PART I

Computing Fundamentals

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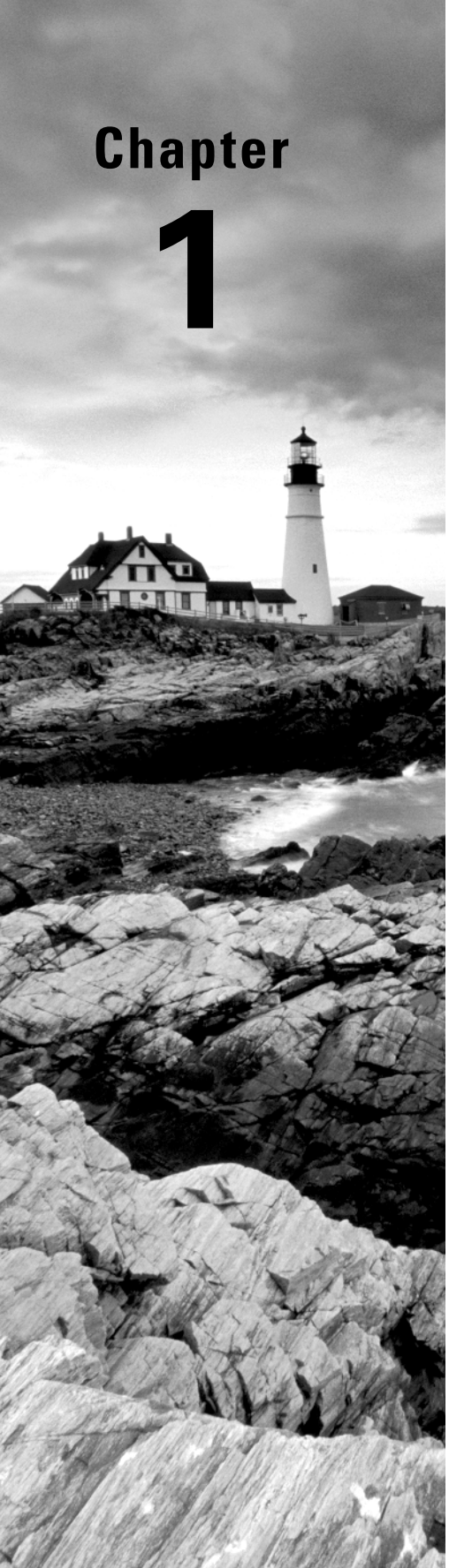


Chapter 1

Understanding Operating Systems

THE FOLLOWING IC3 GS4: COMPUTER FUNDAMENTALS EXAM OBJECTIVES ARE COVERED IN THIS CHAPTER:

✓ **What Is An OS And What Does It Do?**

- Explain the differences between software applications and operating systems and demonstrate their uses.
- Common OS features, explain each of their uses:
  - Power On/Power Off
  - Log on/log off/switch user
  - Lock/Unlock
  - Differences between common OSs
- Explain how hardware can influence the Operating System and software and vice versa.
- Software updates, security fixes, bugs, adaptation to new hardware. Demonstrate how to update software, using manual and automatic settings.

✓ **Manage Computer Files and Folders**

- Directory and folder hierarchy and structure
  - Menu, Toolbar, and Window Navigation
  - Expand and Collapse
  - Folder views
- File/Folder management
  - Keyboard shortcuts
  - Copy
  - Paste
  - Delete

- Move
- Rename
- Create shortcuts
- Search

- Identify file extensions and their associations such as .docx, .xlsx, .pdf, .mp3, etc.

✓ **Manage Computer Configuration, Control Panel, OS, and Drivers**

- Basic Desktop Customization
  - Visual options
  - Languages
  - Date and Time
  - Accessibility options
- Describe the various states of operation available in a typical consumer-level OS. Include Shutdown, hibernation, standby, fully awake, etc.
- User accounts and rights
  - Group policy (specifically mobile)
  - Read/Write
  - Administrative vs. standard user rights
- File and Directory Permissions

Modern computers and devices like smartphones and tablets consist of numerous components, even though some devices are really small. First, there are plenty of specialized hardware components like video cards or sound cards, each of which has its own role to play. Then there are the operating system (e.g., Windows) and the programs (e.g., Microsoft Office) that make the device useful to users. Without them, any piece of hardware, no matter how powerful, cannot be used. That's why, in this chapter, we will start by discussing the role each component plays in a modern computer and the basics of how they work together. Then we will focus on the operating system, what it does, how it works, and how to personalize it.

