

CHAPTER

1

# Introducing Hardware

**Labs included in this chapter:**

- **Lab 1.1:** Gather and Record System Information
- **Lab 1.2:** Identify Computer Parts
- **Lab 1.3:** Use Software to Examine a Computer, Part 1
- **Lab 1.4:** Use Software to Examine a Computer, Part 2
- **Lab 1.5:** Compare Costs of Systems
- **Lab 1.6:** Plan an Ideal System

## LAB 1.1 GATHER AND RECORD SYSTEM INFORMATION

### OBJECTIVES

The goal of this lab is to use a system's physical characteristics and operating system to determine how the system is configured. After completing this lab, you will be able to:

- ▲ Gather system information by observing a system
- ▲ Use available Windows tools to access specific system information

### MATERIALS REQUIRED

This lab requires the following:

- ▲ Windows Vista/XP operating system
- ▲ Individuals or a workgroup of 2 to 4 students

### LAB PREPARATION

Before the lab begins, the instructor or lab assistant needs to do the following:

- ▲ Verify that Windows starts with no errors.

### ACTIVITY BACKGROUND

When working with a computer system, it's a good idea to know what components are installed on the system. This lab helps you identify some of these components as you gather information by observing the system and by using system tools.

ESTIMATED COMPLETION TIME: 15 Minutes

#### Activity

Observe the physical characteristics of your system and answer the following questions:

1. Does the outside of the case have any identification on it indicating manufacturer, model, or component information? If so, list this information:

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2. How many CD or DVD drives does your system have?

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3. Describe the shape or type of the connection your mouse uses:

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4. How many USB ports are in the back of your system? How many are in the front?

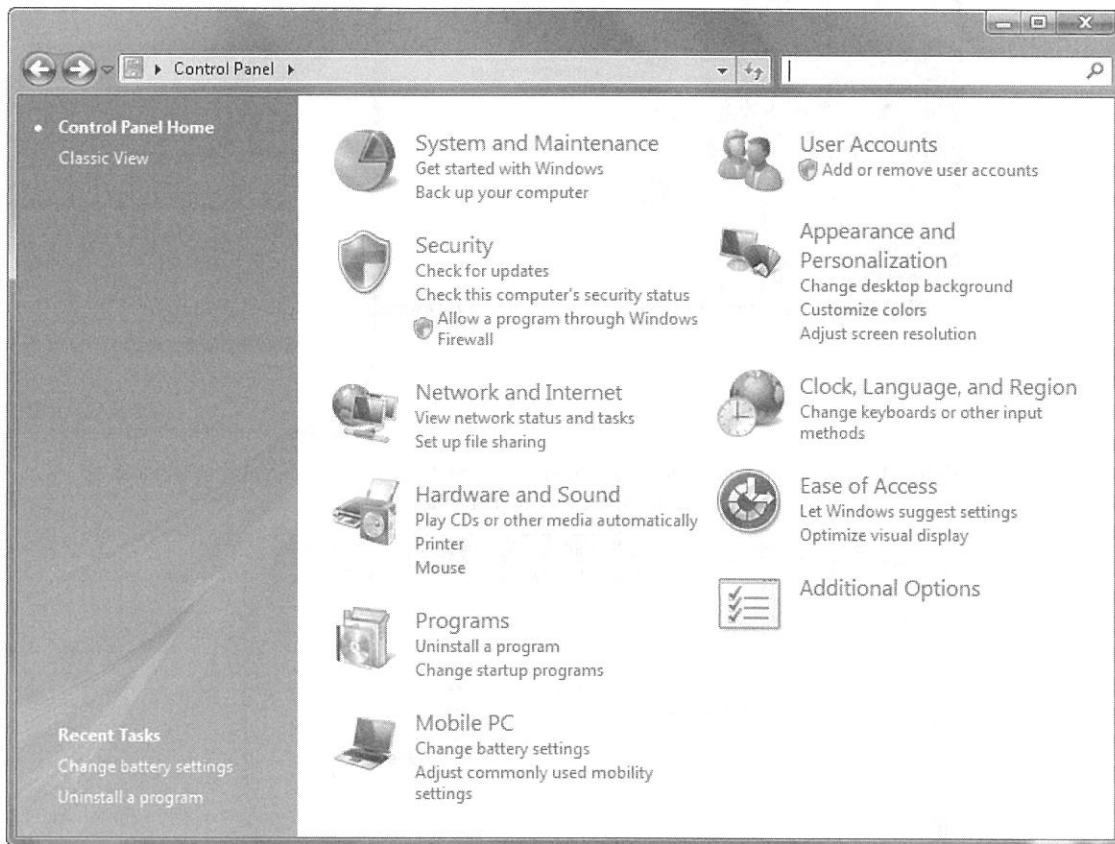
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5. How many internal hard drives does your system have? Explain how you got your answer:

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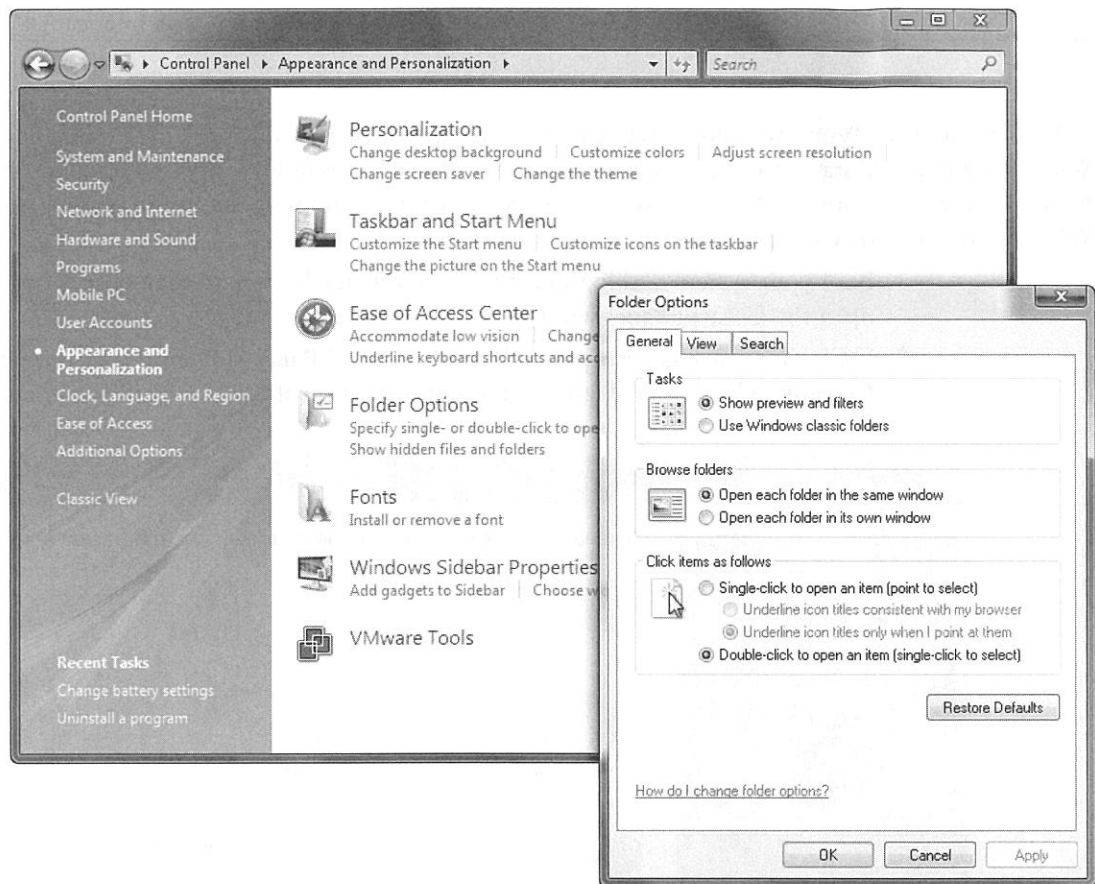
Most versions of Windows allow users to customize the display of information to suit their tastes. Windows XP and Vista can mimic the way previous versions of Windows presented menus and settings for users who are more comfortable with these presentations. Complete the following steps to restore Windows defaults to your system:

1. Boot your system and log on, if necessary. Click **Start**, and then click **Control Panel** to open the Control Panel window.
2. If Classic view has been enabled, select **Control Panel Home** in Vista or click **Switch to Category View** in XP. Figure 1-1 shows the Control Panel in Category view for Vista.

