The act of removing space between two letters so that one slightly invades the other's space, to produce more compact, readable type, especially in headlines. See Chapter 24.

keyboard shortcut A combination of keys, usually including a modifier key such as &, Option, Shift, or Control, that when pressed activate some function in a program normally accomplished by choosing a command from a menu.

kilobyte 1024 bytes of computer information (for example, 1024 typed characters).
label  A System 7 text or color tag, used to identify icons by category. See Chapter 2.
Label menu  The Finder menu that applies label settings to selected icons. See Chapter 2.
LAN  See local area network.
landscape  The sideways orientation of a piece of paper.
laptop  A portable computer small enough to be used in one's lap.
laser printer  A printer incorporating a laser engine that can provide high-quality text and graphics. The output is generated with toner powder, very much like a conventional copying machine. See Chapter 25.
LaserWriter  Apple's line of laser printers.
launch  The process of opening a program (usually by double-clicking its icon).
LCD  Acronym for Liquid Crystal Display. A technology used in flat computer screens, such as those used in Macintosh PowerBooks and digital watches. See Chapter 10.
leader  In typography, a repeated fill character (such as a period or underline character) used to separate items in subsequent columns of a table.
leading  Pronounced leding. A term from the world of traditional typography that refers to the distance from the baseline of one line of type to the baseline of the next. See Chapter 24.
ligature  In typography, a single character that is a composite of two separate characters; for example, the ꝑ in the word fish and the ꝑ in the word flounder.
line spacing  Same as leading.
lines per inch  The measurement unit for the resolution of a halftone.
local area network  A group of computers, printers, and other devices plugged into each other so that they can exchange information. Acronym is LAN. See Chapter 31.
LocalTalk  Apple's name for the wires and connectors used to link Macs together into a local area network. See Chapter 31.
logic board  The main printed circuit board on a Mac.
macro  A series of steps, such as opening and printing a document, that is stored and played back by specialized macro software and triggered by a single keystroke. See Chapter 22.
MacroMaker  A macro program that once came with each System 6 Mac. Does not work with System 7.
mail merge  The production of form letters whereby the names on a mailing list are seamlessly merged into a text document.
marquee  A dotted, rectangular outline used to indicate the selection of a region of graphics in a Macintosh program.
math coprocessor  A chip that works with the Macintosh to handle math-intensive processing. See Chapter 11.
MB  Short for megabyte.
media  In computer parlance, the actual material inside a disk or cartridge that stores data.
megabyte  A unit used to measure the capacity of hard disks and other large storage devices. One megabyte equals 1024K. See also kilobyte.
memory  The temporary, electronic holding area for computer data where a document is stored while it's being edited. See Chapter 8.
menu  A list of program commands, organized by topic, that drops down from the top of the Mac screen when the menu's name is clicked.
menu bar  The white horizontal strip that's always at the top of the Mac screen, containing menu titles.
MFS  Acronym for Macintosh Filing System. The original scheme for Mac file organization on a disk, in which files and folders occupy a single level on the desktop.
modem  A device used to translate computer data into telephone signals. Derived from modulator/demodulator. See Chapter 27.
modifier keys  Keys that give letter keys alternate functions: Shift, ⌘ (Command), Option, Control, and Caps Lock.
monitor  A computer screen.
monochrome  A black-and-white or gray-scale monitor. See Chapter 10.
monospaced font In typography, a typeface in which every character has the same width, like the characters on a conventional typewriter. For example, Courier is a monospaced font. See Chapter 24.

motherboard See logic board.

mount To make a disk or cartridge's icon appear on the Mac desktop so that its contents may be viewed or opened.

mouse The handheld box that, when rolled on a flat surface, controls the movement of the cursor.

mouse button The square plastic button in the middle of the mouse.

mouse pad A piece of plastic or foam rubber that protects the mouse and desk from each other and gives good traction to the mouse.

MultiFinder The application, a component of System 6, that permits two or more applications to be open at the same time (or permits the Mac to perform two or more tasks at a time). See Chapter 16.

multimedia The merger of various forms of graphics, sound, text, and video into a single, often audience-driven, presentation.

multitasking Running more than one application (or performing more than one task) simultaneously on a computer. See Chapter 16.

nanosecond The measure of the speed of a chip: a billionth of a second.

native mode Using a computer's original operating system, as opposed to emulating another operating system. For example, a PowerPC may emulate a 80x0-based Macintosh, or it may run in the faster native mode.

network The connection of two or more computers and peripherals together for the purpose of exchanging information; for example, a local area network. See Chapter 31.

