Getting Started with Mac OS X Leopard

Kelley P. Shaffer
About This Book

Welcome to Getting Started with Mac OS X Leopard®—Illustrated! Since the first book in the Illustrated Series was published in 1994, millions of students have used various Illustrated texts to master software skills and learn computer concepts. We are proud to bring you this new Illustrated book on the basics of Leopard, the latest version of the Mac operating system.

This textbook is designed to introduce you to the Mac operating system version 10.5, also known as Mac OS X Leopard. Leopard has many new features that compliment the power and flexibility that are inherent in every Mac. With new view options and an updated sidebar, the functionality of Finder has increased dramatically.

The unique design of this book, which presents each skill on two facing pages, makes it easy for novices to absorb and understand new skills, and also makes it easy for more experienced computer users to progress through the lessons quickly, with minimal reading required. We hope you enjoy exploring the features of Mac OS X Leopard as you work through this book!

Author Acknowledgments

This book has taken me on an incredible journey. I have a new respect for the authoring process and have come to realize and appreciate the manpower involved to transform classroom lessons and ideas into print. Words cannot truly express the gratitude I feel for all the people that have devoted their time and effort into producing this book. I couldn’t have asked for a better team of professionals to guide, edit, and mentor me through this process. Course Technology has provided incredible resources and personnel that have shown unwavering faith in this book. Thanks to Karen Stevens for keeping me on task, Mary Kemper for editing a novice, and especially Jeanne Herring for all her guidance during this process and especially her patience. I’d also like to thank the remaining team members for their expertise on this project.

Finally, to Matt, Jordan, and Sami, thanks for being so supportive and making sacrifices while I turned this idea into a reality.

Kelley Shaffer
Preface

Welcome to *Getting Started with Mac OS X Leopard*—Illustrated. The unique page design of the book makes it a great learning tool for both new and experienced users. Each skill is presented on two facing pages so that you don't have to turn the page to find a screen shot or finish a paragraph. See the illustration on the right to learn more about the pedagogical and design elements of a typical lesson.

This book is an ideal learning tool for a wide range of learners—the "rookies" will find the clean design easy to follow and focused with only essential information presented, and the "hot shots" will appreciate being able to move quickly through the lessons to find the information they need without reading a lot of text. The design also makes this a great reference after the course is over!

About This Book

This all-new text covers everything students need to begin using the Mac. Here are some highlights of what's included:

- **New file view options in Leopard**—Preview page one and a detailed list of files with Cover Flow, or use Quick Look to view the contents of a file without actually opening it.
- **Stay up-to-date with Safari 4**—View previously visited Web sites in the bookmarks library using Cover Flow, or review thumbnails of favorite Web sites using Top Sites.
- **Time Machine**—Easily make backups of your files, folders and preferences.

Each two-page spread focuses on a single skill.

Concise text introduces the basic principles in the lesson and integrates a real-world case study.

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**Starting a Program**

In addition to Finder, Leopard includes a variety of programs, such as Mail, Safari, iChat, iCal, iTunes, and iMovie, which by default are all available on the dock. The dock is a glossy ribbon at the bottom of your screen that contains icons, or small images that represent programs, folders and files, and the Trash. The purpose of the dock is to give you quick, easy access to the most frequently-used items on your computer. By default, the dock is open and located at the bottom of your computer screen, but it can be moved or hidden. The dock is divided into two areas by a vertical dashed line; programs appear on the left side of the dashed line, and folders, files, and the Trash appear on the right. To open a program, simply click the program's icon on the dock. Once you open a program, you can adjust your view of the program window using the scroll bars located on the right side and/or bottom of the window. Because you need to schedule events for your upcoming tour, you want to try working with the iCal program. Once you open the program, you scroll through the program window to get a look at the workspace.
Assignments

The lessons use Quest Specialty Travel, a fictional adventure travel agency, as the case study. The assignments on the light purple pages at the end of each unit increase in difficulty. Additional case studies provide a variety of interesting and relevant exercises for students to practice skills.

Assignments include:

- **Concepts Reviews** consist of multiple choice, matching, and screen identification questions.
- **Skills Reviews** provide additional hands-on, step-by-step reinforcement.
- **Independent Challenges** are case projects requiring critical thinking and application of the unit skills.
- **Real Life Independent Challenges** are practical exercises to help students with their everyday lives by improving their mastery of the Mac operating system.
- **Visual Workshops** are practical, self-graded capstone projects that help develop independent problem solving skills.
Instructor Resources

The Instructor Resources CD is Course Technology's way of putting the resources and information needed to teach and learn effectively into your hands. With an integrated array of teaching and learning tools that offer you and your students a broad range of technology-based instructional options, we believe this CD represents the highest quality and most cutting edge resources available to instructors today. Many of these resources are available at www.cengage.com/coursetechnology. The resources available with this book are:

- Instructor's Manual—Available as an electronic file, the Instructor's Manual includes detailed lecture topics with teaching tips for each unit.
- Sample Syllabus—Prepare and customize your course easily using this sample course outline.
- PowerPoint Presentations—Each unit has a corresponding PowerPoint presentation that you can use in lecture, distribute to your students, or customize to suit your course.
- Figure Files—The figures in the text are provided on the Instructor Resources CD to help you illustrate key topics or concepts. You can create traditional overhead transparencies by printing the figure files. Or you can create electronic slide shows by using the figures in a presentation program such as PowerPoint.
- Solutions to Exercises—Solutions to Exercises contains files students are asked to create or modify in the lessons and end-of-unit material. Also provided in this section is a document outlining the solutions for the end-of-unit Concepts Review, Skills Review, and Independent Challenges.
- Data Files for Students—Students do not need any Data Files to complete the units in this book.
- ExamView—ExamView is a powerful testing software package that allows you to create and administer printed and computer (LAN-based) exams. ExamView includes hundreds of questions that correspond to the topics covered in this text, enabling students to generate detailed study guides that include page references for further review. The computer-based testing components allow students to take exams at their computers, and also saves you time by grading each exam automatically.

Read This Before You Begin

Frequently Asked Questions

What software was used to write and test this book?

This book was written and tested on a computer with a typical installation of Mac OS X Leopard (OS X v10.5). The browser used for any steps that require a browser is Safari 4.

In this book, Macintosh commands instruct users to press the [return] key to enter information. On some newer Macintosh keyboards, this key may be named [enter] or the keyboard may include both [return] and [enter].

Do I need to be connected to the Internet to complete the steps and exercises in this book?

Some of the exercises in this book assume that your computer is connected to the Internet. If you are not connected to the Internet, see your instructor for information on how to complete the exercises.

What do I do if my screen is different from the figures shown in this book?

This book was written and tested on computers with monitors set at a resolution of 1024 x 768. If your screen shows more or less information than the figures in the book, your monitor is probably set at a higher or lower resolution. If you don't see something on your screen, you might have to scroll down or up to see the object identified in the figures. In some cases, the figures will not match your screen because the program windows have been resized or moved in an effort to make the figures as easy to read as possible. Be aware that the tops of dialog boxes and windows may appear to slip beneath the menu bar when you drag them near the top of the screen.
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Computers are essential tools in almost all kinds of activity in virtually every type of business. In this unit, you will learn about computers and their components. You will learn about input and output, how a computer processes data and stores information, how information is transmitted, and ways to secure that information. Finally, you will learn about system and application software.

Quest Specialty Travel is expanding its North American offices and just purchased Sheehan Tours, an established travel agency in Boston, Massachusetts. Sheehan Tours has been in business for over 40 years and has a large customer base. Unfortunately, its computer system is tremendously outdated. Its office contains a hodgepodge of computer equipment, most of which has been purchased used. The office staff still carries data between computers on floppy disks, and only one computer is connected to the Internet. Kevin O'Brien, the manager of the New York office, has been sent to the new Boston office to help them switch to Quest's business practices. He has already ordered and installed new computer equipment. His next task is to teach the staff how to use the new equipment.

**OBJECTIVES**

- Investigate types of computers
- Examine computer systems
- Examine input devices
- Examine output devices
- Investigate data processing
- Understand memory
- Understand storage media
- Explore data communications
- Learn about networks
- Learn about security threats
- Understand system software
- Understand application software
Investigating Types of Computers

A computer is an electronic device that accepts information and instructions from a user, manipulates the information according to the instructions, displays the information in some way, and stores the information for retrieval later. Computers are classified by their size, speed, and capabilities. Most of the staff at Sheehan Tours do not know anything about computers except for the ones that sit on their desks, so Kevin decides to start with a basic explanation of the types of computers available.

The following list describes various types of computers:

- **Personal computers** are computers typically used by a single user, for use in the home or office. Personal computers are used for general computing tasks such as word processing, manipulating numbers, working with photographs or graphics, exchanging e-mail, and accessing the Internet.

- A personal computer is available as a **desktop computer**, which is designed to sit compactly on a desk; as a **notebook computer** (also referred to as a laptop computer), which is small, lightweight, and designed for portability; or as a **tablet PC**, which is also designed for portability, but includes the capability of recognizing ordinary handwriting on the screen. Figure A-1 shows a MacBook, one of Apple's notebook computers. Desktop personal computers can be purchased for as little as $300, but high-end notebooks can cost more than $3500. A notebook computer with similar capability is usually more expensive than a desktop computer, and tablet PCs are generally more expensive than notebook computers. Many computer users spend between $800 and $1500 when purchasing a new personal computer.

- **Hand-held computers** are small computers that fit in the palm of your hand. Hand-held computers have more limited capabilities than personal computers.

  - **PDAs (personal digital assistants)** are generally used to maintain an electronic appointment book, address book, calculator, and notepad. See Figure A-2. High-end PDAs are all-in-one devices that can send and receive e-mails and make phone calls.
  
  - **MP3 players** are hand-held computers that are primarily used to store and play music, although some models can also be used to play digital movies or television shows.
  
  - Cell phones are another type of hand-held computer. In addition to being used to make telephone calls, cell phones store contact information. Many cell phones can take and store digital photos and video and play and store music. Most cell phones have additional capabilities such as built-in calculator programs. High-end cell phones can also perform many of the same functions as a PDA.

- **Mainframe computers** are used by larger businesses and government agencies to provide centralized storage, processing, and management for large amounts of data. The price of a mainframe computer varies widely, from several hundred thousand dollars to several million dollars.

- The largest and fastest computers, called **supercomputers**, are used by large corporations and government agencies when the tremendous volume of data would seriously delay processing on a mainframe computer. A supercomputer, like the one shown in Figure A-3, can cost tens of millions of dollars.

**Understanding terminals**

When an organization uses mainframes or supercomputers, each user inputs processing requests and views output through a terminal or a terminal emulator. A terminal has a keyboard for input and a monitor for output, but processes little or no data on its own. A terminal emulator is a personal computer, workstation, or server that uses special software to imitate a terminal so that the PC can communicate with the mainframe or supercomputer for complex data processing.
Examining Computer Systems

A computer system includes computer hardware and software. Hardware refers to the physical components of a computer. Software refers to the intangible components of a computer system, particularly the programs, or lists of instructions, that the computer needs to perform a specific task. Kevin explains how computers work and points out the main components of a computer system.

The following list provides an overview of computer system components and how they work:

- The design and construction of a computer is referred to as its architecture or configuration. The technical details about each hardware component are called specifications. For example, a computer system might be configured to include a printer; a specification for that printer might be a print speed of eight pages per minute or the capacity to print in color.

- The hardware and the software of a computer system work together to process data. Data refers to the words, numbers, figures, sounds, and graphics that describe people, events, things, and ideas. Modifying data is referred to as processing.

- In a computer, processing tasks occur on the motherboard, which is located inside the computer and is the main electronic component of the computer. The motherboard is a circuit board, which is a rigid piece of insulating material with circuits, electrical paths, on it that control specific functions. See Figure A-4. The motherboard contains the following processing hardware:
  - The microprocessor, also called the processor or the central processing unit (CPU), consists of transistors and electronic circuits on a silicon chip (an integrated circuit embedded in semiconductor material). See Figure A-5. The processor is mounted on the motherboard and is responsible for executing instructions to process information.
  - Cards are removable circuit boards that are inserted into slots in the motherboard to expand the capabilities of the motherboard. For example, a sound card translates the digital audio information from the computer into analog sounds that the human ear can hear.

- The data or instructions you type into the computer are called input. The result of the computer processing input is referred to as output. The computer itself takes care of the processing functions, but it needs additional components, called peripheral devices, to accomplish the input, output, and storage functions.
  - You use an input device, such as a keyboard or a mouse, to enter data and issue commands. Commands are input instructions that tell the computer how to process data. For example, you might want to center the title and double-space the text of a report. You use the appropriate commands in the word processing program that instruct the computer to modify the data you have input so the report text is double-spaced and the report title is centered.
  - Output can be in many different forms, including reports, documents, graphs, sounds, and pictures. Computers produce output using output devices, such as a monitor or printer.
  - The output you create using a computer can be stored either inside the computer itself or on an external storage device, such as a DVD. You will learn more about storage devices later in this unit.
Comparing microprocessor speeds

How fast a computer can process instructions depends partially on the speed of the microprocessor, which is determined by its clock speed, word size, and cache size, and whether it is single or dual core. Clock speed is measured in megahertz (MHz), millions of cycles per second, or in gigahertz (GHz), billions of cycles per second. Word size refers to the amount of data that is processed at one time. Finally, a dual-core processor, one that has two processors on a single chip, can process information up to twice as fast as a single-core processor, one with one processor on the chip.
Examineing Input Devices

Before a computer can produce useful information, people must get data into the computer. This is accomplished by using input devices. In a typical personal computer system, you input data and commands by using an input device such as a keyboard or a mouse. Computers can also receive input from a storage device. You will learn about storage devices later in this unit. As Kevin explains peripheral devices to the Sheehan Tours staff, they ask several questions about input devices. For example, one person doesn't understand the difference between a mouse and a trackball. Kevin continues his explanation with a discussion of various input devices.

There are many types of input devices, as described below:

- One of the most frequently used input devices is a keyboard. The top keyboard in Figure A-6 is a standard Mac keyboard. The bottom keyboard in Figure A-6 is ergonomic, which means that it has been designed to fit the natural placement of your hands and should reduce the risk of repetitive-motion injuries. It also has several additional keys programmed as shortcut keys to commonly used functions.

- Another common input device is a pointing device, which controls the pointer, a small arrow or other symbol on the screen. Pointing devices are used to select commands and manipulate text or graphics on the screen.

- The most popular pointing device for a desktop computer is a mouse, such as the one shown on the left side in Figure A-7. An ordinary mouse has a rolling ball on its underside, and an optical mouse has a tiny camera on its underside that takes pictures as the mouse is moved. You control the pointer by moving the entire mouse. A mouse usually has two or more buttons for clicking commands. A mouse might also have a scroll wheel that you roll to scroll the page on the screen and that may function as one of the buttons.

- The trackball, such as the one shown on the right side in Figure A-7, is similar to a mouse except that the rolling ball is on the top side and you control the movement of the pointer by moving only the ball.

- Notebook computers are usually equipped with a trackpad or a pointing stick. See Figure A-8. A trackpad is a touch-sensitive device that you drag your finger over to control the pointer. The buttons or button are located in front of the trackpad. Some Mac notebook computers are equipped with a Multi-Touch trackpad, which does not have any buttons in front of it; the trackpad itself is the button. A pointing stick is a small, eraser-like device embedded among the typing keys that you push up, left, right, or down to move the pointer. Two buttons equivalent to mouse buttons are located in front of the spacebar.

- A scanner is a device that transfers the content on a piece of paper into memory. To do this, you place a piece of paper on the glass, a beam of light moves across the glass similar to a photocopier, and stores the image or words on the paper as digital information. You can scan a document or a photo and save it as an image file, or you can scan a document and have the text “read” by the scanner and saved in a document file for editing later.

- Microphones are another type of input device. You can use them to record sound for certain types of files, or, if you have the voice-recognition software, you can use them to input data and commands.

- Input devices can be connected to the computer with cables or wirelessly. Wireless input devices connect to the computer using infrared or radio frequency technology, similar to a remote control for a television.

Using assistive devices

People with physical impairments or disabilities can use computers because of advances in making computers accessible to everyone. For example, people who cannot use their arms or hands instead can use foot, head, or eye movements to control the pointer. People with poor vision can use keyboards with large keys for input, screen enlargers to enlarge the type and images on the monitor, or screen readers to read the content of the screen aloud. Computers are being developed that can be controlled by a person's thoughts, that is, the brain's electromagnetic waves.
FIGURE A-6: Keyboards

Main keyboard

Function keys

Editing keypad

Ergonomic keyboard

Numeric keypad

FIGURE A-7: Personal computer pointing devices

Mouse

Trackball

FIGURE A-8: Notebook pointing devices

Trackpad

Multi-Touch trackpad

Pointing Stick
Examining Output Devices

As stated earlier, output is the result of processing data; output devices show you those results. The most commonly used output devices are monitors and printers. Kevin continues his discussion of peripheral devices with an explanation of output devices.

Output devices are described below:

- The monitor displays the output from a computer.
- The monitor shown on the left in Figure A-9 is a flat panel monitor, a lightweight monitor that takes up very little room on the desktop. Most flat panel monitors use LCD (liquid crystal display) technology, which creates the image you see on the screen by manipulating light within a layer of liquid crystal. A CRT (cathode ray tube) monitor, shown on the right in Figure A-9, uses gun-like devices that direct beams of electrons toward the screen to activate dots of color to form the image you see on the screen. CRT monitors require much more desk space than flat-panel display monitors. Apple's iMac combines the LCD monitor and the internal components of the computer into one unit, as shown in Figure A-10.
- Monitor screen size is the diagonal measurement from one corner of the screen to the other. In general, monitors on desktop computers range in size from 15" to 30", whereas monitors on notebook computers range in size from 12" to 20".
- Most monitors have a graphics display, which divides the screen into a matrix of small dots called pixels. Resolution is the number of pixels the monitor displays. Standard resolutions range from 640 x 480 to 1600 x 1200, although some Macs have a higher resolution. If your screen is small, a 1600 x 1200 resolution will make the objects on the screen too small to see clearly. Dot pitch (dp) measures the distance between pixels, so a smaller dot pitch means a sharper image. A .28 or .26 dot pitch is typical for today's monitors.
- To display graphics, a computer must have a graphics card, also called a video display adapter or video card. The graphics card is installed on the motherboard, and controls the signals the computer sends to the monitor.
- A printer produces a paper copy, often called hard copy, of the text or graphics processed by the computer. There are three popular categories of printers: laser printers, inkjet printers, and dot matrix printers.
- Laser printers, like the one shown on the left in Figure A-11, are popular for business use because they produce high-quality output quickly and efficiently. In a laser printer, a temporary laser image is transferred onto paper with a powdery substance called toner.
- Inkjet printers, such as the one shown on the right in Figure A-11, are popular printers for home use. These printers spray ink onto paper and produce output whose quality is comparable to that of a laser printer.
- Dot matrix printers transfer ink to the paper by striking a ribbon with pins. A 24-pin dot matrix printer produces better quality print than a 9-pin. Dot matrix printers are most often used when a large number of pages need to be printed fairly quickly or when a business needs to print multi-page continuous forms.
- Speakers, like speakers on a sound system, allow you to hear sounds from the computer. Speakers can be separate peripheral devices attached to the computer, or they can be built in to the monitor.
- Like input devices, output devices can be connected to a computer using cables or a wireless connection.
**Understanding Essential Computer Concepts**

**FIGURE A-9: Monitors**
- Flat panel monitor
- CRT monitor

**FIGURE A-10: Apple's iMac**

**FIGURE A-11: Printers**
- Laser printer
- Inkjet printer
In order to understand how data is processed in a computer, you first need to learn how the computer represents and stores data. All data and programs are stored as files. A computer file is a named collection of stored data. An executable file contains the instructions that tell a computer how to perform a specific task; for instance, the files that are used while the computer starts are executable. A data file is created by a user, usually with software. For instance, a report that you write with a word processing program is data, and must be saved as a data file if you want to access it later. Kevin gives a basic description of how information is represented inside a computer.

The following information will help you understand data processing:

- The characters used in human language are meaningless to a computer. Like a light bulb, the computer must interpret every signal as either “on” or “off.” A computer represents data as distinct or separate numbers. Specifically, it represents “on” with a 1 and “off” with a 0. These numbers are referred to as binary digits, or bits.

- A series of eight bits is called a byte. As Figure A-12 shows, the byte that represents the integer value 0 is 00000000, with all eight bits “off” or set to 0. The byte that represents the integer value 1 is 00000001, and the byte that represents 255 is 11111111.

- A kilobyte (KB or simply K) is 1024 bytes, or approximately one thousand bytes. A megabyte (MB) is 1,048,576 bytes, or about one million bytes. A gigabyte (GB) is 1,073,741,824 bytes, or about one billion bytes. A terabyte (TB) is 1,024 GB, or approximately one trillion bytes.

- Personal computers commonly use the ASCII system to represent character data. ASCII (pronounced “ASK-ee”) stands for American Standard Code for Information Interchange. Each ASCII number represents an English character. Computers translate ASCII into binary data so that they can process it.
  - The original ASCII system used 7 bits to represent the numbers 0 (0000000) through 127 (1111111) to stand for 128 common characters and nonprinting control characters. Because bits are usually arranged in bytes, the eighth bit is reserved for error checking.
  - Extended ASCII uses eight bits and includes the numbers 128 (10000000) through 255 (11111111) to represent additional characters and symbols. Extended ASCII was developed to add codes for punctuation marks, symbols, such as $ and ©, and additional characters, such as é and ü, that were not included in the original 128 codes.
  - Most computers use the original ASCII definitions, but not all computers use the same definitions for Extended ASCII. Computers that run the Leopard operating system use the set of Extended ASCII definitions defined by the American National Standards Institute (ANSI). Figure A-13 shows sample ASCII code with ANSI standard Extended ASCII characters.
**FIGURE A-12:** Binary representation of numbers

<table>
<thead>
<tr>
<th>Number</th>
<th>Binary representation</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>00000000</td>
</tr>
<tr>
<td>1</td>
<td>00000001</td>
</tr>
<tr>
<td>2</td>
<td>00000010</td>
</tr>
<tr>
<td>3</td>
<td>00000011</td>
</tr>
<tr>
<td>4</td>
<td>00000100</td>
</tr>
<tr>
<td>5</td>
<td>00000101</td>
</tr>
<tr>
<td>6</td>
<td>00000110</td>
</tr>
<tr>
<td>7</td>
<td>00000111</td>
</tr>
<tr>
<td>8</td>
<td>00001000</td>
</tr>
<tr>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>253</td>
<td>11111101</td>
</tr>
<tr>
<td>254</td>
<td>11111110</td>
</tr>
<tr>
<td>255</td>
<td>11111111</td>
</tr>
</tbody>
</table>

**FIGURE A-13:** Sample ASCII code representing letters and symbols

<table>
<thead>
<tr>
<th>Character</th>
<th>ASCII Code</th>
<th>Binary Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>(space)</td>
<td>32</td>
<td>00100000</td>
</tr>
<tr>
<td>$</td>
<td>36</td>
<td>00100100</td>
</tr>
<tr>
<td>A</td>
<td>65</td>
<td>01000001</td>
</tr>
<tr>
<td>B</td>
<td>66</td>
<td>01000010</td>
</tr>
<tr>
<td>a</td>
<td>97</td>
<td>01100001</td>
</tr>
<tr>
<td>b</td>
<td>98</td>
<td>01100010</td>
</tr>
<tr>
<td>?</td>
<td>129</td>
<td>10000001</td>
</tr>
<tr>
<td>£</td>
<td>163</td>
<td>10100011</td>
</tr>
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<td>®</td>
<td>217</td>
<td>11011001</td>
</tr>
<tr>
<td>é</td>
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Understanding Memory

In addition to the microprocessor, another important component of personal computer hardware is the \textit{memory}, which stores instructions and data. Memory is different from permanent storage in a computer. Your computer has five types of memory: random access memory, cache memory, virtual memory, read-only memory, and complementary metal oxide semiconductor memory. Kevin realizes that most of the Sheehan Tours staff don't understand the difference between memory types, so he explains the different types of memory.

**Types of memory include the following:**

- \textbf{Random access memory (RAM)} temporarily holds programs and data while the computer is on and allows the computer to access that information randomly; in other words, RAM doesn't need to access data in the same sequence in which it was stored. For example, if you are writing a report, the microprocessor temporarily copies the word processing program you are using into RAM so the microprocessor can quickly access the instructions that you will need as you type and format your report. The characters you type are also stored in RAM, along with the fonts, graphics, and other objects that you might use. RAM consists of chips on cards that plug into the motherboard.
  - Most personal computers use some type of \textit{synchronous dynamic random access memory (SDRAM)}, which is synchronized with the processor to allow faster access to its contents.
  - RAM is sometimes referred to as \textit{volatile memory} or \textit{temporary memory} because it is constantly changing as long as the computer is on and is cleared when the computer is turned off.
  - \textit{Memory capacity}, sometimes referred to as \textit{storage capacity}, is the amount of data that the computer can handle at any given time and is measured in megabytes or gigabytes. For example, a computer that has 512 MB of RAM has the capacity to temporarily store more than 512 million bits of data at one time.

- \textbf{Cache memory}, sometimes called \textit{RAM cache} or \textit{CPU cache}, is a special, high-speed memory chip on the motherboard or CPU itself that stores frequently accessed and recently accessed data and commands.

- \textbf{Virtual memory} is space on the computer's storage devices that simulates additional RAM. It enables programs to run as if your computer had more RAM by moving data and commands from RAM to the hard drive and swapping in the new data and commands. See Figure A-14. Virtual memory, however, is much slower than RAM.

- \textbf{Read-only memory (ROM)} is a chip on the motherboard that has been prerecorded with data. ROM permanently stores the set of instructions that the computer uses to check the computer system's components to make sure they are working and to activate the essential software that controls the processing function when you turn the computer on.
  - ROM contains a set of instructions called the \textit{BIOS (basic input/output system)}, which tells the computer to initialize the motherboard, how to recognize the peripherals, and to start the boot process. The \textit{boot process} is the set of events that occurs between the moment you turn on the computer and the moment you can begin to use the computer. The set of instructions for executing the boot process is stored in ROM.
  - ROM never changes and it remains intact when the computer is turned off; therefore, it is called \textit{nonvolatile memory} or \textit{permanent memory}.