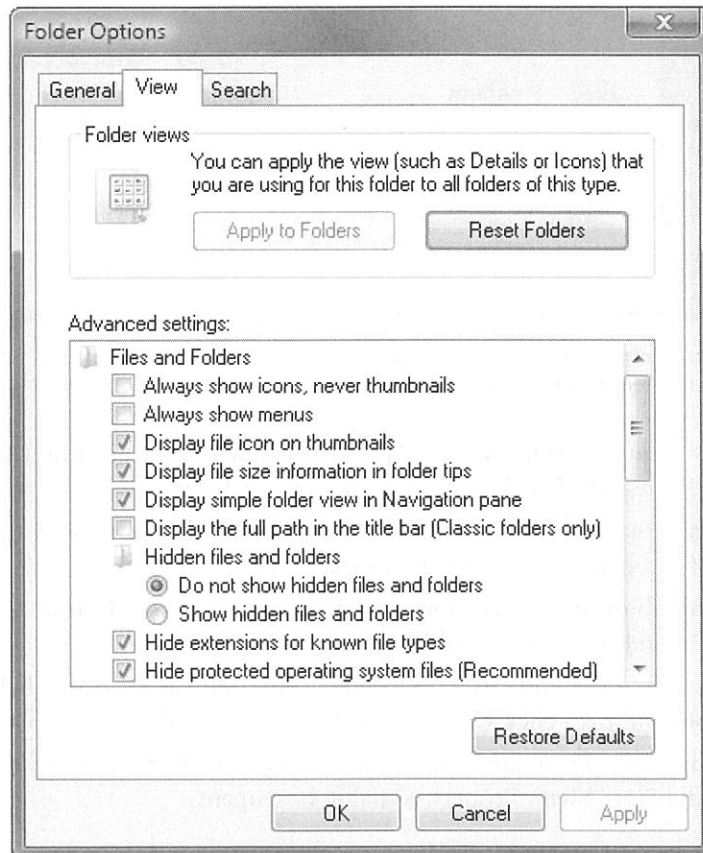


**Figure 1-1** Windows Vista Control Panel in Category view  
Courtesy: Course Technology/Cengage Learning

3. With Category view enabled, click the **Appearance and Personalization** (**Appearance and Themes** in XP) category. The Appearance and Personalization window opens.
4. In the Appearance and Personalization window, click **Folder Options** in the Control Panel icons list to open the Folder Options dialog box.
5. On the General tab of the Folder Options dialog box, click the **Restore Defaults** button (see Figure 1-2), and then click **Apply**.
6. Click the **View** tab in the Folder Options dialog box (see Figure 1-3). Click the **Restore Defaults** button, and then click **OK** to apply the settings and close the dialog box.
7. In the Appearance and Personalization window, click the **Taskbar and Start Menu** icon. The Taskbar and Start Menu Properties dialog box opens.



**Figure 1-2** Use the Folder Options dialog box to restore Windows defaults to a folder  
 Courtesy: Course Technology/Cengage Learning



**Figure 1-3** The View tab of the Folder Options dialog box  
 Courtesy: Course Technology/Cengage Learning

8. On the Taskbar tab, verify that all check boxes in the Taskbar appearance section are selected, except for Auto-hide the taskbar and Show Quick Launch, as shown in Figure 1-4. Click **Apply** if any changes were made.



**Figure 1-4** Use the Taskbar and Start Menu Properties dialog box to control how the taskbar appears and functions

Courtesy: Course Technology/Cengage Learning

9. Click the **Start Menu** tab in the Taskbar and Start Menu Properties dialog box. Verify that the Start menu option button is selected, as shown in Figure 1-5. Click **OK** to apply the settings and close the dialog box. Close the Appearance and Personalization window.

From the Start menu, open the Control Panel and click the **System and Maintenance (Performance and Maintenance in XP) category**. The System and Maintenance window opens. In the System and Maintenance window, click the **System** icon to open the System Properties dialog box. Record the following information:

1. Which OS is installed and what is the version number?

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2. Have any service packs been installed?