Newton The code name for a new generation of handheld personal information-management devices that are produced by Apple and others.

NuBus The expansion slot interface used on the Mac into which intelligent, self-configuring expansion boards may be installed. See Chapter 30.

NumLock A keyboard mode in certain programs in which the Mac's extended keyboard produces numbers rather than commands; also, the key that turns this mode on and off.

object-oriented 1. A kind of graphics created by a drawing program in which each object drawn remains a distinct, editable object (used to distinguish this kind of graphic from bitmapped graphics). 2. A programming technique in which an object (a section of computer instructions) is plugged directly into a program instead of being simply referenced by the program.

OCR Acronym for Optical Character Recognition, a technology in which the text of a document is scanned and converted into editable, word processor text. See Chapter 26.

OEM Acronym for Original Equipment Manufacturer: the company that manufactures equipment that is subsequently packaged and sold by other companies.

on-line Connected; for example, to a network, online service, or BBS.

on-line service A large, commercial electronic bulletin board that is accessible by modem, such as America Online, CompuServe, GEnie, and so on.

operating system On a Macintosh or any other computer, the software that controls the computer itself (for example, System 6 and System 7).

optical disk A high-capacity storage medium read by laser that comes in the form of a disk or cartridge. See Chapter 7.

orphan In page design, a stray line of type at the top of a column or a page, or the last line of a preceding paragraph. Definitions vary; see Chapter 18.

outline font A PostScript or TrueType font that can be scaled to any size and always prints at the maximum resolution of the printer. Contrast with screen font or bitmapped font. See Chapter 24.

painting program A bitmapped graphics program. See Chapter 20.

palette A small, floating window that contains a selection of colors, tool icons, or other frequently accessed program options.
parameter RAM  A tiny battery-operated memory bank that stores as the Mac's clock, desktop pattern, mouse tracking speed, sound level, and other settings. See Chapters 6 and 32.

partition  A subdivision of a hard drive's surface, such that the computer treats each partition as a separate hard drive with a separate icon on the Macintosh desktop. See Chapter 7.

paste  To insert data into a document that has been copied from another document or a different part of the same document.

pasteboard  In publishing software, a blank area surrounding the image of the page where graphic or text objects can be temporarily stored; the computerized representation of the pasteup area used by a mechanical artist.

patch  A small modification to an existing program, usually designed to fix a bug or provide a new feature.

PC  Acronym for personal computer. Ordinarily refers to IBM or IBM-clone computers, but the Macintosh fits into this broad category as well.

PDS  Acronym for Processor-Direct Slot, an expansion slot connected directly to the motherboard of your Mac. See Chapter 30.

peripheral  An add-on component for your computer, such as an expansion board, an external hard drive, a CD ROM, a printer, or a scanner.

PhoneNet  An inexpensive networking connector that employs modular plugs and jacks much like those found on telephones. See Chapter 29.

decimal  In typography, a measurement of size or space; in desktop publishing, equal to \( \frac{1}{72} \) inch. 12 points = 1 pica. (In traditional typography, there are 72.27 points to the inch.)

pop-up menu  Any menu that doesn't appear at the top of the screen. Usually marked by a down-pointing black triangle. Doesn't actually pop up; usually drops down.

port  A connection socket or jack on your Macintosh.

portrait  A right-side-up piece of paper; the opposite of landscape.

PostScript  The name of a mathematical language that describes the characteristics of the printed page. PostScript was developed and is licensed by Adobe Systems. See Chapter 25.


PowerPC  The microprocessing chip (CPU), designed by Apple, Motorola, and IBM, at the heart of the Power Macintosh models (and competing models from IBM and others). A RISC-based (and therefore fast) chip.

Power Macintosh  A family of Mac models built around the PowerPC processing chip, requiring rewritten "native mode" software for maximum speed. See Chapters 11 and 13.

PowerBook  A laptop Macintosh. See Chapter 12.

power supply  A set of electronic components that regulate the power used by a Macintosh or peripheral.

PRAM  See parameter RAM.

printer font  The abbreviated-name file that serves as the printer's half of a PostScript font (the other half is the screen font). Must be in your System folder, and one printer font is required for each style (bold, italic, and so on). See Chapter 24.