- \textbf{Complementary metal oxide semiconductor (CMOS, pronounced “SEE-moss”) memory} is a chip installed on the motherboard that is activated during the boot process and identifies where essential software is stored.
  - A small rechargeable battery powers CMOS so its contents are saved when the computer is turned off. CMOS changes every time you add or remove hardware on your computer system.
  - CMOS, often referred to as \textit{semipermanent memory}, changes when hardware is added or removed, but doesn't empty when the computer is shut off.
  - Because CMOS retains its contents when the computer is turned off, the date and time are stored there.
Upgrading RAM

One of the easiest ways to make a computer run faster is to add more RAM. This enables the computer to access instructions and data stored in RAM very quickly. The more RAM a computer has, the more instructions and data can be stored there. Currently, you can buy from 64 MB to 1 GB RAM cards, and usually, you can add more than one card. You need to check your computer's specifications to see what size RAM cards the slots on your motherboard will accept.
Understanding Storage Media

Because RAM retains data only while the power is on, your computer must have a more permanent storage option. As Figure A-15 shows, a storage device receives data from RAM and writes it on a storage medium, such as a CD. Later the data can be read and sent back to RAM to use again. Kevin explains the types of storage media available. He starts with magnetic storage because almost all computers have a hard disk.

The types of storage media are discussed below:

- **Magnetic storage devices** store data as magnetized particles on mylar, a plastic, which is then coated on both sides with a magnetic oxide coating. Common magnetic storage devices are hard disks, tape, and floppy disks.
  - A **hard disk** is the most common type of magnetic storage media. It contains several magnetic oxide-covered metal platters that are usually sealed in a case inside the computer.
  - **Tape** is another type of magnetic storage media. Tape storage is much too slow to be used for day-to-day computer tasks; therefore, tapes are used to make backup copies of data stored on hard disks. Tape provides inexpensive, though slow, archival storage for large companies who need to back up large quantities of data.
  - A **floppy disk** is a flat circle of magnetic oxide-coated mylar enclosed in a hard plastic case; a floppy disk can store 1.44 MB of data. Floppy disks are sometimes called 3½" disks because of the size of the hard plastic case. The floppy disk has almost become obsolete, and most personal computers are now manufactured without a floppy disk drive.

- **Optical storage devices** are polycarbonate discs coated with a reflective metal on which data is recorded using laser technology as a trail of tiny pits or dark spots in the surface of the disc. The data that these pits or spots represent can then be "read" with a beam of laser light.
  - The first standard optical storage device available for personal computers was the **CD (compact disc)**. One CD can store 700 MB of data.
  - A **DVD**, though the same size as a CD, currently stores between 4.7 and 15.9 GB of data, depending on whether data is stored on one or two sides of the disc, and how many layers of data each side contains. The term **DVD** is no longer an acronym, although it was originally an acronym for digital video disc and later was sometimes updated to digital versatile disc.
  - New formats of optical storage include Blu-ray Discs and HD-DVD, which are capable of storing between 15 and 50 GB of data. They are used for storing high-definition video. Different companies support each format and it remains to be seen if one dominates the market.

- **Flash memory** is similar to ROM except that it can be written to more than once. **Flash memory cards** are small, portable cards encased in hard plastic to which data can be written and rewritten. They are used in digital cameras, handheld computers, video game controllers, and other devices.
  - A popular type of flash memory is a **USB flash storage device**, also called a **USB drive** or a **flash drive**. See Figure A-16.
    - USB drives for personal computers are available in a wide range of sizes; they currently range from drives capable of holding 32 MB of data to drives capable of holding 16 GB of data. They are becoming more popular for use as a secondary or backup storage device for data typically stored on a hard disk drive.
    - USB drives plug directly into the USB port of a personal computer; the computer recognizes the device as another disk drive. The location and letter designation of USB ports varies with the brand and model of computer you are using, but the physical port may be on the front, back, or side of a computer.
    - USB flash storage devices are about the size of a pack of gum and often have a ring that you can attach to your key chain.
A storage device receives information from RAM, writes it on the storage medium, and reads and sends it back to RAM.

**FIGURE A-15: Storage devices and RAM**

Erasing and rewriting on CDs and DVDs

**CD-ROM** stands for compact disc read-only memory. CDs that you buy with software or music already on them are CD-ROMs—you can read from them, but you cannot record additional data onto them. In order to record data on a CD, you need a CD-R (compact disc recordable) or CD-RW (compact disc rewritable) drive and a CD-R or CD-RW disk. On CD-ROMs, data is stored in pits made on the surface of the disk; when you record data on a CD-R or -RW, a laser changes the reflectivity of a dye layer on a blank disk, creating dark spots on the disk's surface that represent the data. On a CD-R, once the data is recorded, you cannot erase or modify it, but you can add new data to the disk, as long as the disk has not been finalized. In contrast, you can re-record a CD-RW. CD-R disks can be read by a standard CD-ROM drive or a DVD drive; CD-RW disks can be read only by CD-RW drives or CD-ROM drives labeled “multi-read.” Recordable DVD drives are also available. As with CDs, you can buy a DVD to which you can record only once, or a rewritable DVD to which you can record and then re-record data. Recordable and rewritable DVDs come in several formats; for example, recordable DVDs are available as DVD-R and DVD+R. Make sure you know which type of DVD your DVD drive uses. Newer DVD drives are capable of reading from and writing to both -RW and +RW DVDs and CDs, as well as DVDs with two layers.

**FIGURE A-16: Flash storage device**

Erasing and rewriting on CDs and DVDs

**CD-ROM** stands for compact disc read-only memory. CDs that you buy with software or music already on them are CD-ROMs—you can read from them, but you cannot record additional data onto them. In order to record data on a CD, you need a CD-R (compact disc recordable) or CD-RW (compact disc rewritable) drive and a CD-R or CD-RW disk. On CD-ROMs, data is stored in pits made on the surface of the disk; when you record data on a CD-R or -RW, a laser changes the reflectivity of a dye layer on a blank disk, creating dark spots on the disk's surface that represent the data. On a CD-R, once the data is recorded, you cannot erase or modify it, but you can add new data to the disk, as long as the disk has not been finalized. In contrast, you can re-record a CD-RW. CD-R disks can be read by a standard CD-ROM drive or a DVD drive; CD-RW disks can be read only by CD-RW drives or CD-ROM drives labeled “multi-read.” Recordable DVD drives are also available. As with CDs, you can buy a DVD to which you can record only once, or a rewritable DVD to which you can record and then re-record data. Recordable and rewritable DVDs come in several formats; for example, recordable DVDs are available as DVD-R and DVD+R. Make sure you know which type of DVD your DVD drive uses. Newer DVD drives are capable of reading from and writing to both -RW and +RW DVDs and CDs, as well as DVDs with two layers.
**Exploring Data Communications**

**Data communications** is the transmission of data from one computer to another or to a peripheral device. The computer that originates the message is the **sender**. The message is sent over some type of **channel**, such as a telephone or coaxial cable. The computer or peripheral at the message’s destination is the **receiver**. The rules that establish an orderly transfer of data between the sender and the receiver are called **protocols**. The transmission protocol between a computer and its peripheral devices is handled by a **device driver**, or simply **driver**, which is a computer program that can establish communication because it contains information about the characteristics of your computer and of the device.

The Sheehan Tours staff will use their computers to connect to the computers at the Quest headquarters in California as well as to surf the Internet, so Kevin next explains how computers communicate.

### The following describes some of the ways that computers communicate:

- The data path between the microprocessor, RAM, and the peripherals along which communication travels is called the **data bus**. Figure A-17 illustrates the data bus that connects a printer to a computer.

- An external peripheral device must have a corresponding **port** and **cable** that connect it to the computer. Inside the computer, each port connects to a **controller card**, sometimes called an **expansion card** or **interface card**. These cards plug into electrical connectors on the motherboard called **expansion slots** or **slots**. Personal computers can have several types of ports, including parallel, serial, SCSI, USB, MIDI, and Ethernet. Figure A-18 shows the ports on a Windows desktop personal computer and on the back of an iMac (your port configuration may differ).

  - A **parallel port** transmits data eight bits at a time. Parallel transmissions are relatively fast, but they have an increased risk for interference. A **serial port** transmits data one bit at a time.

  - One **SCSI (small computer system interface, pronounced “scuzzy”) port** provides an interface for one or more peripheral devices at the same port. The first is connected directly to the computer through the port, and the second device is plugged into a similar port on the first device.

  - A **USB (Universal Serial Bus) port** is a high-speed serial port which allows multiple connections at the same port. The device you install must have a **USB connector**, a small rectangular plug, as shown in Figure A-19. When you plug the USB connector into the USB port, the computer recognizes the device and allows you to use it immediately. You can connect multiple devices to a single USB port by “daisy chaining” them or by using a hub. USB flash storage devices plug into USB ports. For most USB devices, power is supplied via the port, so there is no need for extra power cables.

  - The port for a sound card usually includes jacks for speakers and a microphone, which are designed to work with a **MIDI (Musical Instrument Digital Interface, pronounced “middy”) card**.

  - You can connect to another computer, a LAN, a modem, or sometimes directly to the Internet using an **Ethernet port**. Ethernet ports allow data to be transmitted at high speeds.

  - An internal peripheral device such as a hard disk drive may plug directly into the motherboard, or it may have an attached controller card.

  - Notebook computers may also include a **portable computer card (PC Card)**. PC Cards are credit card-sized cards that plug directly into the PC Card slot and can contain additional RAM, a fax modem, or a hard disk drive (similar to a USB flash storage device).
FIGURE A-17: Components needed to connect a printer to a computer

Printer port
Cable
Printer port
Cable
Rear view of printer
Rear view of system unit

FIGURE A-18: Computer ports and connections

Power connection
Mouse port
Keyboard port
Audio connection
Monitor port
USB ports
Speaker and microphone connections
Network port
Phone line connection
FireWire port
Mini-DVI video output port
USB ports
Firewire ports
Network port
Audio ports

FIGURE A-19: USB connector

Apple's iMac
Windows PC
Learning about Networks

A **network** connects one computer to other computers and peripheral devices, enabling you to share data and resources with others. There are a variety of network configurations; however, any type of network has some basic characteristics and requirements that you should know. Kevin continues his discussion of how computers communicate with an explanation of networking.

**Types of networks are described below:**

- Each computer that is part of the network must have a **network interface card (NIC)** installed. This card creates a communications channel between the computer and the network. A cable is used to connect the NIC port to the network.

- **Network software** is also essential, establishing the communications protocols that will be observed on the network and controlling the “traffic flow” as data travels throughout the network.

- Some networks have one or more computers, called **servers**, that act as the central storage location for programs and provide mass storage for most of the data used on the network. A network with a server and computers dependent on the server is called a **client/server network**. The dependent computers are the **clients**.

- When a network does not have a server, all the computers essentially are equal, and programs and data are distributed among them. This is called a **peer-to-peer network**.

- A personal computer that is not connected to a network is called a **standalone computer**. When it is connected to the network, it becomes a **workstation**. You have already learned that a terminal has a keyboard and monitor used for input and output, but it is not capable of processing on its own. A terminal is connected to a network that uses mainframes as servers. Any device connected to the network is called a **node**. Figure A-20 illustrates a typical network configuration.

- In a **local area network (LAN)**, computers and peripheral devices are located relatively close to each other, generally in the same building.

- A **wide area network (WAN)** is more than one LAN connected together. The Internet is the largest example of a WAN.

- In a **wireless local area network (WLAN)**, computers and peripherals use high-frequency radio waves instead of wires to communicate and connect in a network. **Wi-Fi** (short for **wireless fidelity**) is the term created by the nonprofit Wi-Fi Alliance to describe networks connected using a standard radio frequency established by the Institute of Electrical and Electronics Engineers (IEEE). Wi-Fi is used over short distances to connect computers to a LAN.

- A **personal area network (PAN)** is a network that allows two or more devices located close to each other to communicate or to connect a device to the Internet. In a PAN, devices are connected with cables or wireless.
  - **Infrared technology** uses infrared light waves to beam data from one device to another. The devices must be compatible, and they must be positioned close to each other with their infrared ports pointed at each other for this to work. This is the technology used in TV remote controls.
  - **Bluetooth** uses short range radio waves to connect a device wirelessly to another device or to the Internet. The devices must each have a Bluetooth transmitter, but unlike infrared connections, they can communicate around corners or through walls.

- **WiMAX** (short for **Worldwide Interoperability for Microwave Access**), another standard defined by the IEEE, allows computer users to connect over many miles to a LAN. A WiMAX tower sends signals to a WiMAX receiver built or plugged into a computer. WiMAX towers can communicate with each other or with an Internet service provider.
Telecommunications means communicating over a comparatively long distance using a phone line or some other data conduit. When it is not possible to connect users on one network, telecommunications allows you to send and receive data over the telephone lines. To make this connection, you must use a communications device called a modem. A modem, which stands for modulator-demodulator, is a device that connects your computer to a standard telephone jack. The modem converts the digital, or stop-start, signals your computer outputs into analog, or continuous wave, signals (sound waves) that can traverse ordinary phone lines. Figure A-21 shows the telecommunications process, in which a modem converts digital signals to analog signals at the sending site (modulates) and a second modem converts the analog signals back into digital signals at the receiving site (demodulates). Most computers today come with a built-in 56 K modem and/or NIC (network interface card). 56 K represents the modem's capability to send and receive about 56,000 bits per second (bps). Actual speed may be reduced by factors such as distance, technical interference, and other issues. People who want to use a high-speed connection either over phone lines, such as a DSL (digital subscriber line), or over a cable connection, usually need to purchase an external DSL or cable modem separately.
Security refers to the steps a computer owner takes to prevent unauthorized use of or damage to the computer. Once a computer is connected to a network, it is essential that the computer be protected against possible threats from people intent on stealing information or causing malicious damage. Kevin explains how important it is to be vigilant about keeping the office computers secure and reviews ways to do this.

Several types of security threats are discussed below:

- **Malware** is a broad term that describes any program that is intended to cause harm or convey information to others without the owner's permission.

- Unscrupulous programmers deliberately construct harmful programs, called viruses, which instruct your computer to perform destructive activities, such as erasing a disk drive. Some viruses are more annoying than destructive, but some can be harmful, erasing data or causing your hard disk to require reformatting. Antivirus software, sometimes referred to as virus protection software, searches executable files for the sequences of characters that may cause harm and disinfects the files by erasing or disabling those commands. Figure A-22 shows the screen that appears after AVG Anti-Virus Free Edition finished scanning a computer.

- Some software programs contain other programs called spyware that track a computer user's Internet usage and send this data back to the company or person that created it. Most often, this is done without the computer user's permission or knowledge. Anti-spyware software can detect these programs and delete them.

- A firewall is like a locked door on a computer. It prevents other computers on the Internet from accessing a computer and prevents programs on a computer from accessing the Internet without the computer user's permission. A firewall can be hardware, software, or a combination of both.

- A hardware firewall provides strong protection against incoming threats. A router, a device that controls traffic between network components, usually has a built-in firewall.

- Software firewalls track all incoming and outgoing traffic. If a program that never accessed the Internet before attempts to do so, the user is notified and can choose to forbid access. There are several free software firewall packages available. Figure A-23 shows an alert from Zone Alarm, a software firewall.

- Criminals are getting more aggressive as they try to figure out new ways to access computer users' personal information and passwords.

- A Web site set up to look exactly like another Web site, such as a bank's Web site, but which does not actually belong to the organization portrayed in the site, is a spoofed site. The site developer creates a URL (address on the Web) that looks similar to a URL from the legitimate site. Usually, spoofed sites are set up to try to convince customers of the real site to enter personal information, such as credit card numbers, Social Security numbers, and passwords, so that the thief collecting the information can use it to steal the customer's money or identity.

- Phishing refers to the practice of sending e-mails to customers or potential customers of a legitimate Web site asking them to click a link in the e-mail. The link leads to a spoofed site where the user is asked to verify or enter personal information.

- Sometimes a criminal can break into a DNS server (a computer responsible for directing Internet traffic) and redirect any attempts to access a particular Web site to the criminal's spoofed site. This is called pharming.
Protecting information with passwords

You can protect data on your computer by using passwords. You can set up accounts on your computer for multiple users and require that all users sign in with a user name and password before they can use the computer. This is known as logging in. You can also protect individual files on your computer so that people who try to open or alter a file need to type the password before they are allowed access to the file. Many Web sites require a user name and password in order to access the information stored on it. To prevent anyone from guessing your password, you should always create and use strong passwords. A strong password is at least eight characters of upper and lowercase letters and numbers. Avoid using common personal information, such as birthdays and addresses.
Understanding System Software

Sometimes the term software refers to a single program, but often the term refers to a collection of programs and data that are packaged together. System software helps the computer carry out its basic operating tasks. Before Kevin describes the various types of software that people use to accomplish things like writing memos, he needs to describe system software.

The components of system software are described below:

- System software manages the fundamental operations of your computer, such as loading programs and data into memory, executing programs, saving data to disks, displaying information on the monitor, and transmitting data through a port to a peripheral device. There are four types of system software: operating systems, utilities, device drivers, and programming languages.
- An operating system allocates system resources, manages storage space, maintains security, detects equipment failure, and controls basic input and output. Input and output, or I/O, is the flow of data from the microprocessor to memory to peripherals and back again.
  - The operating system allocates system resources so programs run properly. A system resource is any part of the computer system, including memory, storage devices, and the microprocessor, that can be used by a computer program.
  - The operating system is also responsible for managing the files on your storage devices. Not only does it open and save files, but it also keeps track of every part of every file for you and lets you know if any part is missing.
  - While you are working on the computer, the operating system is constantly guarding against equipment failure. Each electronic circuit is checked periodically, and the moment a problem is detected, the user is notified with a warning message on the screen.
  - Microsoft Windows, used on many personal computers, and the Mac OS, used exclusively on Macintosh computers, are referred to as operating environments because they provide a graphical user interface (GUI, pronounced "goo-ey") that acts as a liaison between the user and all of the computer's hardware and software. Figure A-24 shows the starting screen on a Mac using Leopard (Mac OS X v10.5.6).
- Utilities are another category of system software that augment the operating system by taking over some of its responsibility for allocating hardware resources.
- As you learned earlier in the discussion of ports, device drivers handle the transmission protocol between a computer and its peripherals. When you add a device to an existing computer, part of its installation includes adding its device driver to the computer's configuration.
- Computer programming languages, which a programmer uses to write computer instructions, are also part of the system software. The instructions are translated into electrical signals that the computer can manipulate and process.
FIGURE H-24: Mac OS X Leopard starting screen

Menu bar

Dock

Icon (you might see additional icons on your screen)
Understanding Application Software

Application software enables you to perform specific computer tasks. Some examples of tasks that are accomplished with application software are document production, spreadsheet calculations, database management, and giving presentations. Now that the Sheehan Tours staff understands operating systems, Kevin describes some common application software.

Typical application software includes the following:

- **Document production software** includes word processing software, desktop publishing software, e-mail editors, and Web authoring software. All of these production tools have a variety of features that assist you in writing and formatting documents, including changing the **font** (the style of type). Most offer **spell checking** to help you avoid typographical and spelling errors, as shown in Figure A-25.

- **Spreadsheet software** is a numerical analysis tool. Spreadsheet software creates a worksheet, composed of a grid of columns and rows. You can type data into the cells, and then enter mathematical formulas into other cells that reference the data. Figure A-26 shows a typical worksheet that includes a simple calculation and the data in the spreadsheet represented as a simple graph.

- **Database management software** lets you collect and manage data. A **database** is a collection of information stored on one or more computers organized in a uniform format of records and fields. A **record** is a collection of data items in a database. A **field** is one piece of information in the record. An example of a database is the online catalog of books at a library; the catalog contains one record for each book in the library, and each record contains fields that identify the title, the author, and the subjects under which the book can be classified.

- **Graphics and presentation software** allow you to create illustrations, diagrams, graphs, and charts that can be projected before a group, printed out for quick reference, or transmitted to remote computers. You can also use **clip art**, simple drawings that are included as collections with many software packages.

- **Photo editing software** allows you to manipulate digital photos. You can make the images brighter, add special effects to the photo, add additional images to a photo, or crop the photo to include only relevant parts of the image.

- **Multimedia authoring software** allows you to record digital sound files, video files, and animations that can be included in presentations and other documents.

- **Information management software** keeps track of schedules, appointments, contacts, and “to-do” lists. Most e-mail software allows users to add all the information about contacts to the list of e-mail addresses. In addition, some software, such as Microsoft Entourage, combines a contact list with information management components, such as a calendar and to-do list. The main screen of Microsoft Entourage is shown in Figure A-27.

- **Web site creation and management software** allows you to create and manage Web sites. They allow you to see what the Web pages will look like as you create them.

Understanding object linking and embedding (OLE)

Many programs allow users to use data created in one application in a document created by another application. Object linking and embedding (OLE) refers to the ability to use data from another file, called the source. Embedding occurs when you copy and paste the source data in the new file. Linking allows you to create a connection between the source data and the copy in the new file. The link updates the copy every time a change is made to the source data. The seamless nature of OLE among some applications is referred to as integration.
A wiggly red line indicates a possible spelling error.

Cell B5 contains result of calculation performed by spreadsheet software.

Understanding Essential Computer Concepts

Concepts 25
Label each component of the desktop personal computer shown in Figure A-28.

1. Which component do you use to point to items on the screen?
2. Which component displays output?
3. Which component is used to enter text?
4. Which component processes data?
5. Which component transmits audio output?
Match each term with the statement that best describes it.

6. configuration  a. Software that allocates resources, manages storage space, maintains security, and controls I/O
7. byte                    b. The style of type
8. RAM                      c. The design and construction of a computer
9. hard disk                d. Magnetic storage media that is usually sealed in a case inside the computer
10. expansion slot          e. Series of eight bits
11. server                  f. A computer on a network that acts as the central storage location for programs and data used on the network
12. spyware                 g. A program that tracks a user's Internet usage without the user's permission
13. operating system        h. A slot on the motherboard into which a controller card for a peripheral device is inserted
14. font                    i. Temporarily holds data and programs while the computer is on

▼ SKILLS REVIEW

Select the best answer from the list of choices.

15. Which one of the following would not be considered a personal computer?
   a. Desktop
   b. Notebook
   c. Mainframe
   d. Tablet PC

16. The intangible components of a computer system, including the programs, are called __________.
   a. software
   b. hardware
   c. price
   d. peripherals

17. What part of the computer is responsible for executing instructions to process information?
   a. Card
   b. Processor
   c. Motherboard
   d. Peripheral device

18. What are the technical details about each hardware component called?
   a. Configuration
   b. Circuits
   c. Specifications
   d. Cards

19. Keyboards, monitors, and printers are all examples of which of the following?
   a. Input devices
   b. Output devices
   c. Software
   d. Peripheral devices

20. Which of the following is a pointing device that allows you to control the pointer by moving the entire device around on a desk?
   a. Mouse
   b. Trackball
   c. Trackpad
   d. Pointing stick
21. In order to display graphics, a computer needs a monitor and a _________.
   a. parallel port
   b. network card
   c. graphics card
   d. sound card

22. What do you call each 1 or 0 used in the representation of computer data?
   a. A bit
   b. A byte
   c. An ASCII
   d. A pixel

23. Another way to refer to 1024 bytes is a _________.
   a. byte
   b. kilobyte
   c. megabyte
   d. binary

24. Which of the following is a chip installed on the motherboard that is activated during the boot process and identifies where essential software is stored?
   a. RAM
   b. CMOS
   c. CPU cache
   d. ROM

25. Which of the following is space on the computer's storage devices that simulates additional RAM?
   a. Cache memory
   b. Virtual memory
   c. Read-only memory
   d. Volatile memory

26. Which of the following permanently stores the set of instructions that the computer uses to activate the software that controls the processing function when you turn the computer on?
   a. RAM
   b. CMOS
   c. CPU cache
   d. ROM

27. Which of the following storage media is not a magnetic storage device?
   a. Hard disk
   b. Floppy disk
   c. DVD
   d. Tape

28. The transmission protocol between a computer and its peripheral devices is handled by a _________.
   a. channel
   b. data bus
   c. driver
   d. controller card

29. Which of the following is the data path between the microprocessor, RAM, and the peripherals?
   a. Data bus
   b. Data channel
   c. Data port
   d. Cable
SKILLS REVIEW (CONTINUED)

30. The computer that originates a message to send to another computer is called the __________.
   a. channel
   b. sender
   c. receiver
   d. driver

31. A personal computer that is connected to a network is called a __________.
   a. desktop
   b. workstation
   c. terminal
   d. PDA

32. Which of the following acts as a locked door on a computer?
   a. Antivirus software
   b. Firewall
   c. DNS server
   d. Spyware

33. A __________ consists of connected computers and peripheral devices that are located relatively close to each other.
   a. LAN
   b. WAN
   c. WLAN
   d. PAN

34. The term that describes networks connected using a standard radio frequency established by the IEEE is __________.
   a. WiMAX
   b. WAN
   c. WLAN
   d. Wi-Fi

35. A Web site set up to look exactly like another Web site, such as a bank's Web site, but which does not actually belong to the organization portrayed in the site, is a __________ site.
   a. malware
   b. phished
   c. spoofed
   d. served

INDEPENDENT CHALLENGE 1

This Independent Challenge requires an Internet connection. In order to run the newest software, many people need to upgrade their existing computer system or buy a brand new one. What do you do with your old computer when you purchase a new one? Most municipalities have enacted laws regulating the disposal of electronics. Research these laws in your city and state and write a brief report describing them.

a. Start your browser, go to your favorite search engine, then search for information about laws regarding the disposal of electronics in your city and state. Try finding your city's Web site and searching it for the information, or use electronics disposal laws followed by your city name as a search term and then repeat that search with your state's name in place of your city's name.

b. Open each Web site that you find in a separate tab or browser window.

c. Read the information on each Web site. Can some components be thrown away? Are there laws that apply only to monitors?
INDEPENDENT CHALLENGE 1 (CONTINUED)

Advanced Challenge Exercise

- Search for organizations to which you can donate your computer.
- How do these organizations promise to protect your privacy?
- Can you take a deduction on your federal income tax for your donation?

**d.** Write a short report describing your findings. Include the URLs for all relevant Web sites. *(Hint: If you are using a word processor to write your report, you can copy the URLs from your browser and paste them into the document. Drag to select the entire URL in the Address or Location bar in your browser. Right-click the selected text, then click Copy on the shortcut menu. Position the insertion point in the document where you want the URL to appear, then press ![Ctrl](V).)*

INDEPENDENT CHALLENGE 2

*This Independent Challenge requires an Internet connection.* New viruses are discovered on an almost daily basis. If you surf the Internet or exchange e-mail, it is important to use updated anti-virus software. Research the most current virus threats and create a table listing the threats and details about them.

**a.** Start your browser, go to Symantec’s Web site at [www.symantec.com](http://www.symantec.com), click the Viruses & Risks link, then click the link to Threat Explorer. *(If you don’t see that link, type threat explorer in the Search box on the page, then click appropriate links to get to the Threat Explorer page.) On the Threat Explorer page, click the Latest tab if necessary.

**b.** Click links to the first five latest threats.

**c.** Open a new word processing document and create a table listing each virus threat, a description of what each virus does, how widely it is distributed (the Wild value), and how damaging it is (the Damage Level value).

