part

I

Follow the instructions in this
chapter to set up your computer
and learn the basics.

1 Getting Started

The illustration on the next page shows all the equipment you will need to set up your computer and begin using it. Place your equipment on a sturdy, flat surface near a grounded wall outlet. Before following the setup instructions in this chapter, you may want to read "Arranging Your Office" in Appendix A (in the section on health-related information) for tips on adjusting your work furniture so that you're comfortable when using the computer.

Plugging in the computer

Before you plug your Macintosh into a wall socket, carefully read all the setup instructions in this chapter. Then, before you connect any other devices to it, follow the instructions on how to plug in your Macintosh. The plug grounds the computer and protects it from electrical damage while you are setting up.
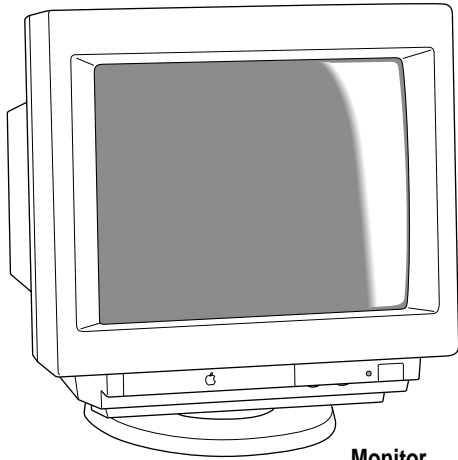
Monitor
(your monitor may look different)
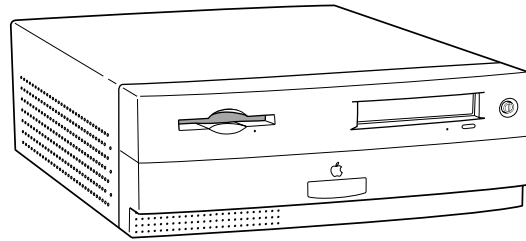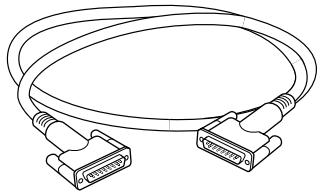
Macintosh computer
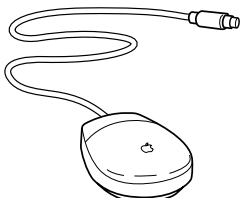
Mouse
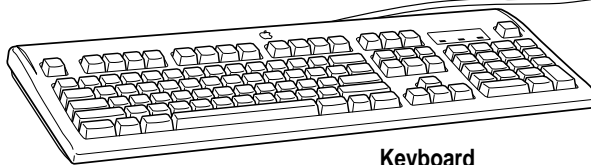
Keyboard

Keyboard cable
(sometimes built
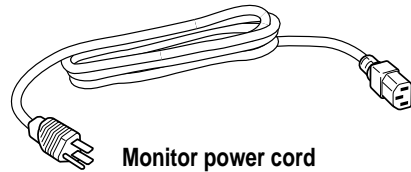into the keyboard
as shown here)

Communication card access cover
(already installed in your computer if you have
an optional communication card installed)

Monitor cable
(sometimes built into the monitor)
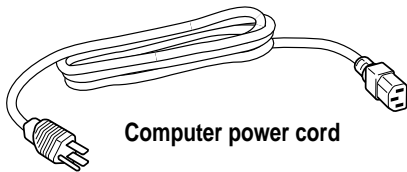
Computer power cord

Monitor power cord
(sometimes built into the monitor)

When you are ready to begin, follow these steps:

1 **Make sure the voltage switch on the back of the computer is set for the kind of voltage system to which you will be connecting.**

The voltage switch must be set correctly to avoid damaging your computer. If you don't know the voltage used in the country you're in, refer to the table "Voltages for Different Locations" later in this section.

Check to see that the voltage switch on the back of your computer is properly set before you plug it in. If you need to change the setting, insert a small screwdriver here and slide the switch.

Set the switch to show "115" for voltages less than 135; set it to show "230" for voltages greater than 180. (Your computer will not operate in the 135–179 volt range.)
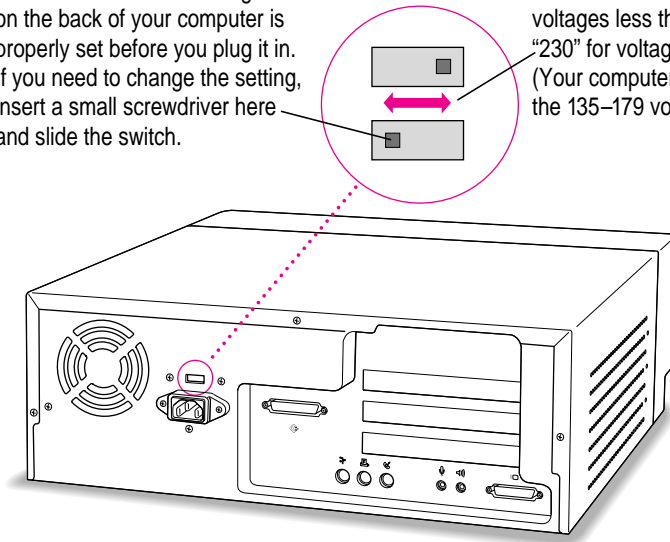
WARNING Setting the correct voltage for your computer does not set the voltage for your monitor. To protect your monitor, be sure to use the appropriate adapter or voltage converter, if one is necessary.

Voltages for different locations

Country	Single voltage
Japan	100
South Korea	100/220
Jamaica, Taiwan	110
Peru	110/220
Brazil, Lebanon	110–220
Philippines	115
Bermuda, Canada, Puerto Rico, United States, Venezuela	120
Mexico	127
Saudi Arabia	127/220
Hong Kong	200
India, South Africa	220–250
Israel, Pakistan, Singapore	230
Australia, Kuwait, Malta, New Zealand, Northern Ireland, Papua New Guinea, Oman, Qatar, United Kingdom	240
Austria, Belgium, Denmark, Finland, France, Germany, Greece, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland	220–230
Bahrain, Chile, China (People's Republic), Czechoslovakia, Egypt, Greenland, Hungary, Iceland, Indonesia, Iran, Jordan, Liechtenstein, Nepal, Paraguay, Poland, Romania, United Arab Emirates, Russia and the Commonwealth of Independent States (CIS), Yemen, Yugoslavia	220

2 **Plug the socket end of the computer power cord into the recessed power cord socket (marked with the symbol ∼) on the back of the computer.**

3 **Plug the other end of the power cord into a three-hole grounded outlet or power strip.**

Choose a power outlet to which you have easy access.

WARNING This equipment is intended to be electrically grounded. Your Macintosh is equipped with a three-wire grounding plug—a plug that has a third (grounding) pin. This plug will fit only a grounded AC outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact a licensed electrician to replace the outlet with a properly grounded outlet. Do not defeat the purpose of the grounding plug!

Power cord plug   Power cord socket
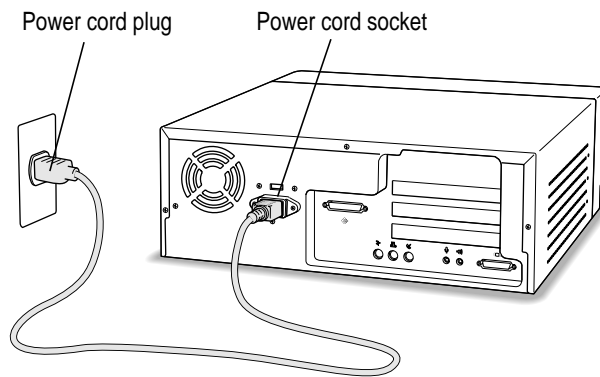
IMPORTANT Be sure that at least one end of the power cord is within easy reach so that you can unplug the computer when you need to.

If the computer starts up: If you hear a tone, the computer has started up and you need to turn it off before proceeding. Press the power button located on the front of the computer to turn it off. (Refer to Chapter 3, "Connecting Equipment and Expanding Your Computer," for an illustration showing the location of the power button on the front of the computer.)

Connecting a monitor

You can connect many types of monitors to your Macintosh. To connect a monitor from a manufacturer other than Apple, refer to the instructions that came with it.

> **WARNING** Setting the correct voltage for your computer does not set the voltage for your monitor. To protect your monitor, be sure to use the appropriate adapter or voltage converter, if one is necessary.

Connecting the monitor power cord

Monitors have two cords to connect—a power cord and a monitor cable.

To connect the monitor power cord, follow these steps:

1 Place the monitor where you will be using it.

Keep these considerations in mind:

- The case of the computer is sturdy enough for you to place on top of it any monitor that is 17 inches or smaller.
- Allow at least 3 inches for air circulation around the sides of the computer and monitor.
- Make sure that the top of the screen is slightly below eye level when you're sitting at the keyboard.
- Position the monitor to minimize glare and reflections on the screen from overhead lights and windows.
- Consult "Arranging Your Office" in Appendix A for suggestions on positioning your computer equipment.

2 **Connect the monitor power cord to the monitor.**

On some monitors, the cord is already attached.

3 **Plug in the monitor power cord.**

Be sure to plug the power cord into a three-hole grounded outlet or power strip.

Monitor power socket
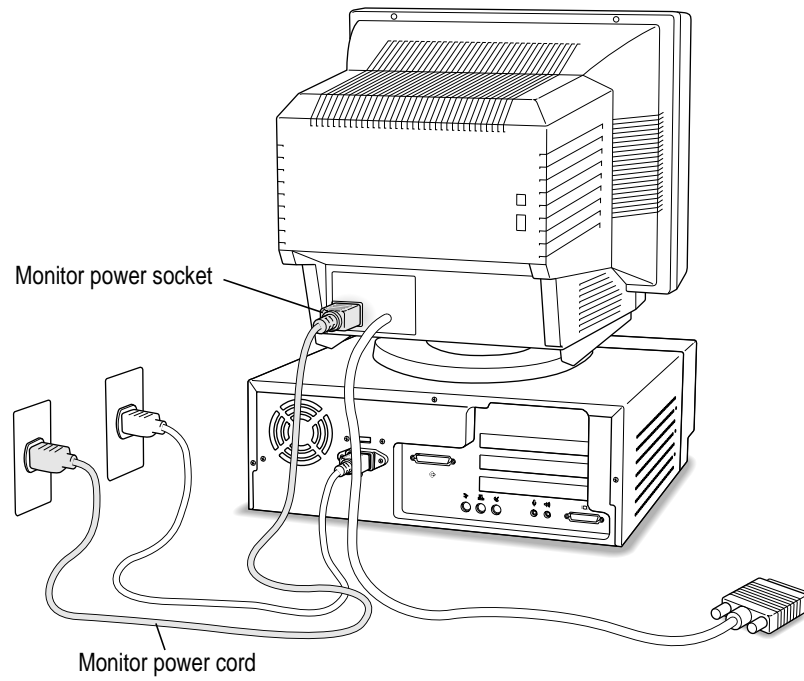
Monitor power cord

Connecting the monitor cable

After you plug in the monitor power cord, you connect the monitor cable to the computer's monitor port.

To connect the monitor cable, follow these steps:

1   Attach the monitor cable to the monitor.

On some monitors, the cable is already attached (as shown below).

2   Attach the monitor cable to the monitor port on the back panel of the computer.

The monitor port is marked with the |◻| icon (symbol).

|◻| Monitor port

Monitor cable
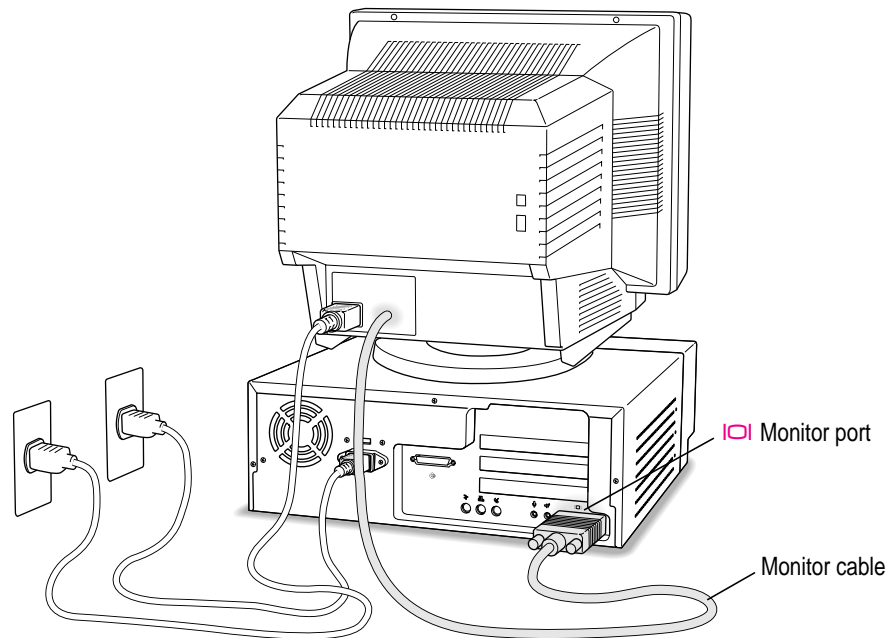
Connecting the mouse and keyboard

1 Plug the mouse cable into the recessed port on the back of the keyboard.

The plug and the port are marked with the ✛ icon. The positions of the port and icon on your keyboard may be different from those pictured.

By the way: A port marked with the ✛ icon is called an Apple Desktop Bus (ADB) port.

Plug the mouse cable into the recessed port on the keyboard. The flat part of the plug should be pointing down, as shown here.

This cable plugs into the Apple Desktop Bus (ADB) port, marked with the ✛ icon, on the back of the computer.
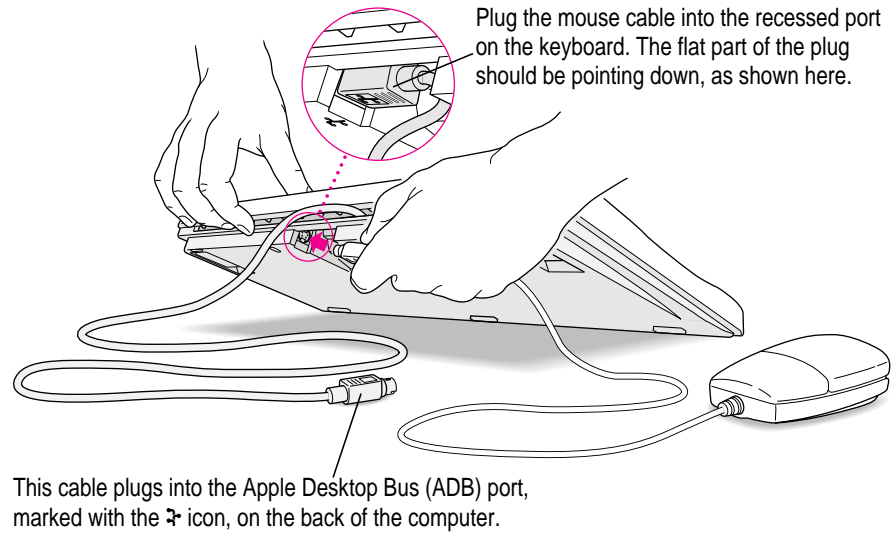
2 If you want to adjust the keyboard angle, lower the feet of the keyboard.

To adjust the keyboard angle, lower the feet until they snap into position.
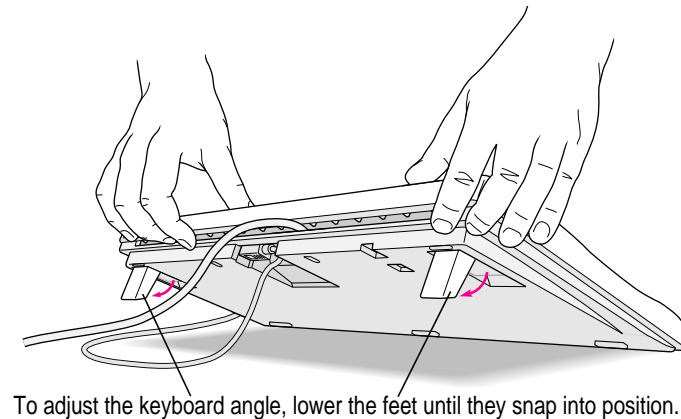
3 **Plug the keyboard cable into the port marked with the ✦ icon on the back of the computer.**

✦ ADB port
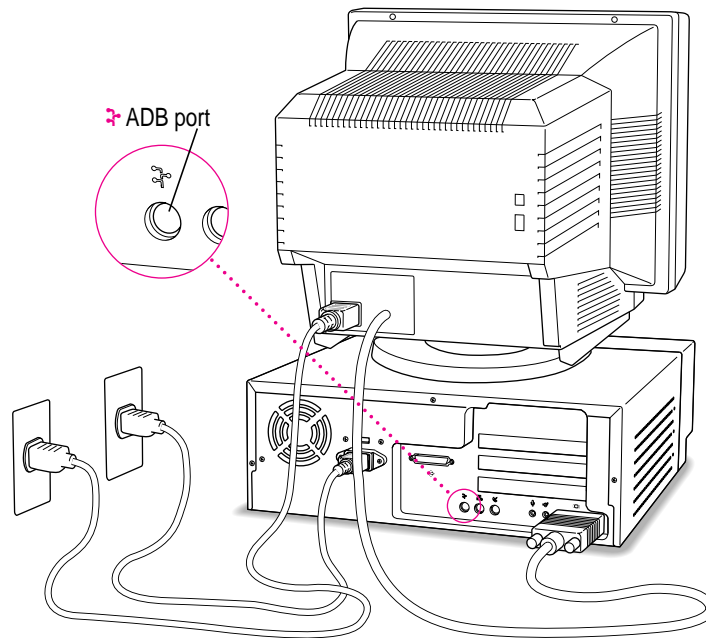
Some monitors have a port to which you can connect the keyboard or mouse. See the information that came with your monitor.

Connecting other equipment

If you are new to the Macintosh, it's a good idea to get some experience using your computer before you connect other equipment, such as a printer or scanner. To learn basic Macintosh skills, continue with the instructions in this chapter.

When you're ready to connect other equipment to your Macintosh, see the instructions in Chapter 3.

Turning the computer on for the first time

To turn the computer on for the first time, follow these steps:

1   Turn on the monitor.

See the information that came with your monitor for the location of the power switch. On newer Apple monitors, the power switch is located on the front of the unit.

Note: If you have extra dynamic random-access memory (DRAM) installed in your computer, it can take several seconds for larger monitors to turn on. (The screen remains black.)

2   Turn on your computer by pressing the power button on the front of the unit.
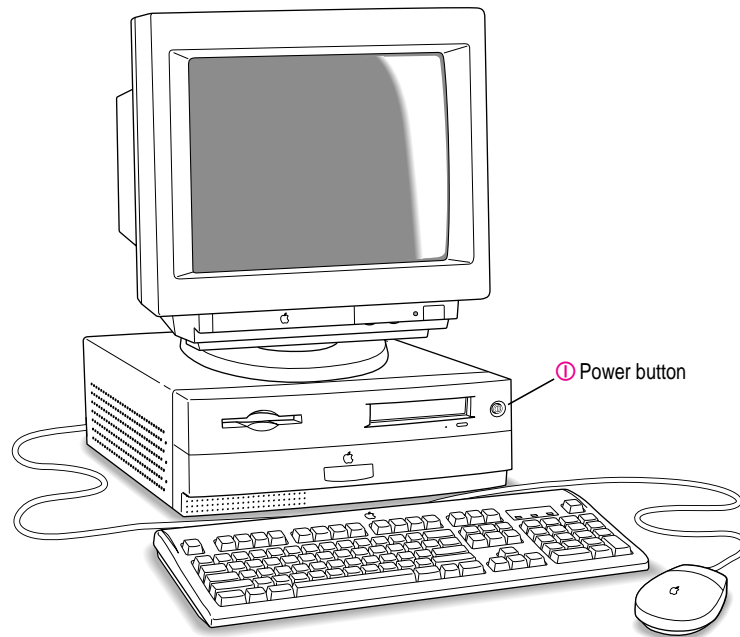
Ⓘ Power button

You hear a tone from your computer as it starts up.

Note: You only need to use the power button on the front of your computer to turn it on for the very *first* time; from now on, you can press the Power key on the keyboard to turn on the computer. Refer to "Turning the Computer On" later in this chapter for information about using the Power key on the keyboard to start up your computer.

3 **Check to see what's on your screen.**

You see a sequence of messages describing what is happening, followed by the Energy Saver dialog box.

■ If you see a blinking question mark, see "Solutions to Common Problems" in Chapter 6.

■ If you see anything else on your screen, or if you see nothing at all, see the section "Problems Starting Up?" next in this chapter.

■ If you are a beginning Macintosh user, press the Return key on your keyboard when the Energy Saver dialog box appears.

■ If you're an experienced Macintosh user, you may want to set your energy-saving options now. For more information, refer to "Saving Energy With the Energy Saver Control Panel," later in this chapter, and to the "Saving Energy" topic area of Macintosh Guide, available in the Guide (②) menu.

- If, when you press Return, you see the Macintosh desktop (shown here), your system software is already set up correctly.

  Skip now to the section, "What's Next?"

Hard disk icon

Macintosh desktop
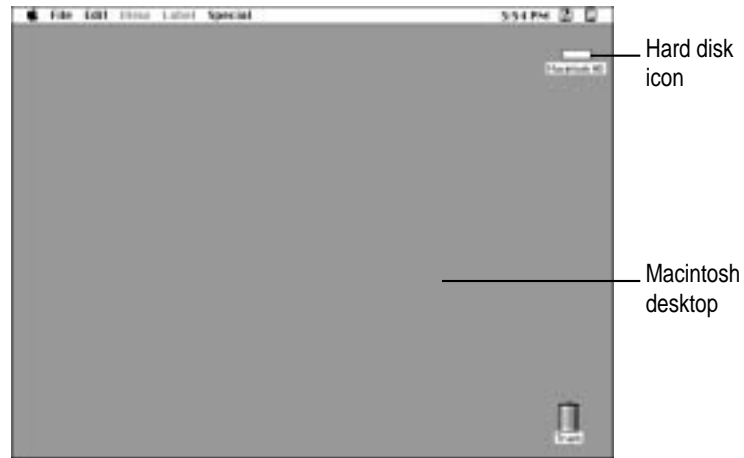
Note: To save energy, your computer is automatically set to put itself to sleep if you haven't used it for 30 minutes or more (the computer goes into power-saving mode and the screen turns black). If this happens while you're setting the computer up, simply press the Power key or any key on the keyboard but Caps Lock to "wake up" the computer (it may take a few seconds). See "Saving Energy With the Energy Saver Control Panel," later in this chapter for more information on setting power-saving options.

Problems starting up?

If the screen is dark, check these items to see if you can identify the problem:

■ Is the computer turned on? The power-on light on the front of the computer should be on. If it isn't, press the power button on the front of the computer.

■ Is the power cord connected to the computer, and is the cord plugged into a power source?

■ If the computer is plugged into a power strip, is the power strip turned on?

■ Are the keyboard and mouse cables connected correctly? (Don't disconnect the keyboard or mouse cable while the computer is on. You could damage your equipment.)

■ Is the monitor power cord plugged in?

■ Is the monitor cable attached firmly to both the monitor and computer?

■ Is the monitor turned on? (Check the power-on light on the front of the monitor.)

■ Is the brightness and contrast control on the monitor adjusted correctly? (On most monitors, the control is marked with the ☼ icon.)

■ If you have an external hard disk attached to your computer, is that hard disk turned on? Was it turned on before you turned on the computer? If you're not sure, turn everything off. Then turn on the external hard disk before you turn on the computer.

If you see a blinking question mark on the screen, you probably need to read "Solutions to Common Problems" in Chapter 6.

What's next?

You've finished setting up your computer. Continue with one of the following steps:

- If you are new to the Macintosh, turn to the next section, "Learning the Basics." When you've learned the basic Macintosh skills, turn to the section "Saving Energy With the Energy Saver Control Panel" to learn how to set energy-saving options for your computer.

- If you are an experienced Macintosh user, turn to the section "Saving Energy with the Energy Saver Control Panel," later in this chapter, to learn how to set energy-saving options for your computer. Then turn to Chapter 2, "Getting Help," to learn about Macintosh Guide, your main source of information when you're working with the Macintosh.

- If you want to connect additional equipment, such as a microphone, to your computer, see Chapter 3, "Connecting Equipment and Expanding Your Computer," for instructions.

- If you want to install application software on your computer, see Chapter 4, "Installing and Using Application Programs." You need this information to set up any applications specifically designed for Power Macintosh computers.

**IMPORTANT** If you need to turn off your computer at any point, please see "Turning the Computer Off" later in this chapter. It is very important to use the correct procedure for shutting down your Macintosh before turning it off.

Learning the basics

If you are new to the Macintosh, you should begin by looking at the easy-to-use program called the Macintosh Tutorial. The tutorial teaches you the basic skills you need to use your computer. To start the tutorial, follow these steps:

1   Slide your mouse along your mouse pad or desk.

Hold the mouse as shown, with the cable pointing away from you. Rest the heel of your palm on the desk and grasp the sides of the mouse between your thumb and fingers. Use your wrist and fingers to slide the mouse around with the index finger resting on the mouse button. Don't press the mouse button (under your index finger). Notice that the arrow (▶) on the screen moves in the same direction that you move the mouse.

Mouse button
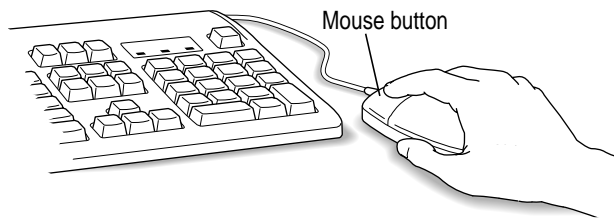
If the arrow doesn't move, make sure that the cables connecting the mouse and keyboard are secure and that your mouse is positioned as shown in the illustration.

2   Move the tip of the arrow (▶) to the question mark (②) in the upper-right portion of the screen.

If you run out of room on your mouse pad or desk while moving the mouse, pick up the mouse and place it where there's more room. (The arrow on the screen moves only when the mouse is in contact with the mouse pad or desk.)

3   **With the tip of the arrow on the question mark, press and hold down the mouse button.**

A list of choices (called a *menu*) appears. This is the Guide (②) menu, which is the place to go when you have a question about how to use your computer.


4   **While holding down the mouse button, move the arrow until the words "Macintosh Tutorial" are highlighted, then release the mouse button.**

A window appears welcoming you to the tutorial. You can set this book aside for now and follow the instructions on the screen. When you have completed the tutorial, return to this book.
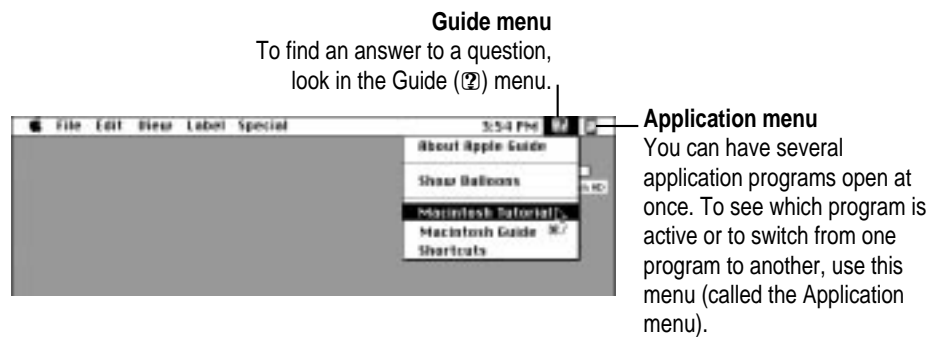
Reviewing the basics

Look at the following illustrations to review the elements you use on your screen to work with your computer.

Menu ———

——— **Icons**

——— **Window**
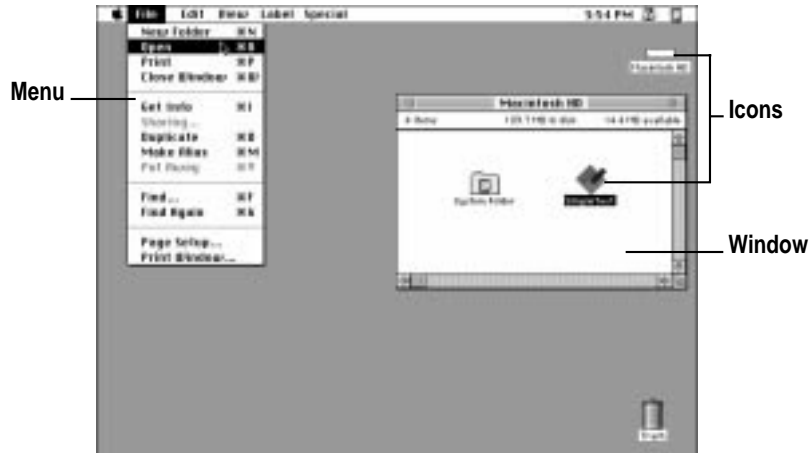
Menus

The strip across the top of the screen is called the menu bar. The symbols and words in it represent menus of commands. To open a menu, place the pointer on the symbol or word for the menu and press the mouse button.

Guide menu
To find an answer to a question, look in the Guide (②) menu.

Application menu
You can have several application programs open at once. To see which program is active or to switch from one program to another, use this menu (called the Application menu).

Icons

Icons are small pictures that represent disks, programs, documents, and folders. You can double-click any icon to open it and see what it contains.
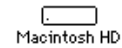
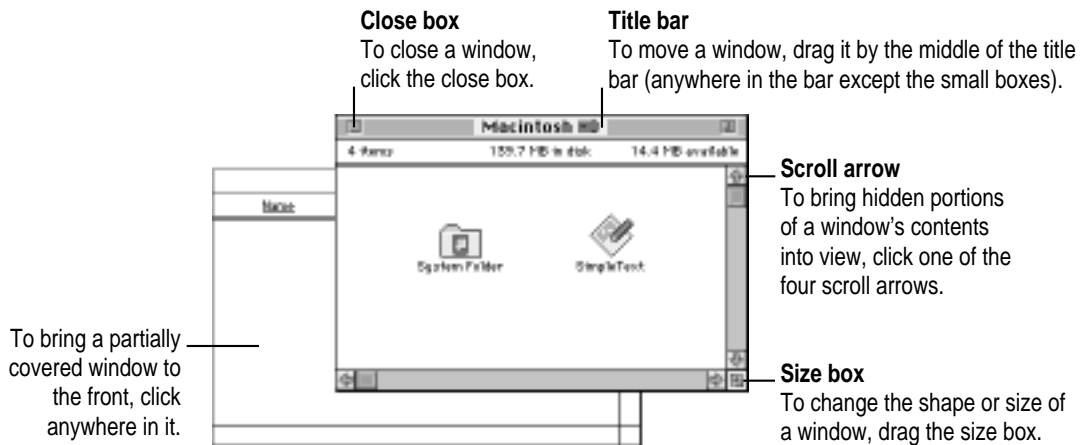|	
Macintosh HD	This icon represents your computer's internal hard disk.
Application	Icons like this one represent application programs, which you use to create documents and do other work.
Document	Icons like this one represent documents, which you can create and edit.
Folder	Icons like this represent folders. A folder contains other icons.
Trash	To throw away an item you no longer want, drag it to the Trash icon and choose Empty Trash from the Special menu.

Windows

Windows are boxes that display text, graphics, or icons. To change the shape or position of a window, or to close the window, use the elements shown here.

Close box
To close a window, click the close box.

Title bar
To move a window, drag it by the middle of the title bar (anywhere in the bar except the small boxes).

Scroll arrow
To bring hidden portions of a window's contents into view, click one of the four scroll arrows.

Size box
To change the shape or size of a window, drag the size box.

To bring a partially covered window to the front, click anywhere in it.

Saving energy with the Energy Saver control panel

When you save energy, you save natural resources and reduce pollution. Your Power Macintosh contains features that automatically save energy. You can increase the savings by using the Energy Saver control panel to shut down your computer if you won't be using it for a while—for example, overnight or over the weekend.

The Energy Saver dialog box (shown in step 3 of "Turning the Computer On for the First Time" earlier in this chapter) appears every time you start up your computer until you open the Energy Saver control panel. Once you open the control panel, you can keep the preset options shown there or set your own energy-saving options. If you do not want to set your energy-saving options when the Energy Saver dialog box is displayed, you can click Close Message or press Return (the Energy Saver dialog box continues to appear when you start up your computer).

Setting energy-saving options

You can get to the Energy Saver control panel by clicking Specify Settings in the Energy Saver dialog box that appears when you start up your computer or by choosing Control Panels in the Apple () menu.

The Energy Saver control panel displays options you can accept or change. For more information on using the Energy Saver control panel, see the "Saving Energy" topic area of Macintosh Guide, available in the Guide (②) menu.

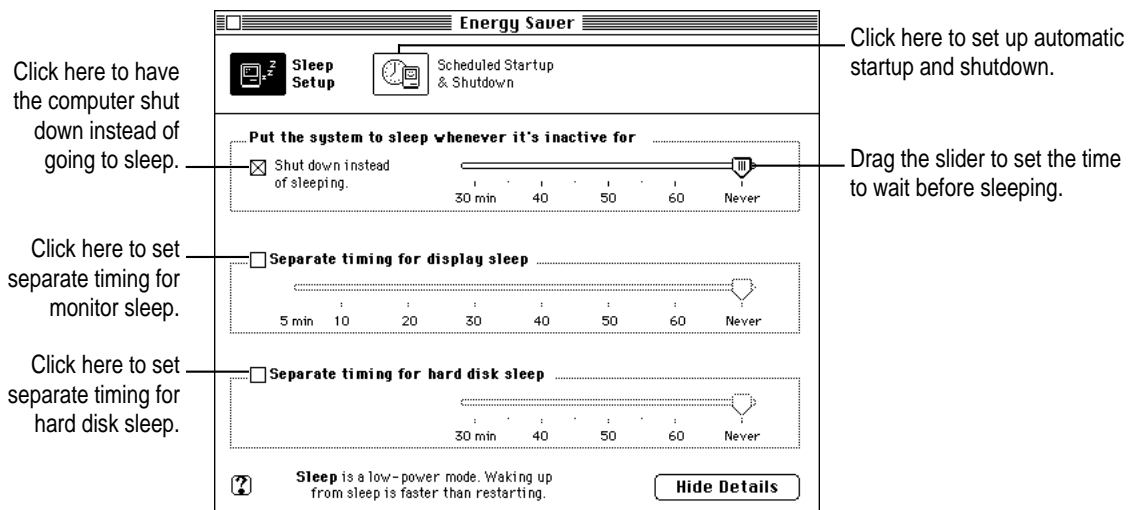## Putting your computer to sleep

Your Power Macintosh is preset to put itself to sleep after 30 minutes of inactivity. When your computer goes to sleep, the screen enters a low-power mode in which it dims and the hard disk stops spinning but remains ready to start back up quickly. (To prevent your computer from overheating, the fan continues to spin.) If the computer goes to sleep while you have unsaved information on screen, you do not lose any of the information.