Operating Systems and Their Roles When Using Computers and Devices

We will start by defining hardware, software, and operating systems so that you have a good understanding on what they are and what their role is. As you will see, the relationship between them is quite delicate and very important. Any computer or device cannot function and cannot be used productively without these three elements working well together. That's why we will start by discussing them and by explaining all the key concepts that are involved.

What Is Hardware?

Any computer or device is composed, at a physical level, of *hardware*. For example, a computer almost always has a monitor, a mouse and keyboard, a hard disk or flash memory, a graphics card, a sound card, some memory, a motherboard, a network card, a case, and a power supply.

If you look inside a smartphone and a tablet, you will find similar components. The most important difference is their size, since they need to fit into a person's hand. Also, the display is touch sensitive, and mobile devices have a battery built in.

Each hardware component is specialized to perform a set of specific tasks. For example, the sound card is in charge of providing sound to the user, the graphics card takes care of processing the image and sending it to display, the network card is in charge of connecting to the network and the Internet, and so on.

What Is Software?

Software is a set of machine-readable instructions that direct a computer or device to perform specific operations. Software is not physical like hardware is. It is ephemeral, in the sense that it is anything that can be stored electronically on the hardware of a computer or device.

There are many types of software, the most important being these two:

System Software This software is designed to directly operate the hardware of a computer or device. Such software provides all the basic functions that allow users and other software to control the device's hardware. The most common types of system software are the operating system, drivers (which control a specific hardware component), and system utilities (which assist users in the maintenance of their computers).

Application Software This is specialized software the users can employ to perform certain tasks. For example, Microsoft PowerPoint lets users create presentations. Antivirus software like Norton Antivirus or Kaspersky Antivirus keeps your computer safe from threats and so on. This type of software is also referred to as applications, programs, or apps (when working with mobile devices). In order to function, application software needs to run on top of both the system software and hardware. Applications are either provided by the operating system (for example, Paint is an application offered by Windows) or installed by users on top of the operating system.

To help you understand these concepts better, let's take a look at each of these two types of software in more detail.

What Is an Operating System?

An *operating system* is a special type of software that manages all the communications between the user, the software applications, and the hardware in a computer or device. It is the most important piece of software that runs on a device because without it interactions with that device would be impossible. Operating systems perform important tasks like recognizing the hardware components of a device, controlling them, taking input from devices such as the keyboard or the touch screen (in the case of tablets and smartphones), managing the file system on that device, taking input from the user or from other software applications, and sending it to the hardware.

The most popular operating systems are Windows, Linux, Mac OS X, Android, iOS, and Windows Phone. Some are designed to work on computers and laptops (Windows, Linux, or Mac OS X), while others are designed to work on mobile devices like smartphones and tablets (Android, iOS, Windows Phone).

Operating systems have many characteristics that allow them to be classified in multiple ways. The most important characteristics are these:

- Modern operating systems are real-time.

  They execute applications and commands in real time. The benefit of being real-time is that the operating system delivers a quick and predictable response to the commands issued by the user or by the applications they are using.

- Modern operating systems are multitasking.

  They allow multiple applications to run at the same time. Hardware resources are allocated and managed automatically by the operating system and shared among all the programs and services that are running.

- Operating systems can be multiuser or single-user.

  For example, Windows and other operating systems that are designed to run on computers are multiuser. This means that you can create multiple user accounts on the same computer and have them share that computer's hardware and software resources. Single-user operating systems allow only one user account. Generally, these operating systems are found on mobile devices like smartphones and tablets. However, even these types of devices will have multiuser operating systems in the future.

- Some operating systems can be embedded.

  This means that they are designed to be used in small devices like cash registers, ATMs, and so on. These devices are very compact and have limited resources. Embedded operating systems are optimized to run on limited hardware resources, and they generally provide a small and specialized set of services and interactions.