**d.** In your browser, go to the Security Advisor on CA’s Web site at [www3.ca.com/securityadvisor](http://www3.ca.com/securityadvisor), and then click the Virus Information Center link. If any of the first five latest virus threats are different from the ones on the Symantec site, add them to your table. *(Hint: After you click a virus name, check the “Also known as” list.)*

**e.** For any viruses that are already in your table because they were on the Symantec site, read the CA description to see if there is any additional information describing how the virus could damage your system. Add this information to your table.

**f.** Save the word processing document as Latest Threats to the drive and folder where you store your Data Files.

INDEPENDENT CHALLENGE 3

*This Independent Challenge requires an Internet connection.* One of the keyboards shown in this unit is an ergonomic keyboard. Ergonomics is the study of the design of a workspace so that the worker can work efficiently and avoid injury. The U.S. Occupational Safety and Health Administration (OSHA) has developed guidelines that describe a healthy computer work environment. Research these guidelines and evaluate your workspace.

**a.** Start your browser, and then go to [www.osha.gov/SLTC/etools/computerworkstations/index.html](http://www.osha.gov/SLTC/etools/computerworkstations/index.html).

**b.** Read the information on the main page. Follow links to descriptions of the best arrangement for equipment you use when working on a computer. *(Hint: Look for the Workstation Components link, and point to it to open a submenu of links.)*

**c.** Locate and print the checklist for evaluating your workspace. *(Hint: Click the Checklist link, then click the View/Print the Evaluation Checklist PDF link. A new tab or window opens and the checklist opens in Adobe Acrobat Reader, a program that displays PDF files. If a dialog box opens telling you that you need to install Acrobat Reader to continue, ask your instructor or technical support person for help.)*

**d.** Using the checklist, evaluate each of the conditions listed. If a condition does not apply to you, write N/A (not applicable) in the Yes column.
INDEPENDENT CHALLENGE 3 (CONTINUED)

Advanced Challenge Exercise

- Use the OSHA Web site or a search engine to research repetitive motion injuries to which computer users are susceptible.
- Evaluate your risk for at least three common injuries.
- On the OSHA checklist, note what injury or injuries each applicable item or behavior will help prevent.

REAL LIFE INDEPENDENT CHALLENGE

You are buying a new Mac for home use, but you’re having trouble deciding between a desktop or a notebook. You know that the computer you buy will need to run Leopard and Office 2008 for Mac and have enough hard disk space for all your files, and you want to make sure you are protected against security threats. You’ll also need a printer.

a. To help you make a decision and organize the information to make it easy to compare, create the table shown in Figure A-29.

**FIGURE A-29**

<table>
<thead>
<tr>
<th>Name: Your Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Your Requirements</td>
</tr>
<tr>
<td>Hardware:</td>
</tr>
<tr>
<td>Processor (brand and speed)</td>
</tr>
<tr>
<td>RAM (amount)</td>
</tr>
<tr>
<td>Video RAM (amount)</td>
</tr>
<tr>
<td>Hard disk (size)</td>
</tr>
<tr>
<td>Printer (type and speed)</td>
</tr>
<tr>
<td>External speakers</td>
</tr>
<tr>
<td>Maintenance Plan:</td>
</tr>
<tr>
<td>Software:</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Total Price:</td>
</tr>
<tr>
<td>Information Source(s):</td>
</tr>
</tbody>
</table>

b. You’ll need to determine which edition of Office 2008 you should get (Standard Edition, Home and Student Edition, or Special Media Edition). Use the Internet to research the different editions to determine which one will best suit your needs. Enter the cost for the edition in the appropriate cells in the table.

c. Research the hardware requirements for running the edition of Office 2008 that you selected. Enter the technical specifications required in the appropriate cells in the table.

d. Research the cost of a new iMac that has Mac OS X Leopard as its operating system and that meets the system requirements needed to run Office 2008. Next, research the cost of a new MacBook or MacBook Pro with the same or similar configuration. To begin, visit www.apple.com to review the technical information to ensure that you are comparing models with similar hardware characteristics. Enter the starting costs for each model in the appropriate cells in the table. (Hint: The Apple store at www.apple.com can help you configure your computer and provide you with the cost of the Apple Care maintenance plan.)
REAL LIFE INDEPENDENT CHALLENGE (CONTINUED)

e. Search the Web to find an inexpensive inket printer that will work with your Mac. Enter the cost in the appropriate cells in the table.

f. Search the Web to find external speakers that will work with your Mac. Enter the cost in the appropriate cells in the table.

g. Search the Web to find antivirus software for your Mac. Enter the cost in the appropriate cells in the table.

h. Review the items to make sure you have entered information in all the rows. Total the costs you entered in the table for the various items.

i. Based on the information you found, determine whether the better purchase would be the notebook (MacBook or MacBook Pro) or the iMac. Write a brief summary justifying your decision.

j. Submit the completed table and your summary to your instructor.
Getting Started with Mac OS X Leopard

Files You Will Need: No files needed

Mac OS X v10.5, or Leopard, is an operating system—software that manages the complete operation of your computer and keeps all the hardware and software working together properly. When you start your Mac, Leopard starts automatically, activates Finder, which provides access to files and programs on your computer, and then displays the desktop—a graphical user interface (GUI) that you use to interact with Leopard and the other software on your computer. Finder helps you organize files (collections of stored electronic data, such as text, pictures, video, music, and programs) in folders (containers for files) so that you can easily find them later. When you open a file or program, Leopard displays the file or program in a rectangular-shaped work area known as a window.

As a new Oceania tour guide for Quest Specialty Travel (QST), you need to develop basic Leopard skills to keep track of all the tour files on your company's Mac computer.

OBJECTIVES

Start Mac OS X Leopard
Use a pointing device
Start a program
Move and resize windows
Use menus
Use dialog boxes
Get Mac Help
End a Leopard session
Starting Mac OS X Leopard

When you start your Mac, Leopard steps through a process called **booting** to get the computer up and running. During this time, you might need to enter your user account name and password, which identifies you to Leopard as an authorized user of the computer. As part of the boot process, Leopard activates Finder and displays the Mac desktop. The desktop is a way for you to interact with your Mac and to access its tools. The desktop appears with preset, or **default**, settings; however, you can change these settings to suit your needs. When your computer starts, the desktop contains the Finder menu bar, the Macintosh HD (hard drive) icon, and the dock. The **Macintosh HD icon**, located in the upper-right corner of your computer screen, gives you quick access to all items stored on your computer. Your supervisor, Nancy McDonald, Oceania’s tour developer, asks you to become familiar with Leopard and its features before your upcoming tour.

### STEPS

1. **If your computer and monitor are turned off, press the Power button**
   Depending on the Mac model you have, the power button may be located in the middle of your tower, on the back of your iMac, or near the monitor of your laptop. After your computer starts, you’ll either be prompted to enter a user name and password (if your Mac is part of a network, or if it is set up for multiple users), or you’ll see the desktop. If you’re prompted for a user name and password, continue with Step 2 and compare your computer screen to Figure B-1. If not, skip to Step 4.

2. **In the Name box, type your user name**

3. **In the Password box, type your password, then press [return] or click Log In**
   After Leopard verifies your user name and password, you see the desktop.

4. **Compare your computer screen to Figure B-2**
   Your desktop may look slightly different.
FIGURE B-1: Mac login screen

FIGURE B-2: Mac OS X Leopard desktop
Using a Pointing Device

The most common way to interact with your Mac and the software you are using is with a pointing device, such as a mouse or a trackpad, as shown in Figure B-3. As you move your pointing device, a small arrow (or other symbol), called a pointer, moves on the screen in the same direction. Table B-1 illustrates common pointer shapes and their functions. You press a button on the pointing device to select and move objects (such as icons and desktop windows); open programs, windows, folders, and files; and select options for performing specific tasks, such as saving your work. Table B-2 lists the basic ways in which you can use a pointing device. Pointing devices can work with your computer through a cable or through a wireless connection that transmits data using radio waves. You'll practice using your pointing device so you can work more efficiently.

**Steps**

1. **Locate the pointer on the desktop, then move your pointing device**
   The pointer moves across the desktop in the same direction as you move your pointing device.

2. **Move the pointer so the tip is directly over the Finder icon on the dock**
   Positioning the pointer over an item and hovering is called pointing. As you point to an item, a ScreenTip appears with the name of the item.

3. **Move the pointer so the tip is directly over the Macintosh HD icon on the desktop, then press and release the left button on your pointing device**
   Pressing and releasing the left button, called clicking or single-clicking, selects an icon on the desktop or in a window, and selects options and objects within a program.

4. **With Macintosh HD still selected, press and hold down the left button on your pointing device, move your pointing device to another location on the desktop, then release the left button**
   A dimmed icon of the Macintosh HD icon moves with the pointer. When you release the left button on your pointing device, the Macintosh HD icon is placed on the desktop at a different location. You use this technique, called dragging, to move icons and windows.

5. **Drag back to its original desktop location**

6. **Position the pointer over , then press and release the right button on your pointing device**
   This action, called right-clicking, opens a shortcut menu, as shown in Figure B-4. A shortcut menu lists common commands for the object that is right-clicked. A command is an instruction to perform a task, such as renaming an object. If a command is dimmed, it is not currently available.

7. **Click the desktop background**
   The shortcut menu closes and the Macintosh HD icon remains selected.

8. **Point to , then quickly press the left button on your pointing device twice and release it**
   Quickly clicking the left button twice is called double-clicking, which opens a window or a program. In this case, the Finder window opens to display the contents of the Macintosh hard drive.

9. **Click the Close button in the upper-left corner of the Finder window**
   The Finder window closes. Every window has a Close button; clicking it is the fastest way to close a window.

**Table B-1: Common pointer shapes**

<table>
<thead>
<tr>
<th>shape</th>
<th>name</th>
<th>description</th>
</tr>
</thead>
<tbody>
<tr>
<td>🔗</td>
<td>Normal Select</td>
<td>Points to an object and selects a command</td>
</tr>
<tr>
<td>🔄 or 🔄</td>
<td>Busy</td>
<td>Indicates that Leopard or another program is busy and you must wait before continuing</td>
</tr>
<tr>
<td>📞</td>
<td>Text Select (also called I-Beam)</td>
<td>Identifies where you can type, select, insert, or edit text</td>
</tr>
<tr>
<td>📥</td>
<td>Link Select</td>
<td>Identifies a link you can click to jump to another location, such as a Help topic or a Web site</td>
</tr>
</tbody>
</table>
FIGURE B-3: Common Mac pointing devices

Wireless Mighty Mouse

Trackpad with separate button

Multi-Touch trackpad

FIGURE B-4: Shortcut menu

Shortcut menu for the Macintosh hard drive

TABLE B-2: Basic pointing device techniques

<table>
<thead>
<tr>
<th>technique</th>
<th>function</th>
<th>operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pointing</td>
<td>Points to an item; may also display a ScreenTip about the item</td>
<td>Move the pointing device to position the tip of the onscreen pointer over an object, and then hover</td>
</tr>
<tr>
<td>Clicking</td>
<td>Selects an item, such as a file or folder, or opens an item that resides on the dock</td>
<td>Point to an object, then quickly press and release the left button once</td>
</tr>
<tr>
<td>Double-clicking</td>
<td>Opens an item or resource, such as a file, folder, or software program (not residing on the dock)</td>
<td>Point to an object, then press the left button twice in quick succession</td>
</tr>
<tr>
<td>Right-clicking</td>
<td>Opens a shortcut menu</td>
<td>Point to an object, then quickly press and release the right button once</td>
</tr>
<tr>
<td>[control]-clicking</td>
<td>Opens a shortcut menu; functions as a right-click for a single-button pointing device</td>
<td>Point to an object, press and hold [control], then press the button once</td>
</tr>
<tr>
<td>Drag</td>
<td>Moves an object to a new location</td>
<td>Point to an object, press and hold the left button, move the object to a new location, then release the left button</td>
</tr>
</tbody>
</table>
Starting a Program

In addition to Finder, Leopard includes a variety of programs, such as Mail, Safari, iChat, iCal, iTunes, and iMovie, which by default are all available on the dock. The **dock** is a glossy ribbon at the bottom of your screen that contains **icons**, or small images that represent programs, folders and files, and the Trash. The purpose of the dock is to give you quick, easy access to the most frequently-used items on your computer. By default, the dock is open and located at the bottom of your computer screen, but it can be moved or hidden. The dock is divided into two areas by a vertical dashed line; programs appear on the left side of the dashed line, and folders, files, and the Trash appear on the right. To open a program, simply click the program's icon on the dock. Once you open a program, you can adjust your view of the program window using the scroll bars located on the right side and/or bottom of the window. Because you need to schedule events for your upcoming tour, you want to try working with the iCal program. Once you open the program, you scroll through the program window to get a look at the workspace.

1. **Locate the dock on your computer screen**
   If the dock is not visible, move the onscreen pointer to the bottom of your screen and the dock will slide into view.

2. **Point to the iCal icon on the dock**
   As shown in Figure B-5, the word “iCal” appears in a ScreenTip above the icon on the dock.

3. **Click on the dock**
   As shown in Figure B-6, the iCal program opens in a window on the desktop. Programs that are currently running have a blue light beneath their program icons on the dock. The blue light identifies an open program. Since Finder is always available on the desktop, a blue light always appears beneath its icon on the dock. On the right side of the iCal window, a vertical scroll bar appears that you can use to adjust your view.

4. **Click the down scroll arrow below the vertical scroll bar**
   The window scrolls down to show another part of the calendar, and part of the calendar has now scrolled out of view.

5. **Drag the vertical scroll box slowly down the window to the bottom of the vertical scroll bar**
   The window view changes in larger increments, and the bottom part of the calendar is visible at the bottom of the window.

6. **Click in the vertical scroll bar just above the vertical scroll box**
   The view moves up approximately the height of one window.

7. **Leave the iCal window open for the next lesson**
Starting a program not found on the dock

If you'd like to use a program that is loaded on your computer but is not on the dock, click the Finder icon on the dock to open the Finder window. Click Applications in the Sidebar (the left side of the Finder window), locate the program you'd like to use on the right side of the Finder window, then double-click the program to open it.

To save time in the future, you can add the program to the dock by dragging the program icon from the Finder window to the location on the dock where you'd like the icon to appear. Icons already on the dock will move to make room for the new icon.
Moving and Resizing Windows

Each program you start opens in its own window. If you open more than one program at once, you are multitasking—performing several tasks at the same time—and each program appears in a different window. As you multitask, you will invariably need to move and resize windows so that you can see more of one window or view two or more windows at the same time. To minimize a window to the dock or to increase a window to full size, you use the window control buttons—Minimize and Zoom—in the upper-left corner of the window. To adjust a window’s height or width (or both), you drag the size control located on the lower-right corner of the window. To move a window, you drag its title bar—the area across the top of the window that displays the window name or program name. The active window is the window you are currently using. An inactive window is another open window that you are not currently using.

As you work on the schedule for your upcoming tour, you need to move and resize the iCal window.

**STEPS**

1. **Click the Zoom button** in the upper-left corner of the iCal window
   The iCal window expands to full-size, filling the screen, as shown in Figure B-7. If the window is already the fullest size available, clicking the Zoom button decreases the window size.

2. **Click again**
   The iCal window is restored to the size it was when you first opened it.

3. **Click the Minimize button** in the upper-left corner of the iCal window
   The iCal window is still open, just not visible. A minimized window collapses to an icon on the right side of the dock, as shown in Figure B-8. You can use this feature to hide a window that you are not currently using, but may use later.

4. **Click the minimized iCal window icon on the dock**
   The iCal window returns to its original size and position on the desktop.

5. **Drag the title bar on the iCal window to the upper-left corner of the desktop**
   The iCal window is repositioned on the desktop.

6. **Position the pointer on the size control on the lower-right corner of the iCal window, then drag down and to the right**
   Both the height and width of the window change, as shown in Figure B-9.
FIGURE 8-7: iCal window expanded to full-size

FIGURE 8-8: Minimized window

FIGURE 8-9: Resized window

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Getting Started with Mac OS X Leopard

Mac OS X 41
**Using Menus**

A **menu** displays a list of commands that you use to accomplish a task. On your Mac, a silver bar called the **menu bar** appears across the top of the desktop, which contains menus for the active program. When no programs are open, the menu bar contains options for working with Finder. When you open a new program, the menu bar changes to accommodate the menu options for that program. Clicking a menu name on the menu bar opens a menu of available options. Table B-3 contains a list of items on a typical Mac menu. You decide to become familiar with the available commands for iCal by exploring the menu bar options.

**STEPS**

1. **Click iCal on the menu bar**
   - The iCal menu opens, as shown in Figure B-10. You can use the commands on this menu to find out more information about iCal, change the iCal’s default preference settings, access iCal services, hide iCal or other programs, and quit iCal.

2. **Point to View on the menu bar**
   - The View menu opens. This menu contains commands for changing the view shown in the iCal window.

3. **Click by Month**
   - The view of the calendar in the iCal window changes to by month, as shown in Figure B-11.

4. **Click View on the menu bar**
   - As shown in Figure B-12, the by Month command is checked on the menu, indicating that the current view shown in iCal is by Month.

5. **Click by Week**
   - The iCal window shows the current calendar week.

6. **Click the Close button in the upper-left corner of the iCal window**
   - The iCal window closes. However, because the Close button affects the iCal window only and not the iCal program, the iCal program is still open and running as indicated by the available iCal menu bar and by the blue light beneath the iCal icon on the dock.

<table>
<thead>
<tr>
<th>TABLE B-3: Typical menu items</th>
<th>description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bold command</td>
<td>Command or operation that can be executed</td>
</tr>
<tr>
<td>Dimmed command</td>
<td>Command or operation that is not currently available</td>
</tr>
<tr>
<td>Ellipsis (…)</td>
<td>Indicates that the command opens a dialog box containing additional options</td>
</tr>
<tr>
<td>Disclosure triangle</td>
<td>Indicates that a submenu is available containing an additional list of commands</td>
</tr>
<tr>
<td>Keyboard shortcut</td>
<td>Pressing the indicated keys will execute the command listed next to the keyboard shortcut</td>
</tr>
<tr>
<td>Check mark</td>
<td>Indicates the command is currently selected or active</td>
</tr>
</tbody>
</table>
**Available commands are bold**

**Unavailable command is dimmed**

**Keyboard shortcut** Ellipsis Disclosure triangle

**Figure B-10: iCal menu**

**Figure B-11: iCal viewed by month**

**Figure B-12: iCal View menu**

**Keyboard shortcuts**

You can execute a command without opening a menu by using a **keyboard shortcut**, which is a combination of keyboard keys that you press to perform a command. Available keyboard shortcut keys are listed to the right of a menu item. The **modifier key** (usually `⌥`) can be pressed and held while you press the other key(s).
Using Dialog Boxes

If a program needs more information to complete an operation, it may open a dialog box, which enables you to select options or provide the information needed to complete the operation. Dialog boxes look similar to windows, but do not contain the window control buttons and usually cannot be resized. Table B-4 provides a list of typical elements found in a dialog box, and Figure B-13 shows many of these elements in a Print dialog box. You want to review the iCal default settings to determine whether they meet your needs while you work.

1. **Click iCal on the menu bar, then click Preferences**
   The iCal Preferences dialog box opens, with the General preferences displayed, as shown in Figure B-14. The iCal Preferences dialog box provides access to the default iCal settings, such as days per calendar week, what day starts each week, and at what time each day's calendar starts. The first six settings in the dialog box are **pop-up menu arrows** that you click to open a pop-up menu that shows one or more options to choose. **Check boxes** at the bottom of the dialog box turn an option on when checked and off when unchecked.

2. **Click the Day starts at arrows, then review the options on the pop-up menu**
   The pop-up menu enables you to select the time of day that each day will start in iCal, as shown in Figure B-15.

3. **Press [esc]**
   The pop-up menu closes without any change to the selected day.

4. **Click the Close button in the upper-left corner of the iCal Preferences dialog box**
   The iCal Preferences dialog box closes.

5. **Click iCal on the menu bar, then click Quit iCal**
   The iCal program closes. The menu bar changes to show the Finder menu options and the blue light no longer appears under iCal on the dock.

**TABLE B-4: Typical elements found in a dialog box**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check box</td>
<td>A box that turns an option on when checked and off when unchecked</td>
</tr>
<tr>
<td>Collapse/Expand button</td>
<td>A button that shrinks or expands a portion of a dialog box to hide or unhide some settings</td>
</tr>
<tr>
<td>Command button</td>
<td>A button that completes or cancels an operation</td>
</tr>
<tr>
<td>Pop-up menu arrows</td>
<td>Arrows that, when clicked, display a pop-up menu of options from which you can choose</td>
</tr>
<tr>
<td>Option button</td>
<td>A small circle you click to select only one of two or more related options</td>
</tr>
<tr>
<td>Spin box</td>
<td>A text box with up and down arrows; you can type a setting in the text box or click the arrows to increase or decrease a setting</td>
</tr>
<tr>
<td>Text box</td>
<td>A box in which you type text (such as a password)</td>
</tr>
<tr>
<td>Tab</td>
<td>A clickable item at the top of a dialog box that switches to a different set of dialog box options; tabs are not available in all dialog boxes</td>
</tr>
</tbody>
</table>
FIGURE B–13: Print dialog box

Collapsible/Expand button

Pop-up menu arrows

Check box

Spin box

Option button

Text box

Command buttons

FIGURE B–14: iCal Preferences dialog box

Days per week: 7
Start week on: Sunday
Scroll in week view by: Weeks

Day starts at: 8:00 AM
Day ends at: 6:00 PM
Show: 12 hours at a time

Show time in month view
Show Birthdays calendar
Add a default alarm to all new events and invitations
15 minutes before the start time

Synchronize my calendars with other computers using MobileMe
You have not set up your MobileMe account.

FIGURE B–15: Pop-up menu

Pop-up menu

Midnight
1:00 AM
2:00 AM
3:00 AM
4:00 AM
5:00 AM
6:00 AM
7:00 AM
8:00 AM
9:00 AM
10:00 AM
11:00 AM
Noon
Getting Mac Help

When you need assistance or more information about how to use Leopard, help is available right at your finger tips. Help is always an option on the menu bar, whether you need help with a program or with the Leopard operating system itself. You can search the interactive built-in Help files for Leopard or your currently active program. You can also go to www.apple.com and search Apple’s Support section. To search the built-in Help files, you can open the Help menu and type **keywords** such as “Organizing files” to obtain a list of all the Help topics that include the keyword or phrase. Because you are a new Mac user, you’d like to get more information about Finder. You decide to use Help.

**Steps**

1. **Click Help on the menu bar**
   A menu opens containing a Search box and Mac Help as a menu option. The Help menu provides access to Help files about the currently active program. When no program is open, the Help menu provides Mac Help, which is information about using the Leopard operating system.

2. **In the Search box, type Finder**
   As soon as you start typing, Leopard begins searching the built-in Help files to narrow down the search results. As shown in Figure B-16, the results are divided into two sections: Menu Items and Help Topics.

3. **Point to About Finder at the top of the search results**
   When you point to an item in the Menu Items section of the search results, the menu containing that command opens and an arrow indicates the selected command. In this case, the Finder menu opens and a large blue arrow points to the About Finder command on the menu, as shown in Figure B-17.

4. **In the Help Topics section of the search results list, click About the Finder**
   When you select a topic in the Help Topics section of the search results list, the Mac Help window opens and displays the selected Help topic, as shown in Figure B-18. After you’ve reviewed the topic shown, you can enter a keyword in the Spotlight search field in the upper-right corner of the window to find help on a different topic. You can also access the Mac Help index by clicking Index below the Spotlight search field.

5. **Click Index below the Spotlight search field**
   The Mac Help index opens, listing keywords alphabetically. See Figure B-19.

6. **Click the letter F, scroll down to locate Finder, then click Finder**
   A list of Mac Help topics related to Finder is displayed in the window.

7. **Click on a topic listed and read the information presented**
   The chosen topic appears in the Mac Help window.

8. **Click Home above the topic title**
   The Mac Help home page opens in the Mac Help window. From here, you can click a listed topic to get more information, click the More topics link to find other topics of interest, click Index to access the Mac Help index again, or click the www.apple.com link under Index to open the Safari browser and go to Apple’s Web site. You can find additional help about Mac products by clicking the Support link on Apple’s home page.

9. **Click the Close button to close the Mac Help window**

**Opening Help for programs**

Your Mac has extensive Help features available. Help is always an option on your menu bar, regardless of what program is open and running. When you click Help on the menu bar with a program open such as iCal or Microsoft Word, you can click a help command (such as “iCal Help” or “Word Help”) to open Help that is specific to the currently active program. You’ll also find additional access to Help features within programs themselves. For example, each Microsoft Office 2008 for Mac program has a Help button on its Standard toolbar. Clicking the Help button opens Help for that program, which provides thorough information on the program and includes a link to go to the software manufacturer’s Web site for additional assistance.
When you start up your computer, the Finder opens. The Finder is a program that's responsible for managing your files, applications, disks, network connections, and devices such as printers. The Finder is always on when your computer is running, though it may be in the background if you're using another program such as Mail.

The Finder provides a menu bar along the top of the screen, and a Dock at the bottom edge. In between the menu bar and Dock are the desktop and any windows you have opened.

The menu bar
At the top of your screen is the menu bar. The leftmost menu is the Apple menu, designated by an Apple icon. When you are in the Finder, you'll see the Finder menu next to the Apple menu. When you use other applications, their menus may appear here instead.

You can click the desktop at any time to get back to the Finder and see the Finder menu.

FIGURE B-17: Menu item containing keyword

FIGURE B-18: Mac Help window

FIGURE B-19: Mac Help index
**Ending a Leopard Session**

When you finish working on your Mac, you should save and close any open files, close any open programs, close any open windows, and shut down the operating system. As shown in Table B-5, there are four options for ending your Leopard sessions. Whichever option you choose, it's important to shut down your computer in an orderly manner. If you turn off the computer while Leopard is running, you could lose data or damage Leopard and your computer. If you are working in a computer lab, follow your instructor's directions and your lab's policies and guidelines for ending your Leopard session. You have examined the basic ways in which you can use Leopard, so you are ready to end your Leopard session.

---

**STEPS**

1. **Click the Apple icon on the menu bar**
   
   The Apple menu has four options for ending a Leopard session—Sleep, Restart, Shut Down, and Log Out, as shown in Figure B-20.

2. **If you are working in a computer lab, follow the instructions provided by your instructor or technical support person for ending your Leopard session; if you are working on your own computer, click Shut Down or the option you prefer for ending your Leopard session**

   After you shut down your computer, you may also need to turn off your monitor and other hardware devices, such as a printer, to conserve energy.