To put your computer to sleep right away, choose the Sleep command from the Special menu, or press the Power key on the keyboard to bring up the Shutdown dialog box pictured below.

Are you sure you want to shut down your computer now?

| Restart | Sleep | Cancel | Shut Down |
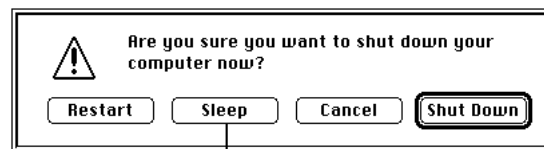
Click here to put your computer to sleep now.

To set sleep options, use the Energy Saver control panel, available under Control Panels in the Apple (🍎) menu.

Energy Saver

Sleep Setup   Scheduled Startup & Shutdown

Click here to set up automatic startup and shutdown.

Click here to have the computer shut down instead of going to sleep.

Put the system to sleep whenever it's inactive for

☒ Shut down instead of sleeping.   30 min   40   50   60   Never

Drag the slider to set the time to wait before sleeping.

Click here to set separate timing for monitor sleep.

☐ **Separate timing for display sleep**

5 min   10   20   30   40   50   60   Never

Click here to set separate timing for hard disk sleep.

☐ **Separate timing for hard disk sleep**

30 min   40   50   60   Never

Sleep is a low-power mode. Waking up from sleep is faster than restarting.
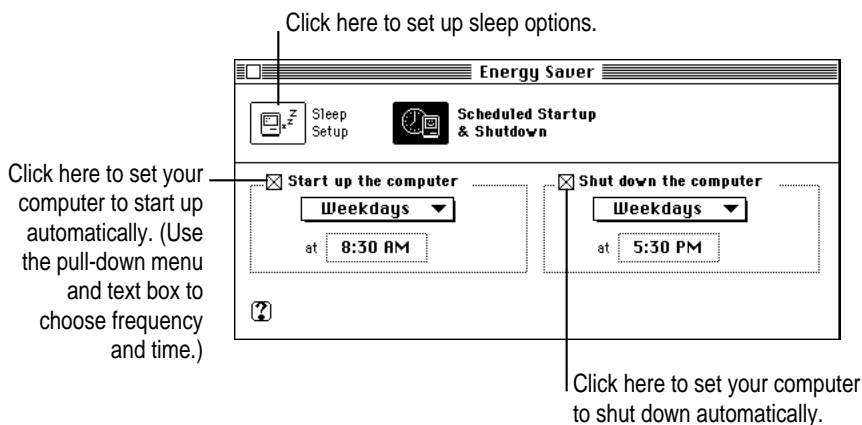
| Hide Details |

Waking your computer from sleep

To wake the computer from sleep, press any key on the keyboard except Caps Lock. (It may take a moment or two for the computer to awaken.) The documents and application programs you had open when the computer went to sleep are still open and unsaved changes are preserved.

Accessing a sleeping computer over a network

If your computer is being used as a server, other users can still access it over a network while it is asleep if you set server options that prevent the hard disk from going to sleep. (You can set server options using the Preferences menu when the Energy Saver control panel is displayed.) The network connection does not have to be established before the computer goes to sleep. However, if you've chosen to have your computer shut itself down rather than go to sleep, other users will not be able to access it over a network after the computer shuts itself down.

Scheduling automatic startup and shutdown

You can set your computer to start up and shut down at specified times using the Energy Saver control panel. For information on using the Energy Saver control panel, see the "Saving Energy" topic area of Macintosh Guide, available in the Guide (②) menu. If there's an unsaved document open on your desktop when the scheduled shutdown time occurs, it is saved automatically for you in a folder on your startup disk. The folder is named with the date and time of the shutdown.

Click here to set up sleep options.

Click here to set your computer to start up automatically. (Use the pull-down menu and text box to choose frequency and time.)

Energy Saver

Sleep Setup

Scheduled Startup & Shutdown

☒ Start up the computer

Weekdays ▼

at 8:30 AM

☒ Shut down the computer

Weekdays ▼

at 5:30 PM

Click here to set your computer to shut down automatically.

Inserting a CD-ROM disc or other CD

Your internal CD-ROM drive works with CD-ROM discs, standard audio compact discs (CDs), and single-session or multisession Photo CDs. Follow these instructions to insert a CD-ROM disc (or other CD) into your CD-ROM drive. Then follow the instructions provided with your disc, as well as the instructions in this manual.

1 **Start up your Macintosh computer, if it's not already on.**

2 **Press the Open/Close button to open the tray of the CD-ROM drive.**

Open/Close button
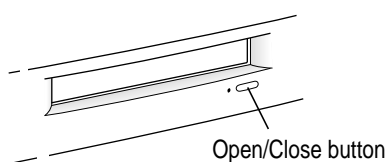
The tray opens.

3 **Place a disc in the tray with the disc label facing up.**

Make sure the disc is lying flat and centered in the tray. If you are using a small (8 cm) disc, make sure it is centered within the inside ring on the tray.

Place the CD disc, label side up, in the CD-ROM drive tray.
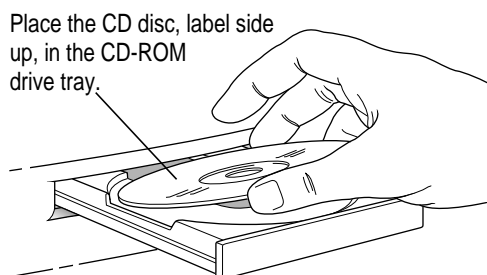
4 **Close the tray by gently pushing it in or by pressing the Open/Close button.**
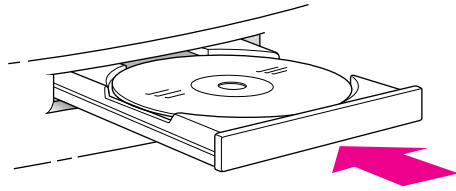
In a few moments, an icon for the disc appears on your screen.

For more information about working with a CD-ROM disc or other CD, see the "CD-ROM Discs" topic area of Macintosh Guide, available in the Guide (❷) menu. For instructions on using Macintosh Guide, see Chapter 2 of this manual.

CD-ROM disc vibration

Your CD-ROM drive reads CD-ROM discs very quickly, but because of the high rotation speed of the drive, some CD-ROM discs can wobble in it and cause the computer to vibrate. This vibration affects very few CD-ROM discs and does not damage your computer or the CD-ROM disc itself, but you should be aware of the vibration in case it occurs.

What causes the vibration? Some CD-ROM disc labels have artwork on them that can cause the CD-ROM disc's weight to be slightly off-center. For example, the label (or "paint") on the CD-ROM disc may be noticeably thicker on one side than the other. A slightly off-center CD-ROM disc spinning in the drive can wobble and cause your computer to vibrate.

Ejecting a CD-ROM disc or other CD

You eject a CD-ROM disc or other CD with the Put Away command in the File menu.

1   Close any files and quit any programs you've opened on the CD-ROM disc.

You cannot eject a disc that contains files or applications that are in use by your computer.

2   Click the disc icon to select it.

3   Choose Put Away from the File menu.

The tray opens.

Note: You can also eject a CD-ROM disc by dragging its icon to the Trash.

4   Remove the disc. Then either gently push the tray in or press the Open/Close button to close the tray.

Turning the computer off

You can turn your computer off either with the Power key or by using the Shut Down command.

Using the Power key

To turn the computer off using the Power key (marked with a triangle) on the keyboard, follow these instructions:

1   If the computer is in sleep mode, press any key on the keyboard except Caps Lock to wake it.

For information on the sleep feature of your Macintosh, see "Saving Energy With the Energy Saver Control Panel" earlier in this chapter.

2 **Press and hold down the Power key on the keyboard for about 2 seconds.**
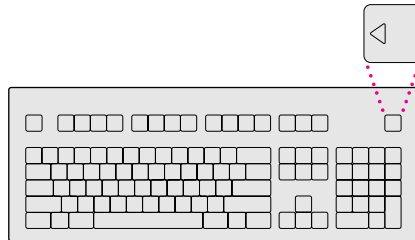
The following dialog box appears on the screen:

> ⚠ Are you sure you want to shut down your
> computer now?
>
> [Restart] [Sleep] [Cancel] [[Shut Down]]
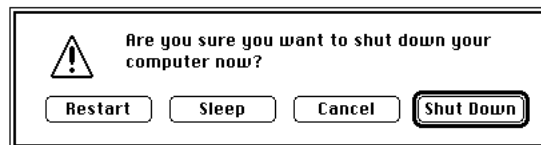
3 **Press the Return key on the keyboard, or click the Shut Down button in the dialog box.**

4 **Turn off the monitor.**

Using the Shut Down command

You can also turn your computer off by using the Shut Down command in the Special menu. Follow these steps:

1 **If the computer is in sleep mode, press the Power key or any key on the keyboard except Caps Lock to wake it.**

2 **Move the tip of the arrow to the word "Special" at the top center of the screen.**

If the word "Special" does not appear in the menu bar at the top of the screen, you're not working in the Finder, the application you need to be in when you shut down your computer. Choose Finder from the Application menu (at the far right of the menu bar). Then try step 2 again.

3   **With the tip of the arrow on the word "Special," press and hold down the mouse button.**

4   **While holding down the mouse button, drag the arrow until the words "Shut Down" are highlighted, then release the button.**

5   **Turn off the monitor.**

To turn the computer on again, just press the Power key on the keyboard.

If you can't shut down your computer

If a problem with the computer prevents you from using the Power key on the keyboard or choosing Shut Down—for example, if the computer "freezes" so that the pointer does not respond to the mouse—you can turn off the computer by pressing the power button on the front of the computer. Use this method only if you cannot choose Shut Down or Restart after following the instructions in "Using the Power Key" or "Using the Shut Down Command."

IMPORTANT You could lose unsaved work if you use the power button on the front of the computer to turn off your computer. Only use the power button when there is a problem that prevents the computer from being turned off with the Power key on the keyboard or the Shut Down command. To make sure your work is saved, use the Power key on the keyboard or the Shut Down command.

Turning the computer on

To turn the computer on after you've shut it down with either the menu command or the keyboard, press the Power key on the keyboard. The Power key is marked with a triangle symbol.
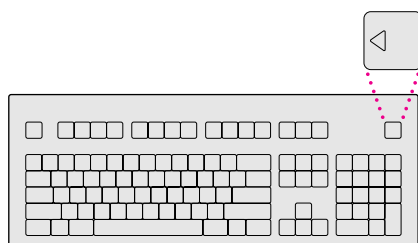
Note: You also have to turn on the monitor separately each time you turn on the computer.

Where to find answers

When you have questions about using your Macintosh, there are several places you can look for answers.

In this book

Use this book to help you set up your computer and learn about it, or to find solutions to problems.

In the Guide menu

The Guide menu (marked with the ⍰ icon) is your main source of information about the Macintosh. You can find information here that is not covered in this manual. To learn how to get different kinds of help from the Guide menu, see Chapter 2 in this book.
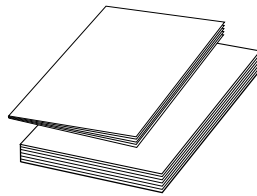
In other manuals

For answers to questions about other equipment or about application programs you have purchased, see the manuals that came with the equipment or programs.

In the About Apple Extras file

The Apple Extras folder on your hard disk contains a SimpleText document (often called a "Read Me" file) called About Apple Extras with important information about some of the application programs included with your computer. Read Me files can also be found inside application folders.

From Apple's customer support hotline

If you can't find an answer in any of the materials provided, call the customer support hotline. (The phone number for the hotline is in the service and support information that came with your computer.)

If you have problems with a particular application program, contact the manufacturer of the program. See the service and support information that came with your computer for information about getting updated Apple software.

**Use the instructions in this
chapter to learn about the help
available to you in the Guide menu.**

2 Getting Help

The Guide menu contains online help and information and is your main
source of information when working with your computer. The menu is
identified by a question mark (②) in the upper-right corner of the screen.
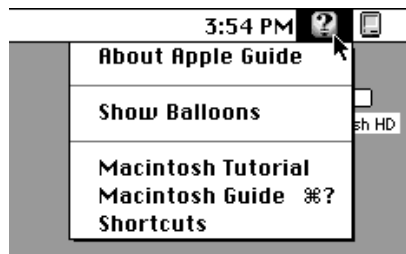
Getting answers to your questions

When you have a question while working with your computer, you can get the answer by choosing Macintosh Guide from the Guide menu.

1 **Open the Application menu (in the upper-right corner of the screen) and choose Finder to make it the active application program.**

A checkmark appears beside the Finder command, indicating that the Finder is the active program.

2 **Open the Guide menu (marked with the ⍰ icon) and choose Macintosh Guide.**

The Macintosh Guide window appears.
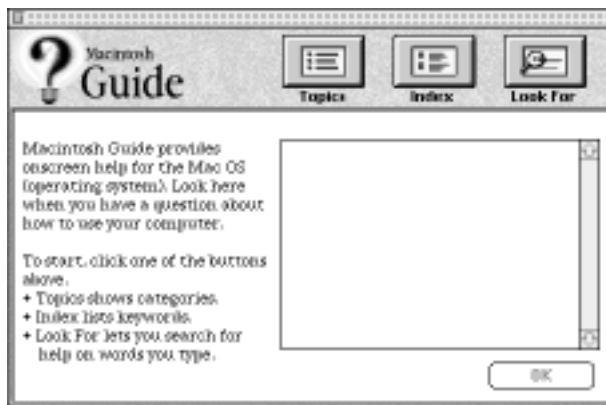
Whenever you use Macintosh Guide, its window remains in front of other windows. If the window gets in your way, you can move it by dragging its title bar (the gray bar across the top of the window).

3   **Notice the three buttons at the top of the window: Topics, Index, and Look For.**

Macintosh Guide gives you three ways of finding information:

- **Topics** lets you choose from a list of general subjects; it is like the table of contents in a book.

- **Index** lets you choose from an alphabetical list of more specific subjects; it is like the index in a book.

- **Look For** lets you search for information related to a specific word or phrase that you type.

In the following sections you will practice using each method.

If you have problems while using Macintosh Guide, see "Tips for Using Macintosh Guide" later in this chapter.

Getting answers with the Topics button

1   **In the Macintosh Guide window, click the Topics button.**

A list of general topic areas appears on the left side of the Macintosh Guide window. (Depending on the hardware and software you have, the list of topic areas may look different.)
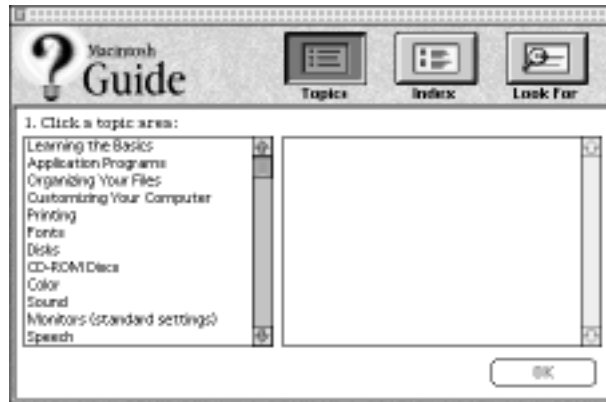
2   **In the list of topics, click "Customizing Your Computer."**

When you click any topic area, a list of related phrases and questions appears on the right side of the Macintosh Guide window.
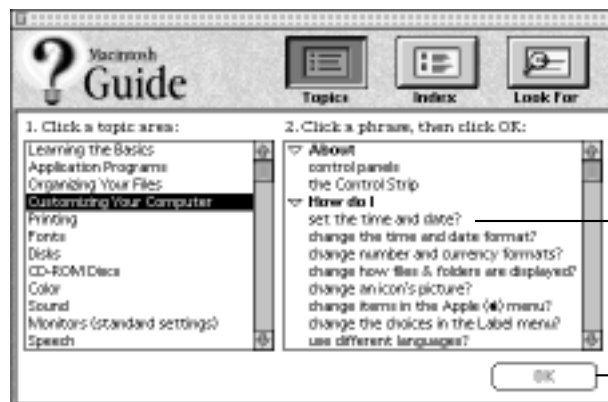
To get instructions, you click a phrase or question…

…and then click OK.

3 Click the question "How do I set the time and date?" and then click OK. Or double-click the question.

A small window appears with instructions for you to follow.

If you want to return to the main Macintosh Guide window, you click this button.

How do I set the time and date?

You set the time and date in the Date & Time control panel.

For instructions, click the right arrow.

Topics   Huh?   ◄ 1 ►

You click here to see the next step (if there is one).

4 Read and follow the instructions in this window.

Macintosh Guide provides step-by-step instructions to answer the question you selected. When you have completed each step, click the right arrow in the lower-right corner to see the next step.
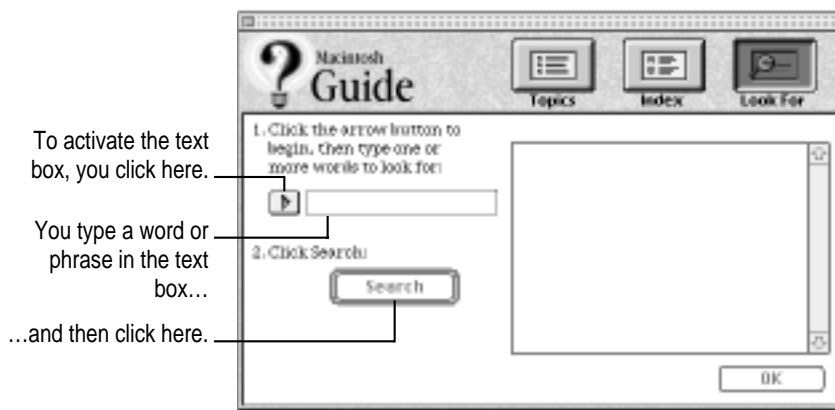
5 When you have completed all the steps, click the Topics button in the lower-left corner to return to the main Macintosh Guide window.

Now continue with the next section.

Getting answers with the Index button

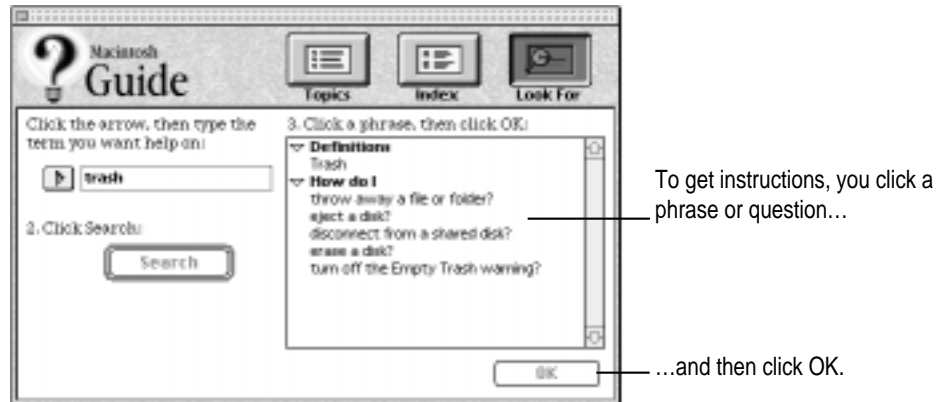**1 In the Macintosh Guide window, click the Index button.**

An alphabetical list of index terms appears on the left side of the window.

Slider

Macintosh Guide

Topics   Index   Look For

Click a term or drag the slider: 2. Click a phrase, then click OK:

A B C D E F G H I J K L M N O P Q R S

32-bit addressing
accent marks
access
access privileges
activating
active program
active window
adaptive computing
alias
aligning icons

▽ About
  control panels
  the Control Strip
▽ How do I
  set the time and date?
  change the time and date format?
  change number and currency formats?
  change how files & folders are displayed?
  change an icon's picture?
  change items in the Apple (●) menu?
  change the choices in the Label menu?
  use different languages?

Scroll bar

OK

2 **Scroll through the alphabetical list until the term "background pattern" is visible.**

You can scroll through the list either by dragging the slider to the letter "B" or by using the scroll bar at the right of the list.

3 **Click the term "background pattern" in the alphabetical list.**

When you click any index term, a list of related phrases and questions appears on the right side of the Macintosh Guide window.
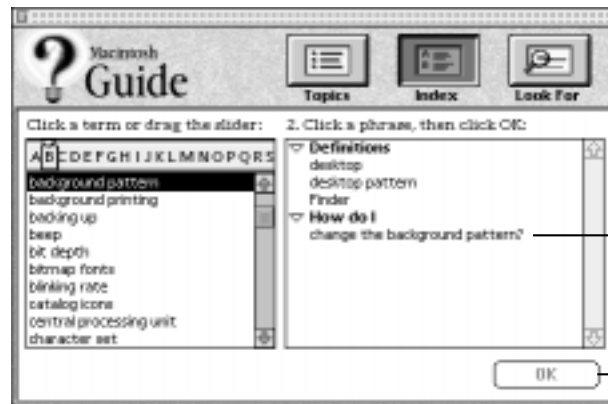
To get instructions, you click a phrase or question…

…and then click OK.

4 **Click the question "How do I change the background pattern?" and then click OK. Or double-click the question.**

A small window appears with instructions for you to follow.

If you want to return to the main Macintosh Guide window, you click this button.

To see the next step (if there is one), you click here.

5 **Read and follow the instructions in the window.**

Macintosh Guide provides step-by-step instructions to answer the question
you selected. When you have completed each step, click the right arrow in the
lower-right corner to see the next step.

6 **When you have completed all the steps, click the Topics button in the lower-left corner to
return to the main Macintosh Guide window.**

Now continue with the next section.

Getting answers with the Look For button

1 **In the Macintosh Guide window, click the Look For button.**

A small box where you can type text appears on the left side of the window.

To activate the text
box, you click here.

You type a word or
phrase in the text
box…

…and then click here.

2 **Click the arrow button to activate the text box.**

3 Type "trash" in the text box, then click Search.

When you click Search, a list of phrases and questions related to the word or phrase you typed appears on the right side of the Macintosh Guide window.

To get instructions, you click a phrase or question...

...and then click OK.

4 Click the question "How do I turn off the Empty Trash warning?" and then click OK. Or double-click the question.

A small window appears with instructions for you to follow.

If you want to close Macintosh Guide, you click here.

To see the next step (if there is one), you click here.

5 Read and follow the instructions in the window.

Macintosh Guide provides step-by-step instructions to answer the question you selected. When you have completed each step, click the right arrow in the lower-right corner to seethe next step.

6 When you have completed all the steps, click the close box in the upper-left corner to close Macintosh Guide.

Tips for using Macintosh Guide

Here are a few tips for using Macintosh Guide effectively:

■ Macintosh Guide is available only when you are in the Finder—the program that displays the desktop area where you can see the icons of disks, folders, and files. (Other programs may also have help available in the Guide menu, however.) If you don't see Macintosh Guide in the Guide menu, open the Application menu (to the right of the Guide menu) and choose Finder.

■ Follow the steps when you're instructed to; don't skip ahead or read ahead. That way the computer can check to make sure you've done a step correctly.

■ Unlike most windows, the Macintosh Guide window stays in front of other windows on the screen so that your instructions are never covered. If you need to move the Guide window out of the way, drag it by the title bar at the top of the window.

You can also move the window out of the way by clicking the zoom box in the upper-right corner of the window. Click the box once to shrink the window; click it a second time to expand the window to its original size.

■ If you need more information about an instruction or a term, click the button labeled "Huh?" to get a further explanation. (The "Huh?" button is dimmed when no additional information is available.)

■ If you want to return to the main Macintosh Guide window, click the Topics button in the lower-left corner of the Guide window.

■ When you're finished using Macintosh Guide, click the close box in the upper-left corner of the window.

Close box   Title bar   Zoom box

How do I set the time and date?

You set the time and date in the Date & Time control panel.

For instructions, click the right arrow.

? Topics   Huh?   ◁ 1 ▷   Right arrow

Topics button   "Huh?" button
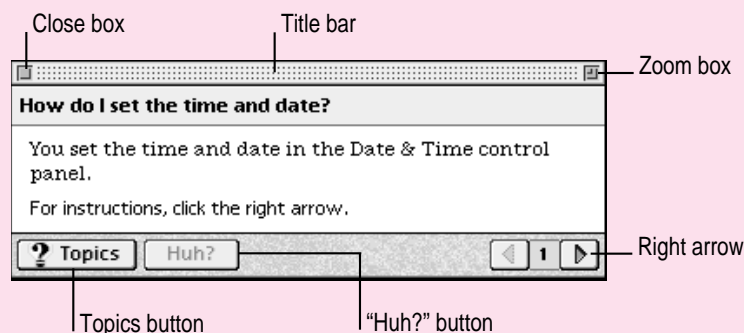
Identifying what's on your computer screen

Sometimes you'll see an unfamiliar item on the screen and ask yourself, "What's that?" You can get an answer by using a Macintosh feature known as Balloon Help.

Using balloons like those you see in comic strips, Balloon Help explains the function of icons, menus, commands, and other items on the Macintosh screen.

Follow these steps to use Balloon Help:

1 Open the Guide menu (marked with the ⍰ icon) and choose Show Balloons.

2 With your mouse, move the pointer to any object on the screen that you want to identify.

A balloon appears next to the object. In the following illustration, for example, pointing to the Trash displays a balloon that explains how to use the Trash.

Although balloons appear next to items when you point to them, the way you work does not change; you can still select icons, choose commands, and so on.

3 When you're finished using Balloon Help, open the Guide menu again and choose Hide Balloons.

Learning useful shortcuts

You can perform many tasks in the Finder more quickly if you use keyboard or mouse shortcuts. For example, instead of clicking an icon and choosing Open from the File menu, you can simply double-click the icon to open it.

Follow these steps to learn keyboard and mouse shortcuts:

1   Open the Guide menu (marked with the ⍰ icon) and choose Shortcuts.

The main Macintosh Shortcuts window appears.

2   Click one of the category buttons.

Another window appears, describing shortcuts for that category.

If you want to close the window, you click here.

To return to the main Macintosh Shortcuts window for more categories, you click the Topics button.

To see the next window (if there is one), you click here.

3 **Read about the shortcuts available for the category you selected.**

Click the right arrow in the lower-right corner of the window to see the next window (if there is one).

4 **When you finish reading about the shortcuts for your category, click the Topics button in the lower-left corner to return to the main Macintosh Shortcuts window. Or click the close box in the upper-left corner to close the window.**

Read this chapter for information on
expanding your computer system
with additional hardware.

3

Connecting Equipment
and Expanding Your Computer

The illustration on the next page shows the basic computer system you now have. You can expand your computer system by connecting additional hardware (such as a SCSI device, printer, modem, or external stereo speakers) to its external ports or by connecting it to a network.

For instructions on connecting audio and SCSI equipment and connecting to an Ethernet network, see the next three sections of this chapter. For instructions on connecting other equipment, see the manuals that came with the equipment.

Installing expansion cards and additional memory

You can also expand your computer by installing items inside the computer. Items you can install include PCI and communication cards (such as an internal modem or an Ethernet card), additional random-access memory (RAM), a High Performance Module (level 2 cache) and additional random-access memory for video.

Instructions for installing these internal accessories are provided in Appendix B, "Installing Expansion Cards and Additional Memory," later in this manual.

Monitor

Internal hard
disk drive

Computer

Floppy disk drive

Speaker

Keyboard

CD-ROM drive

⏏ CD-ROM drive
Open/Close button

ⓞ Power button
A green light
indicates that the
computer is on.

◁ Power key
Use this key to turn your
computer on and off.

Mouse
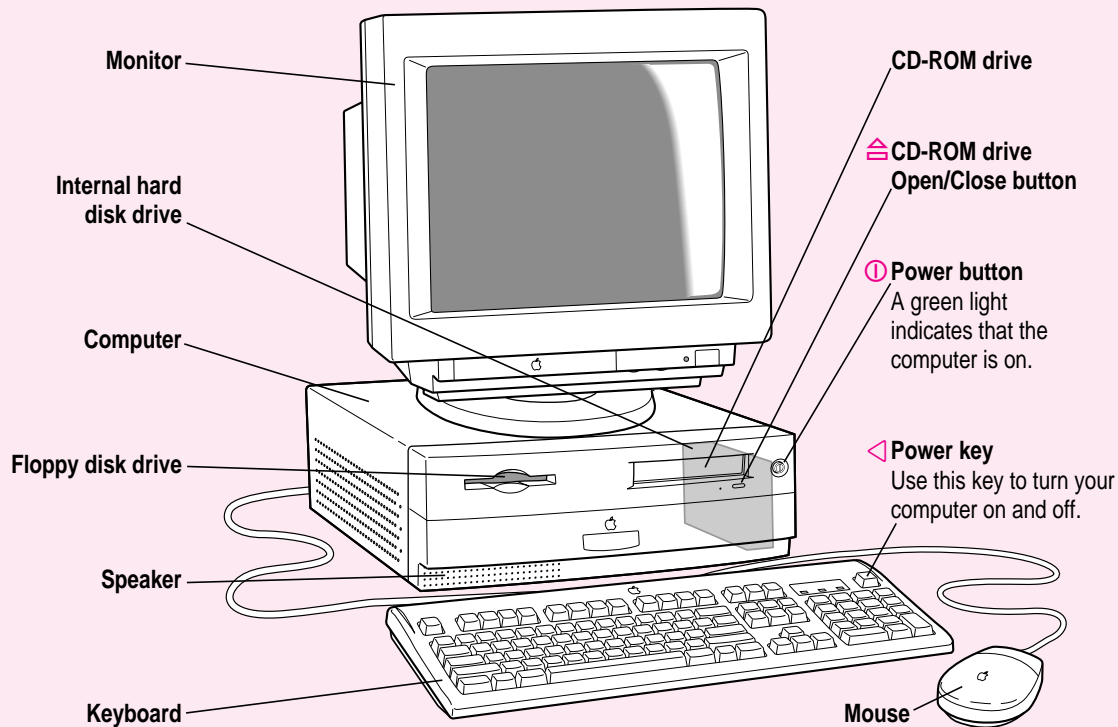
Your computer's ports and connectors

SCSI port	⇔	Connects your Macintosh to SCSI equipment, such as external hard disk drives and scanners.
Apple Desktop Bus (ADB) port	⸓	Connects your Macintosh to an input device, such as a keyboard or a trackball.
Printer port	📠	Connects your Macintosh to a printer, LocalTalk network, or GeoPort device such as the GeoPort Telecom Adapter and the QuickTake 150 digital camera.
External modem port	📞	Connects your Macintosh to an external modem or GeoPort device, such as the GeoPort Telecom Adapter and the QuickTake 150 digital camera.
Access covers for expansion slots		Covers ports for optional Peripheral Component Interconnect (PCI) slot expansion cards.

SCSI port

Power socket

Apple Desktop Bus (ADB) port

Printer port

External modem port

Access covers for PCI expansion slots (2)

Communication card (optional)

Sound input port

Sound output port

Monitor port
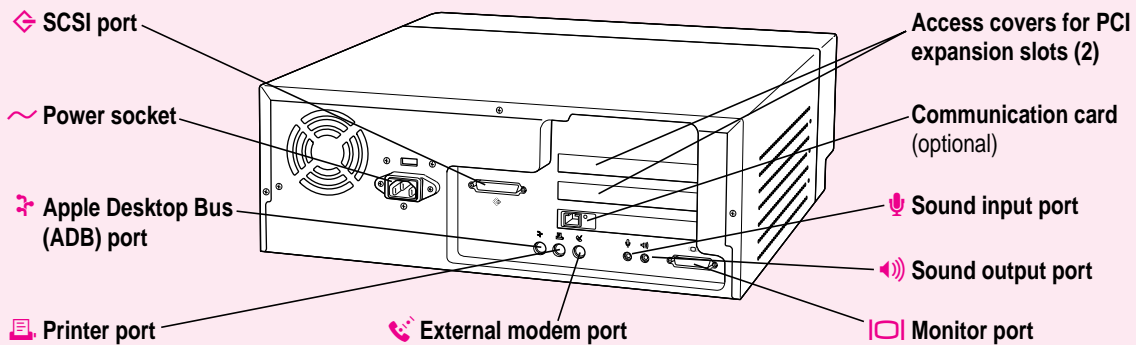
Communication card slot (optional)		Contains an optional communication card (such as an internal modem or Ethernet card). If your computer did not come with a communication card already installed, this access cover looks the same as the access covers on the PCI expansion slots. (It does not have an opening for the communication card.) If your computer did not come with a communication card installed, an access cover with an opening for a communication card is included in the box your computer came in (in case you decide to install the card later).
Sound input port		Connects your Macintosh to another audio source, such as an Apple PlainTalk microphone or a compact disc or audio cassette player.
Sound output port		Connects your Macintosh to sound output equipment, such as externally powered (amplified) speakers.
Monitor port		Connects your Macintosh to your monitor.

Connecting audio equipment

Your Macintosh can play and record stereo sound from a variety of sources. By connecting audio equipment to the sound input and output ports on the computer, you can listen to or reproduce stereo sound. Using the internal CD-ROM player, your computer can also play and record sound from audio compact discs (CDs).

For information on using Macintosh system software to choose audio input and output options, record an alert sound, or play audio CDs, see the "Sound" topic area of Macintosh Guide, available in the Guide (❷) menu.

About your computer's sound ports and features

The sound input port is marked with an icon of a microphone (🎤). The sound output port is marked with an icon of a speaker (◄»).