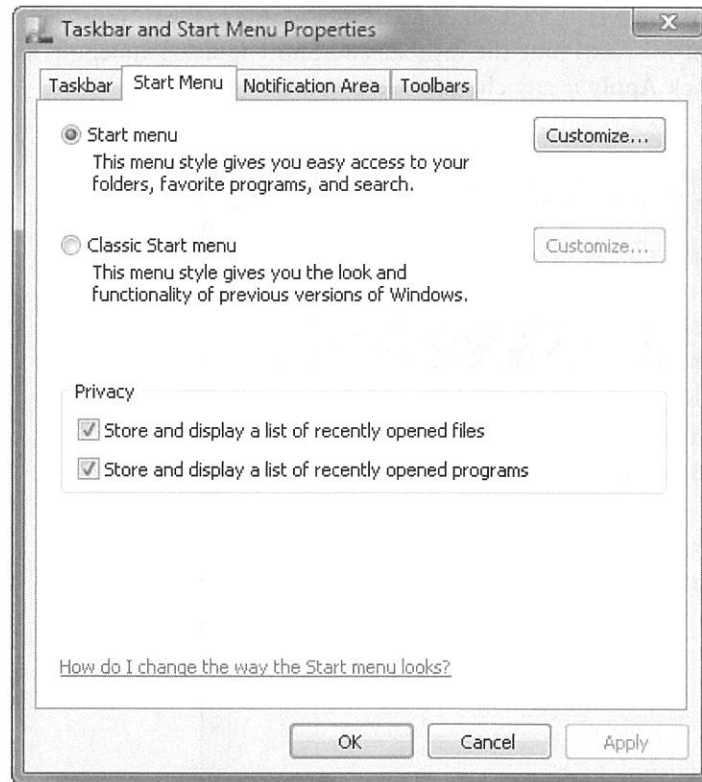
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3. To whom is the system registered?

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4. What kind of CPU (type and speed) is installed in your system?

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**Figure 1-5** The Start Menu tab of the Taskbar and Start Menu Properties dialog box  
 Courtesy: Course Technology/Cengage Learning

5. How much RAM is installed in your system?

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6. Vista provides a rating called a Windows Experience Index to help you rate and improve your system's performance. Click **Windows Experience Index** to gather further details. What is your computer's base score? \_\_\_\_\_

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7. Close the System Properties dialog box and the Performance and Maintenance window.

At this point, click **Start**, click **Computer (My Computer in XP)**, and locate the following information:

1. How many hard disk drives are listed, and which drive letters are assigned to them?

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2. How many devices with removable storage are listed, and which drive letters are assigned to them?

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3. How many network drives are listed, and what are their names?

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4. Move the mouse pointer over the icons to determine information about the drives. What is the total amount of free hard drive space on your system?

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## REVIEW QUESTIONS

1. List two categories available in Control Panel that were not mentioned in the lab:  
\_\_\_\_\_  
\_\_\_\_\_
2. Based on the Windows Experience Index, what component of your computer would you upgrade first? Why?  
\_\_\_\_\_  
\_\_\_\_\_
3. What differences, if any, are there between a list of components derived from a physical inspection versus a list of components derived from My Computer and System Properties?  
\_\_\_\_\_  
\_\_\_\_\_

## LAB 1.2 IDENTIFY COMPUTER PARTS

### OBJECTIVES

The goal of this lab is to examine your computer to identify the parts inside and outside the case. After completing this lab, you will be able to:

- ▲ Identify computer components outside the case
- ▲ Identify computer components inside the case

### MATERIALS REQUIRED

This lab requires the following:

- ▲ A computer that can be disassembled
- ▲ A Phillips-head screwdriver
- ▲ An antistatic ground bracelet (wrist strap)
- ▲ Workgroup of 2 to 4 students
- ▲ A display of four or more computer parts to be identified by students

### LAB PREPARATION

Before the lab begins, the instructor or lab assistant needs to do the following:

- ▲ Provide a computer that can have the cover removed for each student workgroup.
- ▲ Gather up four or more computer parts for display in each student workgroup or area of the lab.

### ACTIVITY BACKGROUND

When working with a computer system, you must be able to identify the hardware components, both inside and outside the case. Components are not always labeled adequately, especially those inside the case. This lab helps you learn to recognize these components.

ESTIMATED COMPLETION TIME: 30 Minutes

 Activity

Observe the physical characteristics of your system and answer the following questions:

1. What size monitor do you have? Measure from the upper-left corner to the lower-right corner (the diagonal) on the monitor screen. Is the measurement what you expected for the size of the monitor?