PrintMonitor  The application that provides background printing on a Macintosh; used to monitor the progress of a printout. See Chapter 25.

print spooler  A program that stores documents to be printed on the hard drive; prints in the background and monitors progress of the printing. Example: PrintMonitor. See Chapter 25.
**processor** The chip that does the actual computing work in the Mac.

**program** A piece of software written by a programmer that permits the computer to perform a specific task.

**programmer** Someone who writes a program; sometimes referred to as a software engineer.

**programmer's switch** Actually two switches (found on many Macintosh models). The reset half restarts the computer. The interrupt switch is used by programmers to enter the debugger.

**proportional font** In typography, a typeface in which each character has a different width (contrast with monospaced font).

**public domain** Software for which the programmer has given up all rights of ownership.

**Publish and Subscribe** System 7's live copy and paste feature, wherein an update made to the original file is automatically reflected in the copies of it. See Chapter 16.

**QuickDraw** The core set of built-in graphics drawing programs on the Macintosh.

**QuickDraw GX** The underlying software, introduced in System 7.5, that enhances the Macintosh printing, font, color-handling, and typography features. In many cases, requires updated software. See Chapter 25.

**QuickTime** The Apple system extension that gives programmers the tools for compressing, playing, and editing animation, movies, and sound on the Macintosh. See Chapter 23.

**quit** To exit or close a program.

**radio button** A small, round on-screen button, always found in a set of two or more, used to offer a mutually exclusive set of options (in a dialog box, for example).

**RAM** Acronym for Random-Access Memory. The memory chips that hold data when a Mac or peripheral is running. See Chapter 8.

**RAM cache** A portion of RAM in which frequently accessed data from the disk can be stored for faster subsequent access. A System 6 speed enhancement. (In System 7, known as disk cache.) See Chapter 8.

**RAM disk** A portion of RAM set aside to emulate a very fast hard drive. See Chapters 8 and 12.

**ReadMe** A text file document often supplied with a software or hardware product that explains changes, bugs, and incompatibilities discovered too late to include in the manuals.

**read/write head** The sensor assembly on a hard drive (or other storage device) that actually stores and retrieves information from the disk surface.

**reboot** See restart.

**rebuilding the Desktop** The process of updating the invisible Desktop files. See Chapter 1.

**record** In database terminology, one *card* in a database, such as one person's address information. Contrast with *field*, which is one *blank* (like the ZIP code) within a record.

**redraw** To refresh or update the image on the Mac's screen.

**relational database** A complex information list where each list of information (such as a mailing list) is interconnected to information on another list.

**remote access** The technology for connecting to a networked or shared computer from a remote location by modem. See Chapter 31.

**removable cartridge** A self-contained form of storage media, something like a floppy/hard drive hybrid (for example, SyQuest and Bernoulli). See Chapter 7.

**ResEdit** Apple's own resource-editing program, used to customize various parts of a specific program. See Chapter 21.

**reset switch** Half of the programmer's switch found on most Mac models. When pressed it restarts the Mac. See Chapter 6.

**resident font** A font built into a printer. See Chapter 24.

**resize box** The small square at the lower-right corner of a window that, when dragged, changes the size and shape of the window.

**resolution** A number, measured in dots per inch, that indicates how crisply a printer or a monitor can display an image.

**resource** The portion of a file that usually contains the programming information.

**restart switch** The reset switch.
RGB  Acronym for Red, Green, Blue: the three colors from which a full-color image is created on your Mac's color monitor.

RISC  Acronym for Reduced Instruction Set Computing. Describes the new generation of CPU chips at the heart of Apple's second-generation computers, the PowerPC, which use a smaller set of commands. See Chapter 11.

ROM  Acronym for Read-Only Memory. A memory chip on which data is permanently imprinted. In a Macintosh, the ROM contains the basic toolbox routines that provide the Mac's unique graphic environment.

root directory  The main hard-drive window.

router  A device that can connect several different networks, intelligently choosing the most efficient route for a network data packet from one address to another. See Chapter 31.

sans serif  A font, like Helvetica or Geneva, lacking small "ledges" (serifs) at the tips of each letter. See Chapter 24.

save  To write a file onto a disk.

scanner  A machine that optically reads an image, whether two or three-dimensional, and converts it into digital form on the Mac, where it can be displayed and edited. See Chapter 26.