Sound input port   Sound output port
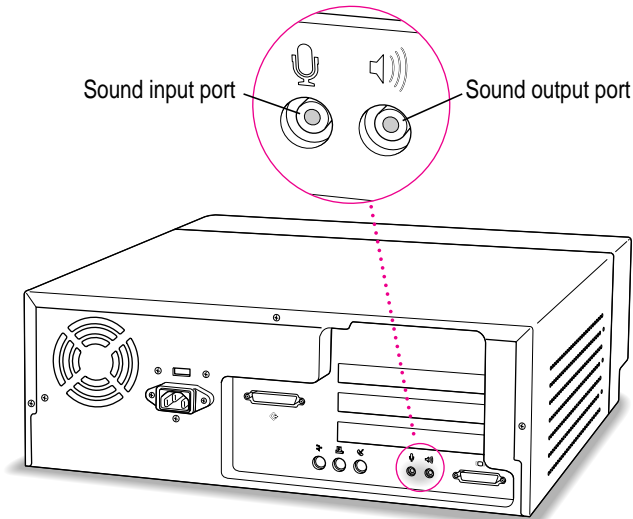
The computer's sound input port (🎤) accepts the 3.5-mm audio connectors shown below. The sound output port (◀))) (where you might connect external speakers) accepts only the stereo miniplug.
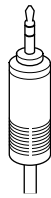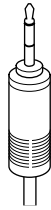
Stereo miniplug   Extended miniplug

The stereo miniplug is found most often on stereo equipment (such as externally powered speakers). The extended miniplug, which is slightly longer and is found on voice quality microphones (such as the Apple PlainTalk Microphone), works only in your computer's sound input port (🎤). (Even though it will fit into the sound output port, it won't work there.) If your equipment has a different type of connector from those shown here, you can purchase an adapter at an electronics supply store.

Connecting audio equipment

To play or record sound with your Macintosh, you can attach a microphone or a pair of speakers.

For instructions on connecting specific equipment, see the following sections later in this chapter:

■ "Connecting an Apple PlainTalk Microphone"

■ "Connecting External Stereo Speakers"

■ "Connecting Headphones"

Follow these general instructions when connecting audio equipment to the Macintosh:

1   Make sure that the audio equipment has a cable with a stereo miniplug or extended miniplug connector.

If it does not, attach an adapter that has a stereo miniplug.
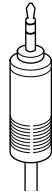
Stereo miniplug

2   Place the audio equipment near the Macintosh.

3   Shut down the Macintosh and turn off the audio equipment.

4   Attach the cable to the audio equipment and to the appropriate sound port on the Macintosh.

To record incoming sound on the computer, connect the audio equipment to the sound input port (🎤).

To record the sound produced by the computer or play that sound through externally powered (amplified) speakers, connect the audio equipment to the sound output port (◀))).

5   Turn on the computer and the audio equipment.

You're now ready to begin listening to and working with sound.

You can adjust the volume using the Monitors & Sound control panel, which uses software inside your computer to adjust sound. See the next section, "Adjusting Volume and Sound."

Adjusting volume and sound

There are several ways to adjust the volume on your computer:

- Use the volume controls on the front of your monitor if your monitor comes with built-in speakers.

- Use the volume control sliders in the Monitors & Sound control panel, as shown below. The Monitors & Sound control panel can be found in the Control Panels folder in the Apple ( ) menu.

- Use the volume control slider in the AppleCD Audio Player if you are playing an audio CD. The AppleCD Audio Player can be found in the Apple ( ) menu. The volume set in the Monitors & Sound control panel also affects the volume of the audio CD.

1 Click here to view sound controls.

For more information about your computer's sound, click here.

2 Adjust the volume slider.
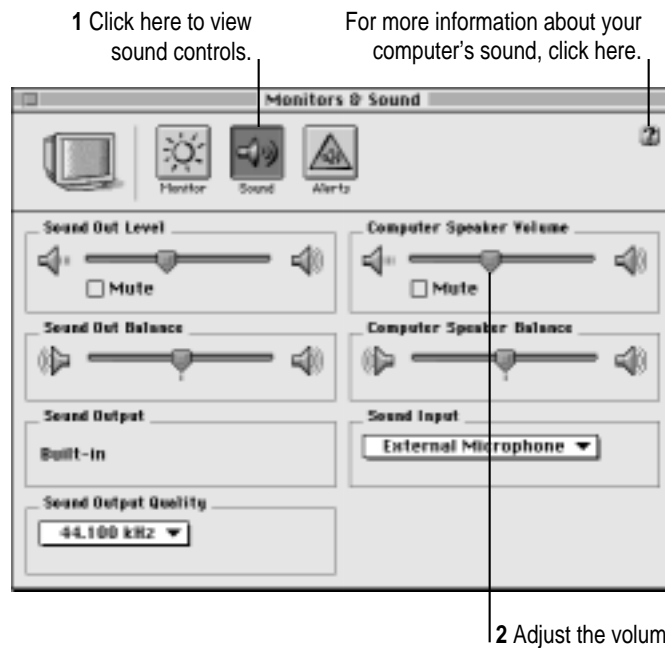
Note: Some monitors also place a "Monitor Sound" icon at the top of the Monitors & Sound control panel.

Tip: You may prefer to set the Sound Out Level slider to about the middle of the slider bar. This way, when you adjust the volume later in other ways—through the AppleCD Audio Player or through the volume controls on the computer or monitor—you can hear your adjustments better because the computer itself is set to about the middle of its volume range.

For more information about sound, see the "Sound" topic area of Macintosh Guide, available in the Guide (②) menu.

Connecting an Apple PlainTalk Microphone

Your computer has a sound input port (🎤), which you can use to connect an Apple PlainTalk Microphone. The Apple PlainTalk Microphone is included with some computer models. If your computer did not include an Apple PlainTalk Microphone, you can purchase one at an Apple-authorized dealer. You cannot connect non-Apple microphones.

Note: The sound input port does not support the Apple Omni microphone (the round microphone shipped with some earlier models of Macintosh) or the attenuated RCA adapter provided with some models of Macintosh.
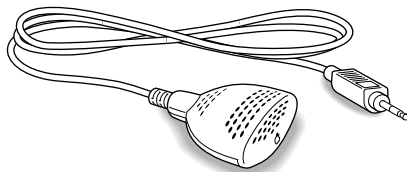
Apple PlainTalk Microphone

To connect the microphone, follow the steps below.

Note: If you want to record sound using the microphone built into your monitor (if you have such a monitor), see "Using Your Monitor's Built-in Microphone," later in this section.

1 **Shut down the Macintosh.**

2 **Plug the microphone's connector into the sound input port (🎤) on the back of the computer.**

3   Place the microphone at the top center of the monitor, with the microphone's Apple (<img> **) icon facing you.**
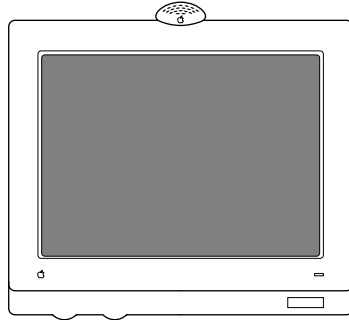
If you can't place the microphone on top of the monitor, position the microphone according to these guidelines:

■ The microphone should be between one and three feet away from you.

■ The microphone should be directly in front of you to minimize the effect of background noises.

4   Turn on the computer.

Next, make sure the Sound In source in your computer is set to External Microphone.

5   Open the Monitors & Sound control panel in the Apple (<img> **) menu and click the Sound icon.**

6   Click the Sound Input pop-up menu and choose External Microphone.

1 Click here to view sound controls.

For more information about your computer's sound, click here.

2 Choose External Microphone from the pop-up menu.
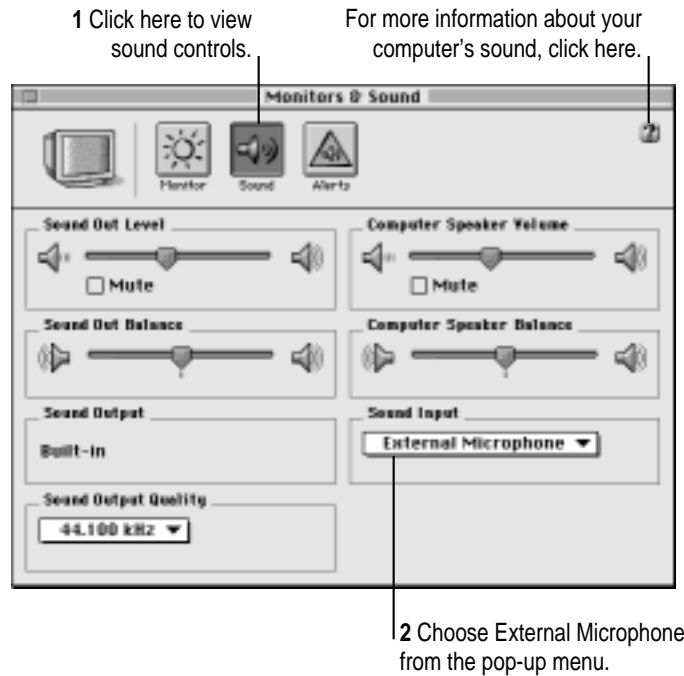
7   Click the close box in the upper-left corner of the Monitors & Sound control panel to close it. (The control panel does not have to remain open while you're recording.)

You're now ready to begin using your microphone.

See the "Sound" topic area of Macintosh Guide, available in the Guide (②) menu, for instructions on recording.

Using your monitor's built-in microphone

If your monitor has a built-in microphone and you want to use it to record, follow these steps:

1   **Open the Monitors & Sound control panel in the Control Panels folder in the Apple () menu.**

2   **Click the Sound icon.**

3   **From the Sound Input pop-up menu, choose External Microphone.**

4   **In the Monitors & Sound control panel, mute your monitor's built-in speakers.**

You may need to click a "Monitor Sound" icon at the top of the Monitors & Sound control panel to display your monitor's sound controls and mute its built-in speakers.

5   **In the Monitors & Sound control panel, select your monitor's built-in microphone.**

You may need to click a "Monitor Sound" icon at the top of the Monitors & Sound control panel to display your monitor's sound controls and select its built-in microphone.

See the "Sound" topic area of Macintosh Guide, available in the Guide () menu, if you need further instructions on recording.

Connecting external stereo speakers

You can take advantage of your computer's stereo sound output by attaching externally powered (amplified) speakers.

1   Assemble the speakers and the cable you need.

You need a cable with a stereo miniplug at one end to connect one or both speakers to the computer.
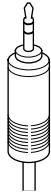
Stereo miniplug

Some speakers require a dual-plug adapter. Others, like those shown in the next illustration, accept a single stereo miniplug and are joined by standard speaker wires. See the documentation that came with your speakers for more information.

2   Turn off the Macintosh.

3   Plug the stereo miniplug into the sound output port (◀⠆) on the Macintosh.

4   Connect the speakers together with speaker wires, if necessary.

Your finished connections should look something like this:

◀⠆ Sound output port

Externally powered speakers

Audio In port
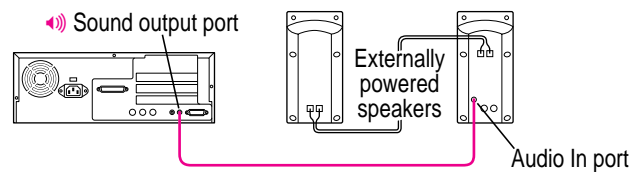
5 **Turn on the computer.**

Now you're ready to hear full-range stereo sound coming from the speakers.

To adjust the overall volume, use the Monitors & Sound control panel, which uses software inside your computer to adjust volume. (For more information, see "Adjusting Volume and Sound," earlier in this section.)

Connecting headphones

If your monitor has a headphone jack, you can connect headphones to it.

For more information on listening with headphones, see the "Sound" topic area of Macintosh Guide, available in the Guide (❷) menu.

Connecting external SCSI devices, such as a scanner or external hard disk

Your computer has a port for connecting devices that use the Small Computer System Interface (SCSI, pronounced "skuh-zee"). SCSI devices commonly used with the Macintosh include hard disk drives, CD-ROM drives, scanners, tape or cartridge backup drives, and some printers. The SCSI port permits high-speed communication between the computer and the device. The SCSI icon appears below the port on the computer's back panel.

SCSI port

SCSI icon
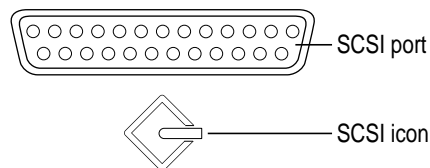
You can connect SCSI devices to the SCSI port in a chainlike fashion. The first device in the chain plugs into the SCSI port; the second device plugs into the first device, and so on. You can attach up to seven external SCSI devices to the SCSI port. Each SCSI device connected to this chain must have its own unique ID number from 0 through 6 (no two devices can use the same ID number).

IMPORTANT The material that follows—"Before You Connect a Device" and "Connecting a SCSI Device"—contains general instructions for attaching SCSI devices to your computer. Make sure you also follow the specific instructions that came with the SCSI device you are connecting to your Macintosh.

Before you connect a device

Before you connect a SCSI device to your Macintosh, complete these tasks:

■ Make sure each SCSI device connected to your Macintosh has its own unique ID number from 0 to 6. The computer itself (the main logic board inside it) has the ID number 7, making the ID numbers 0 through 6 available for additional SCSI devices. Make sure other SCSI devices you add to the chain do not use ID number 7. See the instructions that came with each SCSI device for information on checking and setting its SCSI ID number.

IMPORTANT If you use two or more devices attached to the same SCSI interface with the same ID number, your equipment could malfunction and you could lose data as a result.

■ Make sure you have the appropriate cable for attaching the SCSI device to your Macintosh.

If the device is the first or only one you're connecting, use a SCSI system cable to connect it to the computer's SCSI port:

SCSI system cable
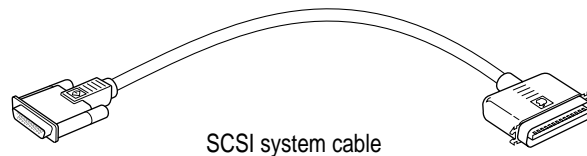
If the device is not the first one, use a SCSI peripheral interface cable to connect it to the last device in the chain:
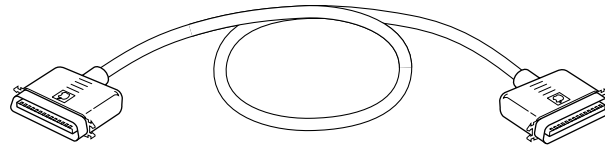
SCSI peripheral interface cable

IMPORTANT The total length of the cables in a SCSI chain should not exceed 6 meters (about 20 feet). SCSI cables must have a 110-ohm impedance. For best results, use SCSI cables manufactured by Apple Computer.

■ Make sure that the last (or only) device in the SCSI chain has a terminator. Make sure that no other external SCSI device has a terminator.

To ensure accurate transmission of information, a terminator must be at each end of a SCSI chain. Your computer's main logic board, which is the first device in the chain, has a built-in terminator.

Some external SCSI devices from manufacturers other than Apple have built-in terminators. (Check the information that came with the device.) If the device at the end of the SCSI chain does not have a built-in terminator, you need to purchase and attach an external terminator.
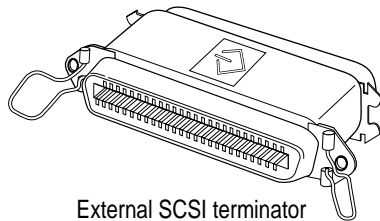
External SCSI terminator

If your SCSI device has a built-in terminator, use it as your last device in the chain or have your Apple-authorized service provider remove the extra built-in terminator. You can attach or remove external terminators yourself.

Connecting a SCSI device

Use these general instructions in conjunction with the instructions that came with your SCSI device:

1 Turn off your Macintosh.

2 Make sure the SCSI device is switched off.

> **WARNING** Do not connect or disconnect any device while the device or your Macintosh is turned on. Doing so could damage the device, your computer, or both.

3 Use a SCSI cable to connect the device either to the computer's SCSI port or to the last SCSI device already in the chain.

IMPORTANT Make sure that the last (or only) device in the SCSI chain has a terminator and that no other external SCSI device has a terminator. Otherwise, the computer may not be able to start up.

4 Turn on all devices in your SCSI chain.

IMPORTANT Always turn on any external SCSI devices connected to your Macintosh before turning on the computer itself. Otherwise, your computer won't recognize that the SCSI devices are connected to it and may not be able to start up.

5 Install any necessary device drivers (software that makes a device work with your computer).

Drivers usually come on a floppy disk with the device. (If no drivers came with the device, contact the device manufacturer.)

Note: If you experience problems after connecting a SCSI device, see the troubleshooting information in Chapter 6 for possible solutions.

Replacing internal storage devices

Your Macintosh comes with three internal storage devices—a floppy disk drive, a CD-ROM (compact disc read-only memory) drive, and a hard disk drive. If you want to replace any of these internal drives, see your Apple-authorized dealer.

**Read this chapter for information
on installing and using application
programs with your computer.**

4 Installing and Using Application Programs

Your computer has several application programs already installed. Some of these applications are

- AppleScript, which allows you to automate any actions you perform repeatedly on your Macintosh

- AppleCD Audio Player, which allows you to play audio CD-ROM discs in your computer's CD-ROM drive

- Network Software Selector, which allows you to switch among various network types such as Ethernet and LocalTalk

- SimpleText, which allows you to create and edit text files, record and play sound, and have the computer read text aloud

You'll find these as well as other applications in the Apple Extras folder on your hard disk. To find out if an application needs to be installed, look inside the application's folder for an icon labeled Installer. If you find an Installer icon and want to use that application, double-click the Installer and follow the instructions on the screen.

Tip: Some of these applications can decrease the amount of random-access memory (RAM) available for use by other applications. To conserve RAM, only install the applications you think you'll use. If you install an application that you find you don't use, you can remove it later to free RAM. See "Increasing Memory Available to Run Applications" later in this chapter for instructions on "uninstalling" applications.

You may want to experiment with AppleScript, one of the applications on your hard disk. With AppleScript you can automate tasks in the Finder and other scriptable applications (applications that support AppleScript). Instructions for using AppleScript are also included in the AppleScript folder.

Using Power Macintosh application programs

Your Power Macintosh is compatible with most application programs intended for use with Macintosh computers. But certain applications are designed especially for Power Macintosh computers. (These are sometimes called "native" applications.) You'll find that these applications take best advantage of your computer's speed.

Special memory requirements

Some Power Macintosh applications may be slightly larger than other applications and may take up more memory. If you find that you are running out of memory when you use your Power Macintosh applications, you can use space on your computer's hard disk as additional memory (virtual memory). For instructions on how to use hard disk space as memory, see "Turning Virtual Memory On or Off" later in this chapter, and the "Memory" topic area of Macintosh Guide, available in the Guide (②) menu.

You can also add more memory to your computer. See Appendix B, "Installing Expansion Cards and Additional Memory" for more information.

Using older Macintosh applications

If you experience problems using an older Macintosh application, it may be incompatible with your Power Macintosh. You may be able to use your older application if you turn off the Modern Memory Manager in the Memory control panel.

Installing application programs

You'll probably want to buy and install additional application programs. See the manuals you receive with your applications for instructions on installing and using them.

Note: Be sure you're acting within the terms of the software license agreement that comes with your application program before you install the program on your computer. The license agreement specifies how many copies of the program you can make for yourself and others.

In many cases, you'll install an application program on your internal hard disk from floppy disks that contain the application. (Some applications come on CD-ROM discs. Refer to "Inserting a CD-ROM disc or other CD" in Chapter 1 for information about using CD-ROM discs in your computer.) The following illustration shows how to insert a floppy disk in your computer's disk drive.

Insert the floppy disk, metal end first, into the floppy disk drive of your computer.
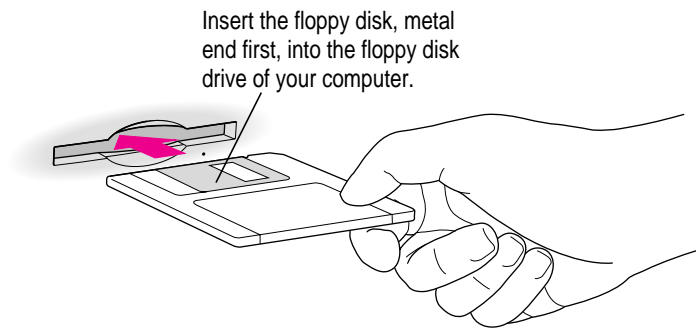
To use your applications most effectively, follow these guidelines:

■ Put only one copy of each application on your hard disk. Having more than one copy can cause errors.

■ Whenever you copy an application disk to your hard disk, be careful not to copy a System Folder. Always check to see what you've copied, and drag any extra System Folders to the Trash.

■ If an application malfunctions consistently, try installing a fresh copy. If that doesn't help, find out from the software manufacturer whether your version of the application is compatible with the system software you're using.

For instructions on how to eject floppy disks, see the "Disks" topic area of Macintosh Guide, available in the Guide (②) menu.

Working with several applications at a time

You can open as many application programs and documents as your computer's memory allows.

Finding out which applications are open

If you have several applications and windows open, you can find out which application is active and which other applications are open by opening the Application menu.

The Finder icon

Commands to hide or display open windows

A checkmark indicates the active program.

Open programs
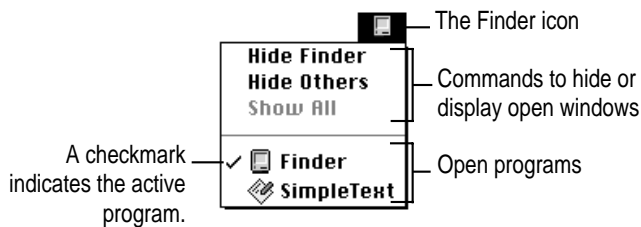
All open applications are listed in the Application menu at the right end of the menu bar. The name of the active application (the one you're using right now) has a checkmark next to it, and its icon appears in the menu bar.

Switching applications

You can switch to another open application or desk accessory by choosing its name from the Application menu.

If an application's icon is dimmed in the menu, that means its windows are hidden. Choosing the application from the Application menu displays its windows.

You can also switch to another application by clicking in a window that belongs to an open application, or by double-clicking an application's icon (or the icon of a document that was created with the application).

Hiding and showing windows on the desktop

You can hide all windows except those of the active application by choosing Hide Others from the Application menu.

The other applications remain open even though their windows are hidden. When you switch to another application, its windows become visible again.

If you want to see all the open windows, choose Show All from the Application menu.

Increasing memory available to run applications

You can increase the memory available to run your application programs by changing memory settings and removing software that you may not need. Each of these options is discussed below.

Turning virtual memory on or off

Virtual memory is a feature that uses space on your computer's hard disk to create extra random-access memory (RAM) to run your applications. If you are using an application program designed especially for Power Macintosh computers (a "native" application program), turning on virtual memory lets the application use less memory. Virtual memory also allows your computer to run more applications at the same time, and to have more windows open at the same time. However, it can result in slightly slower performance. Also, some application programs may not perform optimally with virtual memory turned on.

Your computer comes with virtual memory turned off. To turn virtual memory on or off, use the Memory control panel. For best performance, try setting virtual memory to no more than 150 percent of the memory (RAM) installed in your computer, or no more than 50 percent of your currently available hard disk space, whichever number is lower. For example, if your computer has 16 MB of RAM and your hard disk has 50 MB of available space, set virtual memory to a maximum of 24 MB.

IMPORTANT The RAM disk is a portion of your computer's random-access memory that you can set aside to store programs and other files temporarily. If you turn on both virtual memory and the RAM disk in the Memory control panel (in the Control Panels folder in the Apple [] menu), don't set both of them at or near their maximum values. Doing so can result in unpredictable or reduced performance.

For more information on both the virtual memory and RAM disk features, see the "Memory" topic area of Macintosh Guide, available from the Guide () menu.

Removing software that you may not need

If you have previously installed some or all of the software in the Apple Extras folder you can remove or "uninstall" the software if you are not using it. Removing software like this may make more memory available for running applications and it will also increase the amount of hard disk storage space available.

To remove software, follow these steps:

1 Start up your computer from the system software CD-ROM disc that came with your computer.

For detailed steps, see "Starting Up From a CD-ROM Disc" under "Initializing a Hard Disk" in Chapter 6, "Troubleshooting."

2 Open the Apple Extras folder on the CD-ROM disc.

3 Open the folder for the software you want to remove.

4 Double-click the Installer icon to open the Installer program.

The Installer's Welcome screen may appear.

5 Click OK.

The Easy Install dialog box appears.

6 **Choose Custom Remove from the pop-up menu.**

The Custom Remove dialog box appears, listing the software components that can be removed.

7 **Scroll through the list of components, clicking the checkbox next to each component you want to remove.**

To get additional information about each component listed, click the box with the letter "i" in it to the right of the component.

8 **Click Remove.**

9 **Follow the instructions that appear on the screen.**

10 **When you see a message reporting that the removal was successful, click Quit.**

11 **Restart your Macintosh.**

The software is removed and your computer is ready to use. If you want to remove more software, you can repeat the steps in this section.

Backing up your files

Making backup copies of important files is good protection against possible damage to the originals.

- You can back up files stored on your hard disk by copying them to floppy disks.

- You can back up an entire floppy disk by copying it to another floppy disk or to a hard disk.

- You can use a commercial backup application to copy new and changed files from a hard disk to another hard disk, to a tape drive, or to a series of floppy disks.

- If your computer is on a network, you can back up files by copying them to a shared disk on the network.

5 Connecting Your Computer to a Network

In general, any group of computers set up to communicate with each other constitutes a network. Some networks feature computers connected by a particular type of cable. This is called a local area network (LAN), which can be as simple as a computer connected to a printer or as complex as a business's in-house computer network. Sometimes groups of networks connect to form a larger network, such as the Internet. This is called a wide area network (WAN). This chapter discusses several types of LAN to which you can connect your computer.

Connecting to a network expands the features of your computer by giving you access to the services and resources provided on the network. For example, your computer alone lets you store, retrieve, and modify information on floppy disks, hard disks, and CD-ROM discs. On a network, however, you can also store and retrieve information on the hard disks and CD-ROM discs of other computers, access information that other people have stored for you, use electronic mail, and share computing resources such as printers and modems or other network services.

You can get much of the specific information about the network you want to connect to from the specialist—referred to as the *network administrator*—who oversees its operation. Before you begin, contact your network administrator.

Your computer can be connected to several kinds of networks, including the following:

■ **LocalTalk** To connect to a LocalTalk network, you connect a LocalTalk cable to either the modem port or the printer port on your computer.

■ **Ethernet** To connect to a high-speed Ethernet network, you need to install an Ethernet card in the communication or PCI (peripheral component interconnect) slot in your computer. Many models of your computer come with a 10Base-T (twisted pair) Ethernet card already installed in the communication slot.

■ **Alternative networks such as token ring, ISDN, or Fiber Distributed Data Interface (FDDI)** To connect to any of these networks, you need to install a PCI card in one of the PCI slots in your computer.

This chapter describes how to connect to and configure your computer on LocalTalk and Ethernet networks. For other network-related information, refer to the appropriate source.

■ If your computer is already connected to a network, refer to Macintosh Guide, available in the Guide (②) menu, for information about printing on a networked printer, accessing information on file servers, and sharing files on your computer with other users. Your network administrator can provide information about network software that may be available, such as Internet access and electronic mail.

■ If your location does not currently have a network and you are interested in setting one up, refer to a book on Macintosh networking that will help you select and plan a network appropriate for your organization. Many books are available, such as *Planning and Managing AppleTalk Networks*, an Apple book published by Addison-Wesley, which is available at computer bookstores.

Note: With a modem, you can connect to the Internet and other online services. However, with an Ethernet card or LocalTalk connection (described in this chapter), you can also connect your computer to other computers or servers in a LAN. You may also be able to reach the Internet if you connect to a network that has an Internet link. (Access to the Internet over a network may be noticeably faster than access with a modem.)

Connecting to a LocalTalk Network

To connect your Macintosh to a LocalTalk network, you need LocalTalk cables and a LocalTalk adapter. In most cases, the Apple LocalTalk Locking Connector Kit DIN-8, available from your Apple-authorized dealer, contains the components you need to connect your Macintosh to an existing LocalTalk network. If your network uses standard telephone cables for your network wiring, obtain an Apple LocalTalk RJ-11 Connector instead.

Apple LocalTalk Locking Connector Kit DIN-8   Apple LocalTalk RJ-11 Connector

LocalTalk adapter   LocalTalk adapter

LocalTalk cable   Standard telephone cable
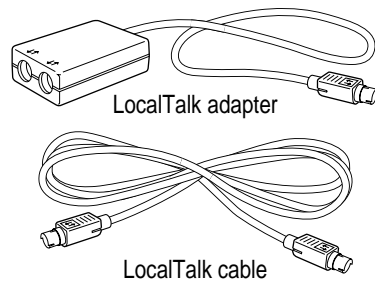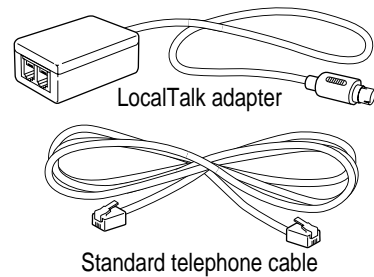
To connect your Macintosh to a LocalTalk network, do the following:

1   **Shut down your computer.**

2   **Attach the LocalTalk adapter to the printer port or modem port on your computer.**

Printer port icon

Printer port
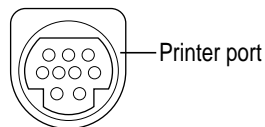
3   **Attach a network cable between the LocalTalk adapter connected to your computer and a LocalTalk adapter on your existing network.**

Note: While connecting to the middle of the network you may interrupt other users. Check with your network administrator.

If you connect to the last computer in the network, you need to attach a network terminator to your LocalTalk adapter.

Use the LocalTalk cable that comes with the Apple LocalTalk Locking Connector Kit DIN-8. Use a standard telephone cable with RJ-11 connectors if you are using the Apple LocalTalk RJ-11 Connector.

Printer port

LocalTalk adapter
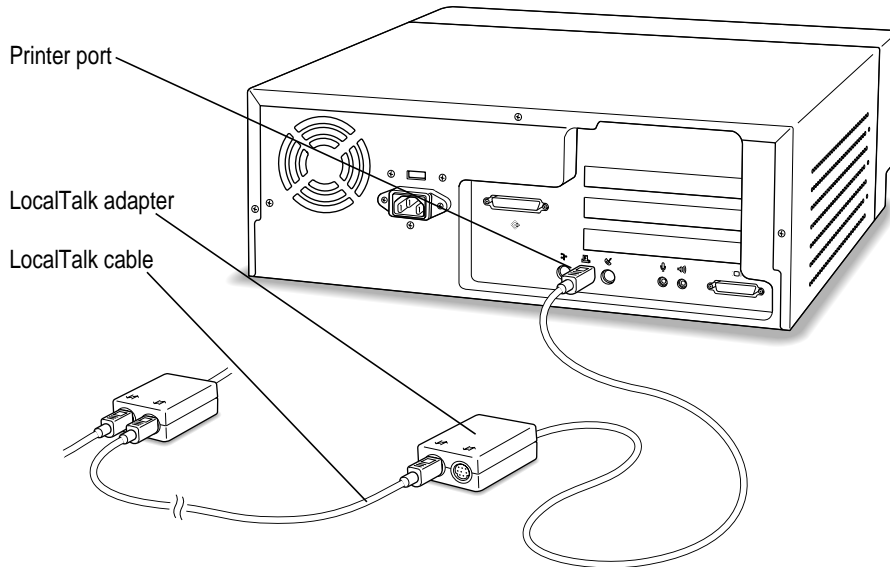
LocalTalk cable

4 **Configure your LocalTalk connection following the advice of your network administrator and the instructions in "Configuring Your Network Connection" later in this chapter.**
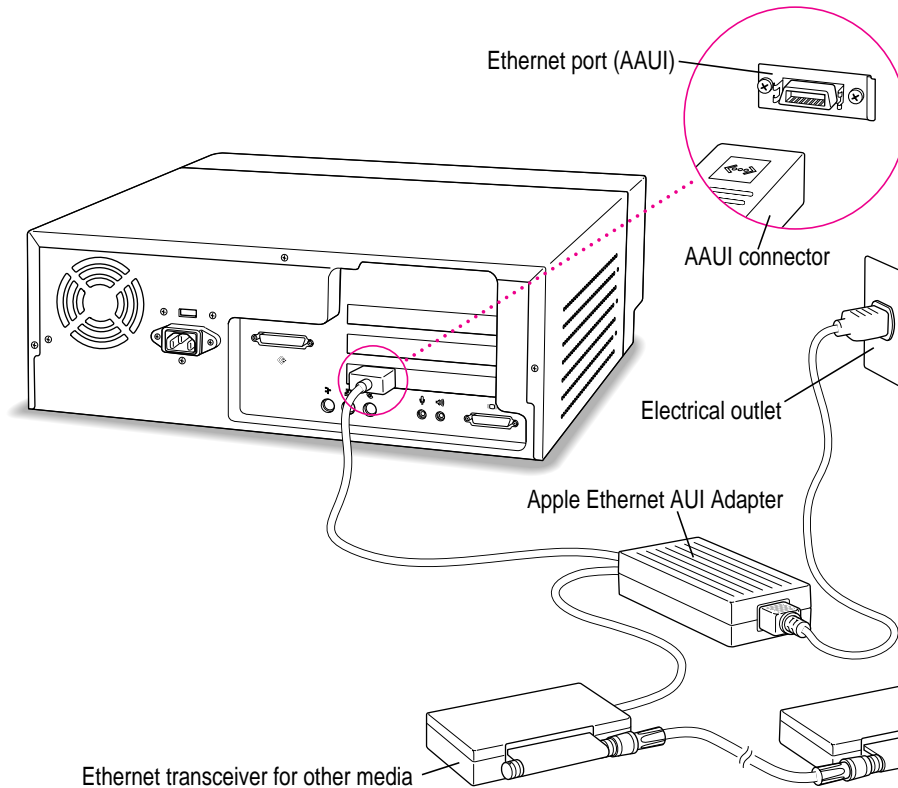
Connecting to an Ethernet network

Ethernet is a cable scheme that lets your computer communicate with other computers much faster than LocalTalk does. To connect your computer to an Ethernet network, first find out from your network administrator what kind of Ethernet network you're connecting to; next, if your computer did not come with one already installed, buy and install the right kind of Ethernet card and cable; third, connect the card to the network; and last, configure the network connection.