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2. How many keys are on your keyboard?

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3. What other external components does your PC have (speakers, printer, and so forth)? Describe each component with as much detail as you can.

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4. Look at the back of your PC and list all cables and cords connected to ports and other connections. Fill in the following chart:

Describe the port or connector to which the cable or cord is connected	Purpose of the cable or cord
1.	
2.	
3.	
4.	
5.	
6.	

5. What other ports on the PC are not being used? List them:

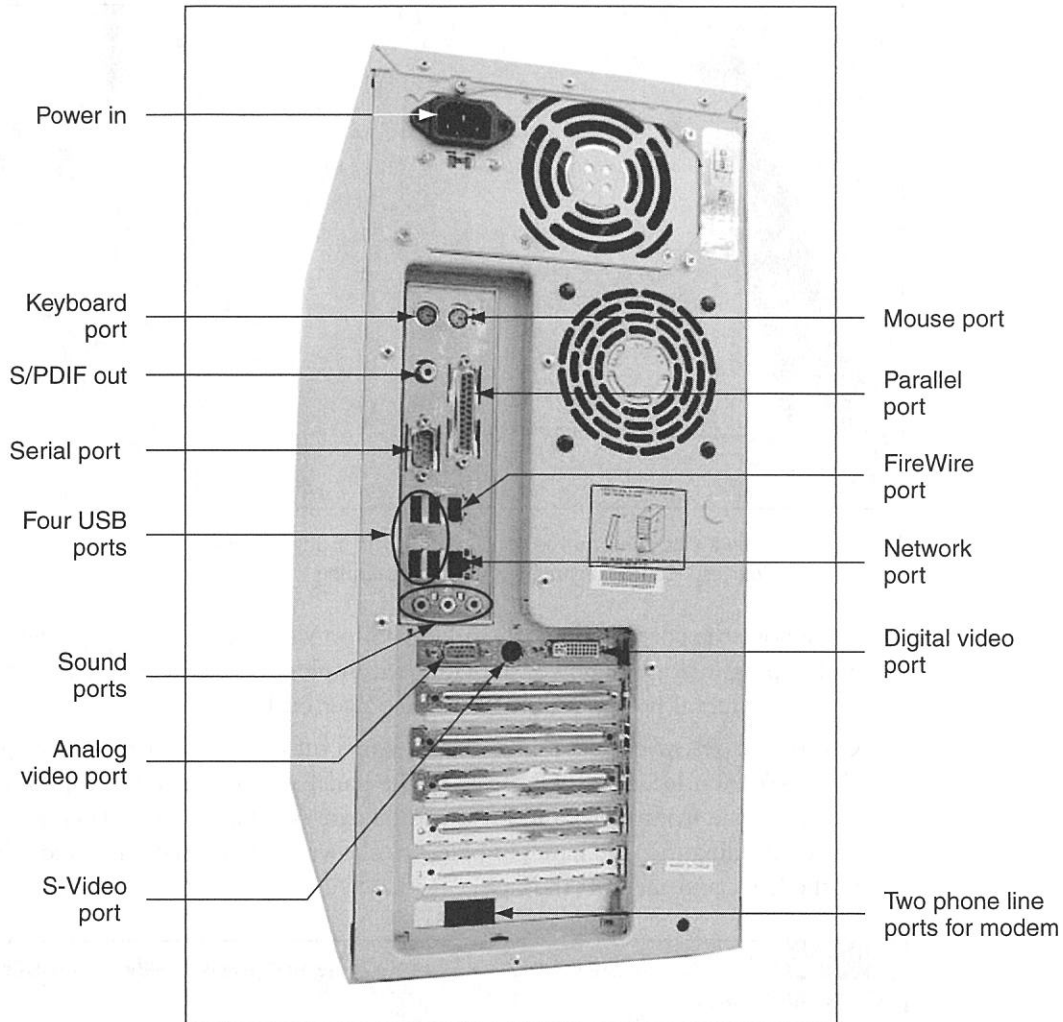
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Next, you'll open the PC case (see Figure 1-6) and examine the components inside. As you work, make sure you do not touch anything inside the case unless you're wearing an antistatic ground strap that's clipped to the case so that any electrical difference between you and the case is dissipated.