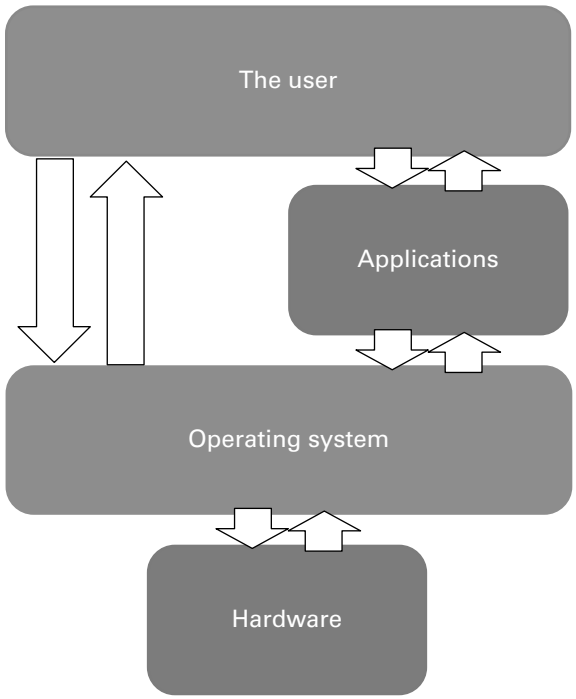
How Do They All Work Together?

When you start a computer or a device like your smartphone, the operating system loads first. Once that is loaded, you will interact with both the application software that is installed on it and the operating system. For example, when you use an application like Microsoft Word to write a document, the application sends your input and commands to the operating system. The operating system then communicates with the hardware, and it automatically manages the resources used by Microsoft Word in order to deliver the desired results.

Users can also work directly with the operating system. For example, in Windows, you can access the files and folders that are stored on your computer and open them. You can also browse the storage on your computer, using the operating system and its features, without needing to install other applications.

Figure 1.1, which shows how the operating system and system software are layered on a typical computer, should help you understand this more clearly. The arrows indicate how the information flows.

FIGURE 1.1 The flow of information among the user, software applications, the operating system, and the hardware



Real World Scenario

Which Computer Operating System Is Best?

There is a never-ending debate about which is the best operating system for your computer. Is it Windows? Is it Mac OS X? Is it Linux? The truth is that modern operating systems are not that different anymore, at least not when it comes to what you can do with them. You can use any of them to write a document, deliver a presentation, play games, watch movies, surf the Internet, and so on. Very few features are unique to one operating system. The differences between them are mostly in the way the user interface works.

Choosing one operating system versus another is mostly a matter of personal preference. If you like how a Mac looks and feels, you might purchase a Mac and use Mac OS X. If you are a great believer in free software, then you might prefer to use Linux on your computer. If you want to have access to the greatest number of applications, devices, and learning resources, then you will go for Windows.

Accessing and Locking the Operating System

When you press the power button on a computer or other device, the operating system is loaded, and you're asked to sign in if you've set up a password or *personal identification number (PIN)*. Regardless of the device, the basic idea is the same: you need to power up your computer or device, wait for the operating system to load, and then authenticate yourself in order to use it.

If you have only one user account on your computer and no password set for it, it is enough to press the power button on your computer and wait for Windows 7 to start and automatically sign you in. However, not having a password makes your computer a lot less secure, and we recommend that you always set a password for your user account.

Let's do an exercise together in which you'll learn how to power on your computer and sign into Windows 7 (Exercise 1.1).

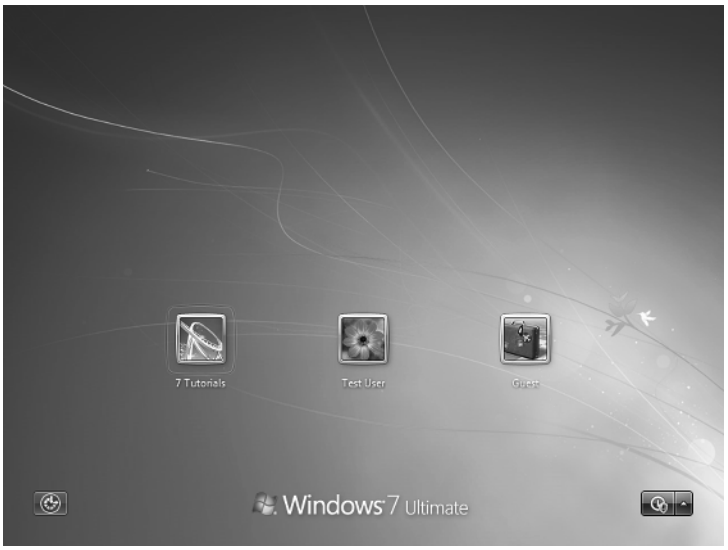
EXERCISE 1.1

Signing into Windows 7

1. Press the power button on your computer.
2. Wait for the operating system to start.

   When that process is finished, you are shown the sign-in screen (Figure 1.2), where you can see the user accounts that exist on your computer.