Choosing an Ethernet card

Many models of your computer come with an Ethernet card already installed. If your computer didn't include an Ethernet card and you decide to add one, there are two factors that affect what kind of Ethernet card you should purchase for your computer—where the card will be installed in your computer and what kind of network you'll be connecting to. Depending on the type of card you install, you may also need an appropriate media adapter.

Where to install the card

Some kinds of Ethernet cards fit into the computer's communication slot; however, so do internal modem cards. If you install an internal modem card in the communication slot but you also want to connect to an Ethernet network, purchase an Ethernet card that instead uses the computer's PCI (peripheral component interconnect) slot.

> **WARNING** Do not connect cables to the back of your computer when the power is on or you may damage your system.

- If your Ethernet card uses a PCI slot, follow the instructions in "Installing a PCI Card" in the section "Installing an Expansion Card" in Appendix B, and the instructions that came with the card. Be sure to install the necessary drivers (software that allows your computer and Ethernet card to communicate).

- If your Ethernet card uses the communication slot (often referred to as an Ethernet Comm II card), follow the instructions in "Installing a Communication Card" in the section "Installing an Expansion Card" in Appendix B and the instructions that came with the card.

Network type

Find out what kind of network you will be connecting to. Depending on the kind of network, you choose among several different kinds of cards that use different cables:

- thin or thick coaxial ("coax") cable, also called 10Base-2
- 10Base-T (twisted pair) cable
- fiber-optic media or other standard Ethernet cable

For example, if you know that your Ethernet network uses 10Base-T cables, and you want to use your communication slot for a modem card, you would purchase a 10Base-T Ethernet card that fits in a PCI slot.

Media adapters

You can connect *directly* to an Ethernet network using a 10Base-T twisted-pair cable. However, to connect your computer to an Ethernet network using coaxial cables, you need one of the following Ethernet media adapters:

- Apple Ethernet Thin Coax Transceiver
- Apple Ethernet AUI Adapter

See your Apple-authorized dealer for more information on Apple Ethernet media adapters.

Connecting to a twisted-pair Ethernet network

Follow this procedure to connect your Macintosh to an Ethernet network that uses twisted-pair cable. (You can't connect to an Ethernet network until you've installed an Ethernet card. See the information at the beginning of this section, "Connecting to An Ethernet Network.") The hardware connection requires a twisted-pair patch cord with an RJ-45 telephone-style connector. You plug the patch cord into a wall plate that is connected to the centralized 10Base-T Ethernet hardware.

Note: Be careful not to plug a regular telephone cable into your RJ-45 connector. Although it works very differently, an RJ-45 connector looks very similar to a standard telephone cable. Also, the connectors at the ends of the cables will fit into both telephone and twisted-pair Ethernet ports. Make sure you are using an RJ-45 connector cable.

To connect your Macintosh to a twisted-pair Ethernet network, follow these instructions:

1 **Shut down your computer.**

2 **Plug one end of the twisted-pair patch cord into the 10Base-T Ethernet port on the Ethernet card in your Macintosh.**

LED (lights up when there's a good network connection)

Twisted-pair Ethernet port (10Base-T)
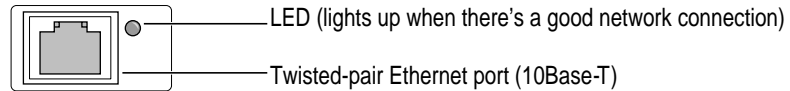
3 **Plug the other end of the twisted-pair patch cord into an RJ-45 wall outlet that is connected to a twisted-pair Ethernet network.**

Ethernet port (twisted-pair)

RJ-45 connector

Wall plate (RJ-45 port)

Twisted-pair cable
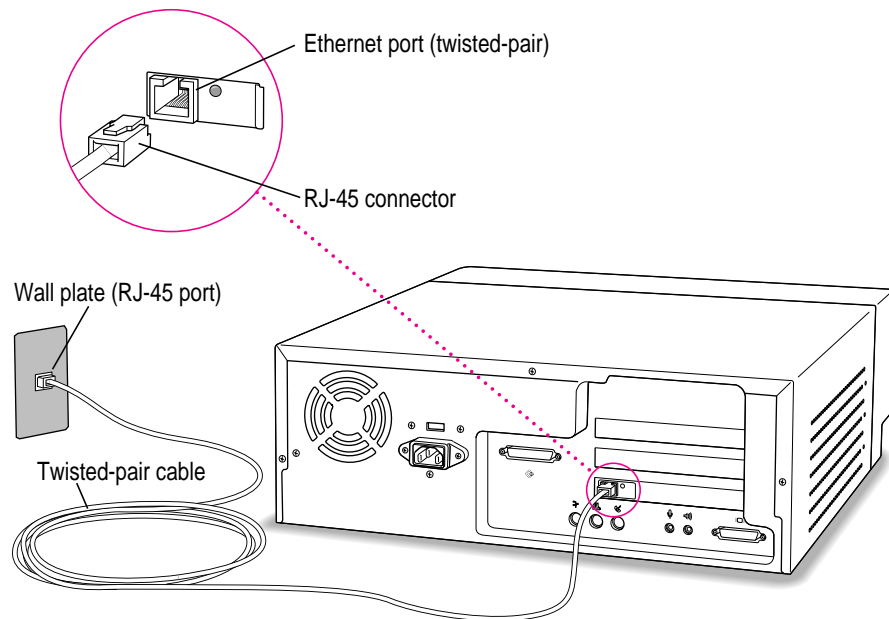
4 **Configure your network connection following the advice of your network administrator and the instructions in "Configuring Your Network Connection" later in this chapter.**

Connecting to a thin coaxial Ethernet network

Follow this procedure to connect your Macintosh to an Ethernet network that uses thin coaxial cable. The hardware connection requires an Apple (or Apple-compatible) thin coaxial transceiver and a thin coaxial cable.

IMPORTANT You can connect your Macintosh anywhere on the network; however, to do so requires that you temporarily disconnect the network, which could disrupt existing network services and other people using the network. Consult your network administrator before connecting your computer to the network.

To connect your Macintosh to a thin coaxial network, follow these instructions:

1 **Shut down your Macintosh.**

2 **Attach one end of a thin coaxial cable to the last thin coaxial transceiver on the network.**

3 **Attach the other end of the thin coaxial cable to the T-connector.**

T-connector

Ethernet port (thin coaxial)

Thin coaxial cable
(or thin coaxial Ethernet terminator if your
computer is the last device on the network)
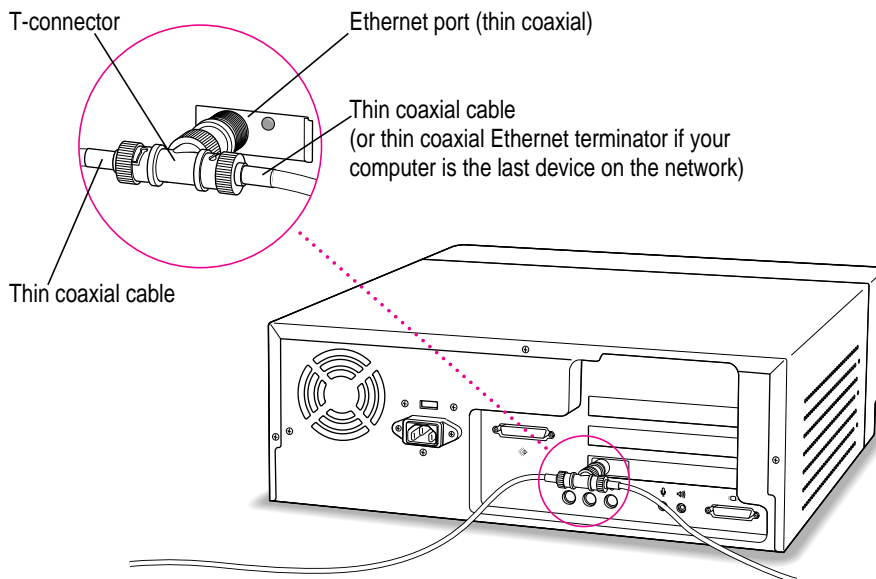
Thin coaxial cable

4 **Plug the T-connector into the thin coaxial (10Base-2) port on the Ethernet card in your Macintosh.**

LED (lights up when there's a good network connection)

Thin coaxial Ethernet port (10Base-2)
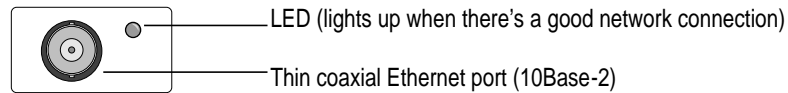
IMPORTANT A thin coaxial network must be terminated at its endpoints to function. If your computer is the last one in the network, it must have a terminator installed on the other side of the T-connector. Check the documentation that came with your network card for more information.

5 **Configure your network connection following the advice of your network administrator and the instructions in "Configuring Your Network Connection" later in this chapter.**

Connecting to other types of Ethernet network

The Apple Ethernet AUI Adapter is a universal adapter that lets you connect your computer to less common types of industry-standard Ethernet media, such as thick coaxial or fiber-optic cable. If you are using the Apple Ethernet AUI Adapter, you also need an Ethernet transceiver for your specific media type; the transceiver must have a standard AUI port on it.

To connect your computer to an Ethernet transceiver for other types of Ethernet media, follow these instructions:

1 **Shut down your computer.**

2 **Connect the Ethernet transceiver to the network following the instructions that came with the transceiver.**

3 **Plug the transceiver cable from the Ethernet transceiver into the standard AUI port on the Apple Ethernet AUI Adapter.**

Ethernet port (AAUI)

AAUI connector

Electrical outlet

Apple Ethernet AUI Adapter

Ethernet transceiver for other media

4 **Plug the adapter's power cord into an electrical power outlet.**

5 **Plug the connector on the Apple Ethernet AUI Adapter into the AAUI Ethernet port on your Macintosh.**

AAUI Ethernet port
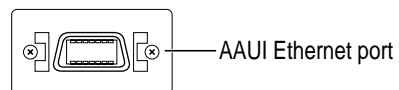
6 **Configure your network connection following the advice of your network administrator and the instructions in "Configuring Your Network Connection" later in this chapter.**

Configuring your network connection

After you physically connect your computer to a LocalTalk or Ethernet network, you need to configure your network connection in the AppleTalk control panel, the TCP/IP control panel, or both.

■ You use the AppleTalk control panel to set up your connection to an AppleTalk network (that is, a network using the AppleTalk protocol).

■ You use the TCP/IP control panel to set up your connection to the Internet and to a TCP/IP network. (TCP/IP stands for *Transmission Control Protocol/Internet Protocol.* It is the set of data communication rules followed by networks to communicate with each other on the Internet.)

You may need additional information about the network to which your computer is connected, or about the service through which your computer is connected to the Internet. To get this information, you may need to contact your network administrator or your Internet service provider (ISP).

Configuring your AppleTalk network connection

To configure your AppleTalk network connection, you must specify the port you use to connect your computer to the network.

Additionally, you may need to select the zone in which your computer is located. Larger networks use zones to create groups of computers, printers, servers, and other network devices. For example, a network might have a zone for each floor in an office building. If your network has more than one zone, you can choose the zone in which your computer is located. The zone you choose is automatically selected in the Chooser (for example, when you select a network printer) and it is the zone in which other network users can find your computer if you turn on file sharing.

To configure your AppleTalk network connection, follow these steps:

1   Choose Control Panels from the Apple menu.

2   Double-click the AppleTalk icon to open it.

The AppleTalk control panel opens.

3   Move the pointer to the "Connect via" pop-up menu (if available), press and hold down the mouse button to open the menu, and choose the port through which your computer is connected to the network.

You can connect to an AppleTalk network through an Ethernet port, the printer port, the modem port, or any other ports available on expansion cards installed in your computer. Any additional ports appear automatically in this pop-up menu.

Note: If you don't see a pop-up menu here, this setting has been locked. Contact your network administrator for assistance. (If you don't have a network administrator, you can use the Administration user mode to unlock this setting. For more information about user modes, click the ⍰ button in the AppleTalk control panel.)

4   Use the Current Zone pop-up menu (if available) to choose the zone you want.

If you don't see a pop-up menu here, either your network has no zone, this setting has been locked, or your network is not set up to allow you to choose a zone. Zones are set up by the network administrator.

5   Click the close box to close the AppleTalk control panel.

If you have made configuration changes, a message asks if you want to save them.

If you have changed the port, a message tells you that the change will interrupt any AppleTalk services that are established. This means that your network services, such as printers and e-mail, may be temporarily unavailable, and you may have to choose a printer and connect to your e-mail service again after saving changes.

6 **To save your changes, click the Save button.**

Your changes take effect immediately; you do not have to restart your computer.

Getting more information about the AppleTalk control panel

Macintosh Guide contains information about additional capabilities available in the AppleTalk control panel, such as

■ using configurations, a way to save different AppleTalk settings and switch among them as desired—for example, if you use your computer with more than one network

■ using the User Mode command to change the availability of settings in the AppleTalk control panel

■ turning AppleTalk off in order to save RAM in your computer when you are not using an AppleTalk network

For more information about these capabilities, click the ⍰ button in the AppleTalk control panel.

Configuring your TCP/IP network connection

You must set up the TCP/IP control panel if your computer is connected to a network that uses TCP/IP standards, such as the Internet.

TCP/IP (Transmission Control Protocol/Internet Protocol) is a set of rules that is applied to data traveling on the Internet. The rules exist to standardize the treatment of data on the Internet so that many disparate kinds of computers can recognize the data when it arrives. TCP/IP protocols can be used with many different types of network hardware and with LocalTalk, Ethernet, and dial-up Internet connections. If you don't know whether your network uses TCP/IP, contact your network administrator.

To set up your TCP/IP network connection, you must specify the port you use to connect your computer to the network. TCP/IP networks also require information about your computer's network address. You must enter that information in the TCP/IP control panel or specify a server on which the information can be found. To get this information, check with your network administrator or Internet service provider.

Before you begin

To configure your connection, you need to know the types of servers used on the network, your Internet Protocol (IP) address and subnet mask, and other information. Your Internet service provider or network administrator can give the information to you and help properly enter it in your computer by following these instructions.

Setting up

To set up your TCP/IP network connection, follow these steps:

1   **Choose Control Panels from the Apple menu.**

The Control Panels window opens.

2   **Double-click the TCP/IP icon to open it.**

The TCP/IP control panel opens.
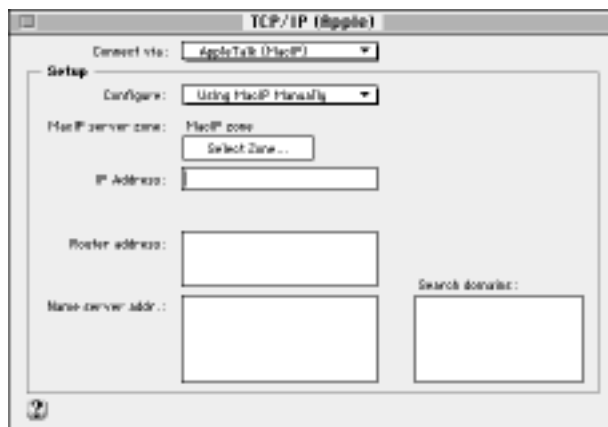
3   **Use the "Connect via" pop-up menu to choose the port through which your computer is connected to the network.**

Note: If you don't see the pop-up menu or other settings described in this section, the TCP/IP configuration may have been locked. Contact your network administrator for assistance. (If you don't have a network administrator, you can use the Administration user mode to unlock this setting. For more information about user modes in the TCP/IP control panel, click the ⍰ button.)

4   **Use the Configure pop-up menu to choose a configuration method.**

If you are connected using Ethernet, the pop-up menu looks like this:

Configure :   ● Manually
                Using BootP Server
                Using DHCP Server
                Using RARP Server
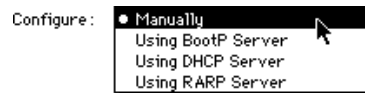
If you are connected using AppleTalk (MacIP), the pop-up menu looks like this:

Configure :   ● Using MacIP Manually
                Using MacIP Server
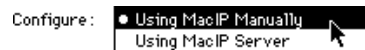
Whether you proceed to step 5 or step 6 depends on whether you are configuring your network manually or automatically.

5   **If you are configuring your network connection manually, type the information provided by your network administrator or Internet service provider into the appropriate boxes.**

You must specify an IP address. You may also need to enter a subnet mask number, router address, and other information.

6   **If your network configuration will be provided automatically by a server, do one of the following:**

■ If you are using a BootP server or DHCP server, skip to step 7. The server usually provides all the configuration information needed by TCP/IP.

■ If you are using a RARP server, you may need to type additional information provided by your network administrator or Internet service provider into the appropriate boxes. If so, enter the information now.

■ If you are using a MacIP server, click Select Zone. In the dialog box that appears, choose the zone that contains the MacIP server you want to use and then click OK. (Additionally, if you are connecting with Apple Remote Access [ARA] you must open a connection before you can select a zone.)

7   **Click the close box to close the TCP/IP control panel.**

If you have made configuration changes, a message asks if you want to save them. If you have changed the port, a message also tells you that the change will interrupt any connections to TCP/IP services. For example, you may have to quit and reopen a Web browser or e-mail software after saving changes.

8   **To save your changes, click the Save button.**

Your changes take effect immediately; you do not have to restart your computer.

Getting more information about the TCP/IP control panel

Macintosh Guide contains information about additional capabilities available in the TCP/IP control panel, such as

■ using configurations, a way to save different TCP/IP settings and switch among them as desired

■ using the User Mode command to determine the availability of settings in the TCP/IP control panel

■ turning TCP/IP off to save RAM when you are not using a TCP/IP-based network

For more information about these capabilities, click the ② button in the TCP/IP control panel.

Chapter 6   Troubleshooting

part

II
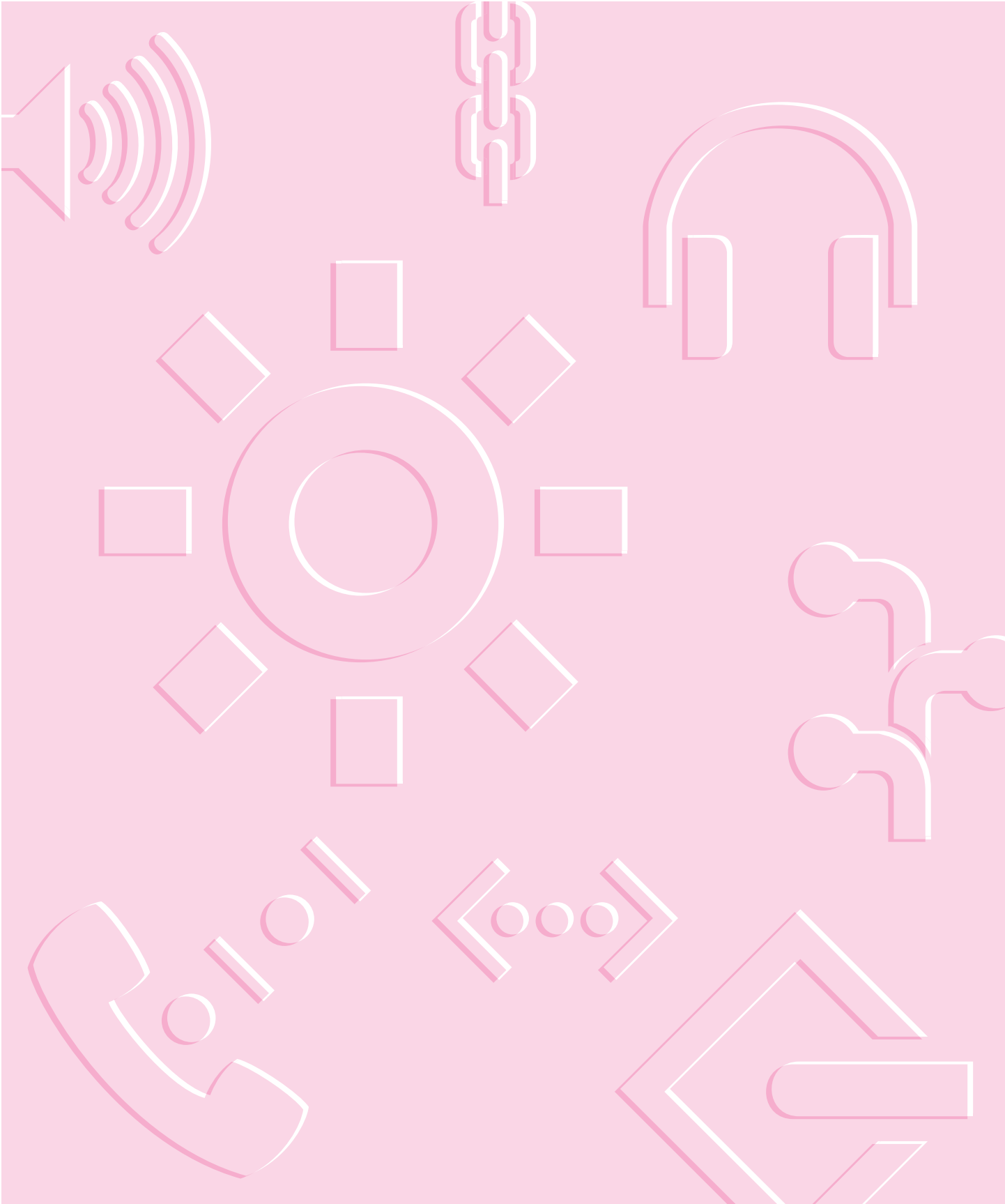
6 Troubleshooting

When you have questions

If you want to know how to do a particular task with your computer, refer
to Macintosh Guide in the Guide (⍰) menu. For instructions on using
Macintosh Guide, see Chapter 2 of this manual.

When you run into trouble

While you're using your computer, you may occasionally see a bomb icon
or an error message, or you may have a problem such as the pointer (▶)
"freezing" on the screen.

> Sorry, a system error occurred.
>
> [Restart]
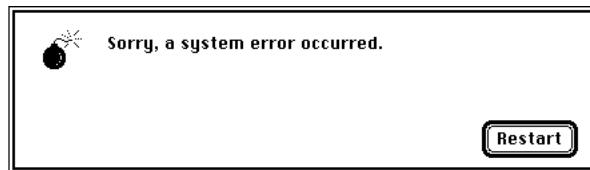
If you have trouble with your computer, take a few minutes to read the
information in this chapter. If your problem is related to a particular
procedure, you should also look for information on that procedure in
Macintosh Guide, available in the Guide (⍰) menu. For additional
troubleshooting information and a list of common questions relating to your
system software, see the "Troubleshooting" topic area of Macintosh Guide.

If you are unable to access Macintosh Guide (for example, if your screen is "frozen"), refer to this chapter to see if you can resolve the problem.

Note: If you have a problem with your Macintosh and nothing presented in this chapter or in Macintosh Guide solves it, consult the service and support information that came with your computer for instructions on how to contact an Apple-authorized service provider or Apple for assistance.

Take your time

When you see an error message, you don't have to take action immediately. The message stays on the screen until you click the OK button or turn off the Macintosh.

To help diagnose and correct the problem, gather as much information on the situation as you can before starting over.

■ Make a note of exactly what you were doing when the problem occurred. Write down the message on the screen and its ID number (if any). Also list the programs you were using and the names of any items you know have been added to the System Folder since the system software was installed. This information will help a service person diagnose the problem. (It is helpful to keep a printed copy of the items in your System Folder. For instructions on printing the contents of a folder, see the "Printing" topic area of Macintosh Guide, available in the Guide [⍰] menu.)

■ Check the screen for any clues. Is a menu selected? What programs and document icons are open? Note anything else that seems relevant.

■ If you were typing text and were not able to save it before the problem occurred, you can write down the parts of the text still visible on the screen so that some of your work will be easy to replace.

■ Ask other Macintosh users about the problem you're having; they may have a solution for it.

Start over

Often you can eliminate a problem simply by clearing the computer's memory and starting over.

If you can, save any open documents before restarting the Macintosh. If your system is frozen and does not respond to anything you do, or if you have a "bomb" message on the screen, saving may not be possible. You can try pressing ⌘-Option-Esc to quit the program in use when the problem occurred; if this works, you can then save the documents open in other programs before restarting. (Be sure to restart the computer immediately after you save your documents—quitting a program using ⌘-Option-Esc may leave corrupted data in the computer's memory. This corrupted data is erased when you restart the computer.)

To restart your Macintosh, try the following steps:

1 **If you can, choose Restart from the Special menu or from the dialog box that's on screen.**

Dialog boxes contain messages from the computer. If something goes wrong, a message may appear on the screen, asking you to restart the computer.

2 **If you can't choose Restart, press the Power key (marked with a triangle) on the keyboard.**

Choose Restart from the dialog box that appears.

3 **If the Power key on the keyboard doesn't work, hold down the ⌘ and Control keys while you press the Power key on the keyboard.**

This key combination restarts the computer. (Use this key combination only when you can't choose Restart from the Special menu.)

4 **If your computer still does not respond, turn it off with the power button on the front of the computer, wait at least ten seconds, and then turn it on again.**

5 **If you suspect that the problem is with other equipment, such as a printer or an external hard disk that's attached to your computer, turn that equipment off for ten seconds or longer. Then turn it on again and restart the Macintosh.**

Rebuild your desktop

A process known as "rebuilding the desktop" helps your Macintosh keep track of data on your startup disks. (Although you usually use the hard disk in your computer as a startup disk, you can also start up from any other disk that has system software installed.)

Rebuilding your desktop can solve a number of problems, such as when application documents are no longer represented by application-specific icons (and are instead represented by generic icons on the desktop), or when a document won't open when you double-click it.

Some extensions may interfere with rebuilding your desktop. To prevent problems, turn off all extensions except Macintosh Easy Open before you rebuild your desktop. When you finish rebuilding the desktop, turn the extensions you normally use back on.

To rebuild the desktop of a startup disk, follow these steps:

1   **Open the Extensions Manager control panel by choosing Extensions Manager from the Control Panels submenu of the Apple () menu.**

2   **From the Sets pop-up menu, choose Save Set.**

3   **In the Save Set dialog box, type a name for your set of selected extensions (for example, "My Extensions") and click OK. The name of your set is added to the Sets pop-up menu.**

This saves your current set of extensions.

4   **Choose All Off from the Sets pop-up menu to turn off all extensions.**

5   **Turn on Macintosh Easy Open by clicking it in the list (under Control Panels) so that a checkmark appears beside it.**

6   **Restart your computer while holding down the Option and ⌘ keys.**

Do not release the keys until you see a message asking whether you want to rebuild the desktop.

7   **Click OK.**

The desktop is rebuilt.

IMPORTANT Do not stop the desktop-rebuilding process. Doing so could cause problems with your system software.

8   **Open the Extensions Manager control panel by choosing Control Panels from the Apple (****) menu. When the Control Panels window appears, double-click the Extensions Manager icon.**

9   **From the Sets pop-up menu, choose the name you gave your set of extensions in step 3 of these instructions.**

This restores your original set of extensions.

10   **Restart your computer to activate the extensions.**

Solutions to common problems

This section contains descriptions of problems you may experience with your computer. Some problems may be caused by your CD-ROM drive, so if you don't find your problem here, check the section "Solutions to CD-ROM Problems" later in this chapter.

The computer is turned on but the screen is dark.

One of the following is probably the cause:

■ The Macintosh or the monitor is not getting power.

    Check that the monitor is plugged in and turned on and that the monitor cable is firmly connected to both the computer and the monitor.

■ Your computer has gone to sleep after a period of inactivity.

    Wake it up by pressing any key on the keyboard except Caps Lock. See "Saving Energy With the Energy Saver Control Panel" in Chapter 1 for more information about computer sleep.

■ You have a screen saver program that darkens the screen when the computer has not been used for a certain period of time.

    Press a key or move the mouse to turn off the screen saver.

■ The monitor's brightness control (☀) is not adjusted properly.

    Check the monitor's brightness control and turn it up if necessary.

The computer does not start up from the hard disk.

Try the following:

- Use the Drive Setup program to make the disk available. Drive Setup is located in the Utility folder on the CD that contains your system software. For instructions, start Drive Setup, then choose Drive Setup Guide from the Guide (❷) menu.

- If the hard disk is internal, shut down your computer, wait at least ten seconds, and then turn it on again.

- If the startup hard disk is external, make sure that it is turned on and that its cable is connected firmly; then restart the Macintosh.

- Check the ID numbers of all SCSI equipment connected to your computer. Each SCSI device must have its own unique ID number. See the manuals that came with your SCSI equipment for information on setting SCSI ID numbers.

- If the hard disk is your startup disk, start your computer using the CD-ROM disc that contains system software. (For instructions on how to start up your computer from the CD-ROM disc, see "Starting Up From a CD-ROM Disc" in the section "Initializing a Hard Disk" later in this chapter.) Then follow the instructions in "Testing and Repairing a Damaged Disk" later in this chapter to test your startup hard disk and repair any damage.

  If repairing the disk doesn't help, follow the instructions in "Installing or Reinstalling System Software" later in this chapter to reinstall system software on your startup hard disk.

The computer's clock keeps time inaccurately.

If your clock begins to keep time inaccurately, have an Apple-authorized service provider replace the battery. The service provider will dispose of the battery according to the local environmental guidelines. Consult the service and support information that came with your computer for instructions on how to contact an Apple-authorized service provider or Apple for assistance.

> **WARNING** If the clock begins to lose accuracy, see your Apple-authorized dealer or service provider for a battery replacement. Do not attempt to replace the clock battery yourself.

When you start up, a disk icon with a blinking question mark appears in the middle of the screen for more than several seconds.

This icon indicates that your Macintosh cannot find the system software it needs to start up. One of the following is probably the cause:

- System software is not installed on the startup hard disk, the system software is damaged, or the hard disk is not working properly.

  Start up your computer using the CD-ROM disc that contains system software. (For instructions on how to start up your computer from the CD-ROM disc, see "Starting Up From a CD-ROM Disc" in the section "Initializing a Hard Disk" later in this chapter.) Then follow the instructions in "Testing and Repairing a Damaged Disk" later in this chapter to test your startup hard disk and repair any damage.

  If repairing the disk doesn't help, follow the instructions in "Installing or Reinstalling System Software" later in this chapter to reinstall system software on your startup hard disk.

- Your computer may be having a problem recognizing external SCSI (Small Computer System Interface) equipment that is being used as a startup device instead of your hard disk.

  Turn off all SCSI equipment and disconnect the first SCSI device in the chain from your computer's SCSI port. Then restart the computer. If the computer starts up after you disconnect your SCSI equipment, refer to the manuals that came with the equipment for information on the proper way to connect SCSI equipment and assign SCSI ID numbers.

When you try to start up from a floppy disk, a disk icon with an X appears in the middle of the screen and the floppy disk is ejected.

This icon indicates that the floppy disk you tried to start up from is not a startup disk (that is, it does not contain system software). When you turn on your computer, it looks first in the floppy disk drive for a disk containing system software. If the disk in the drive does not contain system software, the computer ejects the disk and looks on its internal hard disk for system software.

Wait a few seconds. The computer should start up from its internal hard disk. Make sure you insert floppy disks only after the computer has begun starting up.

A "sad Macintosh" icon appears and the computer won't start up.

This icon indicates that your Macintosh cannot start up because of a problem with the system software or the computer hardware.

Eject any floppy disks or other removable media (like CD-ROM discs or mass storage cartridges) by turning off the computer and then holding down the mouse button while you turn the computer on again. Try starting up with the CD-ROM disc that contains system software. (For instructions on how to start up your computer from the CD-ROM disc, see "Starting Up From a CD-ROM Disc" in the section "Initializing a Hard Disk" later in this chapter.) If the "sad Macintosh" icon appears again, consult the service and support information that came with your computer for information on contacting an Apple-authorized service provider or Apple for assistance.

**The hard disk icon does not appear on the desktop.**

If you don't see a hard disk icon on the desktop, try the following:

■ Use the Drive Setup program to make the disk available. Drive Setup is on the CD-ROM disc that contains system software. For instructions on using Drive Setup, follow the instructions in "How to Verify and Test a Disk" in the section "Testing and Repairing a Damaged Disk" later in this chapter.

■ If the hard disk is internal, shut down your computer, wait at least ten seconds, and then turn it on again.

■ If the hard disk is external, make sure that it is turned on and that its cable is connected firmly; then restart the Macintosh.

■ Check the ID numbers of all SCSI equipment connected to your computer. Each SCSI device must have its own unique ID number. See the manuals that came with your SCSI equipment for information on setting SCSI ID numbers.

■ If the hard disk is your startup disk, start up your computer with the CD-ROM disc that contains system software. Do this by inserting the CD-ROM disc into the drive and holding down the C key while you restart the computer. Then follow the instructions in "Testing and Repairing a Damaged Disk" later in this chapter to test your startup hard disk and repair any damage.

   If repairing the disk doesn't help, follow the instructions later in this chapter for reinstalling system software on your startup hard disk.

Icons do not appear correctly on your screen.

You need to rebuild the desktop—a process that helps your Macintosh keep track of files and folders on your hard disk. For instructions, see "Rebuild Your Desktop" in the section "When You Run Into Trouble" earlier in this chapter.

If icons do not appear correctly after you rebuild the desktop, try rebuilding a second time.

You inadvertently delete a program from your computer's hard disk.

You can replace any of the software that came with your computer by dragging it from the CD-ROM disc that contains system software to your hard disk.

You cannot mount the Mac OS–, DOS-, or ProDOS-format partitions of an external SCSI hard disk or a removable media cartridge as individual volumes on the desktop.

Use Macintosh PC Exchange to mount these partitions as individual volumes on the desktop. (Macintosh PC Exchange is a control panel that is part of system software. When used with a DOS-compatibility card and its accompanying software, Macintosh PC Exchange allows your Macintosh to communicate with non-Macintosh software and hardware.) If the disk contains both Mac OS– and DOS-format partitions, Macintosh PC Exchange will recognize only the Mac OS partition. Also, Macintosh PC Exchange can only recognize ProDOS-format partitions on SCSI hard disks that are less than 32 MB.

You cannot resize or reformat the Mac OS–, DOS-, or ProDOS-format partitions of an external SCSI hard disk or a removable media cartridge.

To resize or reformat multiple Mac OS, DOS, or ProDOS partitions, you need to use third-party software designed for partitioning hard disks and removable media cartridges.

You cannot unmount and eject an external removable media device such as a cartridge.