---

**Table B-5: Options for ending a Leopard session**

<table>
<thead>
<tr>
<th>option</th>
<th>description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sleep</td>
<td>Puts your Mac in a low power state to conserve energy while not in use. All drives are disengaged to protect your drives and data. Press any key on the keyboard to resume use.</td>
</tr>
<tr>
<td>Restart</td>
<td>All open files and programs are closed. All drives are disengaged and memory is cleared. Your Mac safely shuts down, and then restarts automatically.</td>
</tr>
<tr>
<td>Shut Down</td>
<td>All open files and programs are closed. All drives are disengaged and memory is cleared. Your Mac then safely shuts down and turns off.</td>
</tr>
<tr>
<td>Log Out</td>
<td>All open files and programs are closed. All drives are disengaged and memory is cleared. Your Mac then logs out the current user, but continues running so the next user can log in and begin using the computer immediately, without waiting for the computer to boot up.</td>
</tr>
</tbody>
</table>
FIGURE B-20: Leopard shut down options

Shut down options for your Mac
Identify each of the items labeled in Figure B-21.

Match each statement with the term it describes.

9. The part of Leopard that is always active on the Leopard desktop and dock
   a. Dialog box
10. A glossy ribbon at the bottom of your computer screen that contains icons
    b. Menu bar
11. A silver bar across the top of the desktop that gives you easy access to operational commands
    c. Dock
12. Small images that represent programs, folders and files, and the Trash
    d. Icons
13. A type of window that opens after you select a menu command so you can specify settings for completing the operation
    e. Finder
Select the best answer from the list of choices.

14. Leopard is an operating system that:
   a. Interferes with your use of a computer.
   b. Manages the operation of a computer.
   c. Performs a single task, such as connecting to the Internet.
   d. Creates documents, such as a resume.

15. When you right-click with a pointing device such as a mouse, Leopard:
   a. opens a Windows tool or program.
   b. moves an object, such as a desktop icon.
   c. opens a shortcut menu.
   d. deletes the object.

16. Default settings are:
   a. preset settings that cannot be changed.
   b. preset settings that can be changed.
   c. viewable on the dock.
   d. permanent settings for the menu bar.

17. To open a menu:
   a. click the title or word on the menu bar.
   b. click the item on the dock.
   c. click the folder on the dock.
   d. click the Trash.

18. Which operation opens an item on the dock?
   a. Point
   b. Click
   c. Double-click
   d. Right-click

19. When you set your Mac to Sleep to end a Leopard session, Leopard:
   a. Completely shuts down the computer.
   b. Provides an option for switching users.
   c. Restarts your computer.
   d. Puts your Mac in a low power state and allows you to resume use quickly.

20. Which of the following options for ending your Leopard session safely turns your Mac off?
   a. Sleep
   b. Restart
   c. Shut down
   d. Log Out
**Skills Review**

1. **Start Mac OS X Leopard.**
   - **a.** Turn on your computer, then enter your user name and password (if necessary).
   - **b.** Identify the Finder menu bar, the dock, and the Macintosh HD icon on the desktop without referring to the lessons.
   - **c.** Compare your results to Figure B-2 to make sure that you have identified all the desktop items correctly.

2. **Use a pointing device.**
   - **a.** Point to the Trash icon and display its ScreenTip.
   - **b.** Drag the Macintosh HD icon to a new location on the desktop.
   - **c.** Double-click the Macintosh HD icon to open the Finder window.
   - **d.** Close the Finder window.
   - **e.** Drag the Macintosh HD icon back to its original location.

3. **Start a program.**
   - **a.** Using the ScreenTips, locate the Microsoft Word icon on the dock, then click it.
   - **b.** In the Microsoft Word window, click the down scroll arrow below the vertical scroll bar.
   - **c.** Drag the vertical scroll box slowly down the window to the bottom of the vertical scroll bar.
   - **d.** Click above the vertical scroll box in the vertical scroll bar to move the view of the window up.

4. **Move and resize windows.**
   - **a.** Click the Zoom button to expand the Microsoft Word window to full-size. (*Hint: The size of the window may not change dramatically.*)
   - **b.** Click the Minimize button to minimize the Microsoft Word window.
   - **c.** Click the minimized Word window on the dock to restore it to its original size and position on the desktop.
   - **d.** Drag the Word window to the right on the desktop.
   - **e.** Drag the Word window back to its original position.
   - **f.** Click and drag the size control to change the window width and height.
   - **g.** Close the Word window.

5. **Use menus.**
   - **a.** Click Word on the menu bar, then click Quit Word.
   - **b.** Click Finder on the menu bar, then click About Finder.
   - **c.** Click Window on the menu bar, then view the options on the menu.
   - **d.** Click away from the Window menu to close it.
   - **e.** Close the About Finder window.

6. **Use dialog boxes.**
   - **a.** Click the Apple icon on the menu bar, then click System Preferences.
   - **b.** In the System Preferences window, click the Speech icon under System.
   - **c.** Click the Text to Speech tab at the top of the Speech dialog box, if it is not already selected.
   - **d.** Click the arrows next to System Voice, click the male or female voice of your choice, then click the Play command button to hear the voice play. (*Hint: You may need to press [F12] or use the volume option on the right side of the menu bar to turn up the speaker volume.*)
   - **e.** Click to select the check box next to Announce when alerts are displayed.
   - **f.** Click the Set Alert Options command button.
   - **g.** Click the Play command button to hear the announcement.
   - **h.** Click OK.
   - **i.** Click to deselect the check box next to Announce when alerts are displayed.
   - **j.** Close the Speech dialog box.
SKILLS REVIEW (CONTINUED)

   a. Click Help on the menu bar.
   b. In the Search box, type dock.
   c. In the list next to Help Topics, click If you can't see the Dock.
   d. In the Mac Help window, read the instructions in the box titled "To make the Dock reappear:"
   e. Go to the Mac Help index.
   f. Click "D" in the Mac Help index, then scroll down and click Dock.
   g. Click the About the Dock Help topic, then read the topic.
   h. Close the Mac Help window.

8. End a Leopard session.
   a. If you are working in a computer lab, follow the instructions provided by your instructor for using the Apple menu to put the computer to sleep, restart the computer, shut down the computer completely, or log out of the computer.
   b. If you are working on your own Mac, use the Apple menu to choose the shut-down option you prefer.

INDEPENDENT CHALLENGE 1
You work as a teacher for ABC Computer Mentors. You need to prepare a set of handouts that provide an overview of some of the desktop features in Leopard for individuals enrolled in an upcoming class on Mac Survival Skills.

   a. Click Help on the menu bar.
   b. Type About the menu bar in the Search box, then click About the menu bar.
   c. Use the vertical scroll bar to read the information presented, click one of the links under Related Topics at the end, then read that information as well.
   d. Prepare a handwritten list of 5 features that you learned about using menus and the menu bar. Use the following title for your list: Interesting Information about Using Menus.
   e. Close the Mac Help window, write your name on your list, and submit it to your instructor.

INDEPENDENT CHALLENGE 2
A friend of yours has just purchased an iMac to use at home. She recently read an interesting article about the Preview program that comes with all new Macs and would like your help to find out more about this program.

   a. Click Help on the menu bar, then type Preview in the search box.
   b. From the list of search results, open the About Preview topic and read the information presented.
   c. After reading the information in the About Preview topic, use the Help menu to find and read the Previewing a document before you print Help topic.
   d. Prepare a handwritten summary of 2-3 paragraphs with the title What is Preview? listing some of the information you found about this topic.
   e. Close the Mac Help window, write your name on your summary, and submit it to your instructor.
The Dashboard is a feature of Mac OS X that displays information such as the weather, time, and date when the Dashboard icon is clicked on the dock. As a marketing analyst for Expert AI Systems in Philadelphia, Pennsylvania, you contact and collaborate with employees at an Australian branch of the company. Because your colleagues live in a different time zone, you want to add another clock to the Dashboard and customize it to show the time in Sydney, Australia. This way, you can quickly determine when to reach these employees at a convenient time during their workday hours.

**a.** Use the Help menu to search for information on **Customizing Dashboard widgets**.

**b.** Use this Help information to change the settings on the Dashboard's World Clock to apply to your city (or the closest big city to you in your time zone). If your Dashboard does not contain a World Clock, use the Help option to search for **Displaying Dashboard widgets** and follow the instructions to add the World Clock to the Dashboard.

**c.** Search for the **Adding widgets to the dashboard** Help topic, read the topic, then add a second World Clock to the Dashboard and set the time for Sydney, Australia.

**Advanced Challenge Exercise**

- Add a Unit Converter to the Dashboard.
- In the Unit Converter, change the Convert option to **Temperature**.
- Type **70** in the Fahrenheit box.

**d.** Search for a Help topic about removing Dashboard widgets, and then remove all widgets that you added to the Dashboard in this exercise.

**e.** Close the Dashboard.

**f.** Prepare a handwritten summary entitled **Using Widgets** that describes what settings you examined and how you might use them in your daily life.

**g.** Write your name on your summary and submit it to your instructor.
REAL LIFE INDEPENDENT CHALLENGE

As a New Year's resolution, you have decided to automate more of your life and depend less on paper files. You've investigated the features of the Mac and found that your Mac has an application called Address Book where you can store the contact information for family, friends, and business associates. This is a great step towards meeting your resolution, so you decide to use this application.

a. Using ScreenTips, locate the Address Book icon on the dock and open it.
b. Click All on the left side of the Address Book window to select the All Group.
c. Below the Name column in the Address Book window, click the Create a new card button. (Hint: The button has a plus sign on it.)
d. In the right pane, add your first and last name in the spaces provided and complete the Company, work Phone, and work Email entries with fictional information.
e. When you're finished entering information, click the Edit button at the bottom of the right pane to add your information to the Address Book.
f. Add fictitious contact information for four additional people.

Advanced Challenge Exercise

- Click the All group to select it.
- Click File on the menu bar, then click Print.
- In the Print dialog box, click the Expand button to the right of the Printer arrows if necessary to expand the dialog box.
- Click the Style arrows, then click Lists.
- Click Print.
- Circle your name on the printed list and submit it to your instructor.

g. Close the Address Book window.
h. Click Address Book on the menu bar, then click Quit Address Book.
Now that you’ve been introduced to the Mac, you’d like to learn how to use the Grab program to take a picture of your screen. Use the skills you learned in this unit to print a screen shot like that shown in Figure B-22:

- Search Mac Help for information about Grab, then open the Help topic shown in Figure B-22.
- Click Open Grab within the Help topic to open the Grab program on the desktop (as shown in Figure B-22, the Grab menu bar appears but a Grab window does not).
- Following the instructions in the Help topic, click Capture on the Grab menu bar, then click Screen to capture a picture of the computer screen. Follow the instructions in the dialog box that opens. The screen shot will appear in a new window.
- Close the Mac Help window, click File on the Grab menu bar, click Print to open the Print dialog box, then click Print to print the screen shot. Write your name on the printed screen shot, and submit it to your instructor.
- Close the screen shot window, then quit Grab.
Files You Will Need: No files needed.

**Finder** is a program on the Leopard operating system that you use to access the folders and files in your various storage devices. Each **storage device**, or **drive**, is a physical location for storing files. Most people store their files on the computer's hard disk and keep duplicate copies on other storage devices, such as a USB flash drive or a CD. The **hard disk** is a built-in, high-capacity, high-speed storage device for all the software, folders, and files on a computer. When you work with a program, you save the results in a **file**, which consists of stored electronic data such as text, a picture, a video, or music. Each file is stored in a **folder**, which is a container for a group of related files, allowing you to group them into categories such as reports, correspondence, or e-mail contacts. As a tour guide for Quest Specialty Travel (QST), you want to better understand how you can use Finder to manage the files you need for proposing, planning, organizing, and documenting QST tours.

**OBJECTIVES**
- Understand file management
- Open the Finder window
- Change views
- Create and save documents
- Open, edit, and print files
- Copy, rename, and move files
- Search for files
- Delete and restore files
Understanding File Management

Most of the work you do on a computer involves using programs to create files, which you then store in folders. Over time, you create many folders and files and save them on different storage devices. The process of finding your folders and files can become a challenge. File management is a strategy for organizing your files and folders so you can find your data quickly and easily. Finder is the primary tool you'll use for file management. As a QST tour guide for destinations in the South Pacific, you work with many types of files. You want to review how Finder can help you organize your files so you can find them when you need them.

You can use Finder to:

- **Create folders for storing and organizing files**
  Folders provide a location for your files and a way to organize them into groups of related files so that you can easily locate a file later. Leopard provides a **home folder** for each user that contains several subfolders in which you can save your files on the hard drive. The name of the user's home folder is the user's name. Most programs automatically open and use the Documents folder, a subfolder of your home folder, when you save or open files. You can also create additional folders or subfolders. You give each folder you create a unique, descriptive **folder name** that identifies the files you intend to place in the folder. A folder can also contain other folders, called **subfolders**, to organize files into smaller groups. This structure for organizing folders and files is called a **file hierarchy** because it describes the logic and layout of the folder structure on a disk. Figure C-1 illustrates how you might organize your tour folders and files within the Documents folder. In addition to the Documents folder, Leopard also provides folders in your home folder that are dedicated to specific types of files, such as the Pictures folder for image files, the Music folder for music or sound files, and the Downloads folder for content that you download from the Internet. Figure C-2 shows the standard folders that Leopard creates for each user in the home folder.

- **Rename, copy, and move folders and files**
  If you want to change the name of a folder or file, you can rename it. For example, you might change the name of the "French Polynesia Tour Proposal" file to "French Polynesia Tour" after your supervisor approves the tour. If you need a duplicate of a file, you can copy it. You can also move a folder or file to another folder or device.

- **Delete and restore folders and files**
  Deleting folders and files you no longer need frees up storage space on your devices and helps keep your files organized. Folders and files you delete are moved to a folder called the Trash. If you accidentally delete an important folder or file, or if you change your mind and want to restore a deleted folder or file, you can retrieve it from the Trash. If you're sure your Trash has nothing in it you might want to restore, you can empty it, which permanently removes the files or folders.

- **Locate folders and files quickly**
  Finder's search options help you quickly locate a folder or file if you forget where you stored it. If you know the date you last used the file or the type of the file, use the Search For group in the sidebar in the Finder window to find the file. If you can provide part of the folder or filename, or some text that appears in the file, use the Search field in the Finder window to easily locate it.

- **Use aliases to access frequently used files and folders**
  As your file structure becomes more complex, a file or folder you use often might be located several levels down the file hierarchy and require multiple steps to open. To save time, you can create aliases on your desktop to the files and folders you use frequently. An **alias** is a link that gives you quick access to an item, whether it's a folder, file, or program. Each icon on the dock is an alias for a program, folder, or file stored elsewhere on your computer.
Organizing your folders and files efficiently

Good planning is essential for effective file management. First, identify the types of files you work with, such as images, music, reports, and so on, and then determine a logical system for organizing your files. The Pictures and Music folders are good places to store images and music. The Documents folder is the most common place to store all of your other files. Within each folder, use subfolders to organize the files into smaller groups. For example, use subfolders in the Pictures folder to separate family photos from vacation photos, or to group them by year. In the Documents folder, you might group personal files in one subfolder and business files in another subfolder, and then create additional subfolders to further distinguish sets of files. For example, your personal files might include subfolders for resumes, letters, and income tax returns, to name a few. Your business files might include subfolders for clients, projects, and invoices. You should periodically reevaluate your folder structure to ensure that it continues to meet your needs.
Opening the Finder Window

Finder is unique to the Mac and is the main tool you'll use to interact with your computer. Finder starts automatically when you start your computer. The Finder window is an interactive window that provides access to your storage devices, files, search options, and file management tools. The Finder window is accessible from the default menu bar at the top of the screen or from the Finder icon on the dock. You decide to become acquainted with the Finder window so you can quickly and easily locate the files you'll need for QST tours.

1. Click the Finder icon on the dock

The Finder window opens with the home folder selected and the home folder's contents displayed in the right pane. Refer to Figure C-3 to identify the elements of the Finder window described below:

- The title bar contains the name of the resource, such as a folder or a device, whose contents are displayed in the right pane of the Finder window.
- The toolbar appears directly below the title bar and contains tools that aid with navigation, views, and file management. Table C-1 describes the tools on the Finder toolbar.
- The light blue area that makes up the left pane of the Finder window is called the sidebar. The sidebar is a navigation tool that provides quick access to many frequently-used resources on your Mac. When an item is selected in the sidebar, the item's contents are displayed in the right pane of the Finder window. The sidebar is divided into three or four groups:
  - The Devices group provides quick access to all of the storage devices available to your Mac, such as the hard disk and any external drives.
  - The Shared group is only shown if your Mac is connected to a network or to other computers. It lists all shared computers and servers to which the user has access.
  - The Places group provides quick access to the Desktop folder, your home folder, the Applications folder, and your Documents folder.
  - The Search For group helps you find a file quickly by viewing files you've used recently or by viewing only a certain type of file.
- The toolbar control in the upper-right corner of the window hides the toolbar and sidebar when clicked. Once the toolbar and sidebar are hidden, click the toolbar control again to show them.
- The size control at the bottom-right corner of the window enables you to resize the Finder window.
- The status bar lists the number of items in the selected folder or storage device. It also lists the available space on the selected storage device.

### Table C-1: Tools on the Finder toolbar

<table>
<thead>
<tr>
<th>tool</th>
<th>used to</th>
</tr>
</thead>
<tbody>
<tr>
<td>Back and Forward buttons</td>
<td>Display the previous or next file location in the window</td>
</tr>
<tr>
<td>View buttons</td>
<td>Change the arrangement and view of the files and folders in the window</td>
</tr>
<tr>
<td>Quick Look button</td>
<td>Display the contents of a selected file as a large preview without opening the file</td>
</tr>
<tr>
<td>Action button</td>
<td>Perform file management commands such as creating a new folder, opening a file, or copying a file or folder</td>
</tr>
<tr>
<td>Search field</td>
<td>Search for files by filename or file content</td>
</tr>
</tbody>
</table>
The home folder and its contents

The user's home folder is the location designated by Leopard to store all of the files created by the user. By default, each time you click the Finder icon on the dock, the Finder window opens with the home folder selected. Inside the home folder are the Documents folder and eight additional folders, each for different kinds of files. The Desktop folder contains all items on the user's desktop, except for external storage devices such as USB flash drives. The Downloads folder is the default location for all files downloaded from the Internet. The Library folder is the designated location for preferences files and user data and is maintained by Leopard. The Movies, Music, and Picture folders are the designated locations for all movies, music, and picture files, respectively. These folders open by default when you import video from a digital camera, download music from iTunes, or import digital photo files. The Public folder is the designated folder to place any files you'd like to share with other users of your Mac. The Sites folder is the location for your Web pages. Used in conjunction with the Apache Web server software, you can host a Web site on your computer. With the exception of the Public and Sites folder, all folders in the home folder are private and available only to the user.
Changing Views

Leopard provides several ways of displaying your files and folders in the Finder window. Each display, or view, presents the items shown in the main area of the Finder window in a different way. The four main views, icon view, list view, columns view, and Cover Flow, can be selected using the View buttons in the Finder window or using the View option on the Finder menu bar. The fifth view, Quick Look, is accessible only from the Finder window. When you open the Finder window, the current view is the view that was selected when Finder was last used.

You decide to look at the different views in Finder to determine the view that you would most like to use as you work.

Steps

1. In the Finder window, click the Icon View button on the toolbar if necessary
   The right pane displays the contents of your home folder as icons, as shown in Figure C-4.

2. Click the List View button on the toolbar to switch to list view
   As shown in Figure C-5, the right pane displays the contents of your home folder in an alphabetical list with additional details about each file and folder provided, such as Name, Date Modified, Size, and Kind. The Size column shows the sizes of files but does not list sizes for folders. The Kind column lists the file type or the program that created the file.

3. Click the Columns View button on the toolbar to switch to columns view
   The right pane displays the contents of your home folder in a multicolumn format.

4. In the right pane of the Finder window, click the Pictures folder in the first column
   The contents of the Pictures folder are displayed in the column to the right.

5. In the second column, click the iChat icons subfolder, then click the Planets subfolder in the third column
   The Planets subfolder contains the planet icons available for use in the iChat program that comes with Leopard. Compare your computer screen to Figure C-6.

6. With the Planets subfolder selected, click the Cover Flow button on the toolbar
   The right pane of the Finder window is divided in two. In the top section of the pane, a preview of the first file in the Planets subfolder appears with a horizontal scroll bar beneath it. The bottom section of the right pane displays the selected subfolder's contents as a detailed list. Compare your screen to Figure C-7.

7. Click the Jupiter.gif file in the bottom section of the right pane, then click the Quick Look button on the toolbar
   When you initially click the file in the bottom section of the pane, a preview of the file appears in the top section of the pane. When you click the Quick Look button, a larger preview of the file is displayed in front of the Finder window, as shown in Figure C-8. Quick Look is a new feature of the Leopard operating system that allows you to preview the contents of a file without actually opening it. You can click the Full Screen button at the bottom of the Quick Look window to enlarge the Quick Look preview to full-screen size.

8. Close the Quick Look window, then click on the toolbar
   The Finder window changes to columns view again. A preview of the selected Jupiter.gif file appears in the furthest right column.

9. Close the Finder window
FIGURE C-4: Icon view

FIGURE C-5: List view

FIGURE C-6: Planets subfolder selected in columns view

FIGURE C-7: Cover Flow

FIGURE C-8: Quick Look

Understanding File Management
Creating and Saving Documents

Any file you create with a program is temporarily stored in your computer's RAM (random access memory). Anything stored in RAM is lost when you turn off your computer or if the power fails unexpectedly. Before you close a file or exit a program, you must create a permanent copy of the file by saving it on a disk or device. You can save files in the Documents folder in your home folder, on your hard drive, or on a removable storage device such as a USB flash drive. When you save a file, choose a filename that clearly identifies the file contents. Filenames can be no more than 255 characters, including spaces, and can include letters, numbers, and certain symbols. If you want to use Microsoft Word to create a to-do list for your next tour, and you plan to save the file to the Documents folder.

1. **Click the Microsoft Word icon on the dock**
   Microsoft Word 2008 opens and a new, blank document window appears on the desktop. In the document window, a blinking cursor identifies the insertion point, which is where any text you type will appear.

2. **Type To-Do List on the first line, then press [return] three times**
   Each time you press [return], Word inserts a new blank line and places the insertion point at the beginning of the line.

3. **Type the text shown in Figure C-9, pressing [return] at the end of each line**

4. **Click File on the menu bar, then click Save As**
   The Save As dialog box opens with the Documents folder selected as the Where location in which to save the file, as shown in Figure C-10. By default, Word 2008 creates a temporary filename of To.docx in the Save As text box, with the word To highlighted in blue. You'll need to type a more descriptive filename.

5. **In the Save As text box, replace To with To-Do List, then click the Expand button to the right of the Save As text box if necessary**
   The Save As dialog box expands to show the contents of the Documents folder, as shown in Figure C-11.

6. **Click Save in the Save As dialog box**
   Word saves the document in a file named “To-Do List” in the Documents folder and closes the Save As dialog box. The title bar of the Word window now displays “To-Do List.docx”—the filename you entered, followed by the file extension .docx. A file extension identifies the type of file. Each program assigns a file extension to files you create, so you only need to enter a name for the file. Depending on how Leopard is set up on your computer, you may not see the file extensions.

7. **Click Word on the menu bar, then click Quit Word**
   The Word file and the program close.
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FIGURE C-9: Word 2008 document

FIGURE C-10: Save As dialog box

FIGURE C-11: Expanded Save As dialog box

Understanding File Management
Opening, Editing, and Printing Files

You create many new files as you work, but often you want to change a file that you or someone else already created. After you open an existing file stored on a disk, you can edit, or make changes, to it. For example, you might want to add or delete text, or change the formatting (the appearance) of the text. After you finish editing, you usually save the file with the same filename, which replaces the file with the copy that contains your changes. If you want to keep the original file, you can save the edited file with a different filename; this keeps the original file without the edits and creates a new file with the most recent changes. When you want a hard copy, or paper copy of the file, you need to print it.

You need to add two items to your To-Do List, so you want to open and edit it, then print it.

<table>
<thead>
<tr>
<th>STEPS</th>
</tr>
</thead>
</table>

1. **Click the Finder icon on the dock**
   The Finder window opens with the contents of the home folder displayed in columns view.

2. **Click the Documents folder in the first column of the right pane of the Finder window**
   A second column in the right pane displays the contents of the Documents folder, as shown in Figure C-12.

3. **Double-click To-Do list.docx in the second column**
   The program that created the file, Word, loads and opens the selected file, To-Do List.docx, in the Word window.

4. **Click at the beginning of the last blank line in the To-Do List, then type the two additional lines shown in Figure C-13, pressing [return] after each line**

5. **Click the Save button on the Standard toolbar**
   The original To-Do List.docx file is replaced by the edited To-Do List.docx file in the Documents folder.

6. **Click File on the menu bar, then click Print Preview**
   Print Preview displays a full-page view of your document, as shown in Figure C-14, so you can check its layout before you print. If you need to make additional edits, click the Close button on the Print Preview toolbar (not the title bar), make your changes, and then use Print Preview to check the document again before printing.

7. **Click the Print button on the Print Preview toolbar, then retrieve your printed copy from the printer**
   Print Preview closes and returns to the Word window, and your document is printed.

8. **Click Word on the menu bar, then click Quit Word**
   Word closes.
FIGURE C-12: Documents folder in Finder window

Contents of Documents folder (yours may differ)
Open this file

FIGURE C-13: Edited To-Do List file

Additional text

FIGURE C-14: Print Preview

Print button
Closes Print Preview, but not the document

Understanding File Management
Mac OS X 67
Copyng, Renaming, and Moving Files

Periodically, you might need to copy, rename, or move a file to keep your files organized and easy to find. You can copy or move a file, a group of files, or a folder from one storage device to another or from one folder to another. When you copy a file, the original file stays in its current location and a duplicate of the file is created in another location. This feature lets you make a backup of your important files. A backup is a copy of a file that is stored in another location. If you lose the original file, you can make a new working copy from your backup. When you move a file, the original file is stored in a different location and no longer remains in the original location. One of the fastest ways to move a file is with drag and drop (which uses a pointing device to drag a file or folder to a new location). You might also need to rename a file, giving it a name that more clearly describes the file's contents and how you intend to use the file.

As you can work with your To-Do List.docx file when you travel, you plan to copy the file to a new folder on your USB flash drive and then rename it. You also want to move the original file to the desktop so you can easily access it to update the list for your next tour.

**STEPS**

1. **Attach your USB flash drive to your computer and wait for its icon to appear on the desktop**
   
   When the icon for your USB flash drive appears on the desktop and is listed under Devices in the Finder window, it is ready to use.

2. **In the Finder window, click the USB flash drive under Devices, click the Action button on the toolbar, then click New Folder**
   
   A new folder, temporarily named "untitled folder", is added to your USB flash drive, as shown in Figure C-16. The folder name is highlighted so you can type a more descriptive name.

3. **Type French Polynesia Tour as the name of the new folder, then press [return]**
   
   The name of the folder changes and the folder is selected in the Finder window. Because the folder is empty, there are no contents to display in the next column.