Scrapbook  A desk accessory in the Apple menu used for permanent storage of graphics, text, and sounds. See Chapter 3.

screen font  Another name for bitmapped font. See Chapter 24.

screen saver  A program that darkens the screen after several minutes of inactivity. Designed to protect an unchanging image from burning into the screen, but frequently used for entertainment value. See Chapter 22.

screen shot  A digital picture (usually a PICT graphics file) of all or part of the image on the Mac's screen.

script  A user-made routine for automating a set of tasks on the Mac.

scroll  To shift the contents of a window to bring hidden elements into view.

scroll bar  The rectangular bar at the right and at the bottom of a window that permits scrolling when the window contains more information than can fit inside of it.

scroll box  The box within the scroll bar that is used to navigate through a window. You can get a rough idea of where you are in a window by looking at the position of the scroll box.

SCSI  Acronym for Small Computer System Interface (usually pronounced scuzzy). The port, cable, and technology that allows hard drives, CD ROMs, scanners, tape drives, and other peripherals to be attached to the Macintosh. See Chapter 29.

SCSI address  The ID number of a SCSI device; a unique number between 0 and 7. See also SCSI device. See Chapter 29.

SCSI cable  A fat cable with a 25- or 50-pin connector at each end. Used to join SCSI devices to each other. See Chapter 29.

SCSI device  A scanner, CD-ROM drive, external hard drive, removable-cartridge drive, or other piece of equipment that attaches to the wide SCSI port in the back of a Mac. See also Chapter 29.

SCSI port  The wide 25-pin connector in the back of a Mac.

SCSI terminator  A resistor plug which must be placed at each end of a chain of SCSI devices to complete the circuit.

serial port  The modem and printer jacks at the rear of the Mac. (Serial refers to transmitting pieces of data in order, one after another, rather than parallel.)

serif  A font that has small ledges at the tip of each letter. For example, Times. See Chapter 24.

server  A central Macintosh on a network dedicated to sending and receiving files for client Macs.

shareware  Software that's distributed for free via electronic bulletin board or on floppy disk from user groups. The programmer requests that you send a payment to him or her if you decide to continue using the program. See Chapter 33.

Shut Down  The command in the Special menu that turns off the Mac.

SIG  Acronym for special interest group (such as a special topic area of a user group or on-line service).

SIMM  Acronym for Single Inline Memory Module, a memory chip. Small, printed circuit board on which RAM (Random-Access Memory) chips are placed. See Chapter 8.
**SimpleText**  An enhanced version of TeachText, Apple’s small, no-frills text processor. SimpleText adds font and style selection and lets you open more than one document at a time. Included with all system software since late 1993.

**sleep**  A command — and a condition — of PowerBooks or the Mac Portable. A standby mode in which data remains in RAM, but most other systems are off or working at reduced capacity. A single keystroke restores the computer to full operation. Used to conserve battery power. See Chapter 12.

**slot**  See expansion slot.

**software**  Files on disk that contain computer instructions.

**software engineer**  A programmer.

**spooler**  See background printing.

**spreadsheet**  A program designed to resemble an electronic ledger book, which adds up columns of numbers automatically. See Chapter 19.

**stack**  A document created by the HyperCard program.

**startup disk**  A floppy or hard disk that contains a System folder. The startup disk is the one designated to be in control in the event there’s more than one to choose from. The startup disk Control Panel is used to specify the startup disk. See Chapter 6.

**stationery pad**  A System 7 feature: click a document icon, choose Get Info from the File menu, and select Stationery Pad. From now on, when you double-click that icon, it doesn’t open; instead, an exact copy of it opens.

**StyleWriter**  A low-cost, high-quality, slow-speed Apple inkjet printer.

**submenu**  A hierarchical menu item; a mini-menu that pops out, usually to the right of a main menu command, offering several variants of the command.

**SuperDrive**  The kind of floppy disk drive found on every Macintosh except the Plus and early Mac IIs and SEs. Called Super because it can read high-density (1.4MB) floppy disks instead of the un-super 800K disks and because it can, with add-on software, read IBM-format disks.