FIGURE 1.2 The Windows log-in screen showing the user accounts that exist on your computer



EXERCISE 1.1 *(continued)*

3. Select your user account and then type your password.

   If you have only one user account on your Windows 7 computer, you are directly prompted for your password, without having to go through this step. Also, if you have no password set for your account, then you won't be asked to type one.

4. Click the sign-in button, which is an arrow pointing to the right (Figure 1.3).

FIGURE 1.3 The sign-in screen for your user account

Once you log into Windows 7, you can start using the software applications that are installed on it and do your work. When you have finished working on the computer, you can do the following:

Switch User You can switch to another user account that exists on your computer so that someone else can use it. When you do this, your account remains active in the background and so do all your running applications. They will be available to you in the state in which you left them when you switch back to your user account. Be aware that other users can turn off the computer, and your unsaved work will be lost if that happens.

Log Off All your applications and files are closed. The computer and the operating system remain turned on, and other users can log in with their accounts and continue using the computer.

Lock Your user account remains active in the background as well all your running applications. Windows 7 displays the sign-in screen and requests your user account

password. You can unlock your account by typing your password, and you will be able to resume your work exactly where you left off. No one else can use your account and your running applications unless they type your password and unlock your account.

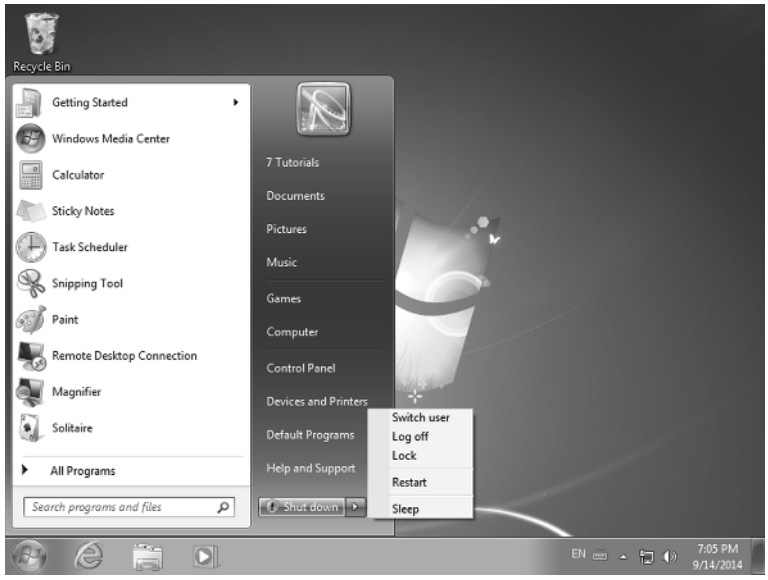
Restart All your applications and files are closed. The operating system is shut down and then your computer and the operating system are restarted. When the restarting procedure is over, you are back to the sign-in screen, where you can log back into Windows.

Sleep Sleep is a low-power mode that saves significantly on power consumption. Your user account gets locked, Windows stores your work in memory, and then it places itself into stand-by mode. When you press the power button, Windows resumes from sleep and allows you to sign in and resume your work, exactly where you left off. Resuming from sleep is generally faster than powering on your computer.

Shut Down First, all your applications and files are closed. Then the operating system turns itself off as well as the computer. When shut down, the computer does not use electrical power because it is no longer running.

To access all these options, click the Start button to open the Start menu. On the right side you will see the Shut Down button and a small arrow near it. Clicking the Shut Down button will obviously power off your computer, as mentioned earlier. Clicking the small arrow near it will give you access to the additional options that were mentioned earlier, as shown in Figure 1.4.