4. **Click Documents under Places in the sidebar, click and drag the To-Do List.docx file from the Documents folder on top of the USB flash drive under Devices until a rounded rectangle appears around the name of your USB flash drive and the contents of the drive appear in the right pane of the Finder window (do not release the mouse button)**

5. **Drag the file on top of the French Polynesia Tour folder in the right pane of the Finder window until the folder is highlighted blue, then release the mouse button**

   As shown in Figure C-17, the To-Do List.docx file has been copied to the French Polynesia Tour folder on your USB flash drive. This method of copying files is called drag and drop. The spring-loaded folders feature of Leopard, in which dragging the file on top of a folder causes the folder to "spring" open and display its contents in the Finder window, enables you to drag and drop files between different locations without having to open additional Finder windows. There are now two copies of the To-Do List.docx file stored in two different locations.

6. **Click the To-Do List.docx file in the second column, then press [return]**

   The first part of the filename is highlighted and can be edited.

7. **Type Tour Preparation, then press [return]**

   The file's name changes to Tour Preparation.docx.

8. **Click Documents in the sidebar, then click and drag the original To-Do list.docx file to the desktop**

   The file moves from the Documents folder to the desktop, as shown in Figure C-18.
Using drag and drop to copy and move files

If you drag and drop a file to a folder on the same storage device, the file is moved into that folder. However, if you drag and drop a file to a folder on another device, the file is copied instead. If you want to move a file to another drive, press and hold down [ ⌘ ] while you drag and drop. If you want to copy a file to another folder on the same drive, press and hold down [ option ] while you drag and drop.
Searching for Files

After creating, saving, and renaming folders and files, you might forget where you stored a particular folder or file, forget its name, or both. Your Mac has several tools that can aid you in your search for a file. The sidebar in the Finder window contains the Search For group, which gives you quick access to predefined subsets of files on your computer organized by date saved or by file type. In addition, the Search field of your Finder window can help you find a file by name or content. Table C-2 lists the available search options that come with the Leopard operating system.

You want to quickly locate the copy of the To-Do List for your next tour.

1. In the Search field in the upper-right corner of the Finder window, type To-
   As soon as you start typing, Leopard goes to work. When you finish typing your entry, the search results are listed in the right pane of the Finder window, as shown in Figure C-19. Your search results will differ; however, all of the search results will have the characters “To-” somewhere either in the name of the item or in the file’s contents. By default, the results are listed in order of the date each file was Last Opened, but can easily be sorted by Name or Kind by clicking the appropriate column heading.

2. In the right pane, double-click To-Do List.docx
   The To-Do List.docx file opens in Microsoft Word.

3. Click Word on the menu bar, then click Quit Word

4. Under Search For in the sidebar, click Today
   Using any option in the Search For group narrows the search based on predefined criteria. Today lists all files and programs opened or saved today. Yesterday lists all files and programs opened or saved yesterday. Past Week lists all files and programs opened or saved within the last week. All Images lists only image files; All Movies lists only video and movie files; All Documents lists all files on your computer.

<table>
<thead>
<tr>
<th>TABLE C-2: Search options available with Leopard</th>
</tr>
</thead>
<tbody>
<tr>
<td>search option</td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>Search For group</td>
</tr>
<tr>
<td>Search field</td>
</tr>
<tr>
<td>Spotlight search field</td>
</tr>
<tr>
<td>Find command</td>
</tr>
</tbody>
</table>
Working with stacks

By default, the Documents and Downloads folders appear both in the Finder window and on the dock (to the right of the dashed line and next to the Trash). When you click a folder on the dock, it doesn't open in a separate window; instead, the folder springs open in an arc or grid to reveal its contents, as shown in Figure C-15. This method of displaying the contents of the folder is called a stack. Once a stack is open, click an item in the stack, such as a file or folder, to open it on the desktop.
Deleting and Restoring Files

If you no longer need a folder or file, you can delete (or remove) it from your computer. If you delete a folder, Leopard removes the folder as well as everything stored in it. Leopard places folders and files you delete in the Trash. If you later discover that you need a deleted file or folder, you can drag it out of the Trash as long as you have not yet emptied the Trash. Emptying the Trash removes the deleted folders and files from your computer. By deleting files and folders you no longer need and periodically emptying the Trash, you free up valuable storage space on your devices and keep your computer uncluttered.

You have the updated copy of the Tour Preparation.docx file stored on your USB flash drive, so you want to delete the To-Do List.docx from the desktop.

You can also right-click a file or folder, then select Move to Trash to delete the file or folder.

QUICK TIP

1. Click Desktop in the sidebar in the Finder window
2. Drag the To-Do List file from the Desktop folder in the Finder window to the Trash icon on the dock
   The To-Do List file is deleted from the desktop and the Desktop folder, as shown in Figure C-20. If your Trash icon on the dock appeared empty before this step, it will now appear to contain crumpled paper. This indicates that it contains deleted files or folders.
3. Click 🗑️ on the dock
   A new Finder window opens displaying the contents of the Trash, as shown in Figure C-21. Your Trash's contents may differ.
4. Click and drag the To-Do List.docx file from the right pane over Documents in the sidebar until a rounded rectangle appears around Documents, then release the mouse button
   When you release the mouse button, the file is restored, or moved from the Trash to a new location on your computer (in this case, the Documents folder).
5. Click Documents in the sidebar if necessary, then drag the To-Do List.docx file from the Documents folder to 🗑️ on the dock
6. Click Finder on the menu bar, click Empty Trash, then click OK in the dialog box that appears
   The trash is emptied, and the Trash icon on the dock no longer has crumpled paper in it.
7. Close all open Finder windows
Emptying the Trash

When you empty the Trash, Leopard marks the physical location of the files and folders in the Trash for reuse. Disk reading utilities can recover these files until the space has been reused. If you want to delete files that contain sensitive information and prevent them from being recovered, click Finder on the menu bar, then click Secure Empty Trash. Secure Empty Trash overwrites the space previously occupied by the deleted files and folders.
Label each of the elements of the Finder window shown in Figure C-22.

Match each statement with the term it best describes.

10. file management  
11. filename  
12. folder  
13. storage device  
14. alias

- a. A container for related files
- b. A link that provides quick access to a folder, file, or program
- c. A physical location for storing files and folders
- d. Organizing and managing folders and files
- e. The name that you assign to a file to identify its contents
Select the best answer from the list of choices.

15. The ____________ is a built-in, high-capacity, high-speed storage medium for all the software, folders, and files on a computer.
   a. hard disk
   b. home folder
   c. sidebar
   d. USB flash drive

16. A ____________ is a unit of stored, electronic data.
   a. device
   b. file
   c. folder
   d. search

17. ____________ is a strategy for organizing your files and folders.
   a. The desktop
   b. The hard disk
   c. File hierarchy
   d. File management

18. ________ view displays the contents of the current folder as an alphabetical list with additional details about each file and folder provided.
   a. Icon
   b. List
   c. Columns
   d. Cover Flow

19. ________ view allows you to preview the contents of files within a folder and to see the folder's contents as a list.
   a. Icon
   b. List
   c. Columns
   d. Cover Flow

20. After you copy a file, you have:
   a. only one copy of the file.
   b. a duplicate copy of the file in a different location.
   c. moved the original file to a new location.
   d. deleted the file.

21. When you delete a file from your hard disk drive, Leopard:
   a. puts the deleted file in the Trash.
   b. permanently deletes the file from the hard disk drive.
   c. stores a duplicate copy of the file in the Trash.
   d. moves the file to a removable disk.
SKILLS REVIEW

1. Understand file management.
   a. Assume you manage a small travel agency. How would you organize your business files using a hierarchical file structure?
   b. What aliases would you place on your desktop for easier access to your business files?

2. Open the Finder window.
   a. List and describe the functions of as many components of the Finder window as you can without referring to the lessons.
   b. Compare your results to Figure C-3 to make sure that you have identified all the elements.

3. Change views.
   a. Double-click the Macintosh HD icon on the desktop to open its contents in the Finder window.
   b. If necessary, change the view to icon view.
   c. Change the view to list view.
   d. Change the view to columns view.
   e. Click the Applications folder in the first column of the right pane to view its contents in the next column.
   f. Scroll down, locate the Utilities folder, then click the Utilities folder to view its contents in the next column.
   g. Change the view of the Utilities folder to Cover Flow to preview the icon images that represent the utilities.
   h. Scroll through the bottom section of the right pane until you find Disk Utility, click Disk Utility, then view Disk Utility in the Quick Look window.
   i. Close the Quick Look window.
   j. Change the view to columns view.

4. Create and save documents.
   a. Open Microsoft Word using the dock.
   b. Type Oceania Tours on the first line of the document, followed by one blank line.
   c. Type your name, followed by two blank lines.
   d. Use Word to create the following list of current Oceania tours. (Hint: After you type the first numbered line, the rest of the lines will be automatically numbered.)

      Current Tours:
      1. French Polynesia
      2. Fiji Islands
      3. Pitcairn Islands
      4. Tonga
      5. Niue
      6. Tokelau
   e. Save the Word file with the filename Oceania Tours in the Documents folder. (If you are prompted that “Oceania Tours already exists. Do you want to replace it?”, click Replace.)
   f. View the filename in the Word title bar, then quit Word.

5. Open, edit, and print files.
   a. Use the Finder window to open the file named Oceania Tours.docx from the Documents folder.
   b. Click at the end of the line containing the last current tour (Tokelau), press [return], then add the names of two more tours on two separate lines: Palau and Tuvalu.
   c. Save the edited Word file.
   d. Use Print Preview to display a full-page view of the document.
   e. Print the Oceania Tours.docx document, retrieve your printed copy from the printer, then quit Word.
6. Copy, rename, and move files.
   a. Attach your USB flash drive to your computer.
   b. When your USB flash drive has been recognized by your Mac, open the drive and create a folder on it with the name **Oceania Tours**.
   c. Copy the Oceania Tours.docx file from your Documents folder to the Oceania Tours folder on your USB flash drive.
   d. Rename the Oceania Tours.docx file on your USB drive to be **Current Oceania Tours.docx**.
   e. Move the original Oceania Tours.docx file from your Documents folder to the Desktop folder.

7. Search for files.
   a. In the Finder window Search field, type **Oceania**.
   b. Examine the Search results, then open the original Oceania Tours.docx file.
   c. Quit Word.
   d. Using the Search For group on the sidebar, click Past Week to list all the programs and files open and saved within the last week.

8. Delete and restore files.
   a. Click and drag the original Word file with the name Oceania Tours.docx from the desktop (or the Desktop folder in the Finder window) to the Trash.
   b. Open the Trash to view its contents.
   c. Drag the file named Oceania Tours.docx to the Documents folder.
   d. Select the Oceania Tours.docx file in the Documents folder, move it to the Trash again, then close all open Finder windows.
   e. Empty the Trash.
   f. Submit the printed copy of your revised Word document and your answers to Step 1 to your instructor.
**INDEPENDENT CHALLENGE 1**

To meet the needs of high-tech workers in your town, you have opened an Internet café named Internet To-Go where your customers can enjoy a cup of fresh-brewed coffee and bakery goods while they work online. To promote your new business, you want to develop a newspaper ad, flyers, and breakfast and lunch menus.

a. Connect your USB flash drive to your computer, if necessary.

b. Create a new folder named **Internet To-Go** on your USB flash drive.

c. In the Internet To-Go folder, create three subfolders named **Advertising**, **Flyers**, and **Menus**.

d. Use Word to create a short ad for your local newspaper that describes your business:
   - Use the name of the business as the title for your document.
   - Write a short paragraph about the business. Include a fictitious location, street address, and phone number.
   - After the paragraph, type your name.

e. Save the Word document with the filename **Newspaper Ad** in the Advertising folder.

f. Preview and then print your Word document, then quit Word.

**INDEPENDENT CHALLENGE 2**

As a freelance writer for several national magazines, you depend on your computer to meet critical deadlines. Whenever you encounter a computer problem, you contact a computer consultant who helps you resolve the problem. This consultant asked you to document, or keep records of, your computer’s current settings.

a. Connect your USB flash drive to your computer, if necessary.

b. Open the Finder window so that you can view information on your drives and other installed hardware.

c. Open Word and create a document with the title **My Computer Documentation** and your name on separate lines.

d. List the names of the devices connected to your computer.

e. List the folders and files in your Documents folder (if there are more than five, list only the first five).

f. List the folders and files on your desktop (if there are more than five, list only the first five).

g. Save the Word document with the filename **My Computer Documentation** on your USB flash drive.

h. Preview your document, print it, then quit Word.
As an adjunct, or part-time, instructor at Everhart College, you teach special summer classes for kids on how to use and create computer games, compose digital art, work with digital photographs, and compose digital music. You want to create a folder structure on your USB flash drive to store the files for each class.

a. Connect your USB flash drive to your computer, then open it.
b. Create a folder named **Computer Games**.
c. In the Computer Games folder, create a subfolder named **Class 1**.

**Advanced Challenge Exercise**

- In the Class 1 folder, create subfolders named **Class Outline** and **Hands-On Lab**.
- Rename the Class Outline folder to **Class Handouts**.
- Create a new folder named **Interactive Presentations** in the Class 1 folder.

d. Use Word to create a document with the title **Photocopying** and your name on separate lines, and the following list of items that you need to photocopy for the first class:
   - **Class 1:**
     - **Class 1 Topics & Resources**
     - **Hands-On Lab Assignment**
   - **On Your Own Exercise**
   - **Interactive Presentation Slides**

e. Save the Word document with the filename **Photocopying** in the Class 1 folder. *(Hint: After you switch to your USB flash drive in the Save As dialog box, open the Computer Games folder, then select the Class 1 folder before saving the file.)*

f. Preview and print the Photocopying.docx file, then quit Word.

g. Draw a diagram of your new folder structure on the printed copy of your Word document.

**REAL LIFE INDEPENDENT CHALLENGE**

*This Real Life Independent Challenge requires an Internet connection.* You want to open a small specialty shop for pottery, stained glass, handcrafts, and other consignments from local artists and craftspeople. First, you need to search for information on the Internet about preparing a business plan so that you can obtain financing from your local bank for the business.

a. Search the Internet for information on **Preparing a Business Plan**. Locate a Web site that contains information on how to write a business plan.

b. Start Word and create a document in which you summarize in your own words the basic process for preparing a business plan. Include a title and your name in the document. At the bottom of your document, list the URL of the Web site or sites from which you prepared your Word document. *(Note: Because many organizations copyright the content on their Web sites, you should not copy the exact content of a Web site, but instead summarize your findings in your own words. If you want to determine what content at a Web site is copyrighted and the conditions for using that content, scroll to the bottom of the Web site and click the link that covers copyright use and restrictions.)*

c. Save the file on your USB flash drive with the filename **Preparing a Business Plan**.

d. Preview and print your Word document, then quit Word.
As a technical support specialist at Advanced Robotic Systems, Ltd., in Great Britain, you need to respond to employee queries quickly and thoroughly. You decide that it is time to evaluate and reorganize the folder structure on your computer so you can quickly access the resources required for your job. Create the folder structure shown in Figure C-23 on your USB flash drive. As you work, use Word to prepare a simple outline of the steps you followed to create the folder structure. Include your name in the document and save it as Reorganizing My Folder Structure on your USB drive. Preview and print the document, then submit it to your instructor.

**FIGURE C-23**

![Diagram of folder structure]

- Tech Support
  - Robotic Systems
    - Troubleshooting Database
    - Contacts
  - Computer Systems
    - Troubleshooting Database
    - Leopard
      - Articles
      - Resources
  - Articles & Resources
Getting Started with Safari

In this unit, you learn how to use the Safari browser to find information on the World Wide Web (WWW or the Web). You will learn how to navigate from one Web page to another and how to search for information on the Web. You will also learn how to print Web pages and how to get helpful information about using Safari. You need to connect to the Internet to complete this unit.

At Quest Specialty Travel (QST), the tour developers for each region provide laptop computers with mobile Internet technology to all tour guides. Guides can then use the Internet to get the latest information on local weather, events, and news while traveling with the groups. Each computer has Safari installed as the browser. Your job is to teach the guides to use the Safari browser so they can use the Internet during their tours.

OBJECTIVES
Understand Web browsers
Start and explore Safari
View and navigate Web pages
Use tabbed browsing
Bookmark Web pages
Print a Web page
Search for information
Get Help and quit Safari
Understanding Web Browsers

The World Wide Web (also called the Web or WWW) is the part of the Internet that contains linked Web pages. Web pages are documents that can contain text, graphics, sound, and video. Web browsers (also called browsers) are software programs used to access and display Web pages. You must have a computing device, an Internet connection, and a browser to view Web pages. Browsers such as Safari, Internet Explorer, Opera, and Firefox, make navigating the Web easy. When you view Web pages with a browser, you click words, phrases, or graphics called hyperlinks, or simply links, to connect to and view other Web pages. Links can also open graphics files or play sound or video files. This unit features Safari, a popular browser from Apple. Figure D-1 shows how the Safari browser displays a Web page from the U.S. government’s White House Web site. The tour developers have asked you to become familiar with Safari and the Web so you can teach the guides how to find information for their tours. You discuss the features and benefits of using Safari.

Using Safari, you can:

- **Display Web pages**
  You can access Web sites from all over the world with a Web browser. A Web site is a group of Web pages focused on a particular subject. Web sites exist for individuals, businesses, museums, governments, charitable organizations, and educational institutions. There are Web sites for the arts, music, politics, education, sports, and commerce—for any topic, interest, or endeavor in the world. The QST tour guides can use the Web to get up-to-date information about the places they are touring.

- **Use links to move from one Web page to another**
  You can click the hyperlinks on a Web page to get more information about a business, city, or organization. For example, if a museum is on the tour, a guide can visit the museum’s Web site and click links to Web pages that describe current exhibits, visiting hours, or special tours.

- **Play audio and video clips**
  A Web browser can play audio and video clips if it has been configured to do so and if your computer has the appropriate hardware, such as speakers. In their research, tour guides might find Web pages that include video clips of historic buildings, shopping trips, local stories and customs, or other information about a region.

- **Search the Web for information**
  A search engine is a special Web site that quickly searches the Internet for Web sites based on words or phrases that you enter. Tour guides can take advantage of search engines to look for Web sites that focus on a country, government, region of travel, or on a specific topic of interest.

- **Bookmark Web pages**
  You can bookmark Web pages that you might need to visit again, such as a page for a specific museum, city, or map. Safari makes it easy to bookmark your favorite Web sites so they are easily accessible when you want to view them later. Tour guides can save pages for historic sites or museums for each city they visit.

- **Print or save the text and graphics on Web pages**
  If you want to keep a hard copy of the information or images you find on the Web, you can simply print the Web page, including any graphics. You can also save the text or graphics on a Web page or copy the information temporarily to the Clipboard, where it is available for pasting into other programs. Tour guides can print maps or informational paragraphs from the Web to hand out to the groups.

- **E-mail Web pages**
  If you want to share a Web page with a colleague, you can e-mail a link to the page or e-mail the page itself directly from the browser window. The person receives the page or the link as part of an e-mail message.
The Internet, computer networks, and intranets

A computer network is the hardware and software that makes it possible for two or more computers to share information and resources. An intranet is a computer network that connects computers in a local area only, such as computers in a company's office. Users can connect to intranets from remote locations to share company information and resources. The Internet is a network of connected computers and computer networks located around the world. The Internet is an international community; Web pages exist from nearly every country in the world. There are over 200 million users worldwide currently connected to the Internet through telephone lines, cables, satellites, and other telecommunications media. Through the Internet, these computers can share many types of information, including text, graphics, sound, video, and computer programs. Anyone who has access to a computer and a connection to the Internet through a computer network or modem can use this rich information source.

The Internet has its roots in the U.S. Department of Defense Advanced Research Projects Agency Network (ARPANET), which began in 1969. In 1986 the National Science Foundation formed NSFNET, which replaced ARPANET. NSFNET expanded the foundation of the U.S. portion of the Internet with high-speed, long-distance lines. By the end of the 1980s, corporations began to use the Internet to communicate with each other and with their customers. In 1991, the U.S. Congress further expanded the Internet's capacity and speed and opened it to commercial use. The World Wide Web was created in Switzerland in 1991 to allow links between documents on the Internet. The first graphical Web browser, Mosaic, was introduced at the University of Illinois in 1993, leading to the development of browsers such as Netscape Navigator and Internet Explorer. With the boom in the personal computer industry and the expanding availability of inexpensive desktop machines and powerful, network-ready servers, many companies were able to join the Internet for the first time in the early 1990s. The Web is now an integral component of corporate culture, educational institutions, and individuals' personal lives. The Web is used daily for commerce, education, and entertainment by millions of people around the world.
Starting and Exploring Safari

To use the Internet, you need a computing device, an Internet connection, and a Web browser. Safari, Apple's Web browser, reads and displays Web pages, enabling you to view, print, and search for information on the Web. Typically, after Safari is installed, its icon appears on the dock. Before you teach the tour guides how to view Web pages and navigate from one page to another, you show them how to start the browser and explain the components of the Safari browser window.

1. Locate the Safari icon [x] on the dock, as shown in Figure D-2, then click [x].

Safari opens and displays your home page. A home page is the first Web page that opens every time you start a browser. The term "home page" also applies to the main page of a Web site. Figure D-3 shows the Apple home page. The home page for your browser may be different. Look at the home page on your screen and compare the elements described, using Figure D-3 as a guide.

The elements of the Safari window include the following:

- The menu bar provides access to most of the browser's features through a series of menus.
- The toolbar contains the following tools to help you browse Web pages with Safari:
  - Back and Forward buttons allow you to access the Web pages that you have viewed since opening the browser.
  - The Add a bookmark button opens a dialog box that you use to name a bookmark and add it to the bookmarks bar or the Bookmarks menu.
  - The address field displays the address of the Web page that's open in the active tab. The Web page's address, called the Uniform Resource Locator (URL), appears in the address field after you open (or load) the page. A button for reloading the current page appears on the right side of the address field.
  - The search field uses the Google search engine to help you search the Internet for Web sites about a particular topic. You can enter a keyword or words in the search field, then press [return] to produce a Google Web page displaying relevant search results. To view your recent searches, you can click the magnifying glass button on the left side of the search field.
- The bookmarks bar contains buttons you can use to go directly to Web pages you have bookmarked, to the bookmark library, to a page showing your Top Sites, and to several popular Web sites whose bookmarks are built into the bookmarks bar.
- The browser window is the area where the current Web page appears.
- The status bar displays information about the page that is loading. It also displays the Web address of a link when you hold your mouse pointer over one.
- The vertical scroll bar appears along the right side of a page if the page is longer than the window's viewable area. The horizontal scroll bar appears along the bottom of a page if the page is wider than the window's viewable area. The scroll box within each scroll bar indicates your relative position within the Web page.
Understanding URLs

Every Web page has a unique address on the Web, also known as the URL (Uniform Resource Locator) for the page. Browser software locates a Web page based on its address. All Web page addresses begin with “http,” which stands for Hypertext Transfer Protocol, the set of rules for exchanging files on the Web. This is followed by a colon and two forward slashes. Most pages begin with “www” (which indicates that the page is on the World Wide Web), followed by a dot, or period, and then the Web site's name, known as the domain name. Following the domain name is another dot and the top-level domain, which tells you the type of site you are visiting. Examples of top-level domains are com (for commercial sites), edu (for educational institutions), and org (for organizations). After the top-level domain, another slash and one or more folder names and a filename might appear.
Viewing and Navigating Web Pages

Moving among Web pages is simple with hyperlinks. When you click a hyperlink, you navigate to, or open, another location on the same Web page or jump to an entirely different Web page. You can follow a link to obtain more information about a topic by clicking a linked word or phrase. In addition to links on Web pages themselves, you can use the navigation tools in Safari to move around the Web. You can navigate from page to page using the Forward and Back buttons, and you can use the History menu to return to your home page or to view a list of previously viewed Web pages.

You look at the Library of Congress Web site for information for a tour traveling to Washington, D.C.

1. **Triple-click anywhere in the address field**
   Clicking the address field once activates the address field; double-clicking the address field highlights a word or part of the Web site address; and triple-clicking the address field highlights the entire Web site address. Any text you type when the entire address is highlighted replaces the address.

2. **Type **www.loc.gov**, then press [return]**
   After you press [return], Safari automatically adds the “http://” (protocol) to the beginning of the address you type. As the page loads, the status bar displays the current status of the Web site; when the page is completely loaded, the status bar is blank. After a moment, the home page for the Library of Congress opens in the browser window, as shown in Figure D-4. The name of the Web page appears above the toolbar at the top of the window. A Web page icon matching the Library of Congress logo appears to the left of the Web page name in the address field. Web pages change frequently, so the Web page in your window may look different from that shown in the figure. The page contains both pictures and text, some of which are hyperlinks.

3. **Place your mouse pointer over the Visitors link in the Resources for section**
   When you place the pointer over a hyperlink, the pointer changes to ➔ and the URL for the hyperlink appears after the words “Go to” on the status bar. A ScreenTip may also appear, giving you more information about the linked page.

4. **Click the Visitors link**
   The Visitors page opens in your Web browser window, as shown in Figure D-5.

5. **Click the Back button ➔ on the toolbar**
   The Web page that you last viewed, the Library of Congress home page, opens in the browser window.

6. **Click the Forward button ➤ on the toolbar**
   The Forward button opens the Visitors page in the browser window again.

7. **Click History on the menu bar, then click Home on the History menu**
   The home page for your installation of Safari appears in the browser window.

8. **Click History on the menu bar, then click Show All History**
   As shown in Figure D-6, the view changes to Cover Flow and the bookmarks library opens in the browser window. The bookmarks library contains collections of links to sites you have visited or want to visit frequently. In the sidebar, the History collection is selected in the Collections group. The right side of the window shows the contents of your History: the bottom section contains a list of the Web pages you have most recently visited, and the top section provides a preview of the Web page selected in the list.

9. **In the top section of the window, drag the scroll bar to the left until you see the preview for Library of Congress Home, then click the Library of Congress Home preview**
Setting the home page

Each time you start Safari and each time you click Home on the History menu, the page that appears in the browser window is your home page. If you want to change the home page, open the Web page that you want to be your new home page, click Safari on the menu bar, click Preferences, then click General (if necessary). The URL of the current home page is highlighted in the Home page text box. Click the Set to Current Page button to change the URL in the Home Page text box to the URL for the Web page currently open in the browser. Close the General dialog box.
Using Tabbed Browsing

When you open multiple Web pages on separate tabs within the same browser window, you are using **tabbed browsing**. This method for organizing Web pages while browsing makes navigation between Web pages fast and simple, and minimizes the number of windows you need to open as you browse the Web. You want to show the tour guides how tabbed browsing will allow them to more easily compare events in a location by viewing the Web pages in one browser window.

**STEPS**

1. **Triple-click the address field**, type www.usa.gov, then press [return]
   The Web page for the U.S. government opens.