**surge suppressor**  A power strip that includes a circuit to reduce the effects of sudden surges of electricity.

**SYLK**  Microsoft’s file format for transferring data between databases and spreadsheets.

**sysop**  Usually the head of a BBS; on an on-line service, the head of a particular forum area. From system operator.

**System 6**  A version of Macintosh System software. Requires 1MB of memory, or less.

**System 7**  The current version of Macintosh System software, providing many enhancements over previous System software versions. Runs, just barely, with 2MB of memory; 4MB is recommended. (Refers to 7.0, 7.1, 7.5, and so on.)

**System crash**  An internal computer error that’s serious enough to prevent you from continuing to work. Sometimes accompanied by a message box on the screen that reads: “Sorry, a System error has occurred.”

**System disk**  See startup disk.

**System file**  A file in the System folder containing the instructions that allow your Mac to run; also stores such necessary resources as keyboard layouts, sounds, and (in versions prior to System 7.1) bitmap and TrueType fonts.

**System folder**  The all-important folder that the Mac requires in order to run. Contains, at minimum, a System file and a Finder. Usually also contains fonts, desk accessories, printer fonts, and so on.

**System software**  Generic term for the contents of the System folder.

**tab-delimited file**  Usually a text file exported from a spreadsheet or database in which entries, field contents, or words are separated by tab characters.

**TeachText**  The rudimentary text-editing program provided with Apple System software.

**telecommunication**  Communicating with other computers over the phone lines. Requires a modem.

**template**  Another description for a stationery file that’s used to supply the basic formatting for a document.
terminator  See SCSI terminator.

third party  The usual reference for a non-Apple firm that produces software and hardware for the Macintosh.

32-bit addressing  A feature that permits the Macintosh to recognize and use more than 8MB of installed memory. See Chapter 8.

TIFF  Acronym for Tag Image File Format, a graphics file format used for scanned drawings and photographs. See Chapter 20.

title bar  The strip at the top of a window where the window’s name appears. Shows thin horizontal stripes if the window is active (in front of all the others).

toner  The fine powder that serves as the “ink” for a laser printer.

trackball  A mouse substitute; something like an upside-down mouse, in which you move the ball rather than the object surrounding it.

tracking  In typography, overall letter spacing. See Chapter 24.

TrueType  A scalable font format from Apple and Microsoft that provides clear screen display and printing of type at any point size, and at the maximum resolution available to the printer. See Chapter 24.

24-bit color  A color or gray-scale image or monitor that can be produced from a palette of millions of colors. See Chapter 10.

Type 1  The standard PostScript font format that includes hinting capability. See Chapter 24.

Type 3  A secondary, unhinted PostScript font format. Often used for logos because it’s capable of generating complex graphic shapes, including shades of gray. See Chapter 24.

UNIX  A command-line operating system that is used mostly in workstation-class computers but is available on a Macintosh in several forms, including A/UX.

upload  To send a file across a network or a modem.

user group  A local computer club that usually meets once a month and acts as a local source of information.

vaporware  Software that is announced, discussed, or promoted but not yet (or never) released.

video board  A circuit board used in conjunction with a monitor to provide basic video display or graphics acceleration.

virtual memory  A System 7 feature that sets aside space on a hard drive to simulate RAM. See Chapter 8.

virus  A self-duplicating computer program designed (by some antisocial programmer) to gum up the works of the Mac. See Chapter 22.

volume  A disk, cartridge, or shared folder.

VRAM  Acronym for Video RAM. Memory chips used to process the Mac’s video display.

WAN  Acronym for wide area network: a very large network, comprising machines located in different buildings or even different geographical locations.

wide area network  See WAN.

widow  A very short last line of a paragraph (but definitions vary). See Chapter 18.

window  A square view of Mac information; in the Finder, a window is a table of contents for a folder or a disk. In a program, a window displays your document.

word wrap  A word processor’s capability to place a word on the next line as soon as a line becomes full.

WORM  Acronym for Write Once-Read Many, an optical disk onto which data may be recorded exactly once and not erased.

WYSIWYG  Acronym for What You See Is What You Get, the principle that the screen representation of a document matches the printout.

zone  A single area or location in a network.

zoom box  The small square in the upper right-hand corner of a window (in the title bar) that makes the window jump to full size when it is clicked.
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Installation Instructions for the SECRETS Software

Attention: Before installing any of the programs from the disks, read the IDG Books License Agreement contained in this book.

We've provided program-by-program instructions for installing the SECRETS software in Chapter 33.

If you're in a hurry, here's a summary.