FIGURE 1.4 Options for switching the user, logging off, locking the computer, restarting it, or putting it to sleep



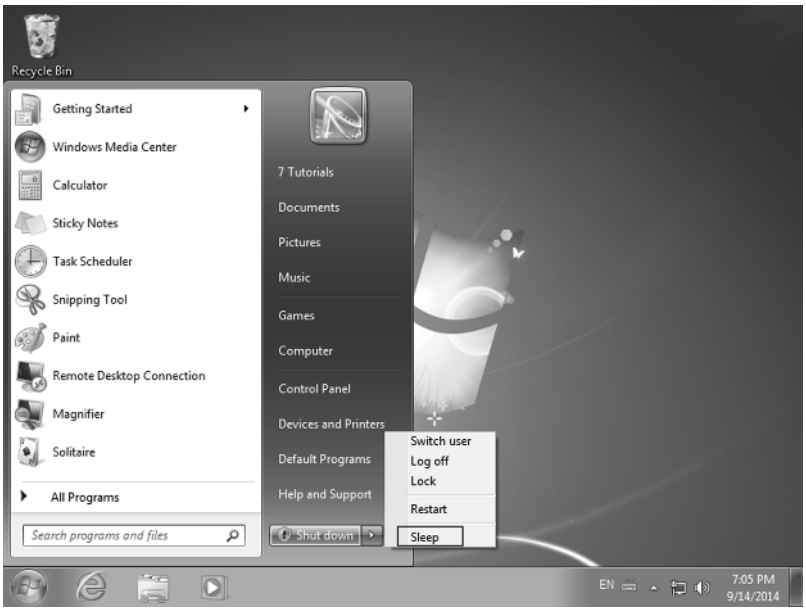
To learn more, let's do this small exercise, which teaches you how to put Windows 7 to sleep and then resume from sleep (Exercise 1.2).

EXERCISE 1.2

Putting Your Computer to Sleep and Then Resuming Your Work

1. Click the Start button in Windows 7, on the bottom-left corner of the screen.
2. Click the small arrow near the Shut Down button to reveal other options (Figure 1.5).

FIGURE 1.5 The Sleep button



3. Click Sleep and wait for Windows 7 to turn off the screen and put itself into sleep mode.
4. Wait a couple of seconds, press the power button, and then wait for Windows 7 to resume from sleep.
5. At the sign-in screen, type your user account password and click the Sign In button.

Software and System Updates

Most applications and operating systems receive updates on a regular basis. Windows receives updates through the Windows Update service, whereas software applications receive updates through their own update services, if their manufacturer provides them. For example, Internet browsers made by companies other than Microsoft (e.g., Google Chrome, Mozilla Firefox, Opera) have their own update service. They are updated on a monthly basis because they require continuous improvement in order to keep up with the

needs of their users and the evolution of the Internet. Other applications may not have their own update service, so users need to manually download and install newer versions when they become available. Most applications are like this, including popular ones like the 7-Zip file archiver or the GOM multimedia player.

Luckily, Microsoft also offers updates to popular software like Microsoft Office or Windows Essentials through the Windows Update service, if you set it to deliver them.

Software updates are created for many reasons:

- To fix problems of any kind, ranging from security issues to bugs that don't allow the software run as it was intended.
- To add new features and characteristics that make the product more useful to its users.
- Some operating system updates also provide new driver versions that allow the operating system to better use and manage the hardware components of your computer.

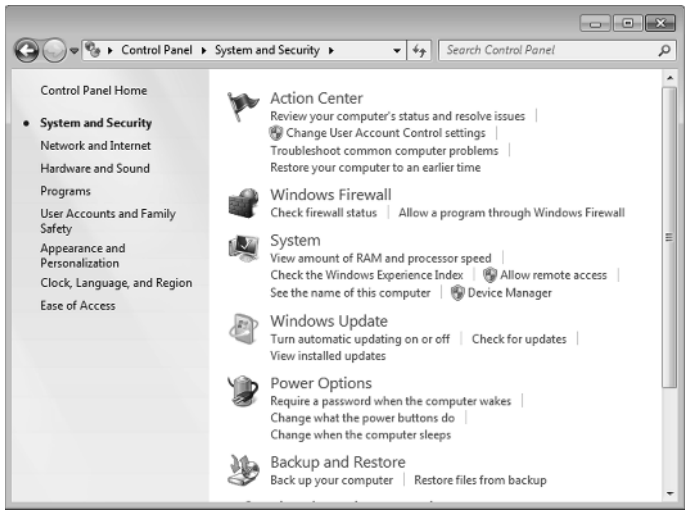
By default, Windows is set to automatically check for updates and install them when they are available. However, you can also install them manually. Exercise 1.3 details how to check for updates and install those that are available.