2. **Click File on the menu bar, then click New Tab**
   By default, the Top Sites page opens in the browser window in a new tab, and the tab bar is displayed below the bookmarks bar. See Figure D-7. The tab bar shows the tabs currently open in the Web browser. The tab that appears on top in the tab bar is the tab currently active in the browser window. You can click the Create a new tab button on the far right side of the tab bar to open a new tab. The Top Sites page displays your 12 most frequently visited Web sites as thumbnail images; to go to one of the sites, you simply click its thumbnail.

3. **Click any thumbnail on the Top Sites page**
   The selected Web page opens in the browser window and the tab on the tab bar changes to display the name of the Web page, as shown in Figure D-8. Your Web page may differ.

4. **Click the Back button [ ] on the toolbar**
   The browser window collapses into a thumbnail image on the Top Sites page.

5. **Point to the Top Sites tab, then click the Close tab button [ ] on the Top Sites tab in the tab bar**
   The Close tab button is hidden until you point to a tab. When it is clicked, the tab closes. With the Top Sites tab closed, the tab bar is no longer visible and the USA.gov Web page is now in the browser window.

6. **Right-click the Site Index link on the USA.gov Web page to open the shortcut menu shown in Figure D-9, click Open Link in New Tab on the shortcut menu, then click the Site Index of USA.gov tab on the tab bar to display the Web page**

7. **Right-click any link on the Site Index of USA.gov Web page, click Open Link in New Tab, then click the new tab on the tab bar**
   Using tabbed browsing, you now have three Web pages open in one browser window.

8. **Position the mouse pointer over each tab to display the ScreenTip for each**
   Each ScreenTip tells you the full name of the Web page on the tab.

9. **Click [ ] for the second and third tabs**
   The Site Index Web page and the Web page for the link you selected on the Site Index page close and the tab bar is hidden. The USA.gov home page is open in the window.

**QUICK TIP**
To open Top Sites in the current window rather than on a new tab, click the Show Top Sites button [ ] on the bookmarks bar.

**QUICK TIP**
To display the tab bar without opening a second tab, click View on the menu bar, then click Show Tab Bar.

**QUICK TIP**
To close all tabs except one, press and hold [option], then click [ ] on the tab for the Web page you want to keep open. All other tabs will close, the tab bar will be hidden, and the Web page you selected will appear in the browser window.

**Quitting Safari when you have multiple tabs open**

When you finish looking at Web pages using Safari, you may find that you have several tabs open. When you quit Safari and you have more than one tab open, a dialog box appears noting how many tabs are open and asking you if you're sure you want to quit Safari. If you want to quit Safari, click Quit. If you want to keep Safari open, click Cancel, then click the Close tab button on each Web page tab that you want to close.
Bookmarking Web Pages

When you find a Web page that you know you will want to revisit, you can bookmark it. When you 
**bookmark** a Web page, you add it to the bookmarks bar or Bookmarks menu, where you can 
easily access the page in the future without having to enter the URL for the Web page in the address 
field. The tour guides want to be able to revisit some travel site Web pages multiple times 
without having to type the URLs in the address field each time, so you show them how to bookmark 
sites they revisit frequently.

**STEPS**

1. **Triple-click the address field, type www.nps.gov/brca, then press [return]**
   The home page for Bryce Canyon National Park opens, providing information about the park. You decide to 
   bookmark this page.

2. **Click the Add a bookmark button **
   The Add a bookmark dialog box opens, as shown in Figure D-10. The Add a bookmark dialog box contains a 
text box for the name of the bookmarked page and a pop-up menu for selecting the location for the book-
mark. By default, the full name of the Web page appears in the text box and Bookmarks Bar is selected as the 
location. You decide to shorten the name so it will be completely visible on a small tab on the bookmarks bar.

3. **Type Bryce Canyon Park in the text box, click the arrows next to the location box, click Bookmarks Bar **
   Bryce Canyon Park is added as a button to the bookmarks bar. You decide that instead of adding it to the 
   bookmarks bar, you’d prefer to create a folder called National Parks that appears on the Bookmarks menu 
   and add the Bryce Canyon Park page as a bookmark to the folder. First, you need to remove the button from 
   the bookmarks bar.

4. **Click and drag the Bryce Canyon Park button off the bookmarks bar and over the browser window, then release the mouse button**
   A small puff of smoke appears on your computer screen where you release the mouse button, and the 
   button is removed from the bookmarks bar.

5. **Click the Show all bookmarks button on the bookmarks bar**
   The bookmarks library is displayed in the browser window.

6. **Click Bookmarks Menu under Collections in the sidebar, then click the Create a bookmarks folder **
   As shown in Figure D-11, an untitled folder appears in the list of bookmarks in the Bookmarks Menu collection.

7. **Type National Parks, then press [return]**
   The untitled folder is renamed National Parks.

8. **Click the Show all bookmarks button to return to the Bryce Canyon Park page, click , click the arrows next to Bookmarks Bar, click the National Parks folder under Bookmarks Menu, then click Add**

9. **Click History on the menu bar, click Home to return to your home page, click Bookmarks on the menu bar, point to National Parks, then click Bryce Canyon National Park (U.S. National Park Service)**
   Clicking the Bryce Canyon National Park bookmark on the Bookmarks menu opens the Bryce Canyon 
   National Park Web page.

10. **Click on the bookmarks bar, compare your screen to Figure D-12, right-click the National Parks folder in the list, click Delete to delete the folder and the bookmark in the folder, click History on the menu bar, then click Home**
   Your browser window returns to your home page.
Creating and organizing bookmarks

Once you bookmark a Web page, returning to that page is much easier. To keep your bookmarks manageable, add only pages that you expect to visit frequently. You can organize bookmarks by placing them into folders by category. For example, you may want to create bookmark folders according to your interests, such as sports, cooking, and travel. You may want to create folders in which each member of a household can place his or her own favorites. Bookmarks can be listed individually or placed in folders on the bookmarks bar or on the Bookmarks menu.
Printing a Web Page

When you print a Web page, its text and any graphics appear on the printed page. You can use the Print dialog box to change the number of copies, number of pages, paper size, and orientation of the Web page before printing. In addition, a preview of the printed Web page appears in the Print dialog box; this is helpful because some Web pages are lengthy and you may only want to print the pages that have the information relevant to your task. You show the tour guides how to print a copy of a Web page so they can provide the information as handouts to the tour guests.

**Steps**

1. **Triple-click the address field on the toolbar, type www.nps.gov, press [return], then click the HISTORY & CULTURE link**
   
   The History & Culture page for the National Park Service opens.

2. **Click File on the menu bar, then click Print**
   
   The Print dialog box opens, as shown in Figure D-13. From this dialog box, you can select a printer, print the Web page, save the Web page as a Portable Document File (PDF) document, or view the Web page as a PDF in the Preview program. More print options are available when the Print dialog box is expanded.

3. **Click the Expand button to the right of the Printer arrows if necessary**
   
   The Print dialog box expands, as shown in Figure D-14. Table D-1 explains the Print dialog box options in more detail. On the left side of the dialog box, the Preview box shows what the first page of the printed Web page will look like. By default, a header will be printed at the top of each page containing the name of the Web page on the left and the current date and time on the right, and a footer will be printed at the bottom of each page containing the URL on the left and page number on the right.

4. **Click the Landscape button next to Orientation**
   
   The Preview box shows the Web page in landscape orientation.

5. **Click the Next page button under the Preview box**
   
   The contents of page 2 of the printed document appear in the Preview box.

6. **Click the Previous page button under the Preview box, then click the Portrait button next to Orientation**
   
   You prefer portrait orientation for the handout, and you'd like to print the first page only of the two-page Web page.

7. **Click the From option button next to Pages**
   
   With the range of pages to be printed set to From 1 to 1, only the first page of the Web page will be printed.

8. **Make sure 1 appears in the Copies text box, then click Print**
   
   The Print dialog box closes, and one copy of the first page of the current Web page prints.

**Copying information from a Web page**

You can select text on a Web page and use the Copy and Paste commands to insert the information into a file made with another program, such as Microsoft Word. You can also save a graphic image from a Web page by dragging it to the desktop or by right-clicking the image, clicking Save Image As on the shortcut menu, then specifying where to save the image. To copy an image to the Clipboard so that you can paste the copy in a new location, click the Copy Image command on the shortcut menu. Keep in mind that the same laws that protect printed works generally protect information and graphics published on a Web page. Do not use material from a Web page without citing its source and checking the site carefully for any usage restrictions.
FIGURE D-13: Print dialog box

Printer: 172.18.23.175
Presets: Standard

Expand button
Print button

FIGURE D-14: Expanded Print dialog box

Printer: 172.18.23.175
Presets: Standard
Copies: 1
Pages: All
Collated
Two-Sided

Number of copies to print
Landscape button
Portrait button
Print button

TABLE D-1: Print dialog box options

<table>
<thead>
<tr>
<th>option</th>
<th>use to</th>
</tr>
</thead>
<tbody>
<tr>
<td>Printer</td>
<td>Select the printer to use; click the arrows to change or see a list of available printers for your computer</td>
</tr>
<tr>
<td>Copies</td>
<td>Indicate the number of copies of each page to print</td>
</tr>
<tr>
<td>Pages</td>
<td>Indicate whether all pages or a page range should be printed</td>
</tr>
<tr>
<td>Paper Size</td>
<td>Select the paper size; click the arrows to change or see a list of available paper sizes for your printer</td>
</tr>
<tr>
<td>Orientation</td>
<td>Select portrait or landscape orientation for the printed page</td>
</tr>
<tr>
<td>Scale</td>
<td>Increase or decrease the size of the item on the printed page</td>
</tr>
<tr>
<td>Print backgrounds check box</td>
<td>Indicate (when checked) that the background colors on a Web page are to be printed</td>
</tr>
<tr>
<td>Print headers and footers check box</td>
<td>Indicate (when checked) that the headers and footers on each page are to be printed</td>
</tr>
<tr>
<td>PDF button</td>
<td>Preview, save, or mail the Web page as a PDF (Portable Document Format) document</td>
</tr>
</tbody>
</table>
Searching for Information

A vast and ever-increasing number of Web pages and other information sources are available through the Internet. To find information on the Web on a specific topic, you can use Safari's built-in search field. Searching for relevant Web sites using the search field is based on criteria or keywords, which are words related to the topic for which you are searching. To search using the search field, you enter a keyword or words in the field, then press [return]. The search field uses the Google search engine to find relevant sites on the Web based on your keywords and opens a Google Web page containing your search results, a list of links called hits. You can click one of the links in the list to go to a Web site. If you prefer to use a search engine other than Google to locate information on the Web, such as Live Search, Ask, or Yahoo!, you can go directly to one of these sites rather than use the Safari search field. You decide to show the tour guides how to look for adventure travel information by searching with the browser.

1. **Click in the search field, type adventure travel, then press [return]**
   The browser window changes to show a list of Google search results for adventure travel, as shown in Figure D-15. Each result provides a link to a Web site, a short description containing your keywords, and the URL of the Web site. Search engines such as Google, Ask, and Yahoo! routinely use software programs to methodically catalog, or crawl, through the entire Internet and create huge databases with links to Web pages and their URLs. When you enter a keyword or phrase, the search engine examines its database index for relevant information and displays a list of Web sites.

2. **Click any link to view a Web page**

3. **Click File on the menu bar, then click New Tab to open a new tab**

4. **Click the magnifying glass on the left side of the search field**
   A drop-down list of Recent Searches opens, as shown in Figure D-16. Your list may differ. You want to access the search results for adventure travel again.

5. **Under Recent Searches, click adventure travel**
   The browser window on the new tab displays the search results from Google about adventure travel.

6. **Click a link different than the one used in Step 2**

7. **Click the SnapBack button on the right side of the search field**
   The most recent Google search results are displayed on the current tab.

8. **Right-click another Web site link on the Google search results page, click Open Link in New Tab, then select that tab**
   You now have three Web sites open, each on a different tab in the same browser window, as shown in Figure D-17. An advantage of using tabbed browsing when searching for information is that it allows you to compare information from different Web sites in the same window.

9. **Close all open tabs except the first tab, click History on the menu bar, then click Home**
   Your home page appears in the browser window.

### Handling pop-ups

Pop-ups are windows that open on your screen as you visit Web sites, generally to advertise products you may or may not want. Most people find them annoying, so Safari blocks pop-ups by default. If you want to enable pop-ups to appear, click Safari on the menu bar, click Preferences, then click Security at the top of the dialog box. Click the check box for Block pop-up windows to deselect it, then close the dialog box.
FIGURE D-15: Google search results

Search field
Number of hits
Search results

FIGURE D-16: List of recent searches

Click in Step 5

FIGURE D-17: Multiple tabs open based on your search

3 open tabs
Getting Help and Quitting Safari

Safari provides a Help system with information and instructions on various features and commands in the browser. While demonstrating Safari, you were asked about how to protect private information such as Web site passwords on computers that are used by other people. Private browsing is a feature of Safari that protects users' private information. You decide to demonstrate the Help system to the tour guides by finding out more about private browsing.

**STEPS**

1. **Click Help on the menu bar, then type private in the Search box**
   As you type, potential matches to your keywords are immediately provided. As shown in Figure D-18, Private Browsing appears under Menu Items, and Browsing privately appears under Help Topics.

2. **Click Browsing privately under Help Topics**
   The Safari Help window opens, displaying information about private browsing and how to turn it on. See Figure D-19.

3. **Read the information presented, then click the Close button to close the window**
   The Help window closes. You are now ready to quit Safari.

4. **Click Safari on the menu bar, then click Quit Safari**

5. **If you connected to the Internet by telephone line, follow your normal procedure to close your connection**

---

**Trouble**

Clicking the Close button on the Safari window closes only the window. Safari continues to run until you quit Safari.

---

**Saving or mailing a Web page**

Before quitting Safari, you may want to save a copy of the current Web page or send someone a copy of the page. To save the current Web page, click File on the menu bar, click Save As, then select a location in which to save the complete Web page, including any graphics, as a Web Archive file. If you want to e-mail the Web page to someone, click File on the menu bar, click Mail Contents of This Page, then use your e-mail program to address and send the message containing the Web page. If you want to e-mail only a link to the page, not the whole page, click File on the menu bar, click Mail Link to This Page, then address and send the message containing the link.
When you browse the web, Safari stores information about the websites you visit, including the content and any user names, passwords, and credit card numbers you enter. Other people who use your computer can view that information. If you don’t want this information stored, use private browsing.

Private browsing is always turned off when you open Safari, even if it was on when you last quit Safari.

To turn on private browsing:

1. Choose Safari > Private Browsing.
2. When you see a confirmation message, click OK.
Practice

Concepts Review

Label each element of the Safari browser window shown in Figure D-20.

Match each term with the statement that best describes it.

7. Hyperlink
   a. Click to view a new Web page
8. Top Sites
   b. Displays the URL for the currently displayed page
9. Bookmarks menu
   c. Displays your most frequently visited Web pages as thumbnails
10. Address field
    d. Displays a list of saved Web pages
11. Uniform Resource Locator (URL)
    e. A Web page's address
Select the best answer from the list of choices.

12. Software programs such as Safari and Firefox are called _______.
   a. Web companions  
   b. Web browsers  
   c. Web documents  
   d. Web windows

13. A(n) _______ is the hardware and software that makes it possible to share information and resources.
   a. computer network  
   b. extranet  
   c. Internet  
   d. intranet

14. The page that opens every time you start a browser is called the:
   a. first page  
   b. home page  
   c. title page  
   d. Web page

15. _______ browsing allows you to open more than one Web page at a time in a browser window.
   a. Favorites  
   b. Linked  
   c. Tabbed  
   d. Web

16. The letters following the dot after the domain name are called the _______ domain and indicate the type of site you are visiting.
   a. top-level  
   b. home-level  
   c. dot-com  
   d. main-level

17. Which button on the toolbar should you click if you want to view the previous Web page on your computer?
   a. Home  
   b. Last  
   c. Back  
   d. Link

18. The toolbar that contains bookmarked Web sites is called the:
   a. Top Sites  
   b. toolbar  
   c. search field  
   d. bookmarks bar

19. Safari's search field uses the _______ search engine.
   a. Ask  
   b. Live Search  
   c. Yahoo!  
   d. Google

**SKILLS REVIEW**

1. Start and explore Safari.
   a. Make sure your computer is connected to the Internet.
   b. Start Safari.
   c. Identify and list as many components of the Safari window as you can without referring to the lessons.
   d. Compare your results to Figure D-3 to ensure that you have identified all the essential components.
   e. Identify the complete URL of the current Web page.

2. View and navigate Web pages.
   a. Open the Web page www.nasa.gov using the address field, then compare your screen to Figure D-21. (The contents of your screen may differ.)
   b. Click the For Students link on the Web page.
   c. Return to the home page for your browser.
   d. Click the Back button.
   e. Follow another link to investigate the content.
   f. Click History on the menu bar, click Show All History, then click the NASA - Home preview in the top section of the History collection in the bookmarks library to open the NASA home page in the browser window.
   g. Return to the home page for your browser.
SKILLS REVIEW (CONTINUED)

3. Use tabbed browsing.
   a. Open the Web page www.nytimes.com using the address field.
   b. Right-click a link on the Web page to open an article in a new tab.
   c. Create a third tab in the browser window, then open www.cnn.com in the new tab.
   d. Create a fourth tab in the browser window, then click the first thumbnail on the Top Sites page. Your browser window should resemble that shown in Figure D-22.
   e. Close all tabs except the New York Times tab.

   a. Open the Web page www.nasa.gov in the browser window again.
   b. Open the bookmarks library, then add a folder to the Bookmarks menu called Science Sites.
   c. Close the bookmarks library, then add the NASA Web page to the Science Sites folder on the Bookmarks menu.
   d. Return to the default home page for your browser.
   e. Using the Bookmarks menu, return to the NASA home page.
   f. Open the bookmarks library, delete the Science Sites folder from your Bookmarks menu, then close the bookmarks library. (Hint: Right-click the Science Sites folder, then click Delete.)

5. Print a Web page.
   a. Click any link on the NASA home page that is interesting to you.
   b. Open the Print dialog box, then view all of the Web page’s printed pages in the Preview box.
   c. Change the orientation of the printed page to landscape.
   d. Print one copy of the first page of the Web page only.

   a. Click the search field on the toolbar. (Hint: If the search field already contains text, triple-click the text in the field to select it so it can be replaced in the next step.)
   b. Type any keyword or phrase for which you would like to find information, then execute the search and review the results.
   c. Click any link in the Search results page and read the Web page.
   d. Click an additional link found on the Web page and read the new Web page.
   e. Use the SnapBack button to return to your search results.
   f. Explore some of the other hyperlinks you found.

7. Get Help and quit Safari.
   a. Using the Help menu, search Safari Help for a topic of interest to you.
   b. Click any link for the topic you want to learn more about.
   c. Read the results.
   d. Close the Safari Help window.
   e. Quit Safari.
**INDEPENDENT CHALLENGE 1**

You are an aspiring journalist interested in understanding how different journalists approach the same story. You decide to use the Web to find some articles for comparison.

**a.** Start Safari.

**b.** Read and compare the coverage of a current international news story using two of the following sites:

- CNN  
  www.cnn.com
- MSNBC News  
  www.msnbc.com
- ABC News  
  www.abcnews.com
- CBS News  
  www.cbsnews.com

**c.** Open each news story in its own tab in the browser window.

**d.** Print one page of the same story from both sites that you chose.

**Advanced Challenge Exercise**

- You should be able to find many English-language versions of non-U.S. papers. Use the search field or your favorite search engine to locate an online news media source from a country other than the United States. You can search on keywords such as “Asian newspapers” or “European newspapers.”
- See if you can find the news story you researched in Step b.
- Read the article.
- Print one page of the article from the site that you chose.

**e.** Close all but one of the tabs, then quit Safari.

**f.** Write your name on your printed pages and hand them in to your instructor.

**INDEPENDENT CHALLENGE 2**

You have been asked by your local community college to teach a short course on classic films from the 1940s and 1950s. The class will meet four times; each class will begin with a screening and will be followed by a discussion. You decide to use the Web to research the material.

**a.** Start Safari.

**b.** Using the search field, find a Web site that contains information about films made in the 1940s.

**c.** Find two films from the 1940s that you want to show as part of the course. View the information about each film in a separate tab in the browser window.

**d.** Click several links on the film site and review the online resources.

**e.** Search the film site to find two films from the 1950s. View the information about each film in a separate tab in the browser window.

**f.** Using the bookmarks library, create a folder on the Bookmarks menu. Name the folder with your name.

**g.** Bookmark each film’s Web page and put it in your folder on the Bookmarks menu.

**h.** Use the Bookmarks menu to open each film Web page in the browser window, and print the first page from each film Web page.
Advanced Challenge Exercise

- Find one Web page that includes a link for media such as audio or video about a 1940s or 1950s film.
- Click the link and listen to the audio or play the video.
- After listening to or viewing the media file, close the window.
- Bookmark this Web page in your Bookmarks menu folder.

  i. Open the bookmarks library, then delete your folder from the Bookmarks menu.
  j. Quit Safari.

INDEPENDENT CHALLENGE 3

As a student of American political history, you want to learn about your representatives in the U.S. government. You decide to use the Web to get information about this topic.

  a. Start Safari, then access the following government Web site: www.thomas.gov.
  b. Explore the site to find information about members of Congress. Print one page from this site.
  c. In a new tab, open the Web site www.senate.gov.
  d. Click the Senators link, then find a link to a Web site for a senator who represents the state that you would most like to visit. Click the link, then print one page from this site.
  e. Explore three links on the senator's Web site to learn more about those topics, opening each page in a new tab.
  f. Print one page from each of these links.
  g. Quit Safari.
  h. Write your name on the printed pages and hand them in to your instructor.
REAL LIFE INDEPENDENT CHALLENGE

You decide to compare several search engines to determine if there are differences in appearance or the number of hits you receive when you use them to search the Web.

a. Start Safari. Using two of the search engines listed below, type nobel prize winners in the Search text box, and then search for the topic.

- Yahoo! www.yahoo.com
- Live Search www.live.com
- Google www.google.com
- Ask www.ask.com

b. Print the first page of the results from each search. Circle the name of the search engine and the number of hits, or results it produced.

c. Compare and contrast the appearance and number of hits you received from each site. Also include which search engine you think is better and include a few reasons for your preference.

Advanced Challenge Exercise

- In the bookmarks library, create a folder in the Bookmarks Bar collection called Search Results.
- Bookmark the home page for your favorite search engine in the Search Results bookmark folder.
- Return to your home page, then use the Search Results folder on the bookmarks bar to go to the search engine home page.
- Delete the Search Results bookmark folder from the bookmarks bar. (*Hint: Drag the bookmark folder off of the bookmarks bar, then click Delete Folder in the dialog box that opens.)*

d. Quit Safari.
VISUAL WORKSHOP

Graphics you find as you view pages on the Web can be static images, video, or animated graphics. Find two Web sites that include a video. You may be given the option to watch the video using a player such as Quicktime. Other viewing options may include other players or viewing the video in a viewing window on the Web page. Keep in mind that Windows Media Player files will not play on your Mac. View at least one video on a news site and one video on a topic-specific Web site such as an organization or tourism site. An example is shown in Figure D-23. Write a brief summary of the videos you watched. Identify the Web sites on which the videos were located.

FIGURE D-23

http://anon.nasa-global.edgesuite.net/qt.nasa-global/constellation/cxemm_earthclip01_720p.mov

http://anon.nasa-global.edgesuite.net/qt.nasa-global/constellation/cxemm_earthclip05_720p.mov
Files You Will Need: No files needed.

Setting System Preferences

One of the many appealing features of the Mac OS X Leopard operating system is that it is user-friendly. You don't need to be a computer expert to change the features and functionality of your Mac or to customize its appearance. When you first turn on a new Mac, the system preferences—such as the desktop background, the dock location, and the source for the system date and time—have been preset by the manufacturer (Apple). These are called default settings, or simply defaults. Most people change the system preferences in one way or another to customize their Macs to better fit their needs. This appendix explains how to change the settings for the interface of the Leopard operating system, such as the desktop background image, screen saver, dock, screen resolution, sleep settings, and system date and time. You'll also learn how to use the Time Machine to back up your computer, how to update your software, and how to modify your system's sound options.

OBJECTIVES

Change the desktop background and screen saver
Change the dock
Change the screen resolution
Change the sleep settings
Change the date and time
Use Time Machine
Update your software
Change sound options
Changing the Desktop Background and Screen Saver

When you start your Mac, Leopard displays the Aurora image as the background image on the desktop by default. You can select a different image to appear as the background, either by choosing from several built-in background images provided with Leopard or by using an image of your own. You can change the desktop background image using the Desktop & Screen Saver dialog box. Another setting you can change in this dialog box is the screen saver, which appears when you leave your computer idle for several minutes; it is an image that moves around the screen to prevent damage to your monitor. Without the screen saver, the crystals in an LCD monitor can be damaged and will continue to display an image faintly even after the on-screen image has changed. This is known as **image persistence**. You can select from several different screen saver options provided with Leopard. You decide to change the desktop background and screen saver to give your Mac a more personalized look.

**STEPS**

1. **Click the System Preferences icon** on the dock
   As shown in Figure A-1, the System Preferences dialog box opens. It is divided into 4 or 5 categories: Personal, Hardware, Internet & Network, System, and Other. Depending on how your Mac is configured, your screen may differ. Some icons and the Other category may not appear in your dialog box.

2. **In the Personal category, click the Desktop & Screen Saver icon**
   The Desktop & Screen Saver dialog box opens with the Desktop tab selected, as shown in Figure A-2. At the top of the Desktop tab, a preview of the current background image appears (Aurora). On the left side of the tab is a list of folders containing images that can be used as the background image. You can access the standard Apple choices or use an image stored in one of your iPhoto albums. When a folder is selected on the left, the sample box on the right displays thumbnails of the images available in the selected folder.

3. **In the list of image folders, click a folder of your choice, then click any image in the sample box**
   The desktop background changes to the image you selected. The preview at the top of the Desktop tab now shows the selected image.

4. **Click the Screen Saver tab**
   The options on the Screen Saver tab become available, as shown in Figure A-3. On the left side of the Screen Saver tab is the Screen Savers list, which includes several built-in Apple choices as well as stock pictures. You can even select an image or photo you created if it's stored in the Pictures folder in your home folder. When a static image is selected, the screen saver changes the screen display over time by increasing and decreasing the dimensions of the photo. On the right side of the Screen Saver tab is a Preview box, which shows how the currently selected screen saver appears when activated.

5. **Click an option in the Screen Savers list, watch the preview in the Preview box, then continue clicking options in the Screen Savers list until you select the screen saver you would like to use**
   The Preview box displays the selected screen saver.

6. **Drag the Start screen saver slider to 15**
   The slider below the Preview box lets you select when the screen saver should be activated. With the slider set at 15, the screen saver will start after 15 minutes of no activity on your screen.