Before we begin, please note: the SECRETS software comes on high-density disks. If you have an old-style 800K disk drive, call IDG Books at 800-434-3422, and we'll send you a replacement set of 800K disks at no charge.

Step 1: Install onto Your Hard Drive

Getting a program from our disks is simple.

- Insert SECRETS Disk 1. Its window opens on your screen.
- Double-click the SECRETS Installer.
- Select the checkboxes of the programs you want. For descriptions, click the I button next to each one. If necessary, use the Switch Disk button to select which hard drive you want to receive the software. (If you only have one hard drive, no such button appears.)
- Click Install.

You may be asked to insert other disks. When it's all over, you'll find a new folder on your hard drive called Mac SECRETS Software — and inside are the programs you selected.

Step 2: Install and Use the Software

The Installer doesn't go all the way with the installation. For example, it doesn't put control panels into your Control Panels folder; instead, it places each control panel, together with its Read Me and other support files, into a folder on your hard drive.

To find out how to install a program the rest of the way, read its description in Chapter 33.
### Disk Contents at a Glance

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<th>A shareware RAM disk application. A RAM disk is made of memory, but the disk appears on your desktop just like any other hard disk — but 10 times faster.</th>
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<td>AppIcon</td>
<td>A graceful, beautifully designed, tile-based application-switcher for System 7.</td>
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<td>AreaCodeFinder</td>
<td>A fast, elegant application. Lets you find out the area code for a certain city — or vice versa. It has over 2400 American cities listed, and you can add your own. Even shows a U.S. map with time zones.</td>
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<td>Before Dark</td>
<td>Getting a little tired of that boring gray desktop pattern? Before Dark fills your desktop with one of dozens of stunning full-color textures or patterns. Our collection includes a special selection of photographic backdrops from Pixar Corp.</td>
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<td>Bitstream Fonts</td>
<td>A pair of TrueType font families from Bitstream’s vast library of typefaces.</td>
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<td>Color Coordinator</td>
<td>This control panel lets you switch your screen’s Monitors color setting simply by pressing a key — or automatically by application. From Casady &amp; Greene.</td>
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<td>Color It!</td>
<td>A powerful 24-bit painting and retouching program, along the lines of the Photoshop, but quicker to load, simpler to learn, and requiring half as much memory. Commercial software from MicroFrontier.</td>
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<td>CP DriveLight</td>
<td>Displays a handy menu bar icon of your choice that tells you when the hard drive is active. From Mac Tools Deluxe (Central Point Software).</td>
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<td>CP Undelete</td>
<td>This program, part of Mac Tools Deluxe 2.0, can recover recently deleted files, even after you empty the Trash. Commercial software from Central Point.</td>
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<td>Disinfectant</td>
<td>A freeware application and extension — one of the very best antivirus programs available for the Macintosh.</td>
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<td>DiskTop</td>
<td>The powerhouse file-management desk accessory from PrairieSoft. The Finder in a DA.</td>
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<td>Description</td>
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<td>Extensions Manager</td>
<td>This extension lets you press the Space bar as the Mac is starting up. A list shows all of your extensions and control panels, so you can control their loading. Part of System 7.5.</td>
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<td>Flash-It</td>
<td>A shareware screen-capture utility; sends a screen snapshot to the Clipboard, Scrapbook, file, or printer.</td>
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<td>Several saucy, sassy sound files from the award-winning Kaboom! collection of sound effects. From Nova Development.</td>
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<td>Each time you turn on your Mac, the Label menu displays a different Macintosh Secret from this book. Exclusive with this book!</td>
</tr>
<tr>
<td>MacMan Pro</td>
<td>A great arcade game, loosely based on the original Pacman.</td>
</tr>
<tr>