The Eject Disk command is unavailable when you are working with removable media devices. To unmount and eject a removable media cartridge, click the device's icon to select it and choose Put Away from the File menu. Once the device has spun down and its light goes out, you can manually eject the cartridge from the drive. To access a removable media cartridge that has been ejected, simply reinsert the cartridge in the drive.

Your Macintosh can't read a floppy disk.

If you see a message that a floppy disk is unreadable, try one of the following:

- If the disk has never been used, you may simply need to initialize it. For instructions, see the "Disks" topic area of Macintosh Guide, available in the Guide (⍰) menu.
- The disk may be damaged. See "Testing and Repairing a Damaged Disk" later in this chapter for information on testing and repairing disks.
- The disk may have been formatted for use on another kind of computer. You may be able to use a program that lets you work with such disks on your Macintosh.

If you are trying unsuccessfully to use a floppy disk created in a PC (personal computer), DOS (Disk Operating System), or Windows environment, consider the following:

■ When formatting floppy disks on a DOS computer for use in a Macintosh, you need to format standard double-sided disks as 720K disks and high-density disks as 1440K disks. Because DOS computers allow standard double-sided disks to be formatted in 1440K format and high-density disks to be formatted in 720K format, it's possible that your disk has been given a format that won't work in a Macintosh.

If you think your DOS floppy disk might have a format that doesn't work in a Macintosh, use a DOS computer to copy the contents of your DOS floppy disk onto another DOS floppy disk that has been properly formatted for use in a Macintosh.

A dialog box with a bomb appears.

Your system has a software problem.

■ Write down what you were doing when the message appeared, and write down the message's text and its number, if there is one.

■ Restart your Macintosh. (See "Start Over" in the section "When You Run Into Trouble" earlier in this chapter for instructions.) Most software problems are temporary, and restarting usually corrects the problem.

■ Check the startup disk and application program you were using when the dialog box appeared. Make sure that all programs, desk accessories, and system extensions you're using are compatible with the system software. Reinstalling the system software may correct the problem.

■ Sometimes incompatible system extensions or control panels can cause system software problems. Restart while holding down the Shift key; this temporarily turns off all system extensions. If your computer works normally after you do this, use the Extensions Manager control panel (in the Control Panels folder in the Apple [] menu) to turn on individual extensions and control panels one at a time. Restart after you turn on each extension. This procedure will identify any incompatible extensions.

If your program performs better when a particular extension or control panel is turned off, contact the software's manufacturer for information or an upgrade.

■ If the problem recurs, you may need to reinstall system software. See "Installing or Reinstalling System Software" later in this chapter for instructions.

Your screen displays a right angle-bracket prompt (>) in a blank dialog box.

Your computer has tried to launch a "debugging" application, but could not find one on your hard disk. Debugging applications are programs that software developers use to locate and fix problems in computer code. If you do not have a debugging application installed, your screen displays a right angle-bracket prompt (>). To return to the desktop, type G and then press Return.

The pointer (￪) doesn't move when you move the mouse.

One of the following situations is probably the cause:

■ The mouse or keyboard is not connected properly.

Check that the mouse and keyboard cables are connected properly, and then restart the computer.

■ Signals from the mouse are not reaching the computer, either because the mouse needs cleaning or because there is something wrong with it.

Clean the mouse according to the instructions in Appendix A of this book.

If you have another mouse or pointing device, try connecting and using it. (Turn off the computer before connecting it.) If the new device works, there is probably something wrong with the mouse you replaced.

■ Your system has a software problem.

Press ⌘-Option-Esc to quit the application program in use when the problem occurred. If this works, you can save the documents open in other programs before restarting.

Restart your Macintosh. See "Start Over" in the section "When You Run Into Trouble" earlier in this chapter for instructions.

Check the startup disk and program you were using when the problem occurred. Make sure that all programs, desk accessories, and system extensions you're using are compatible with the system software. Try starting up the computer from the CD-ROM disc that contains system software. (For instructions on how to start up your computer from the CD-ROM disc, see "Starting Up From a CD-ROM Disc" in the section "Initializing a Hard Disk" later in this chapter.) If your computer starts up normally, there may be an extension conflict.

If the problem recurs, you may need to reinstall system software. See "Installing or Reinstalling System Software" later in this chapter for instructions.

Typing on the keyboard produces nothing on the screen.

One of the following is probably the cause:

- You haven't selected any text or set the insertion point (|).

  Make sure the program you want to type in is the active program. Then place the pointer (▶) in the active window and click to set an insertion point (|) or drag to select text (if you want to replace the text with your typing).

- The keyboard is not connected properly.

  Turn off the computer by pressing the power button on the front of the computer. With the computer off, check that the keyboard cable is connected properly at both ends.

- Your system has a software problem.

  Restart your Macintosh. For instructions, see "Start Over" in the section "When You Run Into Trouble" earlier in this chapter.

  Check the startup disk and application program you were using when the problem occurred. Make sure that all the programs, desk accessories, and system extensions you're using are compatible with the system software. (Refer to the instructions for checking system extension compatibility given in the troubleshooting tip "A Dialog Box With a Bomb Appears" earlier in this chapter.)

  If the problem recurs, you may need to reinstall system software. See "Installing or Reinstalling System Software" later in this chapter for instructions.

■ The keyboard is damaged.

If you have access to another keyboard, try using it instead. (Turn the computer off before connecting it.) If the new keyboard works, there is probably something wrong with the one you replaced.

If none of these procedures solves the problem, consult the service and support information that came with your computer for instructions on how to contact an Apple-authorized service provider or Apple for assistance.

Your computer won't restart, and a CD-ROM disc is in the CD-ROM drive.

■ Your computer may be trying to start up from the CD-ROM disc. Immediately after you restart, press the Open/Close button of your CD-ROM drive to open the tray and remove the CD-ROM disc. Close the tray, then restart your computer.

You can't eject a floppy disk.

If you can't eject a floppy disk in the usual way, try the following in order:

■ Hold down the ⌘ and Shift keys and press the number 1 key on your keyboard to eject a disk in the internal disk drive.

■ Turn off the computer. If the disk isn't ejected, then hold down the button on your mouse or other pointing device while you turn the computer on again.

■ Locate the small hole near the disk drive's opening, and carefully insert the end of a large straightened paper clip into it. Push gently until the disk is ejected. Do not use excessive force.

Emergency ejection hole
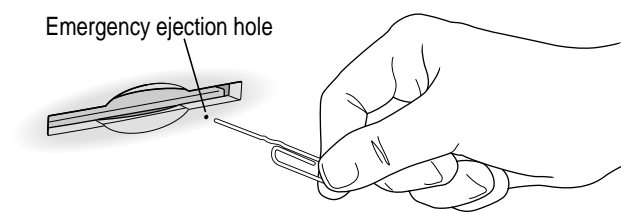
If none of these solutions works, take the computer or disk drive to your Apple-authorized service provider to have the disk removed.

The Energy Saver control panel continuously displays and dismisses dialog boxes as if you had pressed the Return key during a scheduled shutdown or a shutdown that was initiated because the computer was idle.

The Document Auto-Save feature that automatically saves any open unsaved documents when the computer shuts down has experienced a problem. To return to normal operation, click the mouse button or press the Space bar on the keyboard.

You can't start an application program or it quits unexpectedly. Or when you try to open a program, you see a message that not enough memory is available.

One of the following is probably the cause:

■ The Macintosh ran out of memory.

Quit the programs that you have open and then open the program you want to use, or restart your Macintosh.

Make sure virtual memory is turned on in the Memory control panel. For more information on virtual memory, see "Increasing Memory Available to Run Applications," under "Working With Several Applications at a Time" in Chapter 4 of this manual, and the "Memory" topic area of Macintosh Guide, available in the Guide (⌥) menu.

■ The program needs more memory.

Use the program's Get Info window to give it more memory. For more information on increasing a program's memory, see the "Memory" topic area of Macintosh Guide, available in the Guide (⌥) menu.

■ An incompatible system extension or control panel is causing a problem.

To temporarily turn off all system extensions, restart your computer while holding down the Shift key. If your program works normally after you do this, use the Extensions Manager control panel (in the Control Panels folder in the Apple [] menu) to turn on individual extensions and control panels. Restart after you turn on each extension. This procedure helps you identify incompatible extensions and control panels. (If you just added new software to your computer, its system extension is the most probable cause of the problem.)

If your program performs better when a particular extension or control panel is turned off, contact the software's manufacturer for information or an upgrade.

You see a message that your computer doesn't have enough memory to start an application or open a document.

You can make more memory available to run your application following the instructions in "Increasing Memory Available to Run Applications" under "Working With Several Applications at a Time" in Chapter 4 of this manual.

You can't open a document, or you see a message that an application program can't be found.

- Some documents can be opened by more than one application program. Start a program that you think might be able to open the document. Then choose Open from the program's File menu to try to open the document.

- Purchase and install the correct software to use the document, or find out if the creator of the document can convert it to a form that one of your programs can use.

- Don't try to open the files in your System Folder. Most of the files in your System Folder are used by your computer for internal purposes and are not intended to be opened.

- Rebuild your desktop. See "Rebuild Your Desktop" under "When You Run Into Trouble," earlier in this chapter, for more information.

- If the document was created on a PC (personal computer running DOS or Windows), use the PC Exchange control panel to specify which Macintosh program will open the document. For information about working with DOS documents on your Macintosh, see the information about DOS in Macintosh Guide, available in the Guide (⍰) menu.

You experience problems using a document created on a computer running DOS or Windows.

If you can't open a DOS document using a Macintosh program, try the following:

- Open the document from within the program by choosing Open in the program's File menu.

- Use the PC Exchange control panel to change the document's type to one that can be opened by the program.

If a DOS document is displayed incorrectly, or you see strange codes or characters in the document, try one of the following:

- See the information that came with your program. Your application program may have special procedures for opening and saving documents with different file formats.

- Try opening the document in another program.

Note: Some characters that can be displayed on the Macintosh are not accurately displayed on DOS computers, and vice versa.

For more information about working with DOS documents on your Macintosh, see the "DOS, Windows, and Apple II Files" topic area of Macintosh Guide, available in the Guide (⍰) menu.

You see a message that your application program can't be opened because a file can't be found.

Power Macintosh programs use special files called *shared libraries.* Any necessary shared libraries should be installed automatically when you install Power Macintosh programs.

Follow the directions that came with your program to reinstall the program. If the shared library is still missing, contact the software program's manufacturer for assistance.

You experience problems using an older Macintosh program.

Some older Macintosh programs are not completely compatible with Power Macintosh computers.

Open the Memory control panel and turn off Modern Memory Manager.

You can't record sound using an external microphone or the microphone built into your monitor.

- Any time you want to record sound, you need to make sure your sound input source is set to External Microphone. Open the Monitors & Sound control panel in the Apple (⌘) menu, click the Sound icon, and choose External Microphone from the Sound Input pop-up menu.

- If you're using your monitor's built-in microphone to record, use the Monitors & Sound control panel to make the monitor's speakers mute. In the same control panel, make sure that the sound input is set to the monitor's built-in microphone.

Solutions to CD-ROM problems

Problems using the CD-ROM drive

The CD-ROM drive icon does not appear on screen.

■ Make sure the Apple CD-ROM extension is turned on in the Extensions Manager control panel. Open the Extensions Manager control panel in the Control Panels folder in the Apple () menu. Click to put a checkmark next to Apple CD-ROM. Then restart your computer.

■ If you reinstalled the CD-ROM software, make sure to restart your computer afterward.

The computer keeps asking you to reinsert a CD-ROM disc after you've ejected it.

■ An application program from the CD-ROM disc may still be open. Reinsert the CD-ROM disc, then look in the Application menu in the upper-right corner of your screen to see what application programs are open. If any application other than the Finder is listed, select it and choose Quit from the File menu. Repeat this step for all open applications (except the Finder) listed in the Application menu. When you have quit all open applications, eject the CD-ROM disc by selecting its icon and dragging it to the Trash.

■ You may not have properly ejected the CD-ROM disc. Reinsert the disc, then select the disc's icon and drag it to the trash or choose Put Away from the File menu. (Do not eject discs by choosing Eject Disk from the Special menu—your computer will continue to ask you to reinsert them.)

Your computer starts up and you see large folder-shaped areas, containing labeled pictorial buttons, instead of the usual Macintosh desktop.

■ Your computer may have started up from a CD-ROM disc containing At Ease, an alternative to the Macintosh desktop. You need to have the Macintosh desktop on your screen before you can use any of the installation instructions in this manual.

To return to the Macintosh desktop, choose Shut Down from the Special menu. Turn on your computer, and then immediately press the Open/Close button on your CD-ROM drive to open the tray. Remove the CD-ROM disc and gently close the tray. Your computer finishes starting up.

To avoid having the computer start up from a CD-ROM disc, remember to remove any disc from the drive before you shut down your computer.

The tray of your CD-ROM drive won't open.

If a CD-ROM disc icon appears on your screen:

■ Drag the disc icon to the Trash, or select it and choose Put Away from the File menu. If the AppleCD Audio Player program is active, choose Eject CD from the File menu.

   If you see a message that a disc can't be put away because it is being shared, turn off file sharing, then try again to put away the disc.

If no CD-ROM disc icon appears on your screen:

■ Press the Open/Close button of your CD-ROM drive.

■ The signal to open the tray may not be reaching the computer. Turn off your computer and locate the small pinhole to the lower right of the CD-ROM tray opening. Insert the end of a large, straightened paper clip firmly and horizontally into the pinhole. Push gently until the tray is released, then carefully pull the tray open. Do not force the tray open; wait until the paper clip has dislodged it, or you may break the front of the tray.

> **WARNING** Turn off your computer before you attempt to eject the tray using a paper clip. If you don't, you may damage the CD-ROM drive.

If neither of these suggestions works, your CD-ROM drive may be damaged. Contact an Apple-authorized service provider or Apple for further assistance.

Your computer won't restart, and a CD-ROM disc is in the CD-ROM drive.

Your computer may be trying to start up from the CD-ROM disc. Press the Open/Close button of your CD-ROM drive to open the tray, and remove the CD-ROM disc. Gently close the tray; then restart your computer.

Problems using CD-ROM discs

You insert a CD-ROM disc, but its icon doesn't appear on the Macintosh desktop.

■ Make sure that the disc label is facing up and the disc is centered in the tray. If you're using a small (8 cm) disc, make sure it is within the tray's inner ring.

■ Make sure the tray is closed all the way.

■ Try restarting your computer.

■ The disc may use a format that the Macintosh cannot recognize.

■ While holding the C key down, try starting your computer from the CD-ROM disc that contains system software. If only the hard disk icon appears on the desktop, then there may be a hardware problem with your CD-ROM drive. If the CD-ROM icon appears above the hard disk icon, try reinstalling your CD-ROM software following the instructions in "Installing or Reinstalling CD-ROM Software" later in this chapter.

CD-ROM software is already installed on Macintosh computers that come with CD-ROM drives. You can reinstall it by following the procedure in "Installing or Reinstalling CD-ROM Software" later in this chapter.

Your computer displays the message "This is not a Macintosh disk: Do you want to initialize it?" when you insert a CD-ROM disc in the CD-ROM drive.

■ Make sure that the Foreign File Access and Audio CD Access CD-ROM extensions are installed in your Extensions Folder and are turned on. (If they are not turned on, use the Extensions Manager control panel to turn them on and then restart your computer.)

■ Make sure the CD-ROM software is installed. (The CD-ROM software is already installed on Macintosh computers that come with CD-ROM drives.)

■ The disc may use a format that the Macintosh cannot recognize.

Your CD-ROM disc is vibrating in the CD-ROM drive.

■ Some CD-ROM disc labels have artwork that is noticeably thicker on one side than the other, which can cause the disc's weight to be slightly off-center. This uneven distribution of weight coupled with the high rotation speed of your CD-ROM drive can cause some discs to wobble in the drive and make your computer vibrate. The vibration damages neither the CD-ROM disc nor the computer and occurs with very few CD-ROM discs. If you can feel or hear that the CD-ROM disc is vibrating in the computer, you don't need to do anything special; continue to use the CD-ROM disc as you normally would.

   If you use a CD-ROM disc with a removable (sticky) label, remove the label before inserting the disc.

Your computer ejects a CD-ROM disc without giving you any error message.

■ Make sure the disc is flat in the tray and the disc label is facing up. If you're using a small (8 cm) disc, make sure it's centered within the tray's inner ring.

■ The disc may need to be cleaned. (See "Handling Compact Discs" in Appendix A.) If there are visible scratches on the shiny side of the disc, you may be able to remove them with a CD polishing kit (available from your audio CD dealer). If the scratches can't be removed, you'll need to replace the disc.

■ The disc may be damaged. Try another disc in the drive, and try the original disc in another drive. If the original drive reads other discs or if the original disc doesn't work in another drive, the disc is probably damaged. You'll need to replace the disc.

You can't open a document on a CD-ROM disc.

■ Try opening the application program first; then open the document.

■ Read the manual that came with your CD-ROM disc. Some discs come with software that you need to install on your computer before using the disc.

You can't save changes you make to information on a CD-ROM disc.

CD-ROM is a read-only medium. This means that information can be read (retrieved) from it, but not written (stored) on it. You can save the changed information on a hard disk or floppy disk.

Problems using ISO 9660 or High Sierra discs

You cannot access files on a CD-ROM disc that uses the ISO 9660 or High Sierra format.

■ Discs in the ISO 9660 and High Sierra formats have version numbers attached to filenames. Some application programs need these version numbers in order to work with files. To make the version numbers available to programs on your computer, follow these instructions:

Drag the CD icon to the Trash. When the tray opens, hold down the Option key and push the tray back in, continuing to hold down the Option key until the disc is fully in the drive. The program you are using should now be able to locate filenames on that CD-ROM disc.

■ Make sure that Foreign File Access, ISO 9660 File Access, and High Sierra File Access are present in the Extensions folder in your System Folder.

Problems playing audio CDs

You don't hear any sound when you play an audio CD or an audio track on a CD-ROM disc using the AppleCD Audio Player.

■ If you have headphones or speakers connected to the computer, adjust the plug to make sure they are firmly connected. Make sure the volume control on your headphones or speakers is not turned down too low.

■ If you are using a CD-ROM disc over a network, you won't be able to hear the audio portion.

■ Make sure the volume is turned up in the AppleCD Audio Player. With the Audio Player open, drag the volume control slider up or press the Up Arrow key on your keyboard.

■ The CD may have been paused. Click the Play/Pause button in the AppleCD Audio Player once or twice.

While playing an audio track on a CD-ROM disc that combines audio tracks and data, you double-click the disc icon and the audio track stops playing.

You can't open data files on a CD-ROM disc and listen to audio tracks on that disc at the same time.

You are unable to record sound from an audio CD.

You may need to reset the sound options in a sound control panel. Refer to the "Sound" topic area of Macintosh Guide, available in the Guide (⍰) menu.

You insert an audio CD-ROM disc and it begins playing immediately.

Your computer is set to automatically begin playing audio CDs when they are inserted. To turn off this feature, use the QuickTime Settings control panel available under the Apple (🍎) menu to change the automatic play setting.

Problems using Photo CDs

Your CD-ROM drive will not open Photo CDs.

Reinstall the CD-ROM software (available through the Multimedia Software option in Custom Install when you reinstall system software). For more information, see "Installing or Reinstalling System Software" later in this chapter.

Your computer does not display color icons for individual images on a Photo CD.

Your computer may be low on memory. To view color icons, restart your computer and then reopen the Photos folder. See the "Memory" topic area of Macintosh Guide, available in the Guide (⍰) menu, for more information on managing memory.

After you open an image on a Photo CD, the image is scrambled, colors are displayed incorrectly, or no image appears in the window.

The program you are using may not be designed to work with large (high-resolution) image files. You can open the image with another program or you can assign more memory to the program. (For more information on managing memory, see the "Memory" topic area of Macintosh Guide, available in the Guide [⍰] menu.)

After you open an image on a Photo CD, your system is "frozen" and does not respond to any input, or you have a "bomb" message on your screen.

Restart your Macintosh. The program you are using may not be designed to work with large (high-resolution) image files. You can open the image with another program, or you can assign more memory to the program (see the "Memory" topic area of Macintosh Guide, available in the Guide [⍰] menu, for more information on managing memory).

If your computer's performance decreases

If you notice a decrease in your computer's speed and general performance and you often use networks, connect to bulletin boards, or share files with other computer users, your computer may have a "virus." Computer viruses are potentially data-destroying programs that can be copied to your computer without your knowledge when you or someone you share files with connects to public computer resources. Use a virus-detection application, available at most software retailers, to see if your computer has a virus, and to remove it from your computer.

If you notice a significant decrease in performance and your computer has virtual memory turned on, you may want to turn it off. Refer to the section "Increasing Memory Available to Run Applications" under "Working With Several Applications at a Time" in Chapter 4 of this manual and to the "Memory" topic area of Macintosh Guide, available in the Guide (❷) menu, for instructions.

If you notice a decrease in your computer's performance after you add special software (a control panel, system extension, or custom utility), it may be because your special software does not work well with Macintosh computers built with the PowerPC microprocessor.

■ To find out if your special software is the problem, hold down the Shift key while you restart the computer. This temporarily turns off certain kinds of software. If the computer performs better without this software, the software is likely to be the problem.

■ Use the Extensions Manager control panel to turn off a system extension or set of extensions. For detailed instructions, see the "Customizing Your Computer" topic area of Macintosh Guide, available in the Guide (❷) menu. If the computer performs better when an extension is turned off, contact the extension's manufacturer for information or an upgrade.

■ Drag special software items out of the System Folder or remove them permanently. (The special software may be in the Control Panels or Extensions folder inside the System Folder.) If the computer performs better when the software is removed, contact the software's manufacturer for information or an upgrade.

Hint: If you have more than one special software item, drag all the special items out of the Control Panels and Extensions folders. Then return them one at a time, restarting and checking your computer's performance each time until you identify the one that is causing problems.

If you still do not notice an improvement, follow the instructions in "Installing or Reinstalling System Software" later in this chapter to reinstall system software on your startup hard disk.

Solving printer problems

The following suggestions should work for all printers:

■ Make sure that the printer driver for your printer is turned on in the Extensions Manager control panel in the Control Panels folder in the Apple () menu. To find out the name of the printer driver—for example, LaserWriter—refer to the documentation that came with your printer. The printer driver should appear in the Extensions list and have a checkmark beside it. If it doesn't, click to put a checkmark beside it, and restart your computer.

■ Check your printer settings in the Chooser (in the Apple [] menu), making sure you have selected the correct printer. If you are using a printer that is shared by other computer users (a printer on a local network), make sure that AppleTalk (in the lower-right corner of the Chooser) is active. If you are using your own printer (a serial printer connected to your computer), make sure that AppleTalk is active.

■ Next, turn off the computer and printer and check the printer cable connections.

■ If neither of these suggestions solves the problem, reinstall your printer driver. If your printer is an older model, do not use the driver that came with it. Instead, use the updated printer drivers provided on the system software CD-ROM that came with your Power Macintosh. These drivers are created especially for use with the Power Macintosh.

If you have an Apple printer, you need to determine which printer driver to reinstall—the one that came on a floppy disk with your printer or the driver that comes on the system software CD-ROM disc (both drivers must have identical names). You should install the driver that has the most recent date. You can see the date of a driver file by inserting its disk and choosing to view its contents by Name (choose "by Name" from the View menu). To install the printer driver from the CD-ROM disc, drag it to the System Folder on your hard disk and then click OK. To install the printer driver that came on a floppy disk with your printer, refer to the manuals that came with the printer for instructions.

Obtaining service and support

Your computer came with a booklet that describes the service and support options that are available from Apple. The booklet contains phone numbers you can call if you have trouble with your computer and also describes many other ways of obtaining support information from online services, the Internet, and automated fax services.

Testing and repairing a damaged disk

Hard disks and floppy disks can become damaged by repeated use and handling.

When do you need to repair a disk?

If you see a message reporting that a disk is damaged or unreadable, you may need to repair the disk.

Dealing with a potentially damaged disk consists of several steps, which are explained in more detail later in this section:

■ verifying the disk (checking for imperfections) with an application called Disk First Aid

■ repairing any problems detected by Disk First Aid

- testing the disk with an application called Drive Setup
- repairing any problems detected by Drive Setup by using Disk First Aid (or another disk repair application) a second time, or, if the problem can't be repaired, by reinitializing the disk

Before you begin verifying and testing a disk you think is damaged, try the following possible solutions.

Try these suggestions first

If you can't start up from a hard disk or you don't see the hard disk icon on the desktop, try the following:

- If the hard disk is internal, shut down or turn off your Macintosh, wait at least ten seconds, and then turn it on again.
- If the hard disk is external, make sure that it is turned on and that its cable is connected firmly; then restart the Macintosh.
- If the hard disk is your startup disk, start up with a different startup disk. If the hard disk's icon appears on your desktop after you successfully restart, reinstall system software on the hard disk (see "Installing or Reinstalling System Software" later in this chapter).
- Check the ID numbers of all SCSI equipment connected to your computer. Each device must have a unique ID number. (Your computer is SCSI ID number 7.) Also check that the chain of devices is terminated properly. For information on setting SCSI ID numbers and terminating a SCSI chain, see the manuals that came with your SCSI equipment.
- If none of these steps solves the problem, verify and test the disk by following the instructions in the next section, "How to Verify and Test a Disk."

How to verify and test a disk

The Drive Setup and Disk First Aid applications are used to verify and test disks. They can be found on the CD-ROM disc that contains system software.
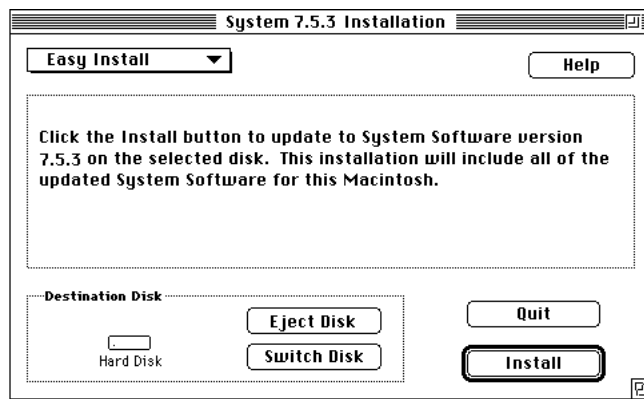
To verify and test a disk, follow these steps:

1   **Start up your computer from the CD-ROM disc that contains system software.**

See "Starting Up From a CD-ROM Disc" in the section "Initializing a Hard Disk" later in this chapter.

2   **Verify the disk using Disk First Aid.**

■ Double-click the Disk First Aid icon (you may need to look in a folder called Disk Tools to find Disk First Aid).

Disk First Aid

■ When the Disk First Aid window appears, click the icon of the disk you want to verify, then click Verify.

■ If any problems are detected, repair them with Disk First Aid following the instructions in "How to Repair a Hard Disk or Floppy Disk" later in this chapter.

3   **Open the Drive Setup program.**

You may need to look in a folder called Disk Tools to find Drive Setup.

Drive Setup

4 **In the list of drives, click the disk you want to test.**

```
┌─────────────────────────────────────────┐
│  ═══════════════ Drive Setup ═══════════ │
│                                          │
│  List of Drives                          │
│  ┌──────────────────────────────────┐    │
│  │ Volume Name(s)      Type Bus ID LUN│   │
│  │ Macintosh HD        IDE   0  0  0 ⬆│   │
│  │ Karlina's           SCSI  0  4  0  │   │
│  │                                    │   │
│  │                                   ⬇│   │
│  └──────────────────────────────────┘    │
│  ┌──────────────────────────────────┐    │
│  │ This disk can be initialized.     │   │
│  │                                    │   │
│  └──────────────────────────────────┘    │
│                            ┌───────────┐ │
│                            │ Initialize… │ │
│                            └───────────┘ │
└─────────────────────────────────────────┘
```
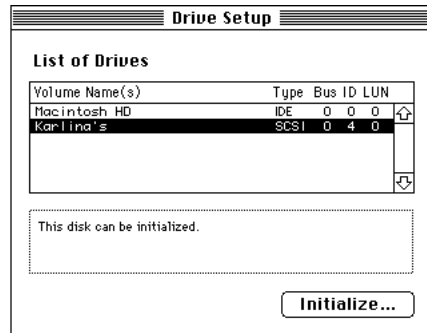
5 **Open the Functions menu and choose Test Disk.**

6 **When a message tells you that testing is complete, click Quit.**

If the Drive Setup test reveals a problem, you may be able to correct it by using Disk First Aid again or another disk repair program (see the instructions that follow), or you may need to reinitialize the disk (see "Initializing a Hard Disk" later in this chapter). Consult an Apple-authorized service provider for assistance if necessary.

How to repair a hard disk or floppy disk

You can repair some types of disk damage by using the Disk First Aid application, which is included on the CD-ROM disc containing system software.

**1** **Start up your computer from the CD-ROM disc that contains system software.**

See "Starting Up From a CD-ROM Disc" in the section "Initializing a Hard Disk" later in this chapter.

2 **Open the Disk First Aid icon.**

You may need to look in a folder called Disk Tools to find Disk First Aid.

Disk First Aid

3 **Click the icon of the disk you want to repair.**

Disk icons appear in a box at the top of the Disk First Aid window.

4 **Click Repair to begin testing and repairing the disk.**

You can't repair the startup disk or the disk that contains the Disk First Aid program, but you can test these disks by clicking Verify. If the program reveals a problem with either of these disks, start up the computer from another disk so that you can repair the damaged one.

If you want to test and repair another disk, click its icon and then click Repair.

5 **When testing and repair are finished, choose Quit from the File menu.**

If Disk First Aid cannot correct the problem

- Try repairing the disk with Disk First Aid again. Sometimes repeating the process corrects the problem.

- Use another disk repair or recovery program. Some disk repair programs let you recover information from a damaged disk.

- Consult a computer repair specialist for help.

- Once you have recovered all the information you can, erase (reinitialize) the disk. If initialization doesn't work, discard the damaged disk (if it's a floppy disk), or take it to your Apple-authorized service provider for repair (if it's a hard disk).

Initializing a hard disk

You may never need to initialize a hard disk. This section helps you determine whether you need to initialize your hard disk and tells you how to do so, if it's necessary.

When do you need to initialize a hard disk?

The hard disk inside your computer was initialized at the factory, so you shouldn't need to initialize it. You need to initialize a hard disk only if one of the following is true:

■ You purchase a hard disk that has not been initialized at the factory.

■ Your hard disk is damaged.

If a hard disk needs to be initialized, the disk's icon does not appear on the desktop when you start up the computer using another disk.

If the hard disk you want to initialize is not the startup disk, you can use the Drive Setup program to initialize it. Drive Setup is located on the CD-ROM disc that contains system software. For instructions, start Drive Setup and choose Drive Setup Guide from the Guide (❷) menu.

If the hard disk you want to initialize is the startup disk, follow the instructions in this section. First, start up from the CD-ROM disc that contains system software. Then follow the instructions in "How to Initialize a Hard Disk" later in this section.

WARNING Initializing a disk erases any information that may be on it. Before you initialize a damaged disk, try to repair it as described in "Testing and Repairing a Damaged Disk" earlier in this chapter.

Starting up from a CD-ROM disc

To initialize, test, or repair a hard disk, or to install system software on a hard disk, you need to start up your computer from the CD-ROM disc containing system software that came with the computer.

To start up the computer using the CD-ROM disc, either use a control panel to set the CD-ROM drive as your startup drive, or follow these steps:

1 Turn your computer on.

2 Immediately press the Open/Close button on your CD-ROM drive, quickly insert the CD-ROM disc containing system software into the drive, and close the tray.

3 Immediately press the C key on your keyboard.

Continue to hold down the key until you see the "Welcome to Macintosh" message.

If a blinking question mark appears, or if the computer starts up from your hard disk: You did not insert the CD-ROM disc into the drive quickly enough for the computer to recognize it as a startup disk. Follow these steps:

1 Shut down your computer.

The CD-ROM disc will remain in the CD-ROM drive.

2 Turn the computer on.

3 Immediately press the C key on the keyboard.

Continue to hold down the key until you see the "Welcome to Macintosh" message.

Starting up from a floppy disk

To initialize, test, or repair a hard disk, or to install system software on a hard disk, you need to start up your computer from another disk. Usually, you start up using the built-in CD-ROM drive. However, if you can't use the CD-ROM drive for some reason, you can also start up the computer from the floppy drive using the *Disk Tools* floppy disk. (Note that the *Disk Tools* floppy disk is created from files that are on the CD-ROM disc that contains system software—if you cannot use your CD-ROM drive, you'll need to find another Macintosh with a CD-ROM drive that you can use.)

Disk Tools is available as a disk image file on the CD-ROM disc that contains system software. (A disk image file is a file that contains a compressed version of a floppy disk's contents.) To create a *Disk Tools* floppy disk, insert the CD-ROM disc that contains system software and a floppy disk. Then double-click the *Disk Tools* disk image file on the CD-ROM disc. This launches an application called Disk Copy that carries out the process of creating the floppy disk from the disk image file. Refer to the Disk Copy Read Me file for more information about using Disk Copy.

To start up your computer using a floppy disk, follow these steps:

1 **Shut down or turn off your computer.**

2 **Insert the *Disk Tools* floppy disk into the disk drive.**

3 **Restart or turn on the computer.**

How to initialize a hard disk

You initialize a hard disk by using a program called Drive Setup, which is on the CD-ROM disc that contains system software. (To initialize a hard disk from another manufacturer, use the utility software that came with the hard disk.)

> **WARNING** Initializing a disk erases all information that may be on it. Before you initialize a damaged disk, try to repair it as described in "Testing and Repairing a Damaged Disk" earlier in this chapter.

1   Start up your computer from the CD-ROM disc that contains system software.

See "Starting Up From a CD-ROM Disc" earlier in this section.

2   Open the Drive Setup program.

You may need to look in a folder called Disk Tools to find Drive Setup.

Drive Setup

3   In the list of drives, click the disk you want to initialize.

```
════════════ Drive Setup ═══════════
 List of Drives
┌──────────────────────────────────────┐
│Volume Name(s)        Type Bus ID LUN │
│Macintosh HD          IDE   0  0  0  ⇧│
│Karlina's             SCSI  0  4  0   │
│                                      │
│                                   ⇩ │
├──────────────────────────────────────┤
│ This disk can be initialized.        │
│                                      │
│                                      │
│                  ┌─────────────┐     │
│                  │ Initialize… │     │
│                  └─────────────┘     │
└──────────────────────────────────────┘
```

Click the drive you want to initialize...