7. **Click the Desktop tab, then click the Close button in the Desktop & Screen Saver dialog box**
   The desktop background image and screen saver options you just selected are now active.
Changing the Dock

By default, the dock is displayed across the bottom of your screen, and when you point to an item on the dock, a ScreenTip with the name of the item appears above its icon. Using the Dock dialog box, you can change the size of the dock, how the dock icons appear when you point to them, and where the dock is located on the screen. For instance, you might prefer for the dock to be hidden until you need it, or you might want to position it vertically along the left or right edge of the screen. You decide to explore the dock options to determine where you want the dock to appear on the screen and how you want the icons to appear when you point to them.

**Steps**

1. Click the System Preferences icon on the dock, then click the Dock icon in the Personal category in the System Preferences dialog box.

   The Dock dialog box opens, as shown in Figure A-4. At the top of the dialog box is the Size slider, which you use to control the size of the dock and its elements. The Magnification check box (below the Size slider), when selected, increases the size of the dock icons when you point to them. Use the Position on screen option buttons to change the position of the dock to the left, bottom, or right of the screen. The Minimize using options allow you to choose the effect used to animate items as they are minimized to the dock.

2. Click and drag the Size slider toward the Small end of the slider bar, then click and drag the Size slider toward the Large end of the slider bar.

   As you move the slider towards Small, the size of the dock decreases, and as you move the slider towards Large, the size of the dock increases. The effect of the Size slider depends on the size of your computer screen, because the dock size is proportional to your screen size. The larger your screen, the more of an effect the Size slider will have.

3. Position the Size slider so that the dock is the size you prefer.

4. Click to select the Magnification check box, drag the Magnification slider to Max if necessary, then point to any icon on the dock.

   The dock icons around the icon to which you point grow larger; the icon to which you point directly is the largest.

5. Drag the Magnification slider to the location on the slider bar that magnifies the dock icons the amount that you prefer.

6. Click to deselect the Magnification check box, then click the Left option button to the right of Position on screen.

   The dock moves to the left side of the screen in a vertical position, as shown in Figure A-5. If you click the Right option button, the dock appears vertically on the right edge of your screen.

7. Click the option button for the dock position you prefer.

8. Click the Automatically hide and show the Dock check box to select it.

   As shown in Figure A-6, the dock is hidden, maximizing the space of the work area on your desktop. If you prefer to have the dock open and visible at all times, make sure to deselect this check box.

9. Move the on-screen pointer to the edge of the computer screen where the dock was last positioned.

   The dock slides into view and is available for use.

10. Click the Automatically hide and show the Dock check box to deselect it, then close the Dock dialog box.
**FIGURE A-4: Dock dialog box**

- Magnification check box
- Size slider
- Magnification slider
- Minimize using options
- Dock hide option
- Dock position options

**FIGURE A-5: Left dock position**

- Size slider
- Magnification slider
- Minimize using options

**FIGURE A-6: Screen with dock hidden**

- Size slider
- Magnification slider
- Minimize using options
Changing the Screen Resolution

Your Mac has many different options to choose from that allow you to change the size and quality of your monitor’s screen image. Your monitor’s screen resolution is the number of pixels, or dots, used to display the computer screen image. In a screen resolution setting such as 800 × 600, the first number (800) is the number of horizontal pixels in the image, and the second number (600) is the number of vertical pixels in the image. The higher your screen resolution, the greater the quality of the screen image and the smaller the components within the image (such as icons) appear. To adjust the screen resolution for your computer, you use the Display tab of the Color LCD (or Apple Studio Display) dialog box. You can also use the Display tab to change the brightness of your screen to an appropriate level based on the amount of ambient lighting in the room where your Mac is located. You decide to investigate the display options for your screen to determine the resolution and brightness you prefer as you work.

**STEPS**

1. **Click the System Preferences icon on the dock, then click the Displays icon in the Hardware category in the System Preferences dialog box**

   The Color LCD dialog box opens with the Display tab selected, as shown in Figure A-7. On the left side of the Display tab is the Resolutions list, containing several resolution options. In Figure A-7, the current resolution setting is 1024 × 768, but the resolution setting of your computer may differ.

2. **Click 1280 × 800 in the Resolutions list**

   If your computer was previously at a lower resolution setting than 1280 × 800, then more of the background image is visible now and the dialog box appears smaller. If your computer was previously at a higher resolution setting than 1280 × 800, then less of the background image is visible now and the dialog box appears larger. See Figure A-8.

3. **Click 800 × 600 in the Resolutions list**

   Your computer screen displays a larger dialog box and less of the background image than at the 1280 × 800 resolution setting. Your dock icons may appear less clear when you use this resolution.

4. **Click the setting in the Resolutions list that you prefer**

5. **Under the Resolutions list, drag the Brightness or Contrast slider to the left and right**

   As you drag the slider to the left, the brightness of your screen decreases. As you drag the slider to the right, the brightness of your computer screen increases.

6. **Move the Brightness or Contrast slider to the location you prefer**

7. **Close the Color LCD (or Apple Studio Display) dialog box**
FIGURE A-7: Display tab in Color LCD dialog box

Current resolution (yours may differ)

FIGURE A-8: 1280 x 800 screen resolution

Amount of background that is visible changes

Setting System Preferences
Changing the Sleep Settings

Your Mac “goes to sleep” after you haven’t used your computer for a period of time, which means that it goes into a low power mode but does not shut off. There are separate sleep settings for your monitor display and for your computer. When your display is about to go to sleep, it dims. When the display or the computer is asleep, the screen is black and the Mac appears to be turned off. To wake up your Mac, you press any key on the keyboard or move the on-screen pointer in any direction. When asleep, your Mac uses much less energy to keep running. In addition, once you are ready to use your Mac again, it takes less time to wake your Mac up from sleep than it does to start it up after being shut down. You can work more efficiently and optimize the energy needed to power your computer by adjusting the sleep settings for your Mac. The sleep settings are located in the Energy Saver dialog box.

You’d like to conserve energy that your Mac uses and plan to adjust the sleep settings so that your computer goes to sleep after it is inactive for a brief time.

### STEPS

1. **Click the System Preferences icon on the dock, then click the Energy Saver icon in the Hardware category in the System Preferences dialog box**
   
   The Energy Saver dialog box opens, as shown in Figure A-9 (your dialog box and settings may differ). By default, the Sleep tab is active. Below the tab are 2 sliders: one to put your computer to sleep, and one to put your display to sleep. The two sliders can have the same or different times selected. Putting the display to sleep before the computer can be beneficial if you use a program that requires a long time to process data. Putting the display to sleep earlier reduces power to the display but keeps full power to the computer, enabling active programs to continue running.

2. **Click and drag the upper slider to the 15 min location on the slider bar**
   
   After 15 minutes of inactivity, all components of your Mac will go to sleep and the computer will use less energy.

3. **Click and drag the lower slider to the tick mark to the left of the 15 min tick mark on the slider bar**
   
   After 10 minutes of inactivity, only your display will go to sleep and draw less power. Note that the settings for when your screen saver is activated and when your display goes to sleep can differ. Both prevent image persistence, but sleep draws less power than a screen saver. A warning may appear in the dialog box stating that the display will sleep before your screen saver activates. You can click the Screen Saver button to open to the Screen Saver tab of the Desktop & Screen Saver dialog box and change the screen saver settings.

4. **Close the Energy Saver dialog box**
FIGURE A-9: Energy Saver dialog box

Energy Saver dialog box showing settings for Power Adapter and Custom optimization. The settings are optimized for normal performance and energy savings. Current battery charge: 99%

- **Computer sleep setting slider**
- **Display sleep setting slider**

Settings for: **Power Adapter**
Optimization: **Custom**

Your energy settings are optimized for normal performance and energy savings. Current battery charge: 99%

**Put the computer to sleep when it is inactive for:**

- 1 min
- 15 min
- 1 hr
- 3 hrs
- Never

**Put the display(s) to sleep when the computer is inactive for:**

- 1 min
- 15 min
- 1 hr
- 3 hrs
- Never

- **Put the hard disk(s) to sleep when possible**

**Hide Details**  
**Schedule...**

Click the lock to prevent further changes.
Changing the Date and Time

There may be times you'll need to change the system date and time displayed by your computer. It's important to make sure your computer displays the accurate date and time, because all the date references for files, such as when they are saved, modified, or last opened, are determined by the system clock. You can adjust the date and time settings manually using the Date & Time dialog box. You want to explore how to change the system date and time in case you need to correct it manually in the future.

**Steps**

1. Click the **System Preferences icon** on the dock, then click the **Date & Time icon** in the System category in the System Preferences dialog box.
   The Date & Time dialog box opens, as shown in Figure A-10. This dialog box contains three tabs: Date & Time, Time Zone, and Clock. By default, the Date & Time tab is active.

2. Click the **Set date & time automatically check box** to deselect it, if necessary.
   When this check box is checked, your computer displays the current time automatically based on the information it receives from Apple's time Web site. When the check box is unchecked, the date on the calendar and the time on the clock can be changed manually.

3. Click the **date up and down arrows** to select a different date, then click the **time up and down arrows** to select a different time.
   The date and time shown on the calendar and clock in the dialog box reflect your changes. You can also change the date by clicking a date in the calendar; click the arrows in the upper-left corner of the calendar to move between months. You can also change the time by dragging the hands on the clock to new locations; click the AM or PM below the clock's center to switch to PM or AM.

4. Click the **Set date & time automatically check box** to select it.
   The date and time displayed on the calendar and clock return to the current date and time, updated automatically from Apple's time Web site.

5. Click the **Time Zone tab**.
   Options for changing the time zone appear in the dialog box, as shown in Figure A-11. Click the Closest City list arrow to see a list of major cities in your time zone. You can also click a section of the map to locate a major city near your home and change the time zone if necessary. Once you have selected a major city in your time zone, the date and time on the Date & Time tab are updated accordingly.

6. Click the **Clock tab**.
   The options available for changing the appearance of the clock on your menu bar appear on the Clock tab, as shown in Figure A-12. You can change how the date and time are displayed on the menu bar, and you can choose to have the computer announce the time out loud by clicking the Announce the time check box and choosing the timing of the announcement. By default, the date and time are displayed digitally on the right end of the menu bar.

7. Click the **Analog option button** to the right of **View as**.
   The digital clock on the menu bar changes to a clock icon showing the current time.

8. Click the **Show date and time in menu bar check box** to deselect it.
   The menu bar no longer displays the clock icon.

9. Click the **Show date and time in menu bar check box** to select it, then click the **Digital option button** to the right of **View as**.
   The menu bar displays the date and time in digital format on the menu bar again. Additional check boxes under the Digital and Analog option buttons enable you to further adjust the display of the date and time.

10. Click the **Date & Time tab**, then close the Date & Time dialog box.
    Setting System Preferences
Set date & time automatically check box

FIGURE A-10: Date & Time tab in Date & Time dialog box

Date up and down arrows

Time up and down arrows

Show date and time in menu bar check box

Announce the time check box

FIGURE A-11: Time Zone tab in Date & Time dialog box

Closest City list arrow

FIGURE A-12: Clock tab in Date & Time dialog box

Clock on menu bar
Time Machine is a new feature in Leopard that helps you maintain your files, folders, and programs by backing up everything on your computer on a regular basis. The first time you use Time Machine, it backs up not only all of the files, folders, and programs on your computer, but also your system files, accounts, and preferences. After the initial backup, Time Machine subsequently backs up only those items that have changed. Time Machine keeps hourly backups for the past 24 hours, daily backups for the past month, and weekly backups. Backups are catalogued by date, so you can restore your entire system from any backup, or you can recover individual files or folders.

You want to back up the contents of your computer to prevent the loss of data if something were to go wrong, so you set up Time Machine for your computer.

The following instructions require a storage device capable of storing the entire contents of your computer, such as an external hard drive. This device should be dedicated for Time Machine use only.

1. **Connect your storage device to the appropriate port**
   Depending on the make and model of your storage device, it may connect to a USB port or to a FireWire port. Please read the manufacturer's instructions for set up of the storage device before proceeding.

2. **Click the System Preferences icon on the dock, then click the Time Machine icon in the System category in the System Preferences dialog box**
   The Time Machine dialog box opens, as shown in Figure A-13.

3. **Click and drag the Time Machine Off/On switch to the On position**
   This activates Time Machine and opens a window listing the drives available for making your backups, as shown in Figure A-14.

4. **Select the storage device you want to use as backup, then click Use for Backup**
   If the storage device is not blank, you may receive a message that the device needs to be erased to continue. Click OK to continue. The backup starts. This process may take several minutes the first time you run it. While the files are being copied, you will see progress bars. When complete, the dialog box will change to that shown in Figure A-15. In order for Time Machine to continue to automatically make backups, the storage device must remain attached to your computer. Should you need to restore a file, folder, or program from the Time Machine device, click the Time Machine icon on the dock to access the catalogued backups.

5. **Close the Time Machine dialog box**

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**Steps**

1. **Connect your storage device to the appropriate port**
2. **Click the System Preferences icon on the dock, then click the Time Machine icon in the System category in the System Preferences dialog box**
3. **Click and drag the Time Machine Off/On switch to the On position**
4. **Select the storage device you want to use as backup, then click Use for Backup**
5. **Close the Time Machine dialog box**
Time Machine keeps copies of everything on your Mac, including system files, applications, and settings, as well as your music, pictures, and other important files. Since Time Machine keeps daily backups, you can revisit your Mac as it appeared in the past.

Available backup drives (yours will differ)

Backup drive

Time Machine icon on dock
Updating Your Software

To ensure that your computer runs efficiently, you should keep your system and application software up-to-date. Software updates are provided by the software manufacturer as improvements are made and bugs are corrected. You can use the Software Update dialog box to set your Mac to search for and download Apple software updates on a daily, weekly, or monthly basis. You can also click the Check Now button in the Software Update dialog box to activate a search for updates yourself. You want to ensure that the software on your Mac is kept up-to-date, so you set up your computer to search for updates and alert you when they are ready to be installed.

**An Internet connection is required to successfully complete the following steps.**

1. **Click the System Preferences icon on the dock, then click the Software Update icon in the System category in the System Preferences dialog box**
   The Software Update dialog box opens with the Scheduled Check tab selected, as shown in Figure A-16.

2. **Click to select the Check for updates check box, if necessary**
   When this check box is selected, your Mac will check for software updates on a regular basis. Depending on the settings for the Mac you are using, this check box may already be selected.

3. **Click the arrows to the right of Check for Updates, then select Weekly if necessary**
   The options for how frequently your computer will search for software updates are Daily, Weekly, and Monthly. Your Mac will notify you when updates are available for software on your computer.

4. **Click the Download important updates automatically check box to select it, if necessary**
   When this check box is checked, your Mac will automatically download critical software updates as soon as they are available and will alert you when they are ready to be installed.

5. **Click the Check Now button**
   A new dialog box opens and a progress bar appears as your Mac checks for updates, as shown in Figure A-17.
   If there are any available updates, your Mac will provide you with a list of available updates and you can select the updates you'd like to install. If your Mac is up-to-date, you'll receive a message notifying you that your software is up-to-date.

6. **If any updates are listed, click the Install button**
   Your Mac will install the available updates.

7. **Close the Software Update dialog box**
Software Update checks for new and updated versions of your software based on information about your computer and current software.

Check Now button

Check for updates check box

Download important updates automatically check box

Scheduled Check tab

FIGURE A-16: Software Update dialog box

FIGURE A-17: Checking for updates

Note: Use of this software is subject to the original Software License Agreement(s) that accompanied the software being updated. A list of Apple SLAs may be found here: http://www.apple.com/legal/sla/.

Install button
Changing Sound Options

Your Mac comes equipped with built-in sound effects to help you become an effective Mac user. The alert sound feature provides a sound effect when you try to perform an action or command that is not available or when an alert dialog box appears. The alert sound is also played as feedback when you adjust the system volume to let you hear the volume at its new setting. You can change the alert sound using the Sound dialog box. The Sound dialog box also enables you to adjust the system volume and select whether or not you can change the system volume using an icon on the menu bar. You want to change the alert sound played by your Mac and also want to explore the other sound and volume options available for your system.

**STEPS**

1. Click the System Preferences icon on the dock, then click the Sound icon in the Hardware category in the System Preferences dialog box.
   The Sound dialog box opens. The dialog box contains three tabs: Sound Effects, Output, and Input.

2. If necessary, click the Sound Effects tab.
   The Sound Effects tab displays a list of options for the alert sound and several check boxes for turning sound options on and off. By default, Funk is selected as the alert sound.

3. In the Choose an alert sound list, click Bottle.
   The Bottle alert sound is played.

4. Click additional alert sound options to listen to them, and then click the alert sound that you prefer.

5. Drag the Alert volume slider to select a volume level for the alert sound that you prefer.

6. If necessary, click the Play user interface sound effects check box.
   Selecting this check box ensures that you will hear user interface sound effects, which are the sounds you hear when you perform Finder actions such as dragging a file to the Trash and emptying the Trash.

7. If necessary, click the Play feedback when volume is changed check box.
   Selecting this check box ensures that you will hear an alert sound at the new volume setting when the system volume is changed.

8. Click and drag the Output volume slider to the location you prefer to adjust the system volume.
   When you drag the slider to a new location and then release the mouse button, the alert sound plays at the new volume setting.

9. If necessary, click the Show volume in menu bar check box.
   Selecting this check box places the speaker icon near the right end of the menu bar and allows you quick access to it without opening a dialog box. You can click the speaker icon on the menu bar to access the vertical slider to adjust the volume up or down.

10. Close the Sound dialog box.
    All options selected are saved when the dialog box closes.
Action button  A button on the Finder toolbar that provides access to file management commands such as creating a folder, opening a file, or copying a file or folder.

Active  Currently available.

Active window  The window that is currently in use.

Add a bookmark button  A button found on the Safari toolbar that enables users to name a bookmark and add it to the bookmarks bar or the Bookmarks menu.

Address field  A text field on the Safari toolbar that displays the address of the Web page that is open in the active tab.

Alert sound  A sound that occurs when you try to perform an action or command that is not available, when an alert dialog box appears, or when you change the system volume.

Alias  A link that provides quick access to a file, folder, or program located on the hard disk; for example, each icon on the dock is an alias for a program, folder, or file stored elsewhere on the computer.

American Standard Code for Information Interchange  See ASCII.

Analog signal  A continuous wave signal (sound wave) that can traverse ordinary phone lines.

Anti-spyware software  Software that detects and removes spyware.

Antivirus software  Software that searches executable files for the sequences of characters that may cause harm and disinfects the files by erasing or disabling those commands. Also called virus protection software.

Application  Software that can be used to perform a task, such as creating a document, analyzing data, or creating a presentation. Also called a program.

Application software  Software that enables users to perform specific computer tasks, such as document production, spreadsheet calculations, database management, and presentation preparation.

Architecture  The design and construction of a computer. Also called configuration.

ASCII (American Standard Code for Information Interchange)  The number system that personal computers use to represent character data.

Back button  A button commonly found at the top of a window that, when clicked, displays the previous Web page, file, folder, or drive in the window.

Backup  A copy of a file stored in another location.

BIOS (Basic Input/Output System)  Instructions that initialize the motherboard, recognize peripheral devices, and start the boot process.

Binary digit (bit)  The representation of data as a 1 or 0.

Bit  See Binary digit.

Bits per second (bps)  The unit of measurement for the speed of data transmission.

Bluetooth  A wireless technology standard that allows electronic devices to use short range radio waves to communicate with one another or connect to the Internet; the radio waves can be transmitted around corners and through walls.

Bold command  On a menu, a command or operation that can be executed.

Bookmark  To add a favorite Web page to the bookmarks bar or Bookmarks menu, where the page can be easily accessed in the future by clicking instead of entering the Web address in the address field.

Bookmarks bar  A feature of Safari that contains buttons users can click to go directly to bookmarked Web pages, to the bookmarks library, to a page showing Top Sites, or to several popular Web sites whose bookmarks are built into the bookmarks bar.

Bookmarks library  In Safari, a list of bookmark collections that can be used to view, organize, add, and delete bookmarks and bookmark folders.

Boot process  The set of events that occurs between the moment the computer is turned on and the moment you begin to use the computer.

Booting  The process that Leopard steps through to get the computer up and running.

bps  See Bits per second.

Browser  A software program, such as Safari, used to access the Internet and display Web pages.
Browser window The rectangular area on the computer screen where the current Web page appears.

Byte One character of storage space on disk or in RAM; comprised of a series of eight bits.

Cable Plastic-enclosed wires that attach a peripheral device to a computer port.

Cache memory Special high-speed memory chips on the motherboard or CPU that store frequently-accessed and recently-accessed data and commands. Also called RAM cache or CPU cache.

Card A removable circuit board that is inserted into a slot in the motherboard to expand the capabilities of the motherboard.

Cathode ray tube monitor See CRT monitor.

CD (compact disc) An optical storage device that can store approximately 700 MB of data.

CD-R (compact disc recordable) A CD on which users can record data with a laser that changes the reflectivity of a dye layer on the blank disk, creating dark spots on the disk's surface that represent the data; once the data is recorded, it cannot be erased or modified.

CD-ROM (compact disc read-only memory) A CD that contains software or music when you purchase it, but you cannot record additional data on it.

CD-RW (compact disc rewritable) A CD on which you can record data as on a CD-R, and then delete or re-record data on it as needed.

Central processing unit (CPU) See Microprocessor.

Channel The medium, such as a telephone line or coaxial cable, over which a message is sent in data communications.

Chart A visual representation of selected worksheet data.

Check box A box that turns an option on when checked or off when unchecked.

Chip An integrated circuit embedded in semiconductor material.

Circuit A path along which an electric current travels.

Circuit board A rigid piece of insulating material with circuits on it that control specific functions.

Click To quickly press and release the left button on a pointing device. Also called single-click.

Client A computer connected to a network that is dependent on a server.

Client/server network A network with a server and computers dependent on the server.

Clip art Simple art objects that are included as collections with many software packages.

Clipboard A temporary storage area in the computer's memory containing an item that was cut or copied from a file and is available for pasting.

Clock speed The pulse of the processor measured in megahertz or gigahertz.

Close button Window control button that closes and removes a window from the desktop.

CMOS See Complementary metal oxide semiconductor memory.

Collapse button A button that shrinks a portion of a dialog box to hide some settings.

Columns view A view of items in a window that displays the contents of a device or folder in a multicolumn format.

Command An instruction to perform a task.

Command button A button that completes or cancels an operation.

Compact disc See CD.

Compact disc read-only memory See CD-ROM.

Compact disc recordable See CD-R.

Compact disc rewritable See CD-RW.

Complementary metal oxide semiconductor (CMOS) memory A chip installed on the motherboard powered by a battery whose content changes every time you add or remove hardware on your computer system and that is activated during the boot process so it can identify where essential software is stored. Also called semipermanent memory.

Computer An electronic device that accepts input, processes data, displays output, and stores data for retrieval later.

Computer network The hardware and software that makes it possible for two or more computers to share information and resources.

Computer system A computer, its peripheral devices, and software.

Configuration See Architecture.

[control]-click To press and hold [control] while clicking the mouse button once; functions as a right-click for a single-button pointing device.

Controller card A card that plugs into a slot on the motherboard and connects to a port to provide an electrical connection to a peripheral device. Also called expansion card or interface card.

Copy To create a duplicate of a file in new location, while the original file stays in its current location.

Cover Flow A view of items in a window that provides a preview of the first page of the files and a detailed list of the files in the currently selected location.

CPU See Microprocessor.

CPU cache See Cache memory.

Create a new tab button A button at the right side of the tab bar in Safari that, when clicked, opens a new Web page tab in the browser window.

CRT (cathode ray tube) monitor A monitor that uses gun-like devices to direct beams of electrons toward the screen to activate dots of color to form an image.

Data The words, numbers, figures, sounds, and graphics that describe people, events, things, and ideas.

Data bus The path between the microprocessor, RAM, and the peripherals along which communication travels.
Data communications The transmission of data from one computer to another or to a peripheral device via a channel using a protocol.

Data file A file created by a user, usually with software, such as a report written with a word processing program.

Database A collection of information stored on one or more computers organized in a uniform format of records and fields.

Database management software Software used to collect and manage data.

Default setting A setting preset by the manufacturer of an operating system or program.

Delete To place a file or folder in the Trash, where you can either remove it from the disk permanently or restore it.

Desktop The graphical user interface (GUI) displayed on screen after you start Leopard that you use to interact with Leopard and other software on your computer.

Desktop computer A personal computer designed to sit compactly on a desk.

Device See Storage device.

Device driver System software that handles the transmission protocol between a computer and its peripheral devices. Also called a driver.

Devices Group in the sidebar in the Finder window that provides quick access to all of the storage devices available to your Mac, such as the hard disk and any external drives.

Dialog box A window that opens to enable users to select options or provide the information needed to complete an operation.

Digital signal A stop-start signal that your computer outputs.

Digital subscriber line See DSL.

Dimmed command On a menu, a command or operation that is not currently available.

Disclosure triangle A small triangle that indicates a command or group has additional options or categories available.

DNS server A computer responsible for directing Internet traffic.

Dock A glossy ribbon at the bottom of the computer screen that contains icons for frequently used programs, folders, and files, and the Trash.

Document An electronic file that you create using a program such as Word.

Document production software Software, such as word processing software, desktop publishing software, e-mail editors, and Web authoring software, that assists users in writing and formatting documents, including changing the font and checking the spelling.

Document window The main work area within the program window that displays all or part of an open document.

Domain name The name of a Web site that appears after www in a Web address; for example, in www.apple.com, apple is the domain name.

Dot matrix printer A printer that transfers ink to paper by striking a ribbon with pins.

Dot pitch (dp) The distance between pixels on a monitor.

Double-click To press and release the left mouse button twice quickly, opening a window or program.

dp See Dot pitch.

Drag To point to an object, press and hold the left button on the pointing device, move the object to a new location, and then release the left button.

Drag and drop The action of moving or copying an entire file or selected text in a document by dragging it with the mouse and placing it at a new location.

Drive A physical location for storing files. Also called a storage device.

Driver See Device driver.

DSL (digital subscriber line) A high-speed connection over phone lines.

Dual-core processor A CPU that has two processors on the chip.

DVD An optical storage device that can store up to 15.9 GB of data; was originally an acronym for digital video disc and later digital versatile disc.

Edit To change the content or format of an existing file.

Ellipsis (...) On a menu, indicates that the command opens a dialog box containing additional options.

Embed To insert a separate copy of a file in a different program that can be edited using the tools of the program in which it was created.

Enter To type information in a document or dialog box.

Ergonomic Designed to fit the natural placement of the body to reduce the risk of repetitive-motion injuries.

Ethernet port A port used to connect computers in a LAN or sometimes directly to the Internet; it allows for high-speed data transmission.

Executable file A file that contains the instructions that tell a computer how to perform a specific task, such as the files that are used during the boot process.

Expand button A button that expands a dialog box to display additional settings.

Expansion card See Controller card.

Expansion slot An electrical connector on the motherboard into which a card is plugged. Also called a slot.