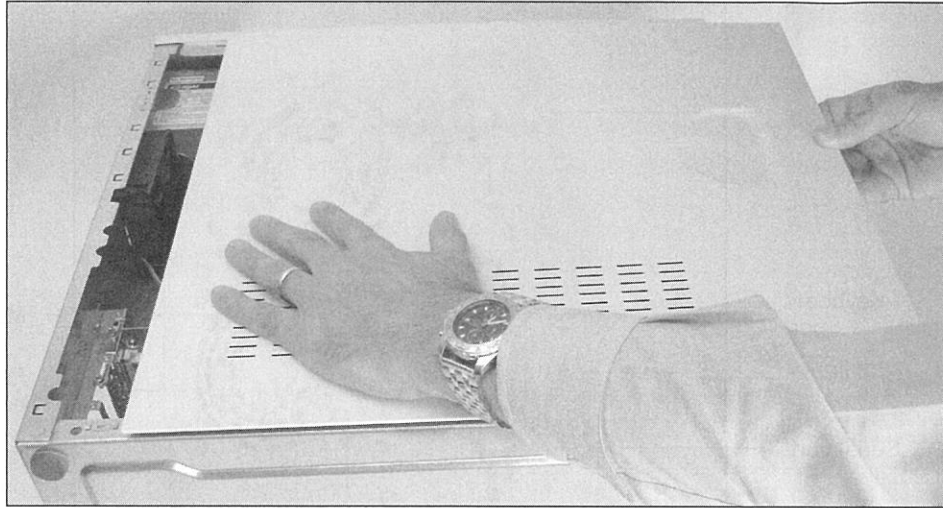
**Figure 1-6** Common ports and connectors found on the back of a PC  
Courtesy: Course Technology/Cengage Learning

To remove the cover from a PC with screws, follow these steps:

1. Power down the PC and unplug it. Next, unplug the monitor, printer, and any other device that has its own external power supply. Do not disconnect any cables or cords (other than the power supply cord) connected to the back of the PC case.
2. Case manufacturers use slightly different methods to open the case. Many newer cases require that you remove the faceplate on the front of the case first. Other cases require removing a side panel first, and very old cases require removing the entire sides and top as a single unit first. Study your case for the correct approach.

**Notes** In the steps that follow, you will find general guidelines for disassembling a PC. If any of these steps do not seem to apply to your system, you'll need to consult the user manual or download a PDF of the manual from the manufacturer's Web site for more detailed instructions.

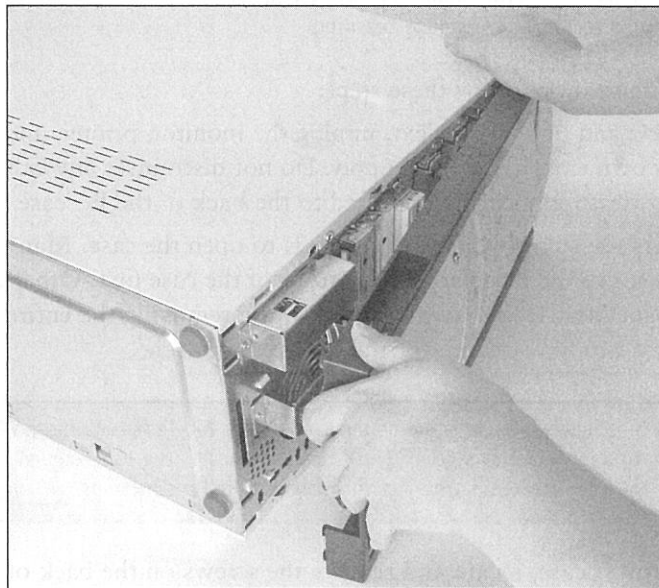
3. For a desktop or tower case, locate and remove the screws on the back of the case. Be careful not to unscrew any screws besides the ones attaching the cover. The other screws are probably holding the power supply in place.
4. After you remove the cover screws, slide the cover back to remove it from the case, as shown in Figure 1-7.