...then click Initialize.
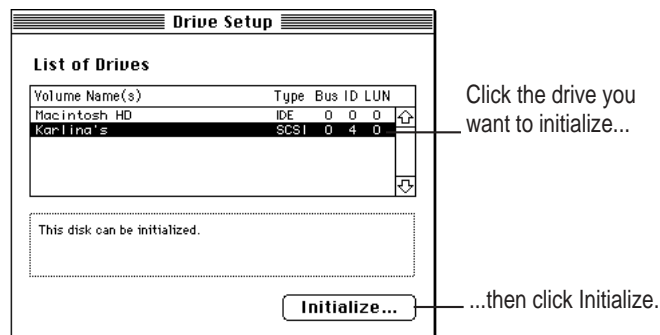
4   **Click Initialize.**

5   **Click Quit when you see a message reporting that initialization was successful.**

If a message reports that initialization failed, try again. If initialization fails a second time, take the disk to your Apple-authorized service provider for repair.

Installing or reinstalling system software

System software is the set of programs and other files that your computer uses to start itself up, keep track of your files, and run the application programs you use. System software is kept in the folder called the System Folder. When you turn on your computer, it looks for a startup disk, which is a disk that contains the system software. The startup disk is usually the hard disk that's inside your computer, though another hard disk or a floppy disk can also be a startup disk.

The accessory kit that came with your Macintosh provides system software on either a set of floppy disks or a CD-ROM disc. You can use the floppy disks or the CD-ROM disc to install the system software on your Macintosh if you need to do so.

When should you install system software?

Your Macintosh came with all the necessary system software installed on its internal hard disk, so you don't need to install system software on that disk unless you encounter software problems.

If you have a new hard disk or a newly initialized hard disk that doesn't contain system software, or if you want to upgrade to a more recent version of system software on a hard disk, follow the instructions in "Installing System Software" later in this section.

When should you reinstall system software?

If you have a problem with your system software, you may see this icon in the middle of the screen:

If this icon appears, follow the instructions in "How to Repair a Hard Disk or Floppy Disk" earlier in this chapter to test your startup hard disk and repair any damage.

If repairing the disk doesn't help, follow the instructions in "Installing System Software," to reinstall system software on your startup hard disk.

Installing system software

Follow the steps in this section to do what is commonly called a "normal" installation of system software.

If you're installing system software on a hard disk for the first time, make sure that your hard disk has been initialized, a process that prepares the disk to store information. If you see the hard disk's icon on the desktop when you start up the computer, the disk has been initialized. If no disk icon appears when you start up, see the section "Initializing a Hard Disk" earlier in this chapter for instructions.

To do a normal installation, follow these steps:

1   Start up your computer from the CD-ROM disc that contains system software.

See "Starting Up From a CD-ROM Disc" in the section "Initializing a Hard Disk" earlier in this chapter.

2   Find and open the Disk First Aid icon.

You may need to look in a folder called Disk Tools to find Disk First Aid.

Disk First Aid

After Disk First Aid starts, follow the instructions on the screen. Disk First Aid checks your hard disk for any problems.

3   When Disk First Aid has finished checking your hard disk, choose Quit from the File menu.

4   Open the Drive Setup program.

You use the Drive Setup program to update your hard disk. You may need to look in a folder called Disk Tools to find Drive Setup.

5   In the list of drives, click your startup disk.

6   Choose Update Driver from the Functions menu.

7   When the update process is finished, quit Drive Setup.

8   Shut down your computer.

9   Start up your computer from the CD-ROM disc that contains system software.

See "Starting Up From a CD-ROM Disc" in the section "Initializing a Hard Disk" earlier in this chapter.

The Installer's Welcome screen appears. You may have to double-click the System Software Installer icon to open the Installer program.

10   Click Continue.

The Easy Install dialog box appears.

Disk on which system software will be installed

Click here to install on a different disk.

Click here to install the software you need.

11 Make sure that the hard disk named in the Destination Disk box is the one on which you want to install system software.

If it isn't, click Switch Disk until the correct disk name appears.

12 Click Install.

13 Follow the onscreen instructions.

If you're installing system software from floppy disks, you see messages asking you to insert different disks.

14 When you see a message reporting that the installation was successful, click Restart.

If a message reports that installation was not successful, try installing again. (Follow the instructions on the screen.)

If, after reinstalling system software by doing a normal installation, you still experience problems with your computer, follow the steps in the next section for doing a "clean" installation of system software.

IMPORTANT Certain system extensions or application programs that were originally on your hard disk may not be installed with the Installer program. If you notice that a certain extension or program was not installed, you may need to install it separately. You can find these additional extensions and programs on the CD-ROM disc or set of floppy disks that contains system software. (System extensions or application programs from other vendors can be reinstalled from their installation disks.) If you don't have a CD-ROM drive, see the service and support information that came with your computer for information on how to contact Apple directly for assistance.

Doing a clean installation of system software

This section outlines what is commonly called a "clean" installation of system software. A clean installation allows you to discover which item in your System Folder is causing a problem. A clean installation creates a brand new System Folder and saves everything in your original System Folder in a different location. You can then follow the instructions in "Replacing Your Special Software" later in this section to reinstall system extensions, control panels, and other special software one at a time from the old System Folder to the new System Folder. This procedure allows you to determine which item in the old System Folder was the source of the problem.

Do a clean installation if you can't determine what is damaged in your System Folder (especially if you think any special software, such as control panels, system extensions, or custom utilities, may be causing the problems you're experiencing). You should also do a clean installation if you're still having problems with your computer after you've reinstalled system software by doing a normal installation.

To do a clean installation, follow these steps:

1 Start up your computer from the CD-ROM disc that contains system software.

See "Starting Up From a CD-ROM Disc" in the section "Initializing a Hard Disk" earlier in this chapter.

2 Find and open the Disk First Aid icon.

You may need to look in a folder called Disk Tools to find Disk First Aid.

Disk First Aid

After Disk First Aid starts, follow the instructions on the screen. Disk First Aid checks your hard disk for any problems.

3 When Disk First Aid has finished checking your hard disk, choose Quit from the File menu.

4 Open the Drive Setup icon.

You use the Drive Setup program to update your hard disk. You may need to look in a folder called Disk Tools to find Drive Setup.

5 In the list of drives, click your startup disk.

6 Choose Update Driver from the Functions menu.

7 When the update process is finished, quit Drive Setup.

8 Shut down your computer.

9   Start up your computer from the CD-ROM disc that contains system software.

See "Starting Up From a CD-ROM Disc" in the section "Initializing a Hard Disk" earlier in this chapter.

The Installer's "welcome" screen appears. You may have to double-click the System Software Installer icon to open the Installer program.

10   Click Continue.

The Easy Install dialog box appears.

```
═══════════════ System 7.5.3 Installation ═══════════════

 Easy Install       ▼                              Help

┌──────────────────────────────────────────────────────┐
│ Click the Install button to update to System Software │
│ version 7.5.3 on the selected disk. This installation │
│ will include all of the updated System Software for   │
│ this Macintosh.                                        │
│                                                        │
└──────────────────────────────────────────────────────┘

 Destination Disk                          ┌──────────┐
                    ┌───────────┐          │   Quit   │
     [  ]           │ Eject Disk│          └──────────┘
   Hard Disk        └───────────┘          ┌──────────┐
                    ┌───────────┐          │ Install  │
                    │Switch Disk│          └──────────┘
                    └───────────┘
```

11   Make sure that the hard disk named in the Destination Disk box is the one on which you want to install system software.

If it isn't, click Switch Disk until the correct disk name appears.

12   Hold down Shift–⌘–K to start the clean installation.

The following dialog box appears.

```
Select type of installation:
  ○ Update Existing System Folder
  ● Install New System Folder

  ┌──────────┐   ┌──────────┐
  │  Cancel  │   │    OK    │
  └──────────┘   └──────────┘
```

13 **Click the Install New System Folder button and click OK.**

The Easy Install dialog box appears. The Install button has changed to Clean Install, and the contents of your old System Folder have been moved to a new folder named Previous System Folder.

14 **Click Clean Install.**

```
☰☰☰☰☰☰☰  System 7.5.3 Installation  ☰☰☰☰☰☰☰  回☰

   ┌─────────────────────┐                    ┌──────────┐
   │ Easy Install    ▼   │                    │   Help   │
   └─────────────────────┘                    └──────────┘

   ┌─────────────────────────────────────────────────────┐
   │ Click the Install button to place System Software    │
   │ version 7.5.3 on the selected disk. This             │
   │ installation will include all of the recommended     │
   │ System Software for this Macintosh.                  │
   │                                                       │
   │                                                       │
   └─────────────────────────────────────────────────────┘

  ┌Destination Disk────────────────┐        ┌──────────────┐
  │                 ┌─────────────┐ │        │     Quit     │
  │                 │  Eject Disk │ │        └──────────────┘
  │   ┌──┐          └─────────────┘ │        ┌──────────────┐
  │   └──┘          ┌─────────────┐ │        │ Clean Install│
  │   Hard Disk     │ Switch Disk │ │        └──────────────┘
  │                 └─────────────┘ │
  └────────────────────────────────┘
```
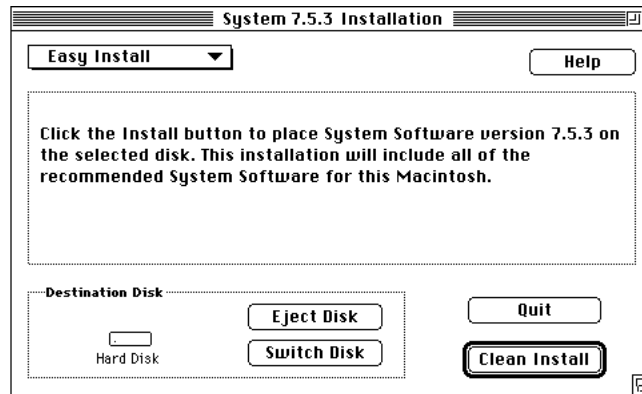
15 **Follow the instructions that appear on the screen.**

It takes a few minutes to complete the installation.

16 **When the installation is complete you see a message reporting that the installation was successful.**

If a Restart button appears, click it to restart your computer.

If a message reports that installation was not successful, try repeating the clean installation procedure.

IMPORTANT Certain system extensions or application programs that were originally on your hard disk may not be installed with the Installer program. If you notice that a certain extension or program was not installed, you may need to install it separately. You can find these additional extensions and programs in the Apple Extras folder on the CD-ROM disc that contains system software. (System extensions or application programs from other vendors can be reinstalled from their installation disks.) If you don't have a CD-ROM drive, see the service and support information that came with your computer for information on how to contact Apple for assistance.

Replacing your special software

Special software consists of items such as control panels, system extensions, custom utilities, fonts, or Apple Menu Items that you may have added to your old System Folder. To make sure that special software does not create any conflicts with other programs on your computer, follow this procedure to safely add back these items in your new System Folder:

1 Copy any special software items from the Previous System Folder back to your System Folder one item at a time, restarting the computer after copying each item.

IMPORTANT Be very careful not to *replace* (copy over) any of the files in the System Folder with files from the Previous System Folder.

2 Check after each restart to make sure your computer is not having any software problems.

If any of your special software items cause software problems, contact the software manufacturer for assistance or an upgrade.

Doing a custom installation

For most Macintosh users, the Easy Install procedure described in the previous sections is appropriate because it automatically installs all the items you need. However, if you'd like to select a combination of system software files for your specific needs, you can customize your system software installation. You use custom installation to install or update one or more specific files, or to save space on your hard disk by installing only the files you want.

To install customized system software, follow these steps:

1 Start up your computer from the CD-ROM disc that contains system software.

See "Starting Up From a CD-ROM Disc" in the section "Initializing a Hard Disk" earlier in this chapter.

2 Click OK.

The Easy Install dialog box appears.

3 **Choose Custom Install from the pop-up menu.**
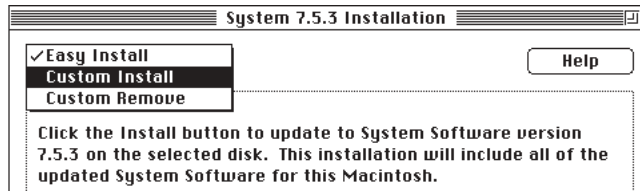
The Custom Install dialog box appears, listing all available system software components.
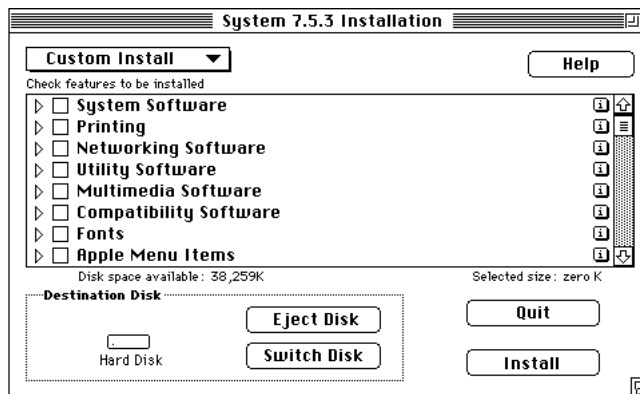
4 **Scroll through the list of components, clicking the checkbox next to each component you want to install.**

To get additional information about each component listed, click the box with the letter "i" in it to the right of the component.

5 **Click Install.**

6 **Follow the instructions that appear on the screen.**

7 **When you see a message reporting that the installation was successful, click Quit.**

If a message reports that installation was not successful, try installing again. (Follow the instructions on the screen.)

8 Restart your Macintosh.

The system software is installed and your computer is ready to use. Don't forget to eject the CD-ROM disc containing system software when you are finished.

Installing or reinstalling CD-ROM software

CD-ROM software is a set of programs and files that allow your CD-ROM drive to work correctly with your computer and allow it to play different kinds of CDs, like Photo CDs or audio CDs. If your computer came with a CD-ROM drive installed, the CD-ROM software is part of system software and was preinstalled for you on your computer's hard disk. (It is also available on floppy disks and a CD-ROM disc that came with your Macintosh.)

If you added a CD-ROM drive after you bought your computer, the CD-ROM software is probably on floppy disks that came with the drive.

When should you install or reinstall CD-ROM software?

If your Macintosh came with the CD-ROM drive already installed, you don't need to install the CD-ROM software unless you encounter problems. (See "Solutions to CD-ROM Problems" earlier in this chapter for descriptions of the kinds of problems you might encounter.)

If you added a CD-ROM drive after you bought your computer, install the CD-ROM software before you attempt to use the CD-ROM drive.

Installing or reinstalling CD-ROM software

1 Start up your computer from the CD-ROM disc that contains system software.

See "Starting Up From a CD-ROM Disc" in the section "Initializing a Hard Disk" earlier in this chapter.

The Installer's Welcome screen may appear. If not, you may have to double-click the System Software Installer icon to open the Installer program.

2 **Click OK.**

The Easy Install dialog box appears.

3 **Choose Custom Install from the pop-up menu.**

```
═══════════════ System 7.5.3 Installation ═══════════════
✓Easy Install                                    ┌─────────┐
 Custom Install                                  │  Help   │
 Custom Remove                                   └─────────┘
┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄
Click the Install button to update to System Software version
7.5.3 on the selected disk. This installation will include all of the
updated System Software for this Macintosh.
```

The Custom Install dialog box appears, listing all available system software
components.

```
═══════════════ System 7.5.3 Installation ═══════════════
┌───────────────────────┐                        ┌─────────┐
│ Custom Install     ▼  │                        │  Help   │
└───────────────────────┘                        └─────────┘
Check features to be installed
 ▷ ☐ System Software                                 ⓘ ⇧
 ▷ ☐ Printing                                        ⓘ ▤
 ▷ ☐ Networking Software                             ⓘ
 ▷ ☐ Utility Software                                ⓘ
 ▷ ☐ Multimedia Software                             ⓘ
 ▷ ☐ Compatibility Software                          ⓘ
 ▷ ☐ Fonts                                           ⓘ
 ▷ ☐ Apple Menu Items                                ⓘ ⇩
        Disk space available: 38,259K          Selected size: zero K
┌─Destination Disk┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄
│                      ┌──────────────┐      ┌──────────────┐
│                      │  Eject Disk  │      │    Quit      │
│      ▭               └──────────────┘      └──────────────┘
│   Hard Disk          ┌──────────────┐      ┌──────────────┐
│                      │  Switch Disk │      │   Install    │
└┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄    └──────────────┘      └──────────────┘
```

4 **Select Multimedia Software by clicking the checkbox next to it.**

To get additional information about each component listed, click the box with
the letter "i" in it to the right of the component.

5 **Click Install.**

6 **Follow the instructions that appear on the screen.**

7 **When you see a message reporting that the installation was successful, click Quit.**

If a message reports that installation was not successful, try installing again.
(Follow the instructions on the screen.)

8 **Restart your Macintosh.**

The CD-ROM software is reinstalled and your computer is ready to use. Don't forget to eject the CD-ROM disc containing system software when you are finished.

Tips for working with DOS-format devices

This section contains helpful information on using DOS-format devices like removable media and SCSI hard disk drives.

Working with DOS-format SCSI removable media devices

■ Use the MS-DOS `FORMAT` command to format a newly initialized removable media cartridge on a DOS or DOS-compatible computer before you copy DOS files onto it.

■ When initializing and formatting Bernoulli and SyQuest cartridges on a DOS or DOS-compatible computer, use the disk setup and partitioning software that came with the device—do *not* use the MS-DOS `FDISK` command.

Working with DOS-format SCSI hard disk drives

■ When initializing and formatting an external SCSI hard disk on a DOS or DOS-compatible computer, use the MS-DOS `FDISK` command. In addition, you should use the MS-DOS `FORMAT` command to format and erase the disk before you copy DOS files to a new SCSI hard disk connected to a DOS PC.

part

III

Read this appendix for important
health and safety instructions,
as well as tips on keeping your
computer in good working order.

Appendix A
Health, Safety, and Maintenance Tips

For your own safety and that of your equipment, follow all the instructions in this chapter. Keep these instructions available for reference by you and others.

Health-related information about computer use

Muscle soreness, eye fatigue, and other discomforts and injuries sometimes associated with using computers can occur from performing any number of activities. In fact, misuse of the same muscles during multiple activities can create a problem that might not otherwise exist. For example, if you engage in nonwork activities that involve repetitive stress on the wrist—such as bicycling—and also use your computer's keyboard improperly, you may increase your likelihood of developing wrist problems. Some individuals are at greater risk of developing these problems because of their health, physiology, lifestyle, and general exposure to stress. Work organization and conditions, such as workstation setup and lighting, also play a part in your overall health and comfort. Preventing health problems is a multifaceted task that requires careful attention to the way you use your body every hour of every day.

The most common health effects associated with using a computer are musculoskeletal discomfort and eye fatigue. We'll discuss each area of concern in the following sections.

Musculoskeletal discomfort

As with any activity that involves sitting for long periods of time, using a computer can make your muscles sore and stiff. To minimize these effects, set up your work environment carefully, using the guidelines that follow, and take frequent breaks to rest tired muscles. To make working with your computer more comfortable, allow enough space in your work area so that you can change position frequently and maintain a relaxed posture.

Another type of musculoskeletal concern is repetitive stress injuries (RSIs), also known as cumulative trauma disorders (CTDs). These problems can occur when a certain muscle or tendon is repeatedly overused and forced into an unnatural position. The exact causes of RSIs are not totally understood, but in addition to awkward posture, such factors as the amount of repetition, the force used in the activity, the individual's physiology, workplace stress level, and lifestyle may affect the likelihood of experiencing an RSI.

RSIs did not suddenly arise when computers were invented; tennis elbow and writer's cramp, for example, are two RSIs that have been with us for a long time. Although less common than other RSIs, one serious RSI discussed more often today is a wrist problem called carpal tunnel syndrome, which may be aggravated by improper use of computer keyboards. This nerve disorder results from excessive pressure on the median nerve as it passes through the wrist to the hand.

This section offers advice on setting up your work area to enhance your comfort while you use your computer. Since the effects of repetitive movements associated with using a computer can be compounded by those of other work and leisure activities to produce or aggravate physical problems, proper use of your computer system must be considered as just one element of a healthy lifestyle.

No one, of course, can guarantee that you won't have problems even when you follow the most expert advice on using computer equipment. You should always check with a qualified health specialist if muscle, joint, or eye problems occur.

Eye fatigue

Eye fatigue can occur whenever the eyes are focused on a nearby object for a long time. This problem occurs because the eye muscles must work harder to view an object that's closer than about 20 feet (about 6 meters). Improper lighting can hasten the development of eye fatigue. Although eye fatigue is annoying, there's no evidence that it leads to permanent damage.

Whenever you're engaged in an activity that involves close-up work—such as reading a magazine, doing craft work, or using a computer—be sure to have sufficient glare-free lighting and give your eyes frequent rest breaks by looking up and focusing on distant objects. Remember to have your eyes examined regularly.

To prevent discomfort and eye fatigue, follow these guidelines:

- Arrange your work space so that the furniture is properly adjusted for you and doesn't contribute to an awkward working posture.

- Take frequent short breaks to give your muscles and eyes a chance to rest.

Arranging your office

Here are some guidelines for adjusting the furniture in your office to accommodate your physical size and shape.

- An adjustable chair that provides firm, comfortable support is best. Adjust the height of the chair so your thighs are horizontal and your feet flat on the floor.

  The back of the chair should support your lower back (lumbar region). Follow the manufacturer's instructions for adjusting the backrest to fit your body properly.

- When you use the computer keyboard, your shoulders should be relaxed. Your upper arm and forearm should form an approximate right angle, with your wrist and hand in roughly a straight line.

You may have to raise your chair so your forearms and hands are at the proper angle to the keyboard. If this makes it impossible to rest your feet flat on the floor, you can use a footrest with adjustable height and tilt to make up for any gap between the floor and your feet. Or you may lower the desktop to eliminate the need for a footrest. Another option is to use a desk with a keyboard tray that's lower than the regular work surface.

■ Position the mouse at the same height as your keyboard. Allow adequate space to use the mouse comfortably.

■ Arrange the monitor so the top of the screen is slightly below your eye level when you're sitting at the keyboard. The best distance from your eyes to the screen is up to you, although most people seem to prefer 18 to 28 inches (45 to 70 cm).

■ Position the computer to minimize glare and reflections on the screen from overhead lights and windows.

45–70 cm (18–28 in.)

Shoulders relaxed

Forearms and hands in a straight line

Forearms level or tilted up slightly

Lower back supported

Thighs horizontal

Top of the screen at or slightly below eye level (You may need to adjust the height of your monitor by placing something under it or by raising your work surface.)

Screen positioned to avoid reflected glare

Clearance under work surface

Feet flat on the floor
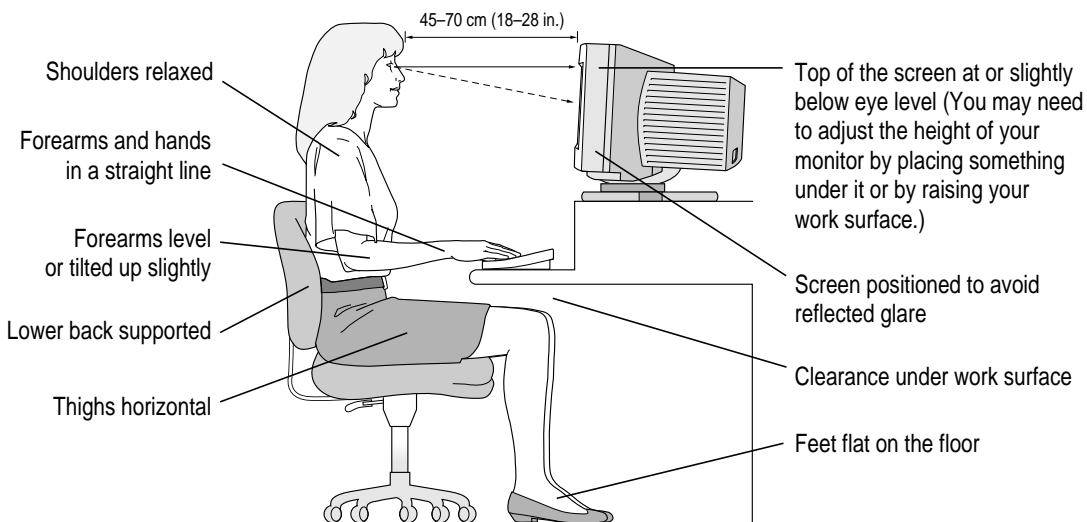
Avoiding fatigue

■ Change your seated position, stand up, or stretch whenever you start to feel tired. Frequent short breaks are helpful in reducing fatigue.

■ Use a light touch when typing or using a mouse and keep your hands and fingers relaxed.

■ Some computer users may develop discomfort in their hands, wrists, or arms after intensive work without breaks. If you begin to develop chronic pain or discomfort in your hands, wrists, or arms, consult a qualified health specialist.

■ Allow adequate workspace so that you can use your keyboard and mouse comfortably. Place papers or other items so you can view them easily while using your computer. A document stand may make reading papers more comfortable.

■ Eye muscles must work harder to focus on nearby objects. Occasionally focus your eyes on a distant object, and blink often while you work.

■ Clean your screen regularly. Keeping the screen clean helps reduce unwanted reflections.

What about electromagnetic emissions?

There has been recent public discussion of the possible health effects of prolonged exposure to extremely low frequency (ELF) and very low frequency (VLF) electromagnetic fields. Such fields are associated with electromagnetic sources such as television sets, electrical wiring, and some household appliances—as well as computer monitors.

Apple has reviewed scientific reports and sought the counsel of government regulatory agencies and respected health organizations. Based on the prevailing evidence and opinions, Apple believes that the electric and magnetic fields produced by computer monitors do not pose a health risk.

In response to those customers who wish to reduce their exposure to electromagnetic fields, Apple has lowered the emission levels of our products. We are also actively encouraging further scientific research so we can continue to promote the health and safety of our customers and employees.

Safety instructions

For your own safety and that of your equipment, always take the following precautions.

Turn off the computer completely and disconnect the power plug (by pulling the plug, not the cord) if any of the following conditions exist:

- the power cord or plug becomes frayed or otherwise damaged
- you spill something into the case
- your Macintosh is exposed to rain or any other excess moisture
- your Macintosh has been dropped or the case has been otherwise damaged
- you suspect that your Macintosh needs service or repair
- you want to clean the case (use only the recommended procedure described later in this chapter)

Be sure that you always do the following:

- Read all the installation instructions carefully before you plug your Macintosh into a wall socket.
- Keep these instructions handy for reference by you and others.
- Keep your Macintosh away from sources of liquids, such as washbasins, bathtubs, shower stalls, and so on.
- Protect your Macintosh from dampness or wet weather, such as rain, snow, and so on.
- Follow all instructions and warnings dealing with your system.

WARNING Electrical equipment may be hazardous if misused. Operation of this product, or similar products, must always be supervised by an adult. Do not allow children access to the interior of any electrical product and do not permit them to handle any cables.

Handling your computer equipment

Follow these guidelines for handling your computer and its components:

- When setting up your computer, place components on a sturdy, flat surface, and carefully follow all setup instructions.

- When connecting or disconnecting a cable, always hold the cable by its connector (the plug, not the cord).

- Turn off your computer and all its components before connecting or disconnecting any cables to add or remove any component. Failure to do so could seriously damage your equipment.

- Never force a connector into a port. If the connector and port do not join with reasonable ease, they probably don't match. Make sure that the connector matches the port and that you have positioned the connector correctly in relation to the port.

- Take care not to spill any food or liquid on the computer, keyboard, mouse, or other components. If you do, turn your computer off immediately and unplug it before cleaning up the spill. Depending on what you spilled and how much of it got into your equipment, you may have to bring your equipment to an Apple-authorized service provider.

- Protect the computer and its components from direct sunlight and rain or other moisture.

- Keep all ventilation openings clear and unobstructed. Without proper air circulation, components can overheat, causing damage or unreliable operation.

WARNING This equipment is intended to be electrically grounded. Your Macintosh is equipped with a three-wire grounding plug—a plug that has a third (grounding) pin. This plug will fit only a grounded AC outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact a licensed electrician to replace the outlet with a properly grounded outlet. Do not defeat the purpose of the grounding plug!

Handling the monitor

Follow these procedures for handling a monitor:

- Make sure that the ventilation openings on the computer and the monitor are clear and unobstructed.

- Some large monitors cannot safely be placed on top of the computer. Check the instructions that came with the monitor for setup information.

- If there is interference on the monitor's screen or on a television or radio near your computer, move the affected equipment farther away.

Handling the keyboard

Take care not to spill any liquid on the keyboard. If you do, turn off your computer immediately.

- If you spill liquid that is thin and clear, unplug the keyboard, turn it upside down to let the liquid drain out, and let it dry for 24 hours at room temperature. If, after you take these steps, the keyboard doesn't work, take it to your Apple-authorized service provider for repair.

- If you spill liquid that is greasy, sweet, or sticky, unplug the keyboard and take it to your Apple-authorized service provider for repair.

Handling floppy disks

Store disks at
temperatures
between 50° F
and 125° F.

Do not use a
pencil or an
eraser on a disk
or disk label.

Keep disks dry.

125° F (52° C)

50° F (10° C)

Do not touch the
exposed part of the
disk behind the
metal shutter.

Keep disks away
from magnets.

Avoid exposing
disks to extremely
hot temperatures.
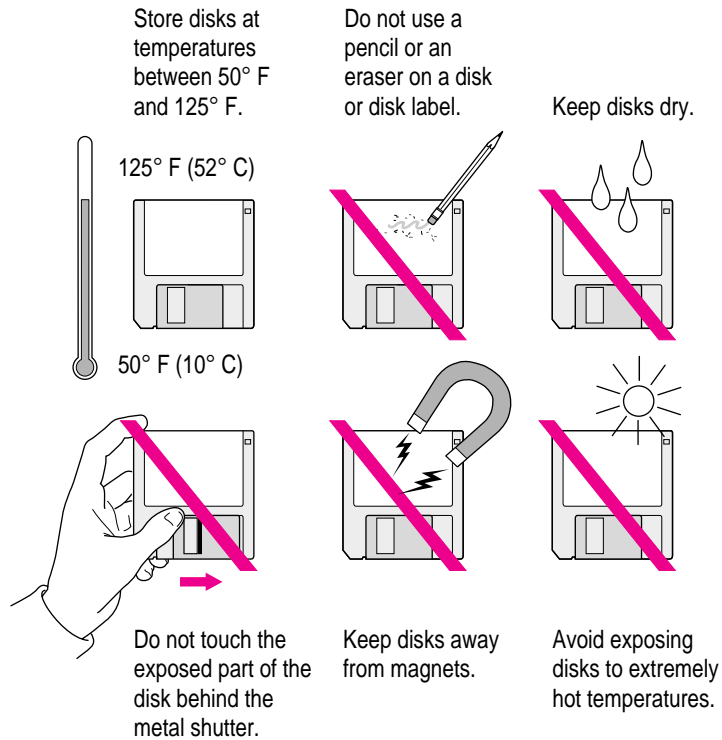
Ejecting a disk

For instructions on ejecting a floppy disk, a CD-ROM disc, or a removable
media disk, see the "Disks" topic area of Macintosh Guide, available in the
Guide (🄰) menu.

Handling compact discs

Keep these important safety instructions in mind as you use compact discs (such as CD-ROM discs, audio CDs, and Photo CDs):

■ Hold a disc by the edges or by one edge and the center hole. Do not touch the disc surface.

■ To clean discs, wipe the shiny surface with a soft, damp cloth, working in straight lines from center to edge. Do not use any form of cleaning agent.

■ To avoid damage to your discs, keep these points in mind:
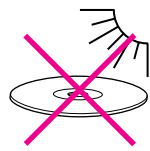
Do not expose discs to direct sunlight.
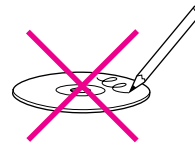
Do not write on discs.

Do not spill liquids on discs.
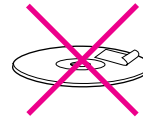
Do not put tape on discs.
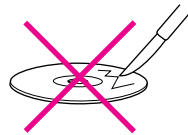
Do not scratch discs.

Do not get dust on discs.

Other important safety instructions to keep in mind as you use your
CD-ROM drive:

■ Position your computer so that when the tray opens, it doesn't bump
   into anything.

■ Do not leave the disc tray open. If dust gets on the lens of the CD-ROM
   drive, the drive may have problems reading your compact discs.

■ Do not put anything (for instance, a cup) on top of the tray when it is open.

■ Do not force the tray open by hand.

■ Do not wipe the lens with a paper towel or other abrasive surface. If you
   need to clean the lens, see an Apple-authorized service provider for a
   lens cleaner.

■ Never transport your computer with a disc inside the CD-ROM drive.

■ Keep your computer equipment away from any source of liquid (such as
   washbasins, bathtubs, and shower stalls). If you drink coffee or other
   beverages while you're at your computer, take care not to spill.

■ Avoid exposing your equipment to damp or wet weather. If your system is
   near a window, be sure the window is closed in rainy weather.

The tray on your CD-ROM drive automatically closes when you shut down
your computer. Open the tray and take your disc out before shutting down.

Power supply

The power supply in your computer is a high-voltage component and
should not be opened for any reason, even when the computer is off. If the
power supply needs service, contact your Apple-authorized dealer or
service provider.

Cleaning your equipment

Follow these general rules when cleaning the outside of your computer and its components:

- Use a damp, soft, lint-free cloth to clean the computer's exterior. Avoid getting moisture in any openings.

- Don't use aerosol sprays, solvents, or abrasives.

Cleaning the computer case

To clean the case, do the following:

1   Turn off the computer completely and then disconnect the power plug. (Pull the plug, not the cord.)

2   Wipe the surfaces lightly with a clean, soft cloth dampened with water.

Cleaning the monitor

To clean the screen, put household glass cleaner on a soft cloth and wipe the screen. Don't spray the cleaner directly on the screen because the liquid might drip into the monitor or computer.

Cleaning the mouse

The mouse contains a small ball that must roll smoothly for the mouse to work properly. You can keep this ball free of dirt and grease by using the mouse on a clean, lint-free surface and cleaning it occasionally.

You need a few cotton swabs and a clean, soft, lint-free cloth.