EXERCISE 1.3

Manually Installing Windows Updates

1. Click Start and then Control Panel.
2. Click System And Security and then Windows Update (Figure 1.6).

FIGURE 1.6 The System And Security section in Control Panel



3. In the column on the left, click Check For Updates (Figure 1.7).

EXERCISE 1.3 *(continued)*

FIGURE 1.7 The Windows Update window

4. Wait for Windows to check for updates and let you know whether there are any updates available to be installed.
5. If updates are available, click Install Updates (Figure 1.8) and wait for them to be installed.

   When the process is finished, you are informed that the updates were successfully installed.

FIGURE 1.8 Windows Update informing you how many updates are available

6. It is possible that Windows will recommend that you restart your computer in order to install those updates. If that is the case, click Restart Now (Figure 1.9). Otherwise, close the Windows Update window.

FIGURE 1.9 Windows Update informing you that updates were successfully installed

Real World Scenario

Always Keep Windows Update Turned On

On some technical forums or blogs you may encounter a recommendation to disable Windows Update. Some recommend this because they think that it improves general system performance. Others recommend this because using Windows Update on pirated copies of Windows will install updates that figure out whether users are using an illegal copy of Windows and try to inform them about this problem and educate them on how to purchase a legal copy of Windows.

Disabling Windows Update is a very bad practice that only creates problems for users. For starters, your Windows installation will not benefit from the many security updates provided by Microsoft. Therefore, it will be vulnerable to all kinds of security threats. Also, you won't benefit from bug fixes and performance improvements. Also, some updates add new features to Windows that may be useful to you. That's why you should always check and confirm that Windows Update is enabled on your computer and that it installs updates automatically.

Windows Update can be set to work in four different ways:

- Install Updates Automatically (Recommended)

  Every day, Windows automatically checks for updates and installs them in the background when they are available. If a computer restart is required in order to finalize

their installation, it will request it from the user. This is the default setting for Windows Update.

- Download Updates, But Let Me Choose Whether to Install Them

  Windows Update automatically checks for updates and downloads them in the background when they are available. The user is prompted to install them, when appropriate.

- Check For Updates, But Let Me Choose Whether to Download and Install Them

  Windows Update automatically checks for updates in the background, and it informs the user when they available for download and installation. It doesn't download any updates without the user's prior consent.

- Never Check For Updates (Not Recommended)

  This means that Windows Update is turned off and not working. Windows is not kept up to date, and it becomes vulnerable to all kinds of problems.

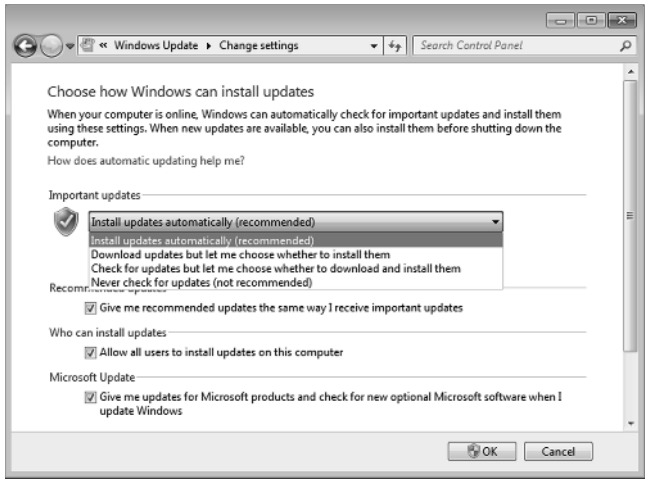
When setting up your Windows computer for the first time, it is a good idea to double-check that Windows Update is turned on and working well. Exercise 1.4 shares how to do this.

EXERCISE 1.4

Confirming That Windows Update Is Turned On

1. Click Start and then Control Panel.
2. Click System And Security and then Windows Update.
3. In the column on the left, click Change Settings.
4. In the Important Updates section, select Install Updates Automatically (Recommended) (Figure 1.10).