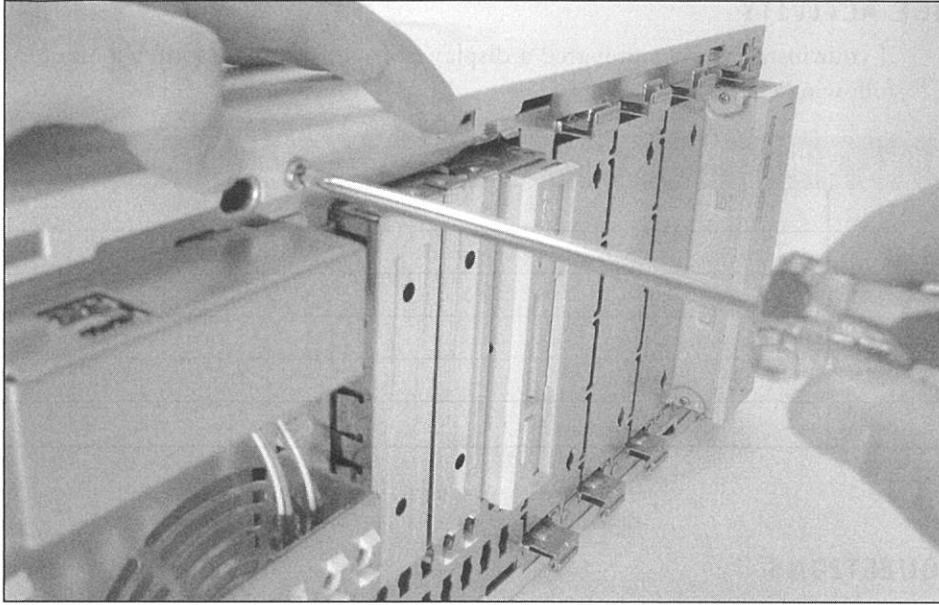
**Figure 1-7** Slide a side panel to the rear and then lift it off the case  
Courtesy: Course Technology/Cengage Learning

5. To remove the cover from a tower PC with no visible case screws, power down the PC and unplug it from its power outlet. Next, unplug the monitor and any other device with an external power source from the power outlet.
6. On some cases, you must pop the front panel off the case before removing the side panels. Look for a lever on the bottom of the panel and hinges at the top. Squeeze the lever to release the front panel and lift it off the case (see Figure 1-8). Then remove any screws holding the side panel in place, as shown in Figure 1-9, and slide the side panel to the front and then off the case.

**Notes** Some case panels don't use screws at all; these side panels usually have buttons or tabs to release the cover.



**Figure 1-8** Some cases require removing the front panel before removing the side panels of a computer case  
Courtesy: Course Technology/Cengage Learning



**Figure 1-9** Screws hold the side panel in place  
 Courtesy: Course Technology/Cengage Learning

With the cover removed, you're ready to look for some components. As you complete the following, you may wish to refer to the drawings and photos in Chapters 4 through 8 of *A+ Guide to Hardware* or consult the Internet for additional information on the specific components in your system.

1. Put on your antistatic ground strap and connect the clip to the side of the computer case.
2. Identify and describe the following major components. List any other components you find inside the case. Fill in the following chart:

Component	Description—Include the manufacturer and model name (if listed) as well as its distinguishing characteristics
Power supply	
Motherboard	
Hard drive(s)	
CD/DVD-ROM drive(s)	
CPU	
RAM	
Cooling fan (not inside the power supply)	
Video card (if not onboard)	
Network card (if not onboard)	
Sound card (if not onboard)	

**CHALLENGE ACTIVITY**

If your instructor has prepared a display of four or more assorted computer parts, fill in the following chart:

Identify the part	Describe how you determined your answer
1.	
2.	
3.	
4.	
5.	
6.	

**REVIEW QUESTIONS**

1. Describe how you decided which expansion card was the video card:  
\_\_\_\_\_
2. Describe how you identified the type of CPU you have:  
\_\_\_\_\_
3. Does your system have much room for adding new components? What types of expansion bus slots are available for adding new cards?  
\_\_\_\_\_
4. Is there space for upgrading the RAM? If there isn't, what could you do to still upgrade?  
\_\_\_\_\_
5. Where (specifically) would you go on the Internet to download a PDF of the motherboard or system manual? What information would be required?  
\_\_\_\_\_  
\_\_\_\_\_

**LAB 1.3 USE SOFTWARE TO EXAMINE A COMPUTER, PART 1****OBJECTIVES**

The goal of this lab is to use Sandra Lite to examine your system. After completing this lab, you will be able to:

- ▲ Download a file from the Internet
- ▲ Install Sandra Lite
- ▲ Use Sandra Lite to examine your system