1   Turn off your computer.

2 Turn the mouse upside-down and turn the plastic ring on the bottom counterclockwise to disengage it.
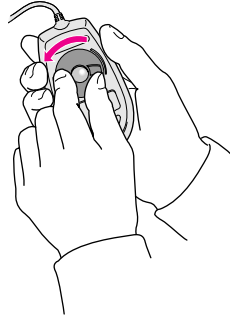
If the mouse is locked, see the next section, "Locking and Unlocking the Mouse," for instructions on how to unlock it.

3 Turn the mouse right-side up with one hand and catch the ring and the ball with your other hand.

4 Clean the three small rollers inside the mouse with a cotton swab moistened with water.

Rotate the rollers to clean all around them.
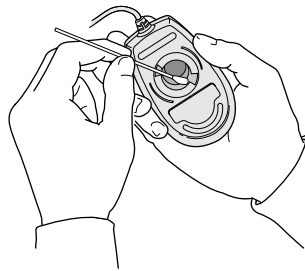
5 Wipe the mouse ball with a clean, soft, dry, and lint-free cloth.

6 If necessary, wash the mouse ball with warm soapy water (use a mild soap such as a dishwashing liquid) and then dry the mouse ball thoroughly.

7 Gently blow into the mouse case to remove any dust that has collected there.

8 Put the ball and the ring back in place.

Your mouse should roll smoothly across your mouse pad or desk. If it doesn't, repeat these instructions carefully.

Locking and unlocking the mouse

Some mouse devices can be locked so that the ball can't be removed. A locking mouse has a small hole on the plastic ring.

To lock the mouse, follow these steps:

1   Insert a straightened paper clip into the hole on the plastic ring.

Insert a straightened paper clip into this hole.

(The hole may be located here on your mouse.)
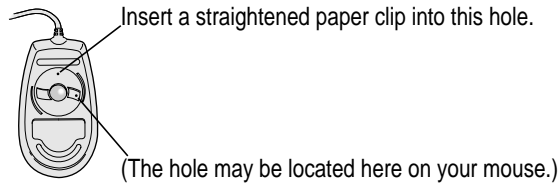
2   Press down on the paper clip while you turn the ring clockwise.
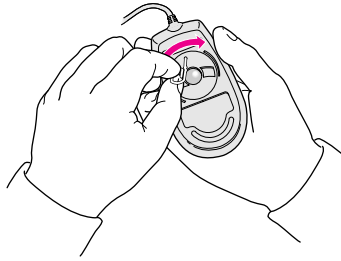
Turn the ring a very short distance, until it stops. When the recessed area on the ring is *not* lined up with the recessed area surrounding the ring, the mouse is locked.
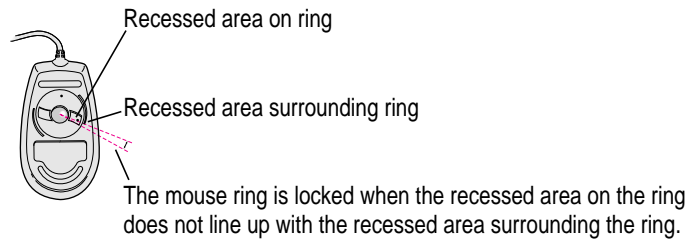
Recessed area on ring

Recessed area surrounding ring

The mouse ring is locked when the recessed area on the ring does not line up with the recessed area surrounding the ring.

To unlock the mouse, follow these steps:

1   **Insert a straightened paper clip into the hole on the plastic ring.**

Insert a straightened paper clip into this hole.

(The hole may be located here on your mouse.)
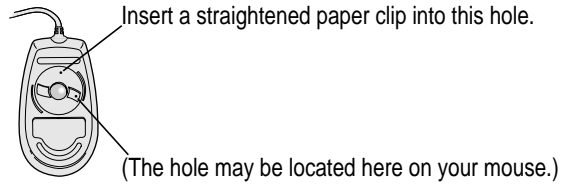
2   **Press down on the paper clip while you turn the ring counterclockwise.**
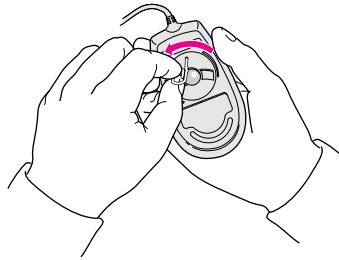
Turn the ring a very short distance. When the recessed area on the ring is lined up with the recessed area surrounding the ring, the mouse is unlocked.

Recessed area on ring

Recessed area surrounding ring

The mouse ring is unlocked when the recessed area on the ring lines up with the recessed area surrounding the ring.
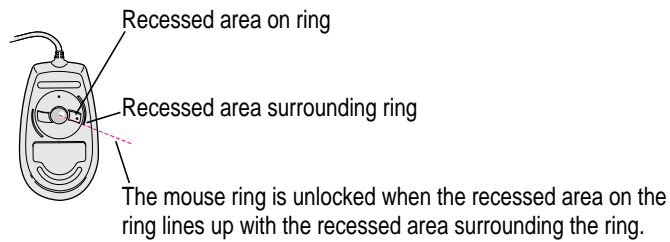
**Read this appendix for
instructions on installing an
expansion card in your computer.**

Appendix B
Installing Expansion Cards and Additional Memory

This appendix provides information about expansion cards and memory (including an optional cache), and explains how to install them.

Installing an expansion card or memory involves three procedures (detailed steps for each are provided later in this appendix):

■ opening the computer

■ inserting the card or memory module into a specific slot or socket

■ closing the computer

About expansion cards

Expansion cards are printed circuit boards that can be installed in your computer to give it special features, such as networking capability. Three slots that will accept different size expansion cards are available within your Macintosh:

■ one peripheral component interconnect (PCI) slot that accommodates most 6.88-inch cards

■ one PCI slot that accommodates either a 6.88-inch card or a full-size 12.28-inch card

■ one slot in which you can install a communication card such as an Ethernet card or modem card. This expansion slot and the cards that fit in it are often referred to as "Apple Comm Slot II" devices. Be sure to use a card that is Apple Comm Slot II–compliant; earlier versions of Ethernet cards will not work in this slot.

Your computer supplies 40 watts (W) of power to the two PCI slots so you can install either one 25-W card and one 15-W card, or two 15-W cards.

Communication slot

DRAM DIMM slots (3)
(Your computer may have a
DRAM DIMM already installed.)

PCI (peripheral component
interconnect) slots (2)

DRAM slot 1

DRAM slot 2

DRAM slot 3

Video DIMM slot
(Your computer has a video
DIMM already installed.)

Cache slot
(Level 2 cache)
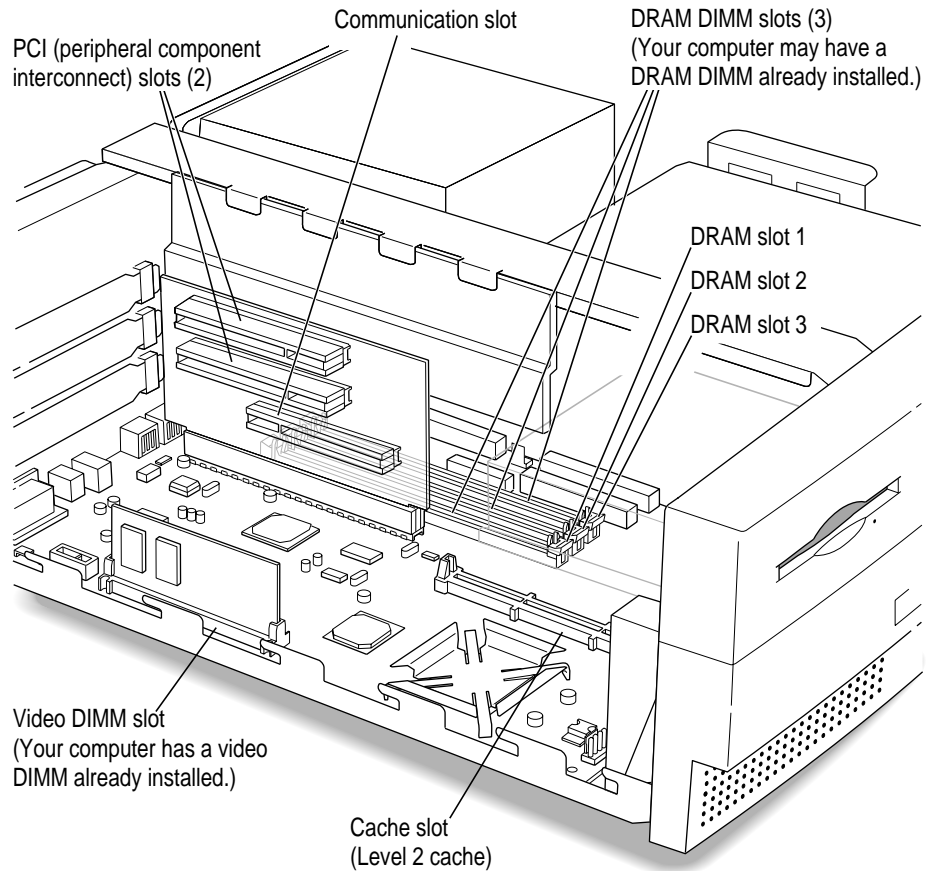
WARNING To avoid damaging your computer and expansion card, do not attempt to install any expansion card without first checking the documentation for that card. If the documentation specifies that an Apple-certified technician must install the card (usually because the installation requires special training or tools), consult the service and support information that came with your computer for instructions on how to contact an Apple-authorized service provider or Apple for assistance. If you attempt to install the card yourself, any damage you may cause to your computer or card will not be covered by the limited warranty on your computer. If the card is not an Apple-labeled product, check with an Apple-authorized dealer or service provider to see if you can install it yourself.

About memory

You can have memory—dynamic random-access memory (DRAM), video memory, or a cache—added to your computer in packages called Dual Inline Memory Modules, or DIMMs.

DRAM configurations

The main logic board has three slots where DIMMs can be installed. Your computer can use the following DRAM configurations:

DIMM slot number	DIMM size	DIMM banks	Refresh count	Device technology
1	8 MB	Single	1K	16 Mbit
1	16 MB	Single	2K	16 Mbit
1	32 MB	Single	2K	16 Mbit
2 and 3	8 MB	Single	1K	16 Mbit
2 and 3	16 MB	Single or dual	1K	16 Mbit
2 and 3	16 MB	Single or dual	2K	16 Mbit
2 and 3	32 MB	Single or dual	2K	16 Mbit
2 and 3	64 MB	Dual only	2K	16 Mbit

You can increase your computer's DRAM to a maximum of 160 MB by having an Apple-authorized dealer or service provider remove the preinstalled DRAM DIMM if necessary, then install a 32 MB DIMM in slot 1, and two 64 MB DIMMs in slots 2 and 3. DIMMs of mixed sizes may be installed one at a time in any order in the memory slots—for example, you can install one 8 MB DIMM and one 16 MB DIMM.

Note: Slot 1 is labeled "single bank" and can only accept single bank DIMMs. Slots 2 and 3 are labeled "dual bank" and can accept either single bank or dual bank DIMMs—the DIMM manufacturer can tell you what kind of DIMM you have.

IMPORTANT The DIMMs should be 64-bit wide, 168-pin 3.3-volt (V) unbuffered Extended Data Output (EDO) DRAM DIMMs, with 60-nanosecond (ns) RAM access time or faster, and a 1K or 2K refresh count. The DIMMS must be composed of DRAM chips with a row and column configuration of 10 by 10, 11 by 10, 11 by 11, or 12 by 9. The 64-bit wide, 168-pin, 5-V buffered fast-page or EDO DRAM DIMMs from other Macintosh computers are not compatible with your computer and should not be used. Do not use DIMMs that support a 4K refresh count.

The DRAM sockets are located behind the card that supports the PCI cards in your computer. It may be difficult to maneuver the DRAM DIMMs in this space, so Apple recommends that you have an Apple-authorized service provider install your DRAM DIMMs.

Video DIMM configurations

Increasing your computer's video memory can result in faster video performance. Your computer's video memory can be increased to a maximum of 4 MB. You can use the following types and sizes of video DIMMs in your computer:

■ +5-V EDO DRAM—1 MB or 2 MB sizes

■ +3.3-V SGRAM—2 MB or 4 MB sizes

Cache configurations

A High Performance Module (256K level 2 cache) provides an overall increase in your computer's performance. You can add a cache by having an Apple-authorized dealer or service provider install a cache DIMM in the cache slot on the main logic board of your computer.

Opening the computer

IMPORTANT To avoid generating static electricity that may damage components, do not walk around the room until you have completed the installation of the expansion card or memory and closed the computer.

1 **Shut down your computer by choosing Shut Down from the Special menu.**

You can also press the Power key on the keyboard.

2 **Unplug all the cables except the power cord from the computer—you'll unplug the power cord later. (Don't forget to unplug the cable that connects your keyboard to the computer.)**

Leaving the power cord plugged in helps protect the computer from damage caused by electrostatic discharge.

3 **Unscrew and remove the three screws on the back of the computer.**

Remove these three screws.
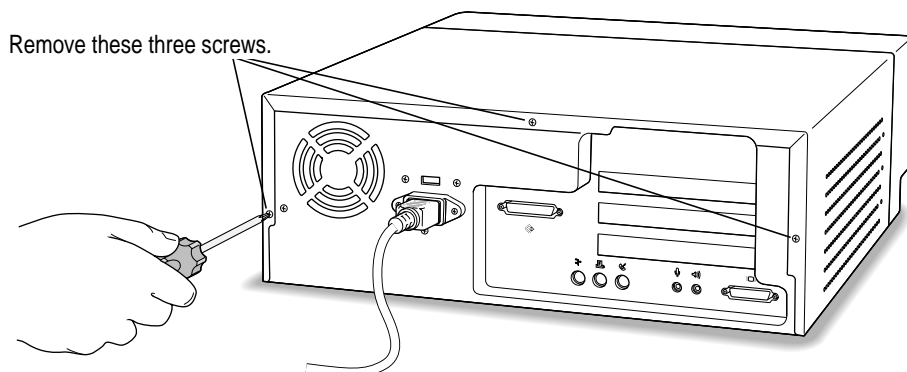
4   Remove the cover as pictured below.

While firmly grasping the back of the computer, push in on the rear panel with your fingertips while sliding the top cover back about a quarter of an inch with your thumbs.
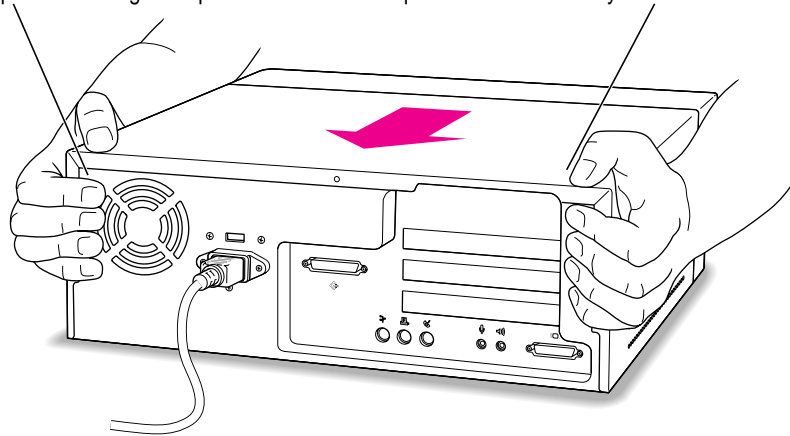
Lift the cover off the computer.
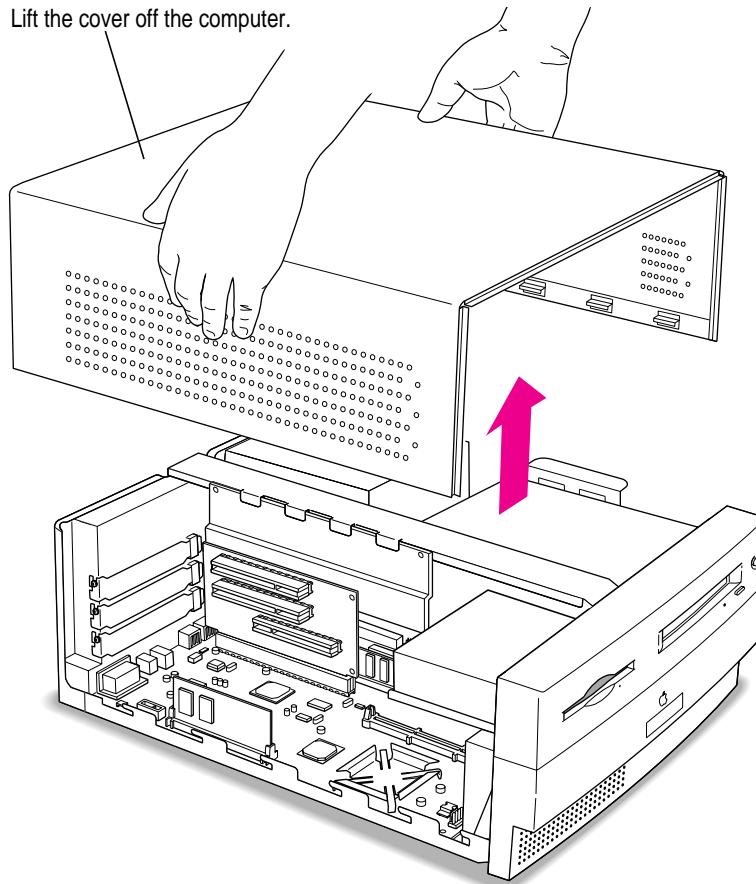
5 **To discharge static electricity from your body that could damage the components inside the computer, touch the metal power supply case inside the computer.**

Power supply case
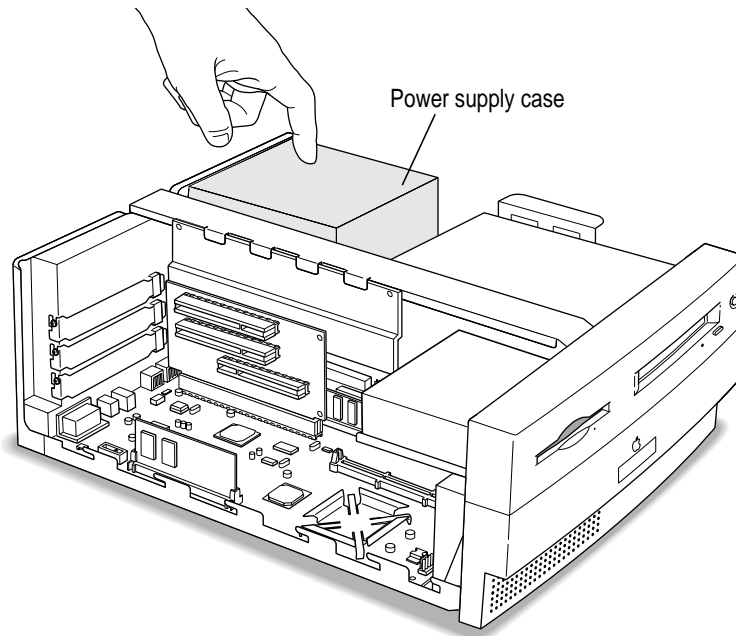
6 **Unplug the power cord from the back of the computer.**

Remove the power cord from the back of the computer.
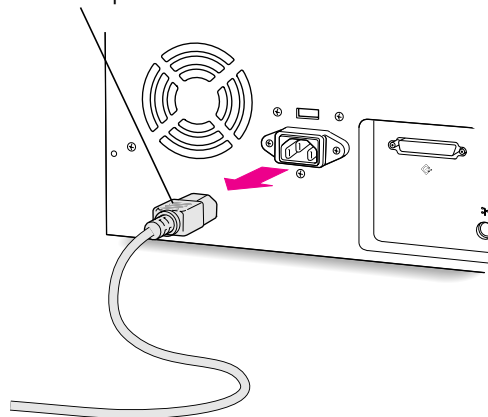
What you do next depends on whether you're installing an expansion card, or a memory, video, or cache DIMM. Skip to the section that pertains to the item you are installing.

Installing an expansion card

This section contains instructions for installing PCI cards and communication cards, such as Ethernet and internal modem cards.

Installing a PCI card

This section contains general instructions for installing a peripheral component interconnect (PCI) card. Refer also to any instructions that came with the card. PCI cards for your computer must be either 6.88 inches or 12.28 inches long. Here's how to install one:

1 **If your PCI card has ports for connecting equipment, remove the port cover.**

6.88-inch cards fit in the top slot; a 6.88-inch or 12.28-inch card fits in the middle slot.

Remove the screw that secures the port cover.

Remove the port cover.
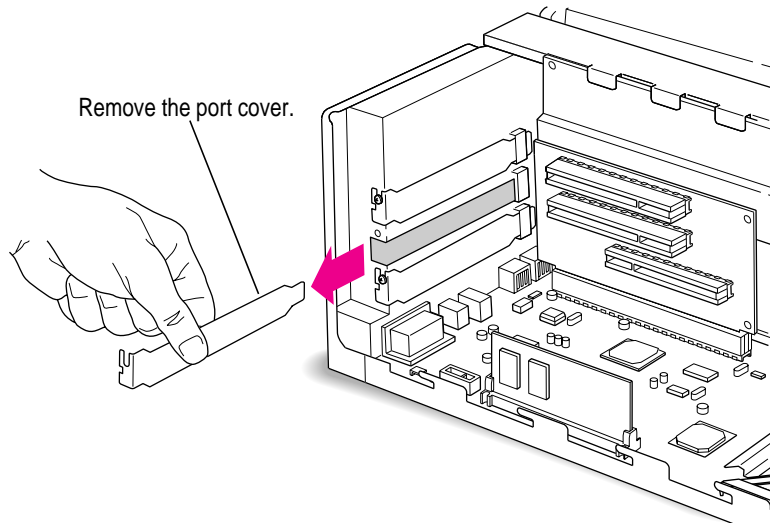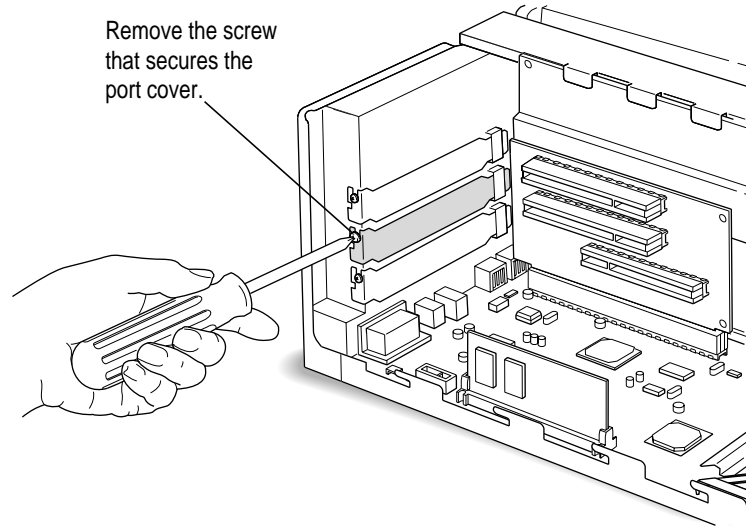
2   Remove the PCI card from its static-proof bag.

Hold the card by its edges to avoid touching any of its connectors.

Connectors
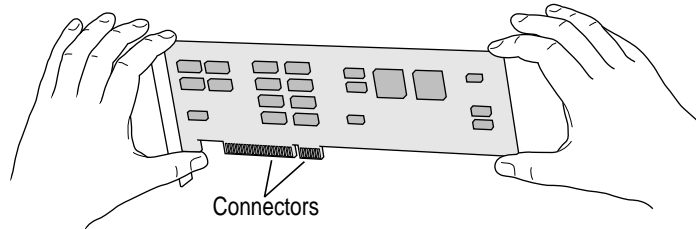
3   Insert the PCI card into the PCI slot.

Be sure to align any ports on the card with the port opening you uncovered earlier. As you press the card firmly into the slot, you may find it helpful to reach behind with your hand to support the riser card on which the PCI slot is located. (Be careful to avoid the soldered pins on the back of the riser card as they can be sharp.)

Slide your hand behind the PCI slots and support the slots with your hand as you install the card. Support the slots with your hand in this area only (shown tinted here) to avoid pressing against the soldered pins on the back of the PCI slots.

PCI slot

Card fence
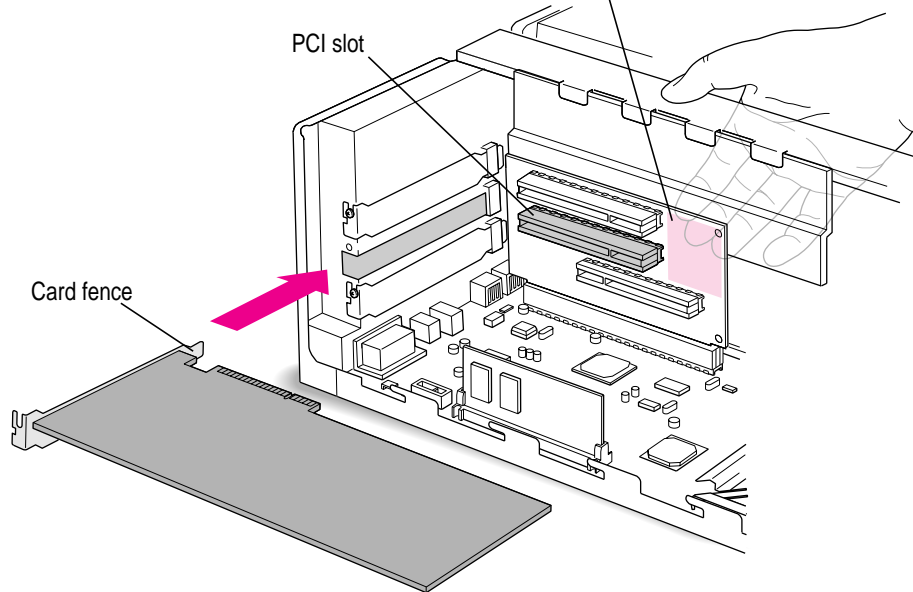
4   **Reinstall the screw you removed from the port cover earlier.**

Reinstall the screw.
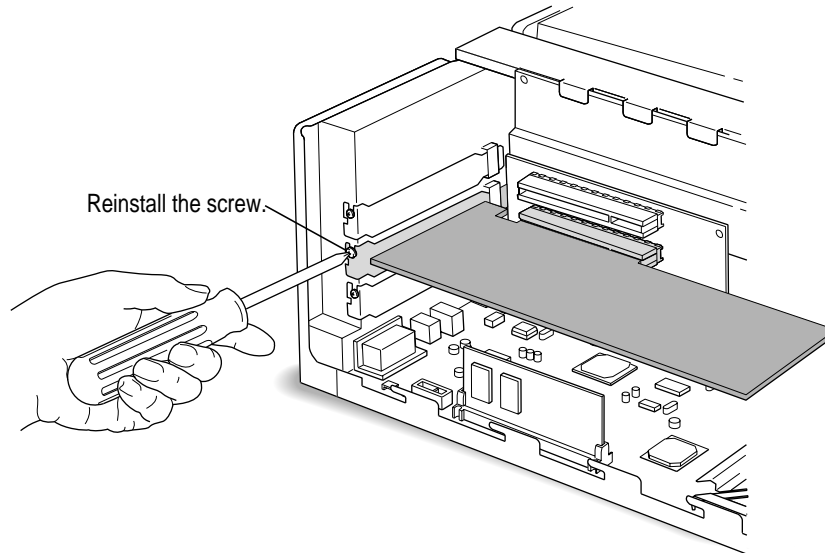
5   **If you have a communication card, memory or video DIMMs, or a cache DIMM to install, refer to those instructions in the next section. If you are finished installing items in your computer, proceed to "Closing the Computer," later in this appendix.**

Installing a communication card

This section contains instructions for installing a Communication Slot II Ethernet or internal modem card in the communication slot in your computer. (Some models of your computer come with an Ethernet card already installed.) You use an Ethernet card to communicate with other computers through a local area network (LAN). For example, in businesses, it is what enables more than one computer to print on a shared printer and to access documents on a central, shared server. You use an internal modem card to connect to online services or the Internet.

Note: In order to leave your communication slot available for an Ethernet card, use an external modem rather than installing an internal modem card.

(An external modem is a separate piece of equipment that sits outside of your computer and is connected to the external modem port with a cable.) If you already have an internal modem card in the communication slot and also want to connect to an Ethernet network, buy and install the kind of Ethernet card that goes in your computer's PCI slot. Then follow the instructions in "Installing a PCI Card" earlier in this section.

Some communication cards designed for other communication slots are not compatible and cannot be installed here. You can tell by examining the placement of the notches on the card. Use the following illustration as a guide if you're not sure you have the correct type of card.

Compatible

Communication card — Notches

Compatible

Notches

Not compatible

Notches
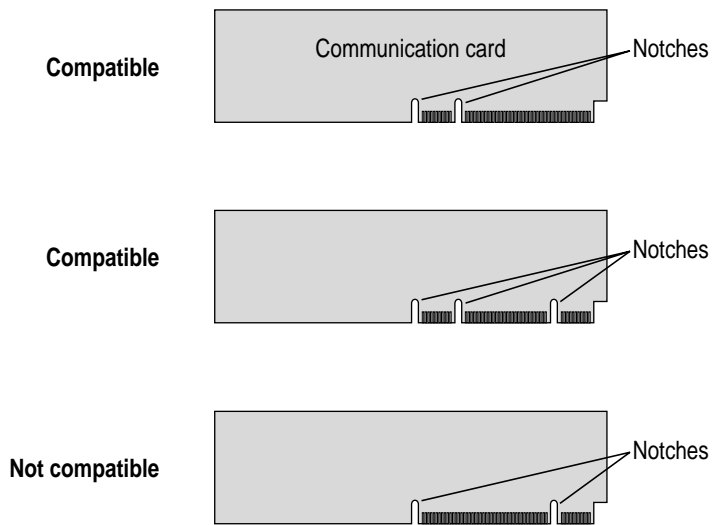
To install a communication card, follow these steps:

1 **To install a communication card in the bottommost slot, you may find it easier to maneuver inside the computer if you first remove the video DIMM.**

Refer to "Installing a Video DIMM" later in this chapter for information on the video DIMM.
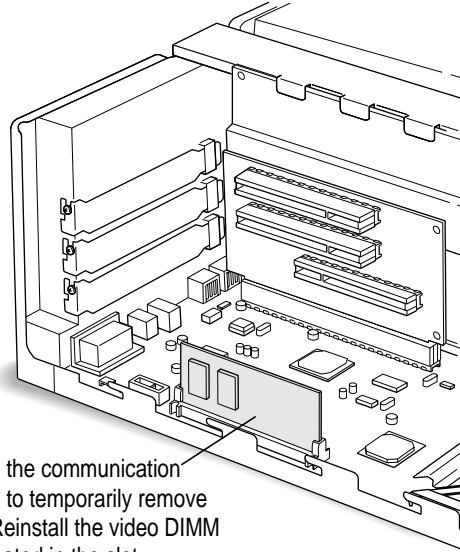
To install a card in the communication slot you may need to temporarily remove the video DIMM. Reinstall the video DIMM after the card is seated in the slot.

2 **Remove the port cover for the communication card slot.**

Save the port cover. If you remove the card later on you'll need to replace the cover.

Remove the screw
that secures the
lowest port cover.

Remove the port cover.
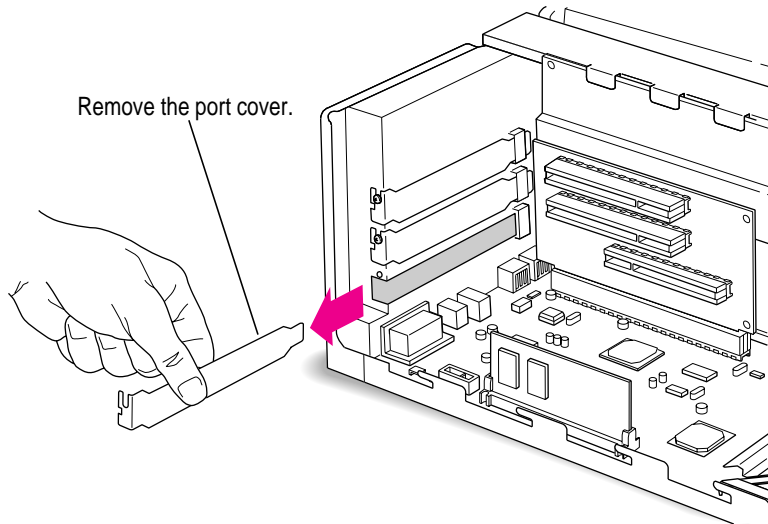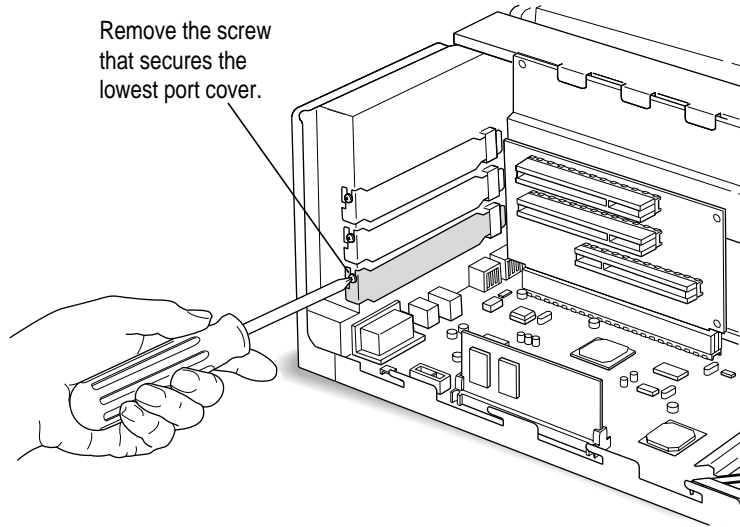
3   **Install the communication card port access cover.**

The communication card port access cover provides an opening so you can connect telephone or network cables to the communication card.

Install the communication
card access cover.