<td>MenuChoice</td>
<td>A System 7 shareware control panel that enables hierarchical menus under the Apple menu. Part of System 7.5.</td>
</tr>
<tr>
<td>MultiClip Lite</td>
<td>A Clipboard that holds more than one item — a Scrapbook that lets you view, search, and sort “thumbnails” of all Scrapbook “pages” at once. Commercial software from Olduvai.</td>
</tr>
<tr>
<td>Olduvai Fonts &amp; Sounds</td>
<td>3 neat TrueType fonts — and 3 Sound Clips sound effects. Commercial software from Olduvai’s CoolFonts, ArtFonts, and SoundClips collections.</td>
</tr>
<tr>
<td>Open-wide</td>
<td>A freeware control panel that widens the Open File dialog box so you can read even long file names.</td>
</tr>
<tr>
<td>PopChar</td>
<td>Shareware control panel that creates a pop-up menu with all characters available in the current font. No more hunting for symbols.</td>
</tr>
<tr>
<td>Power to Go</td>
<td>Three PowerBook modules for controlling the cursor, battery savings, and screen dimming. From Claris Clear Choice.</td>
</tr>
<tr>
<td>PwrSwitcher</td>
<td>A freeware control panel: one tap on your keyboard’s Power button switches you to the next open program.</td>
</tr>
<tr>
<td>QuickDEX</td>
<td>The classic, lightning-fast address book/phone dialer desk accessory. From Casady &amp; Greene.</td>
</tr>
<tr>
<td>Remember?</td>
<td>An incredibly flexible, colorful, and powerful on-screen calendar (and reminder system) in a desk accessory.</td>
</tr>
<tr>
<td>ResEdit</td>
<td>The Mac’s famous resource editor. Lets you examine and edit alert messages, command key equivalents, icons, and much more. Licensed from Apple Computer.</td>
</tr>
<tr>
<td>SCSIProbe</td>
<td>An indispensable tool that helps you manage the complexities of your SCSI setup.</td>
</tr>
<tr>
<td>SmartKeys</td>
<td>A freeware control panel designed to assist Macintosh typists. Prevents doubled caps &amp; double spaces, makes curly quotes, and more.</td>
</tr>
<tr>
<td>Application</td>
<td>Description</td>
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<tr>
<td>Speed Disk</td>
<td>The fast, safe, intelligent hard-disk defragmenter and optimizer, for safety and speed. From Symantec; part of Norton Utilities.</td>
</tr>
<tr>
<td>Sunset Screen Saver</td>
<td>An entertaining set of customizable screen savers, with sound. Part of Advanced Software LC’s QuickTools collection.</td>
</tr>
<tr>
<td>SuperClock</td>
<td>Displays the time and date, in your choice of font and style, on the menu bar.</td>
</tr>
<tr>
<td>System 7 Pack</td>
<td>A powerful System 7 utility: speeds up copying and trash-emptying; adds a Finder Quit menu; adds command-keys to Finder commands; and more! Includes System 7 Pack Extras, a control panel that gives you keyboard control over the Restart, Sleep, Volume, File Sharing, and other commands.</td>
</tr>
<tr>
<td>TempoEZ</td>
<td>A commercial macro utility from Affinity. A macro is a chain of tasks that your Mac performs automatically — when you press a single key.</td>
</tr>
<tr>
<td>Typelt4Me</td>
<td>A control panel that saves typing — by expanding abbreviations as you type. An incredible time-saver!</td>
</tr>
<tr>
<td>WYSIWIG Menus</td>
<td>A brilliant control panel that displays fonts in their own typefaces (in the menus), unites font families, lets you choose font sets for each program, and more. Commercial software from Now Software — part of Now Utilities.</td>
</tr>
<tr>
<td>ZTerm</td>
<td>An award-winning telecommunications program. Use it to dial up friends or local BBS services with your modem.</td>
</tr>
</tbody>
</table>
Title of this book: MACWORLD MAC & POWER MAC SECRETS, 2E

My overall rating of this book: □ Very good □ Good □ Satisfactory □ Fair □ Poor

How I first heard about this book:
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□ Advertisement: [ ]
□ Word of mouth; heard about book from friend, co-worker, etc.: [ ]
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(please specify)

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The disks I prefer to use are □ 5.25 [39] □ 3.5 [40] □ other: [41]

I have a CD ROM: □ yes [42] □ no [43]

I plan to buy or upgrade computer hardware this year: □ yes [44] □ no [45]

I plan to buy or upgrade computer software this year: □ yes [46] □ no [47]

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About the Authors
David Pogue is Macworld Magazine’s "Desktop Critic" columnist and author of the #1 international bestseller "Macs For Dummies™, 2nd Edition — and its successful sequel, MORE Macs For Dummies™. His Macintosh thriller novel, Hard Drive, was a New York Times "notable book of the year." He lives in New York City. Joseph Schorr writes software reviews for both Macworld and other magazines. He works as a systems administrator and troubleshooter for a major company in Oregon.