Feedback The playing of an alert sound when the system volume is adjusted.

Field One piece of information in a database record.

File A collection of stored electronic data, such as text, a picture, video, or music, that has a unique name, distinguishing it from other files.

File extension Additional characters assigned by a program to the end of a filename to identify the type of file.

File hierarchy A logical structure for folders and files that mimics how you would organize files and folders in a filing cabinet.
**File management** A strategy for organizing files and folders so you can find your data quickly and easily.

**Filename** A unique, descriptive name for a file that identifies the file's content.

**Find command** Search option available on the Finder File menu that performs the same operation as Finder's Search field.

**Finder** Part of the Mac operating system (Leopard) that provides access to files and programs.

**Firewall** Hardware or software that prevents other computers on the Internet from accessing a computer or prevents a program on a computer from accessing the Internet.

**Flash drive** See USB flash storage device.

**Flash memory** Memory that is similar to ROM except that it can be written to more than once.

**Flash memory card** A small, portable card encased in hard plastic to which data can be written and rewritten.

**Flash storage device** A removable storage device that is plugged into a USB port to which data can be written and rewritten. Also called a USB drive or a flash drive.

**Flat panel monitor** A lightweight monitor that takes up very little room on the desktop and uses LCD technology to create the image on the screen.

**Floppy disk** A flat circle of magnetic oxide-coated plastic enclosed in a hard plastic case that can store 1.44 MB of data. Also called a 3½ disk.

**Folder** A container for a group of related files.

**Folder name** A unique, descriptive name for a folder that identifies what you store in that folder.

**Font** The design of a set of characters; for example, Arial or Times New Roman.

**Footer** Information, such as text, a page number, or a graphic, that appears in the bottom margin of a page in a document.

**Format** To enhance the appearance of text in a document, spreadsheet, or presentation without changing the content.

**Forward button** A button commonly found at the top of a window that, when clicked, displays the next Web page, file, or folder.

**GB** See Gigabyte.

**GHz** See Gigahertz.

**Gigabyte (G or GB)** 1,073,741,824 bytes, or about one billion bytes.

**Gigahertz (GHz)** One billion cycles per second.

**Graphical user interface (GUI)** A computer environment in which the user manipulates graphics, icons, and dialog boxes to execute commands.

**Graphics card** The card installed on the motherboard that controls the signals the computer sends to the monitor. Also called a video display adapter or video card.

**Graphics display** A monitor that is capable of displaying graphics by dividing the screen into a matrix of pixels.

**Graphics software** Software that allows you to create illustrations, diagrams, graphs, and charts.

**GUI** See Graphical user interface.

**Hand-held computer** A small computer designed to fit in the palm of your hand and that generally has fewer capabilities than personal computers.

**Hard copy** A printed, paper copy of computer output.

**Hard disk** A magnetic storage device that contains several magnetic oxide-covered metal platters that are usually sealed in a case inside the computer, providing built-in, high-capacity, high-speed storage for all the software, folders, and files on a computer. Also called a hard drive.

**Hard drive** See hard disk.

**Hardware** The physical components of a computer system.

**Header** Information, such as text, a page number, or a graphic, that appears in the top margin of a page in a document.

**Highlight** To shade an icon or text differently, indicating it is selected. See also Select.

**Hits** The items in a list of search results that include your keyword(s) or that meet the search criteria. See also Search results.

**Home folder** A folder provided by Leopard for each user that contains several subfolders in which you can save your files on the hard drive.

**Home page** The first Web page that opens every time you start Safari; also, the main page of a Web site.

**Horizontal scroll bar** See Scroll bar.

**Hyperlink** Words, phrases, or graphics that, when clicked, open a new location on the current document or page, open a file or a new Web page, or play audio or video. Also called a link.

**I-beam pointer** The pointer used to move the insertion point and select text.

**Icon** A small image on the desktop or in a window that represents a program, tool, folder, or file.

**Icon view** A view of items in a window that displays the contents of a selected device or folder as icons.

**Image** A nontextual piece of information such as a picture, piece of clip art, drawn object, or graph.

**Image persistence** Damage to the crystals in an LCD computer monitor that occurs when an image stays too long onscreen without changing; the crystals continue to display the image faintly even after the onscreen image has changed.

**Inactive window** An open window you are not currently using.

**Information management software** Software that keeps track of schedules, appointments, contacts, and "to-do" lists.

**Infrared technology** A wireless technology in which devices communicate with one another using infrared light waves; the devices must be positioned so that the infrared ports are pointed directly at one another.
**Inkjet printer** A printer that sprays ink onto paper and produces output whose quality is comparable to that of a laser printer.

**Input** The data or instructions you type into the computer.

**Input and output (I/O)** The flow of data from the microprocessor to memory to peripherals and back again.

**Input device** An instrument, such as a keyboard or a mouse, that you use to enter data and issue commands to the computer.

**Insertion point** A flashing vertical line that indicates where the next character will appear when the user types.

**Integration** The act of inserting and linking information among programs. See also Object Linking and Embedding.

**Interface** The look and feel of a program; for example, the appearance of commands and the way they are organized in the program window.

**Interface card** See Controller card.

**Internet** A network of connected computers and computer networks located around the world.

**Intranet** A computer network that connects computers in a local area only, such as computers in a company's office.

**I/O** See Input and output.

**Justified text** Text aligned equally between the right and left margins.

**KB** See Kilobyte.

**Keyboard** An input device that consists of three major parts: the main keyboard, the numeric keypad, and the function keys.

**Keyboard shortcut** A combination of keyboard keys that you press to perform a command.

**Keyword** A descriptive word or phrase you enter to obtain a list of results that includes that word or phrase.

**Kilobyte (KB or K)** 1,024 bytes, or approximately one thousand bytes.

**LAN** See Local area network.

**Landscape** Layout orientation for a document that specifies to print the page so it is wider than it is long.

**Laptop computer** See Notebook computer.

**Laser printer** A printer that produces high-quality output quickly and efficiently by transferring a temporary laser image onto paper with toner.

**Launch** To open or start a program on your computer.

**Layout** See Slide layout.

**LCD (liquid crystal display)** A display technology that creates images by manipulating light within a layer of liquid crystal.

**Leopard** The Mac OS X v10.5 operating system.

**Link** A shortcut for opening a Help topic or a Web site. (Leopard)

**Liquid crystal display** See LCD.

**List view** A view of items in a window that displays the contents of the selected storage device or folder as an alphabetic list with additional details about each file and folder such as Name, Date Modified, Size, and Kind.

**Local area network (LAN)** A network in which the computers and peripheral devices are located relatively close to each other, generally in the same building, and are usually connected with cables.

**Log in** To sign in with a user name and password before being able to use a computer.

**Log Out** An option for ending a Leopard session in which all open files and programs are closed, all drives are disengaged and memory is cleared, and then the current user's session ends but the Mac continues running so the next user can log in and begin using the computer immediately, without waiting for the computer to boot up.

**Mac OS X** Mac operating system, version 10.

**Macintosh HD icon** The only icon that appears on the Leopard desktop by default; provides quick access to all items stored on the computer.

**Magnetic storage device** A storage device that stores data as magnetized particles on mylar, a plastic, which is then coated on both sides with magnetic oxide.

**Mainframe computer** A computer used by larger business and government agencies that provides centralized storage, processing, and management for large amounts of data.

**Malware** A broad term that describes any program that is intended to cause harm or convey information to others without the owner's permission; short for malicious software.

**MB** See Megabyte.

**Megabyte (MB)** 1,048,576 bytes, or about one million bytes.

**Megahertz (MHz)** One million cycles per second.

**Memory** A set of storage locations on the main circuit board that store instructions and data.

**Memory capacity** The amount of data that a device can handle at any given time. Also called storage capacity.

**Menu** A list of commands in a program (for example, the File menu) that you can use to accomplish a task.

**Menu bar** A bar at the top of a program window or the desktop that provides access to most of a program's features through categories of related commands.

**MHz** See Megahertz.

**Microprocessor** A silicon chip, located on the motherboard, that is responsible for executing instructions to process data; also called processor or central processing unit (CPU).

**Microsoft Word** A word processing program created by Microsoft Corporation you can use to create text-based documents such as letters, memos and newsletters.
MIDI (musical instrument digital interface) card A sound card used to record and play back musical data.

Minimize button Window control button that collapses a window to an icon on the dock.

Minimized window A window that has collapsed to an icon on the right side of the dock.

Modem Stands for modulate-demodulate; a device that converts the digital signals from your computer into analog signals that can traverse ordinary phone lines, and then converts analog signals back into digital signals at the receiving computer.

Modifier key A keyboard key that is used in conjunction with another keyboard key to execute a keyboard shortcut.

Monitor The TV-like peripheral device that displays the output from the computer.

Motherboard The main circuit board of the computer on which processing tasks occur.

Mouse A pointing device that contains buttons for clicking commands; you control the movement of the pointer by moving the entire mouse around on your desk.

Mouse pointer The typically arrow-shaped object on the screen that follows the movement of the mouse. The shape of the mouse pointer changes depending on the program and the task being executed. See also Mouse.

Move To change the location of a file or a selection in a document by physically placing it in another location different from its original location.

MP3 player A hand-held computer that is used primarily to play and store music, but that can also be used to watch digital movies and television shows.

Multimedia authoring software Software that allows you to record digital sound files, video files, and animations that can be included in presentations and other documents.

Multitasking Working with more than one window or program at a time.

Musical instrument digital interface card See MIDI card.

Network Two or more computers that share data and resources and which are connected to each other and to peripheral devices.

Network interface card (NIC) The card in a computer on a network that creates a communications channel between the computer and the network.

Network software Software that establishes the communications protocols that will be observed on the network and controls the "traffic flow" as data travels throughout the network.

NIC See Network interface card.

Node Any device connected to a network.

Nonvolatile memory See Read-only memory.

Notebook computer A small, lightweight computer designed for portability. Also called a laptop computer.

Object Linking and Embedding (OLE) The ability to use data created in one application in a document created by another application. Linking creates a "live" connection between an object in a source file and a linked version in a destination file; embedding places an unconnected copy in the destination file.

OLE See Object Linking and Embedding.

Open To start a program; to display a window that was previously closed or that is currently running but isn’t displayed in an active window; or to load an existing file into an Office program.

Operating environment An operating system that provides a graphical user interface that acts as a liaison between the user and all of the computer’s hardware and software, such as Microsoft Windows and the MAC OS.

Operating system A computer program that manages the complete operation of your computer and keeps all the hardware and software working together properly. The operating system allocates system resources, manages storage space, maintains security, detects equipment failure, and controls basic input and output. Examples of the operating system for Mac are Mac OS X Leopard and Mac OS X Tiger.

Optical storage device A polycarbonate disk coated with a reflective metal on which data is recorded using laser technology as a trail of tiny pits or dark spots in the surface of the disk; the data that these pits or spots represent can then be "read" with a beam of laser light.

Option button A small circle in a dialog box to select only one of two or more related options.

Orientation See Page orientation.

Output The result of the computer processing input.

Output device Any peripheral device that receives and/or displays output from a computer.

Page orientation Printing or viewing a page of data in either a portrait (8.5 inches wide by 11 inches tall) or landscape (11 inches wide by 8.5 inches tall) direction.

PAN See Personal area network.

Parallel port A port that transmits data eight bits at a time.

Password A string of characters used to verify the identity of the user.

Paste To insert items stored on the Clipboard into a new location.

PC card See Portable computer card.

PDA (personal digital assistant) A hand-held computer that is generally used to maintain an electronic appointment book, address book, calculator, and notepad.

Peer-to-peer network A network in which all the computers are considered equal, and programs and data are distributed among them.

Peripheral device The components of a computer that accomplish its input, output, and storage functions.

Permanent memory See Read-only memory.

Personal area network (PAN) A network that allows two or more devices located close to each other to communicate or to connect a device to the Internet.
**Personal computer**  A computer typically used by a single user in the home or office for general computing tasks such as word processing, working with photographs or graphics, e-mail, and Internet access.

**Personal digital assistant**  See PDA.

**Pharm**  To break into a DNS server and redirect any attempts to access a particular Web site to a spoofed site.

**Phish**  To send e-mails to customers or potential customers of a legitimate Web site asking them to click a link in the e-mail and then verify their personal information, which may then be used for illegal purposes; the link leads to a spoofed site.

**Photo editing software**  Software that allows you to manipulate digital photos.

**Picture**  A digital photograph, or a piece of line art or clip art that is created in another program and can be inserted into an Office program.

**Pixel**  One of the small dots in a matrix into which a graphics display is divided.

**Places**  A group in the sidebar in the Finder window that provides quick access to the user's Desktop folder, Applications folder, home folder, and Documents folder.

**Pointer**  A small arrow or other symbol on the screen controlled by a pointing device.

**Pointing**  Positioning the pointer over an item and hovering on it.

**Pointing device**  A device, such as a mouse or trackpad, that controls the on-screen pointer.

**Pointing stick**  A small, eraser-like device embedded among the typing keys on a notebook computer that you push up, left, right, or down to move the on-screen pointer; buttons for clicking commands are located in front of the spacebar.

**Pop-up menu**  A menu that opens when you click a set of pop-up menu arrows.

**Pop-up menu arrows**  Arrows that, when clicked, display a pop-up menu of options from which you can choose.

**Port**  The interface between a cable and a controller card.

**Portable computer card (PC card)**  A credit-card-sized card that plugs directly into a slot in a notebook computer and that can contain additional RAM, a fax modem, or a hard disk drive (similar to a flash storage device).

**Portable Network Graphics (PNG)**  A graphics file format used primarily by Macs and the default file type created when the Preview program generates an image.

**Portait orientation**  A print setting that positions the document on the page so the page is taller than it is wide.

**Presentation authoring program**  See Presentation graphics program.

**Presentation graphics program**  Software designed to develop materials for presentations including slide shows, computer-based presentations, speaker notes, and audience handouts.

**Presentation software**  A software program used to create illustrations, diagrams, graphs, and charts that can be projected before a group, printed out for quick reference, or transmitted to remote computers.

**Preview**  The built-in PDF viewer for Mac OS X.

**Print Preview**  In Word, a view that displays how a document will appear when printed.

**Printer**  The peripheral computer component that produces a hard copy of the text or graphics processed by the computer.

**Process**  To modify data in a computer.

**Processor**  See Microprocessor.

**Program**  Software you can use to perform a task, such as create a document, analyze data, or create a presentation. Also called an application.

**Programming language**  A language used to write computer instructions that are translated into electrical signals that the computer can manipulate and process.

**Protocol**  The set of rules that establishes the orderly transfer of data between the sender and the receiver in data communications.

**Quick Look**  A tool in Finder that displays the contents of a selected file as a large preview without actually opening the file.

**RAM**  See Random access memory.

**RAM cache**  See Cache memory.

**Random access memory (RAM)**  A temporary storage place for data and instructions (software) while being used by the CPU.

**Read-only memory (ROM)**  A chip on the motherboard that is prerecorded with and permanently stores the set of instructions that the computer uses when you turn it on; also called nonvolatile memory or permanent memory.

**Receiver**  The computer or peripheral at the message's destination in data communications.

**Record**  A collection of related fields that contains all information for an entry in a database such as a customer, item, or business.

**Removable storage**  Storage media that you can easily transfer from one computer to another, such as DVDs, CDs, or flash drives.

**Report Bugs to Apple button**  A button on the Safari toolbar that opens a dialog box to be used to notify Apple of problems encountered while using Safari to browse the Web.

**Resolution**  The number of pixels used to display the screen image on a computer monitor. Also called screen resolution.

**Restart**  To shut down your computer, then start it again.

**Restore**  To move a file from the Trash to a new location on the computer.

**Right-click**  To press and release the right mouse button once, opening a shortcut menu on the screen.
ROM  See Read-only memory.

Router A device that controls traffic between network components and usually has a built-in firewall.

Safari A popular browser made by Apple that comes installed on the Mac.

Save To store a file permanently on a disk or to overwrite the copy of a file that is stored on a disk with the changes made to the file.

Save As A command used to save a file for the first time or to create a new file with a different filename or location, leaving the original file intact.

Scanner A device that transfers the content on a piece of paper into memory; you place a piece of paper on the glass, a beam of light moves across the glass, similar to a photocopier, and stores the image or words on the piece of paper as digital information.

Screen resolution  See Resolution.

Screen saver Moving image that appears on the computer screen after the computer is idle for several minutes; prevents image persistence.

Screen size The diagonal measurement from one corner of the computer screen to the other.

ScreenTip A label that appears on the screen when you point to an item, providing the name of the item.

Scroll To use the scroll bars or the arrow keys to display different parts of a document in the document window.

Scroll arrow The arrow at the bottom or right end of a scroll bar that is clicked to scroll a document one line at a time or to scroll a document left and right in the document window.

Scroll bar A bar on the right edge (vertical scroll bar) or bottom edge (horizontal scroll bar) of a document window that allows you to move around in a document that is too large to fit on the screen all at once.

Scroll box A rounded rectangle located within the vertical and horizontal scroll bars that indicates your relative position in a file and that you can drag to view other parts of the document or page in the window. See also Scroll bar.

Scroll wheel A wheel on a mouse that you roll to scroll vertically on the page.

SCSI (small computer system interface) port A port that provides an interface for one or more peripheral devices at the same port.

Search box A text box accessible from the Help menu where you type keywords to search the built-in help files.

Search criteria One or more pieces of information that helps Leopard identify the program, folder, or file you want to locate.

Search engine A special Web site that searches the Internet for Web sites based on words or phrases that you enter.

Search field A text box on the Finder toolbar that the user can use to search for files by filename or file content. (Leopard)

Search field  A text box on the Safari toolbar that uses the Google search engine to help users search the Internet for Web sites about a particular topic. (Safari)

Search For A group in the sidebar in the Finder window that helps locate a file quickly by viewing files used recently or by viewing only a certain type of file.

Search results A list of items or links produced by entering keywords or specific criteria in a search field.

Security The steps a computer owner takes to prevent unauthorized use of or damage to the computer.

Select To highlight an item in order to perform some action on it. See also Highlighting.

Semipermanent memory  See Complementary metal oxide semiconductor memory.

Sender The computer that originates the message in data communications.

Serial port A port that transmits data one bit at a time.

Serial value A number used in an Excel worksheet that represents a date or time used in calculations; a date that is formatted in General format will appear as a serial value.

Server A computer on a network that acts as the central storage location for programs and provides mass storage for most of the data used on the network.

Shared Group in the sidebar in the Finder window that is shown only when your Mac is connected to a network; lists all shared computers and servers that the user has access to.

Shortcut menu A menu that appears when you right-click an object, listing common commands for the object.

Shut down An option for ending a Leopard session in which all open files and programs are closed, all drives are disengaged and memory is cleared, and then the Mac safely turns itself off.

Sidebar The left section of a window (such as the Finder window) or a dialog box (such as the Open or Save As dialog boxes) that provides quick access to many frequently-used resources.

Single-click See Click.

Single-core processor A CPU with one processor on the chip.

Size control The lower-right corner of a window that enables the user to resize the window by clicking and dragging.

Sleep A partial shut-down option that puts the Mac in a low power state to conserve energy while not in use.

Slot See Expansion slot.

Small computer system interface port  See SCSI port.

Software The intangible components of a computer system, particularly the programs or instructions that the computer needs to perform a specific task.

Sort A command that organizes columns in an Excel spreadsheet or a Word table numerically or alphabetically, and in ascending or descending order.

Source file When linking and embedding data between documents, the file from which information is copied or used. An Excel file inserted into a Word report is a source file. See also Destination file.

Specifications The technical details about a hardware component.
Spell check  The feature in document production software that helps you avoid typographical and grammatical errors.

Spoofed site  A Web site set up to look exactly like another Web site, such as a bank's Web site, but which does not actually belong to the organization portrayed in the site.

Spotlight search field  A search option accessible in all programs by clicking the magnifying glass on the right side of the menu bar.

Spreadsheet  Another word for a workbook or worksheet.

Spreadsheet software  Software that you can use to manipulate, analyze, and chart quantitative data, as well as to calculate financial information.

Spring-loaded folder  A folder in the Finder window that springs open when a file is dragged on top of it, displaying its contents in the right pane of the Finder window and enabling the user to drag and drop files between different locations without having to open additional Finder windows.

Spyware  Programs that track a computer user’s Internet usage and send this data back to the company or person that created it, most often without the computer user’s permission or knowledge.

Stack  A method of displaying the contents of a folder on the dock; when the user clicks a folder on the dock, the folder springs open in an arc or a grid to reveal its contents.

Standalone computer  A personal computer that is not connected to a network.

Status bar  The bar at the bottom of the Finder window that lists the number of items in the selected device or folder and the available space on a device. (Leopard)

Status bar  The bar at the bottom of the Safari window that displays information about the Web page that is loading and that displays the Web address of a link when you point to it. (Safari)

Storage capacity  The amount of data a device can handle at any given time.

Storage device  A physical location for storing files. Also called a drive.

Strong password  A string of at least eight characters of upper and lowercase letters and numbers.

Subfolder  A folder within another folder for organizing sets of related files into smaller groups.

Supercomputer  The largest and fastest type of computer used by large corporations and government agencies for processing a tremendous volume of data.

Synchronous dynamic RAM (SDRAM)  RAM that is synchronized with the CPU to allow faster access to its contents.

System resource  Any part of the computer system, including memory, storage devices, and the microprocessor, that can be used by a computer program.

System software  A collection of programs and data that helps the computer carry out its basic operating tasks.

Tab  A clickable item near the top of a dialog box that switches to a different set of options or tools.

Tab bar  A bar at the top of the Safari window that contains the name of the Web pages currently open in tabs in the Web browser.

Tabbed browsing  Web browsing that enables you to open more than one Web page at a time on individual tabs in a browser window.

Tablet PC  A computer designed for portability that includes the capability of recognizing ordinary handwriting on the screen.

Tape  A magnetic storage media that provides inexpensive archival storage for large quantities of data.

TB  See Terabyte.

Telecommunications  The transmission of data over a comparatively long distance using a phone line or some other conduit.

Temporary memory  See Random access memory.

Terabyte (TB)  1,024 GB, or approximately one trillion bytes.

Terminal  A computer connected to a network that uses mainframes as a server; it has a keyboard for input and a monitor for output, but processes little or no data on its own.

Terminal emulator  A personal computer, workstation, or server that uses special software to imitate a terminal so that it can communicate with a mainframe or supercomputer for complex data processing.

Text box  A box in which you type text.

Thumbnails  A miniature version of an image or slide.

Time Machine  A new feature in Leopard that enables users to maintain files, folders, and programs by backing up everything on the computer on a regular basis.

Title bar  The area across the top of a window that displays the program name, document name, or the name of the currently selected file, folder, or device.

Toner  A powdery substance used by laser printers to transfer a laser image onto paper.

Toolbar  A customizable set of buttons that allows you to activate commands using one click.

Toolbar control  A feature in the Finder window that hides or unhides the toolbar and sidebar when clicked.

Top-level domain  The part of a Web site address that identifies the type of site you are visiting; examples of top-level domains are com (for commercial site), edu (for educational institutions), and org (for organizations).

Top Sites  A feature of Safari that displays your most frequently visited Web sites as thumbnail images on a page in the browser window.

Trackball  A pointing device with a rolling ball on the top side and buttons for clicking commands; you control the movement of the on-screen pointer by moving the ball.

Trackpad  A touch-sensitive device on a laptop computer that you drag your finger over to control the on-screen pointer.
Trash  A storage area on your computer's hard disk for deleted files, which remain in the Trash until you empty it.

Triple-click  To press and release the left mouse button three times quickly. In some programs, including Word, this action causes an entire line to be selected.

Uniform Resource Locator (URL)  The address of a Web page.

Universal Serial Bus port  See USB port.

URL (Uniform Resource Locator)  The address of a Web page.

USB connector  A small, rectangular plug attached to a peripheral device and that you connect to a USB port.

USB drive  See USB flash storage device.

USB flash storage device  A popular, removable storage device for folders and files that provides ease of use and portability. Also called a USB drive or flash drive.

USB (Universal Serial Bus) port  A high-speed port to which you can connect a device with a USB connector to have the computer recognize the device and allow you to use it immediately.

User interface  A term for the way commands and features users interact with are organized on screen in a software program.

User interface sound effect  A sound effect that occurs when you perform certain Finder actions such as dragging a file to the Trash.

Utility  A type of system software that augments the operating system by taking over some of its responsibility for allocating hardware resources.

Vertical scroll bar  See Scroll bar.

Video card  See Graphics card.

Video display adapter  See Graphics card.

View  A way of displaying files and folders in a window.

View buttons  Buttons that change the arrangement and view of the contents of a window.

Virtual memory  Space on the computer's storage devices that simulates additional RAM.

Virus  A harmful program that instructs a computer to perform destructive activities, such as erasing a disk drive.

Virus protection software  See Antivirus software.

Volatile memory  See Random access memory.

WAN  See Wide area network.

Web browser  See Browser.

Web page  A document located on another computer that you can view over the Internet and that often contains words, phrases, and graphics that link to other documents.

Web server  A computer directly linked to the Web that has software capable of hosting Web pages.

Web site  A group of Web pages focused on a particular subject.

Web site creation and management software  Software that allows you to create and manage Web sites and to see what the Web pages will look like as you create them.

Where pop-up menu  In the Open dialog box and Save As dialog box, displays the currently selected folder or drive.

Wi-Fi  See Wireless fidelity.

Wide area network (WAN)  A network that covers a large geographic area and usually connects one or more LANs.

WiMAX (Worldwide Interoperability for Microwave Access)  A standard of wireless communication defined by the IEEE that allows computers to communicate wirelessly over many miles; signals are transmitted from WiMAX towers to a WiMAX receiver in a device.

Window  A rectangular work area on a screen that can contain a program, the contents of a file, and/or other usable data.

Window control buttons  Buttons located in the upper-left corner of most windows and some dialog boxes that allow you to close, minimize, or increase the size of the window or dialog box.

Wireless fidelity  The term created by the nonprofit Wi-Fi Alliance to describe networks connected using a standard radio frequency established by the Institute of Electrical and Electronics Engineers (IEEE); frequently referred to as Wi-Fi.

Wireless local area network (WLAN)  A LAN connected using high frequency radio waves rather than cables.

Wizard  A series of dialog boxes that guides you step-by-step through the process of creating a document or accomplishing a task.

WLAN  See Wireless local area network.

Word processing program  A program used to create and manipulate text-based documents, such as memos, newsletters, or term papers.

Word size  The amount of data that is processed by a microprocessor at one time.

Worksheet  An Excel spreadsheet comprised of rows and columns of information that is used for performing numeric calculations, displaying business data, presenting information on the Web, and other purposes.

Workstation  A computer that is connected to the network.

World Wide Web  The part of the Internet that contains Web pages that are linked together. See also Internet.

Worldwide Interoperability for Microwave Access  See WiMAX.

Zoom button  Window control button that maximizes the size of a window or dialog box.
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