Install the screw that
secures the communication
card access cover.
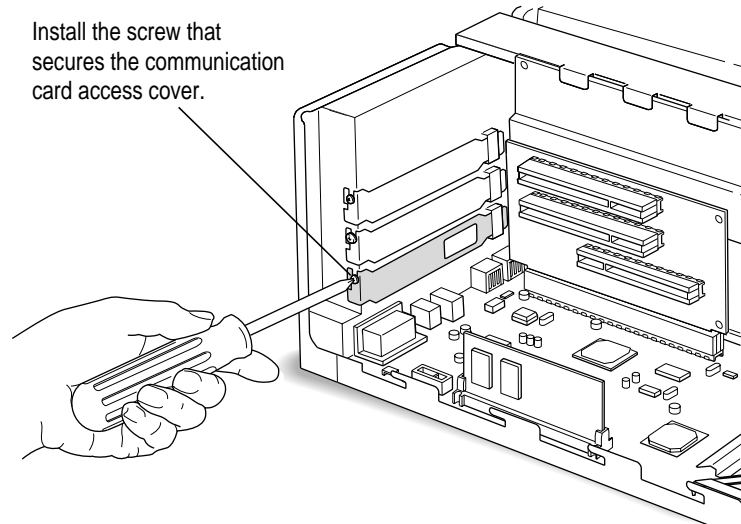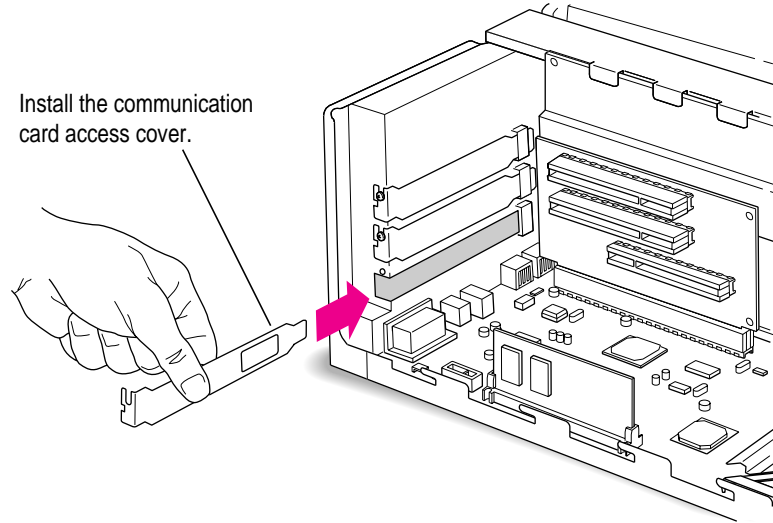
4 **Remove the communication card from its static-proof bag.**

Hold the card by its edges to avoid touching its connectors.

Note: If the card you are installing is a thin coax Ethernet card, you must first remove the T-connector on the card to fit the connector through the port cover.

5 **Align the card over the communication slot.**

The communication slot is the bottommost slot on the riser card that extends from the main logic board and holds the expansion card slots.

6 **Check the external connector on your card, see which of the following two illustrations matches the card you have, and install the card according to the illustration.**

If the card has a hook, make sure it engages the hole in the access cover before you push the card into the slot.

If your communication card
has a hook on it (as shown here),
be sure that the hook engages
the hole in the access cover.

Communication card slot

Communication card
access cover

Communication card
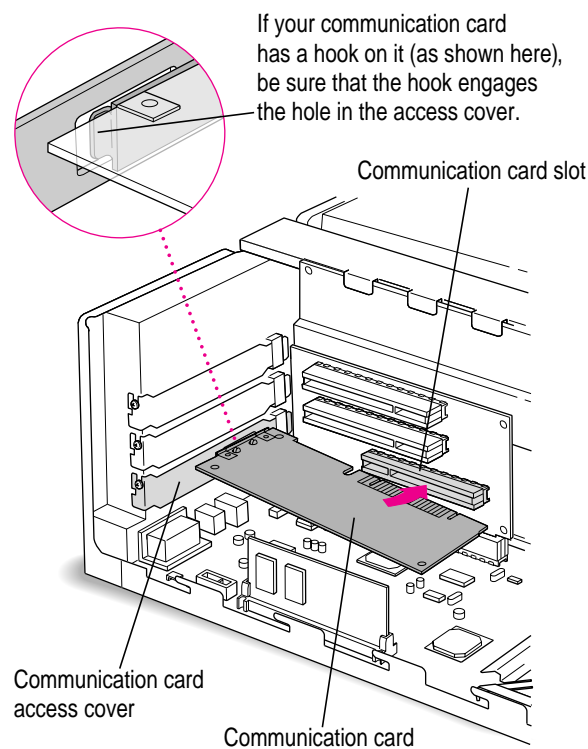
If the card does not have a hook, simply pass the external connector through the opening in the vertical plate as shown. (Some cards have an external connector that protrudes through the opening; others, like the one shown here, have a flatter external connector.)

Communication card slot

Communication card
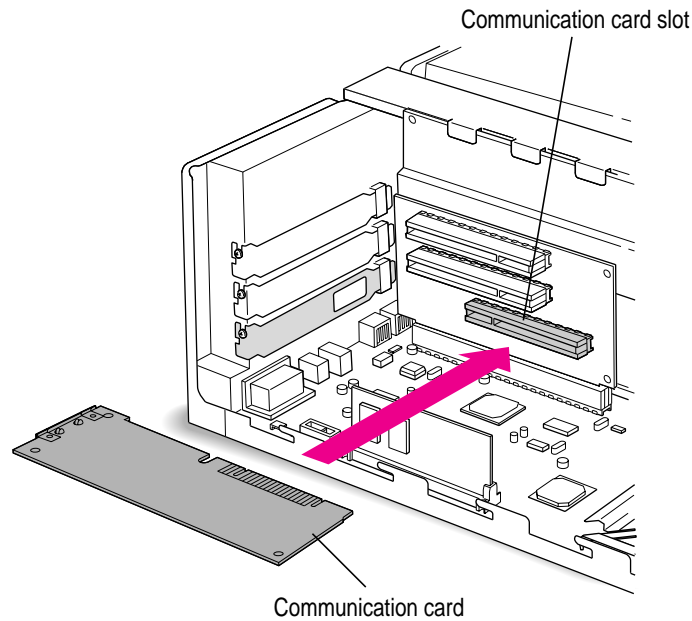
7 **Passing the external connector through the opening in the vertical plate, insert the card into the communication slot. Press down on the card until the connector is solidly in place.**

Don't force the card. If you meet resistance, pull it out and try again.

8 **To see if the card is properly connected, lift it gently. If it resists and stays in place, it's connected.**

9 **If you removed the video DIMM earlier, reinstall it now following the instructions in "Installing a Video DIMM" later in this appendix.**

Note: After you have finished these installation instructions and turned on your computer, you may need to install software for your communication card. If you installed an Ethernet card, you may also need to change the network connection in the AppleTalk control panel. See your network administrator, the manual that came with the card, and refer to Chapter 5, "Connecting Your Computer to a Network," earlier in this manual for more information.

10 **If you have DIMMs to install, follow the instructions in the next section. If you are finished installing items, proceed to "Closing the Computer."**

Installing memory, video, or cache DIMMs

The DRAM sockets are located behind the card that supports the PCI cards in your computer. It may be difficult to maneuver the DRAM DIMMs in this space, so Apple recommends that you have an Apple-authorized service provider install your DRAM DIMMs. Refer to the section "DRAM Configurations" earlier in this chapter for the types and sizes of DIMMs that can be installed in your computer.

WARNING Although instructions for installing DIMMs are provided in this manual, Apple Computer strongly recommends that you have an Apple-certified technician install them. Consult the service and support information that came with your computer for instructions on how to contact an Apple-authorized service provider or Apple for service. If you install additional DIMMs yourself, you risk damaging your equipment, and this damage is not covered by the limited warranty on your computer. See an Apple-authorized dealer or service provider for additional information about this or any other warranty question.

Removing a DRAM DIMM

To upgrade your computer to the maximum amount of memory, you may want to replace the DRAM DIMM that comes preinstalled in your computer with one of a higher capacity. To do this, you'll need to remove the existing DIMM following the instructions provided in this section, then install a higher capacity DIMM following the instuctions in "Installing a DRAM DIMM," next in this appendix.

To remove a DRAM DIMM, follow these instructions:

1   Push the ejector on the DRAM slot outward and down to open it.

Your socket may have one or two ejectors.

2   Press down on the ejector to release the DRAM DIMM from its slot as pictured in the following illustration.

When the ejector releases, pull the DIMM straight up and out of the slot.

DRAM DIMM (Your DIMM's shape and components may vary.)

Connectors

DRAM slot (1 of 3)

While holding the DIMM along its side edges, press down on the ejector as shown. The DIMM will be released from its slot, and you can then pull the DIMM straight up and out of the slot.

Ejector (Your socket may have one or two ejectors.)

Front of computer →

DRAM slot 1
DRAM slot 2
DRAM slot 3
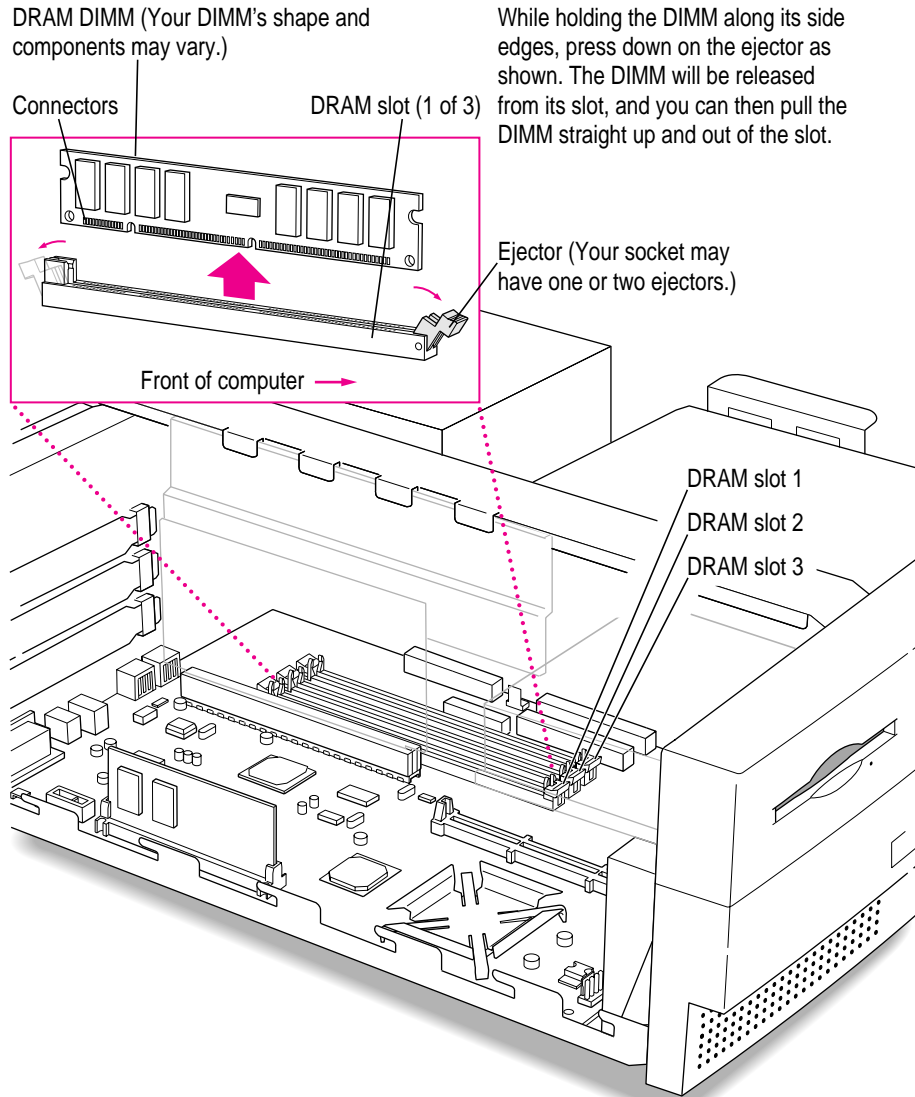
Installing a DRAM DIMM

1   **Push the ejector on the DRAM slot outward and down to open it.**

Your socket may have one or two ejectors.

2   **With the ejector in the open position, align the DRAM DIMM in the DRAM slot as pictured.**

IMPORTANT Do not touch the DIMM's connectors. Handle the DIMM only by the edges.

DRAM DIMM (Your DIMM's shape and components may vary.)

Connectors   Notches   DRAM slot (1 of 3)

Ribs (inside slot)

Front of computer →

The DRAM DIMM is designed to fit into the slot only one way. Be sure to align the notches in the DIMM with the small ribs inside the slot. With the ejector in the open position (as shown), push down on the DIMM until it snaps into place. The ejector will automatically close.

Ejector (Your slot may have one or two ejectors. They should be pushed outward and down to be in the open position, as shown.)

DRAM slot 1

DRAM slot 2

DRAM slot 3

3 **Push down on the DIMM until it snaps into place.**

The ejector automatically closes.

4 **Repeat steps 1–3 if you have other DRAM DIMMs to install.**

5 **If you have a video DIMM or cache DIMM to install, proceed to "Installing a Video DIMM" or "Installing a Cache DIMM." If you are finished installing items in your computer, proceed to the section "Closing the Computer" later in this Appendix.**

Installing a video DIMM

This section describes how to install a video DIMM.

1 **Align the notches in the video DIMM with the small ribs inside the module slot, and insert the module into the slot, as the following picture illustrates.**

IMPORTANT Do not touch the module's connectors. Handle the module only by the edges.

Video DIMM (Your DIMM's shape and components may vary.)

Notch

The video DIMM is designed to fit into the slot only one way. Be sure to align the notch in the DIMM with the small rib inside the slot. Push down on the DIMM until it snaps into place.

Connectors   Video DIMM slot

Rib (inside slot)

Front of computer →
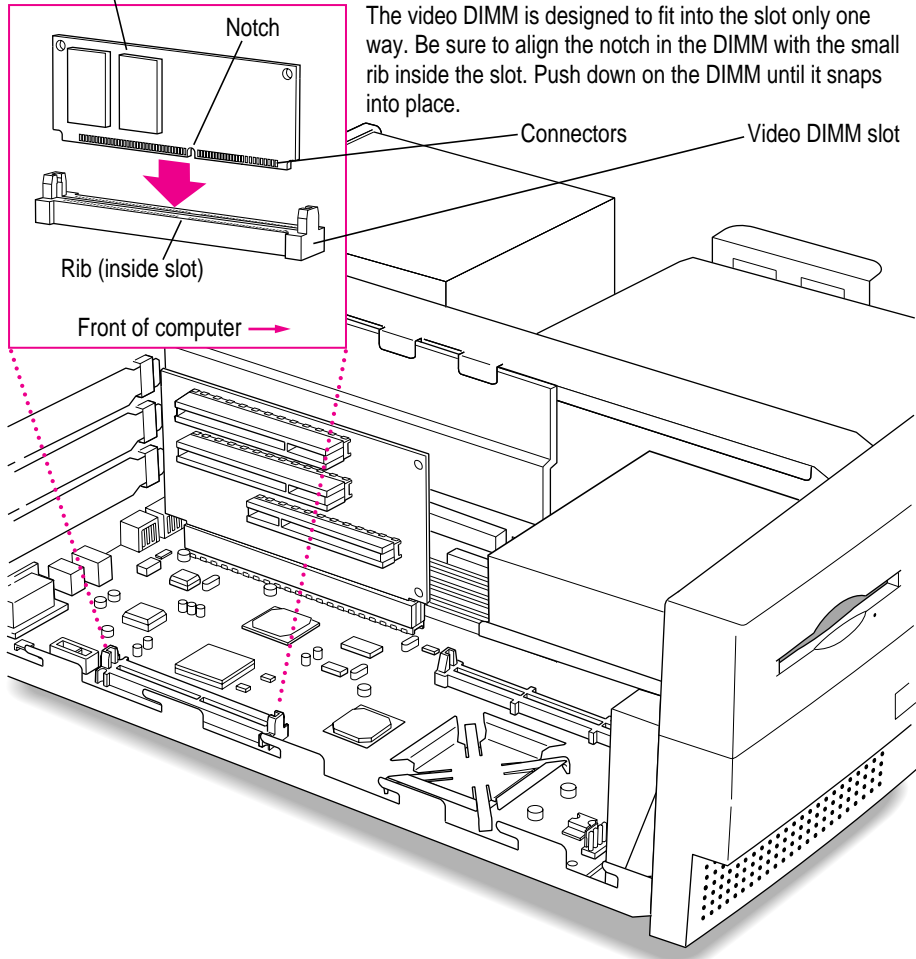
2   **If you want to install a cache DIMM, proceed to "Installing a High Performance Module (level 2 cache DIMM)," next. If you are finished installing items in your computer, proceed to the section "Closing the Computer" later in this Appendix.**

Installing a High Performance Module (level 2 cache DIMM)

1 Align the notches in the cache DIMM (also called a cache *module)* with the small ribs inside the Level 2 cache slot and insert the module into the slot as pictured.

IMPORTANT Do not touch the module's connectors. Handle the module only by the edges.

The cache module is designed to fit into the slot only one way. Be sure to align the notches in the module with the small ribs inside the slot.

Cache slot

Cache module (Your module's shape and components may vary.)

Connectors

Notches

Ribs (inside slot)

Front of computer ⟶
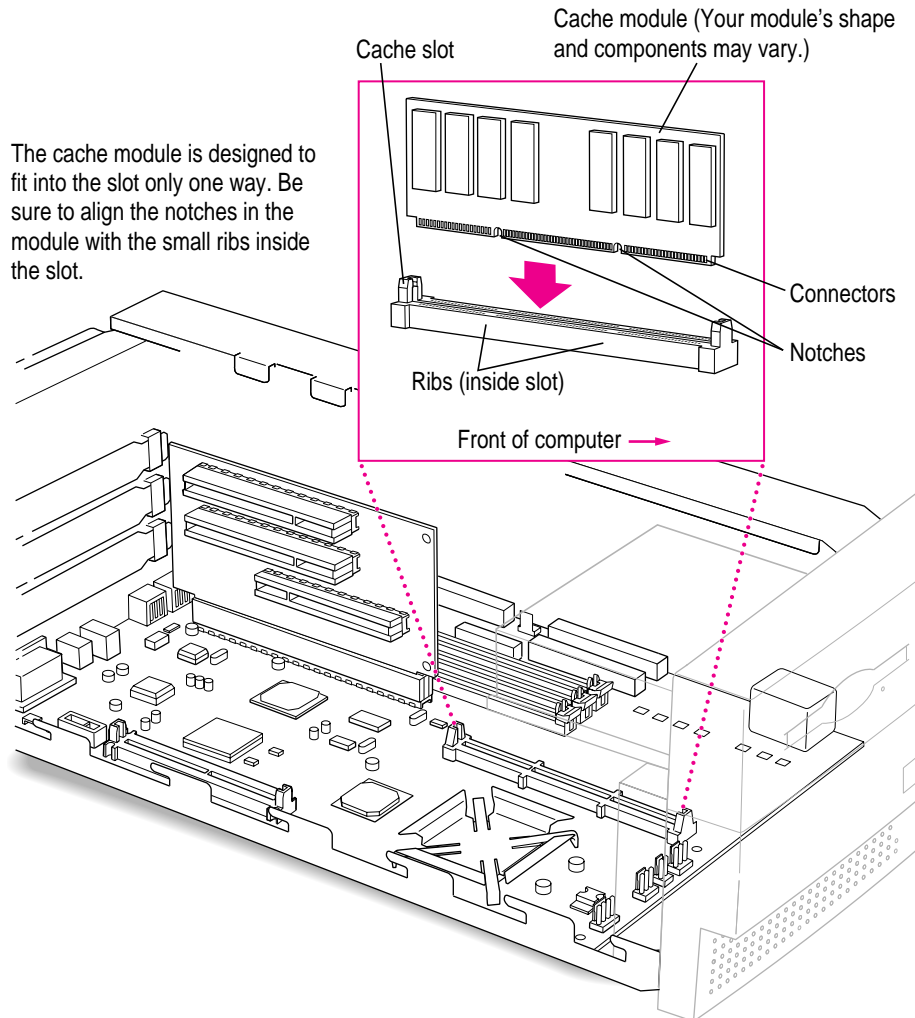
2 Proceed to "Closing the Computer," next.

Closing the computer

1   Slip the base of the logic board into the guide rails inside the computer's case.

Set the top cover down so there's about a quarter of an inch gap here.
Then slide the top cover all the way forward.
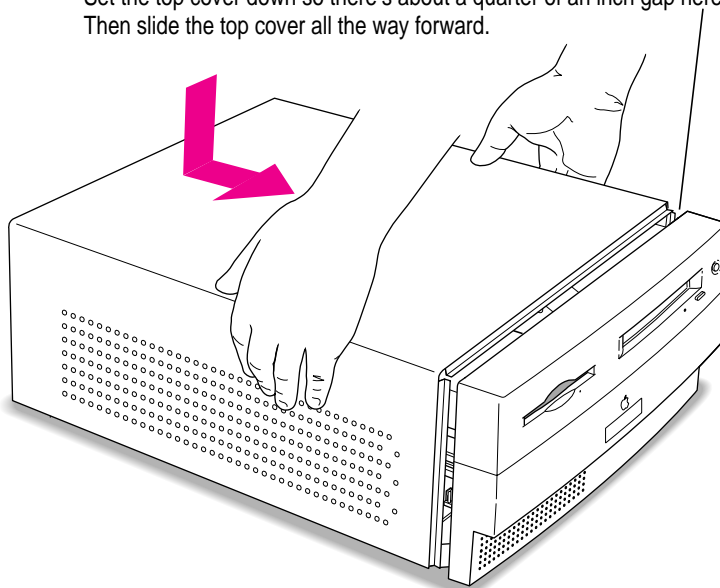
2   Reinsert the three cover screws you removed earlier.

Reinstall these three screws.
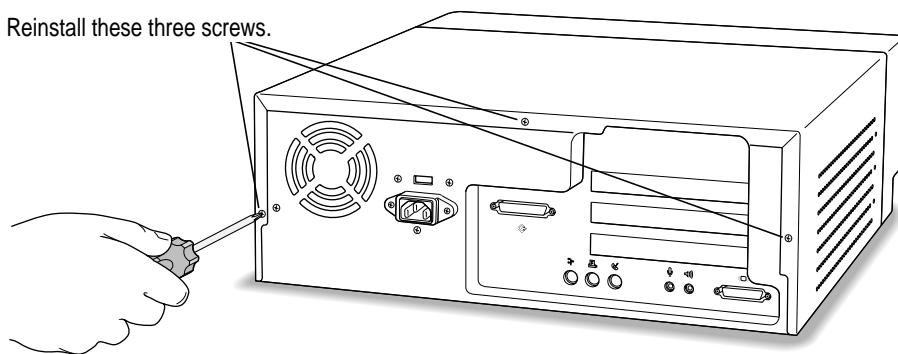
3   Plug the cables back into the computer.

4   Reconnect the power cord.

Your computer is now ready to turn on and use.

> **WARNING** Never turn on your computer unless all of its internal and external parts are in place. Operating the computer when it is open or missing parts can be dangerous, and can damage your computer.
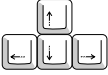
**Read this appendix to learn
how to use the special keys
on your keyboard.**

Appendix C
Special Keys on Your Keyboard

Your computer keyboard contains certain special keys that typewriter keyboards don't have. Many of these keys allow you to give commands to the computer without using the mouse. For example, in many application programs, you can press the ⌘ (Command) key at the same time as the Q key to quit a program.
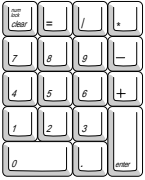
The following table describes what you can do with the special keys on your keyboard. The special keys on your keyboard depend on the model of keyboard you have; some keyboards do not have all the keys listed here.

Special keys on Apple keyboards		
Arrow keys		Use to move the insertion point, as an alternative to using the pointer. In some programs, the arrow keys have other functions.
Caps Lock key		Use to capitalize a series of letters (numbers and symbols aren't affected).
Clear key		Use to delete the current selection (or use the Delete key). In some programs, Clear has other functions.
⌘ (Command) key		Use in combination with other keys as an alternative to choosing a menu command.

Special keys on Apple keyboards *(continued)*

Control key	`control`	In combination with other keys, this key provides shortcuts or modifies other actions.
Delete key	`delete`	Use to delete selected material, or the character to the left of the insertion point.
Enter key	`enter`	In a dialog box, pressing Enter is the same as clicking the outlined button. In some programs, pressing this key confirms information you have provided.
Escape key	`esc`	The function of this key depends on the program you're using.
Function keys	`F1`	Some programs allow you to use the 12 function keys to give commands. You can assign commands or action sequences to function keys with special utility programs.
Option key	`alt option`	Use in combination with other keys to produce special characters or modify actions.
Numeric keys	*(numeric keypad)*	Use to produce numbers and mathematical symbols; some programs use these keys as function keys to initiate actions.
Power key	`◁`	On some models, press to turn on the computer. Also press to shut down the computer, to put the computer to sleep, or to restart the computer.
Return key	`return`	Use to move the insertion point to the beginning of the next line. In a dialog box, pressing Return is the same as clicking the outlined button.
Shift key	`shift`	Use to produce capital letters (or the upper character on the key).
Tab key	`tab`	Use to move the insertion point to the next stopping place (such as a tab stop or field in a dialog box or program).
Other special keys	*(help, home, page up, del, end, page down)*	The function of these keys depends on the operating system and program you're using.

Typing special characters and symbols

You can type a variety of international and other special symbols and characters (including characters with diacritical marks, such as accents) by pressing combinations of keys.

The Key Caps program, which is installed with your system software, shows you the characters produced when you type certain keys and key combinations in the fonts available on your computer. Choose Key Caps from the Apple (🍎) menu, then choose the font from the Key Caps menu.

Characters appear here when you press keys on the keyboard or click them in the window.

Characters available in the Chicago font
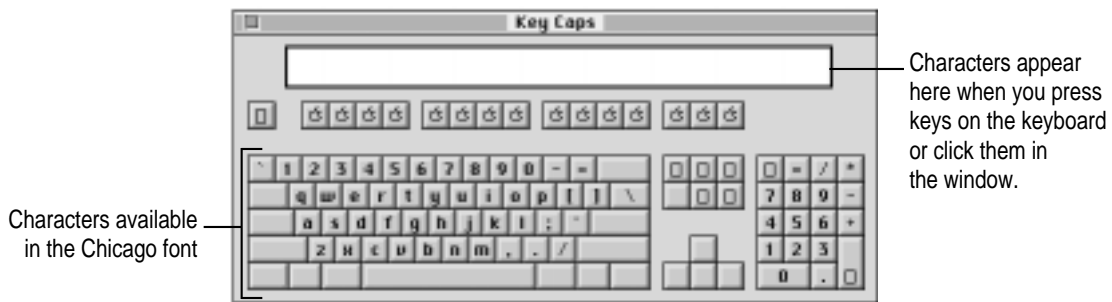
To have Key Caps show more options for special characters, press each of these keys or key combinations: Option, Shift, Shift-Option, Shift-⌘, and Option-⌘.

Characters available in the Chicago font when the Option key is pressed

The highlighted key represents the key held down on the keyboard— in this case, the Option key.
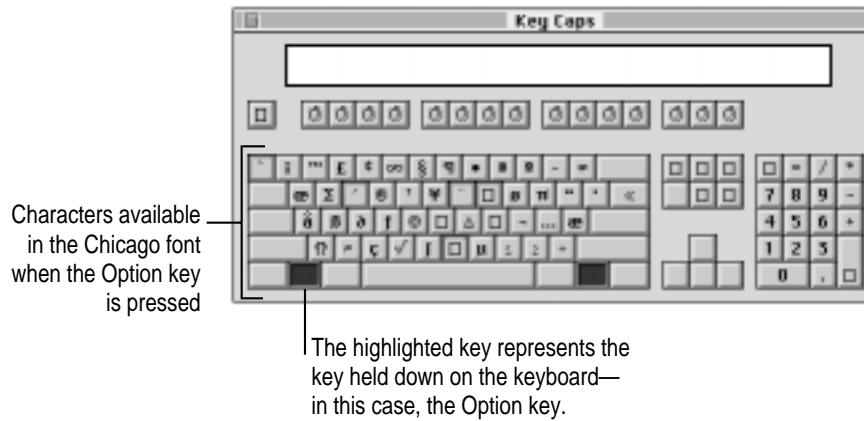
If you press the Option key, Key Caps outlines lightly the keys that you can use in combination with letter keys to type letters with accents or other diacritical marks.

If you see rectangles: If you see rectangles instead of diacritical marks on some of the pictures of keys in Key Caps, try pressing Option-⌘ to see the diacritical marks. However, you only need to use the Option key (not Option-⌘) in combination with the other keys to type letters with diacritical marks.

If you press the Option key at the same time as a key for a specific diacritical mark and then release both keys, Key Caps outlines in bold the keys for letters that can be typed with that mark. (You'll see that most key combinations for diacritical marks can be used with the Space bar as well as letter keys—producing the mark without a letter.)

The most common diacritical marks and how to create them are summarized next.

Diacritical mark	Key combination
Grave accent (`)	Option-`, then type the character
Acute accent (´)	Option-e, then type the character
Circumflex (^)	Option-i, then type the character
Tilde (~)	Option-n, then type the character
Umlaut (¨)	Option-u, then type the character
The letter "c" with a cedilla (ç)	Option-c

To type a letter or a space with a specific diacritical mark, press the Option key and the key for the mark simultaneously. Then type the letter that needs the mark.

If you are having trouble getting a mark and letter to appear together, try again. Be sure to press the Option key before (or at the same time as) the key for the mark; then, after you release both keys, type the letter to be marked.

Special key combinations

If difficulties with your mouse or computer don't allow you to use standard methods of quitting a program or restarting your computer, you can try using these special key combinations.

To do this...	...press this key combination
Force a program to quit	⌘-Option-Esc
Force the computer to restart	⌘-Control-Power key

Here are other key combinations you may find useful while starting up your computer:

To do this at startup...	...press this key combination
Start the computer from a CD-ROM disc	C key
Turn off system extensions	Shift key
Start the Extensions Manager	Space bar
Rebuild the desktop	Option-⌘

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Power Macintosh

User's Manual

Includes setup, troubleshooting, and important health-related information for Power Macintosh 4400 series computers

Contents

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Communications regulation information

FCC declaration of conformity

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. See instructions if interference to radio or television reception is suspected.

Radio and television interference

The equipment described in this manual generates, uses, and can radiate radio-frequency energy. If it is not installed and used properly—that is, in strict accordance with Apple's instructions—it may cause interference with radio and television reception.

This equipment has been tested and found to comply with the limits for a Class B digital device in accordance with the specifications in Part 15 of FCC rules. These specifications are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation.

You can determine whether your computer system is causing interference by turning it off. If the interference stops, it was probably caused by the computer or one of the peripheral devices.

If your computer system does cause interference to radio or television reception, try to correct the interference by using one or more of the following measures:

- Turn the television or radio antenna until the interference stops.
- Move the computer to one side or the other of the television or radio.
- Move the computer farther away from the television or radio.
- Plug the computer into an outlet that is on a different circuit from the television or radio. (That is, make certain the computer and the television or radio are on circuits controlled by different circuit breakers or fuses.)

If necessary, consult an Apple-authorized service provider or Apple. See the service and support information that came with your Apple product. Or, consult an experienced radio/television technician for additional suggestions.

IMPORTANT Changes or modifications to this product not authorized by Apple Computer, Inc., could void the FCC Certification and negate your authority to operate the product.

This product was tested for FCC compliance under conditions that included the use of Apple peripheral devices and Apple shielded cables and connectors between system components. It is important that you use Apple peripheral devices and shielded cables and connectors between system components to reduce the possibility of causing interference to radios, television sets, and other electronic devices. You can obtain Apple peripheral devices and the proper shielded cables and connectors through an Apple-authorized dealer. For non-Apple peripheral devices, contact the manufacturer or dealer for assistance.

Responsible party: Robert Steinfeld, Apple Computer, Inc., 1 Infinite Loop, Cupertino, CA 95014-2084, 408-974-2618.

Industry Canada statement

This Class B device meets all requirements of the Canadian Interference-Causing equipment regulations.

Cet appareil numérique de la Class B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

VCCI Class 2 statement

情報処理装置等電波障害自主規制について

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づく第二種情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。

取扱説明書に従って正しい取り扱いをしてください。

Laser information

WARNING Making adjustments or performing procedures other than those specified in your equipment's manual may result in hazardous radiation exposure.

WARNING Do not attempt to disassemble the cabinet containing the laser. The laser beam used in this product is harmful to the eyes. The use of optical instruments, such as magnifying lenses, with this product increases the potential hazard to your eyes. For your safety, have this equipment serviced only by an Apple-authorized service provider.

If you have an internal Apple CD-ROM drive in your computer, your computer is a Class 1 laser product. The Class 1 label, located in a user-accessible area, indicates that the drive meets minimum safety requirements. A service warning label is located in a service-accessible area. The labels on your product may differ slightly from the ones shown here.
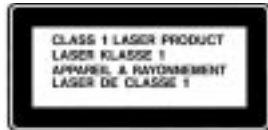
Class 1 label
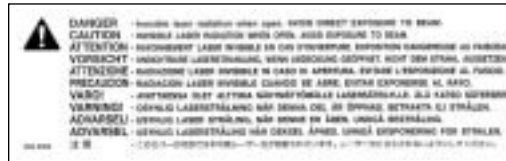
Service warning label
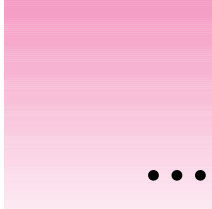
Welcome to Power Macintosh

Congratulations on the purchase of your new Macintosh. Your computer is designed to give you the highest performance combined with real ease of use—it's easy to set up, easy to use, and easy to expand. This book will guide you through the setup procedure, tell you how to expand your Macintosh, and provide many tips on using your new system.

Your Macintosh computer is powered by the **PowerPC**™ microprocessor (or "chip"). This microprocessor was designed by Apple Computer, Inc., Motorola, Inc., and IBM Corporation. The **PowerPC** microprocessor uses Reduced Instruction Set Computing (RISC) technology to deliver very high performance at the lowest possible cost. The **PowerPC** RISC microprocessor represents the state of the art in microprocessor design.

Your new Power Macintosh will run almost all of your existing Macintosh software, but for best performance and greatest speed, look for the new software programs designed especially for computers that contain the **PowerPC** microprocessor. You'll find **PowerPC** microprocessor–compatible programs at any software store that carries products for the Macintosh computer.