FIGURE 1.10 Where you change the Windows Update settings



5. Click OK.
6. Close the Windows Update window.

Working with Files, Folders, and Libraries

When you work on a computer, you will create files and folders to store your work and use it later on. A file is a resource for storing information that can then be opened and used with the help of a computer program. To make it simpler, imagine the file to be the digital counterpart of a paper document. Similarly, a folder is the digital equivalent of the file folder used in offices. *Libraries* are a new concept that was introduced in Windows 7 and used in all subsequent versions of Windows. A library is a virtual collection of folders on your computer.

Files *Files* can store any kind of data. For example, Word files will store documents created with Microsoft Word. Documents can include text, graphics, tables, and so on. Images are also files—the digital counterpart of pictures. Images can be opened with programs that are designed to deal with images and render them on the screen. Videos and movies are also stored as files, and they can be viewed with specialized programs that render them on the screen.

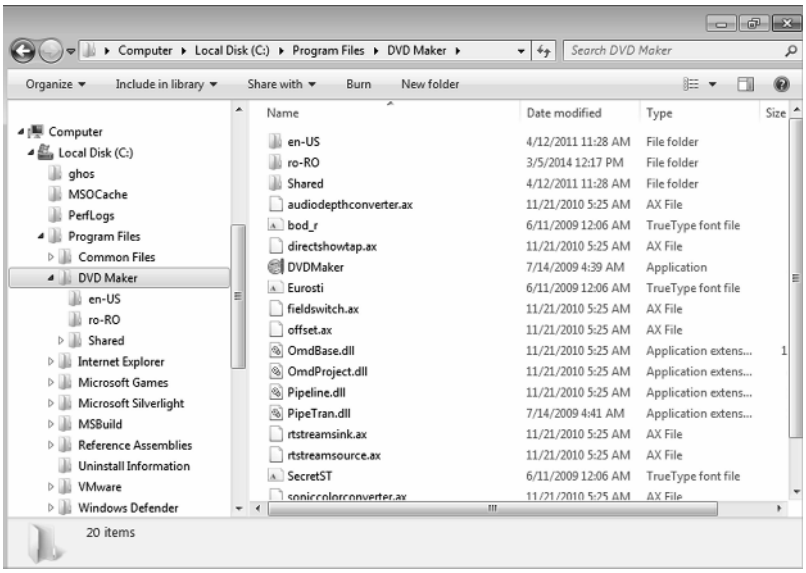
Files can be created by the user, by the applications they are using, and by the operating system. They are generally stored in folders with different names and sizes.

Folders *Folders* are a way of organizing files and other folders on your computer. You can think of a folder as a collection of references to other files and folders that are inside it. Some people also refer to them as directories. Folders always have a hierarchical tree-like structure. One folder contains several files and other folders (also named subfolders). Its subfolders have their own files and subfolders, and so on (Figure 1.11).

Libraries Libraries do not exist as actual folders on the computer but only as references to one or more folders and the files stored inside them. Libraries are named using the type of files and folders they tend to store: Documents, Pictures, Music, and Videos. The Documents library will link to the folders where you store your documents, the Pictures library will link to the folders where you store your pictures, and so on.

Libraries are useful because they have direct shortcuts throughout the operating system, and you can easily access them. Also, their content is automatically indexed by Windows so that you can quickly search for the files you are looking for. Searching for files that are not part of a library generally takes longer than when searching for files that are part of a library.

FIGURE 1.11 A folder and its contents displayed by Windows Explorer



Accessing Your Files and Folders

All operating systems provide an easy way for you to access your files and folders. In Windows 7, you can use Windows Explorer. To open this program, click the folder icon on the taskbar—the transparent bar that runs across the bottom of the screen. You can see the folder icon in Figure 1.12.

FIGURE 1.12 The shortcuts on the Windows taskbar, including the one for Windows Explorer

The left side of Windows Explorer is named the Navigation pane. There you will see several sections and shortcuts to different locations on your computer. Whatever is selected in the Navigation pane determines what is shown on the right pane (Figure 1.13).

By default, Libraries is selected. There you will see the four default libraries that exist in Windows 7: Documents, Music, Pictures, and Videos. To make things easy for you, it is best to save your documents in the Documents library, your pictures in the Pictures library, and so on.

In order to successfully navigate through your computer's files and folders, you have to learn how Windows Explorer works. First, let's take a look at its window and each of its elements, as they are highlighted in Figure 1.14.

FIGURE 1.13 The Windows Explorer window

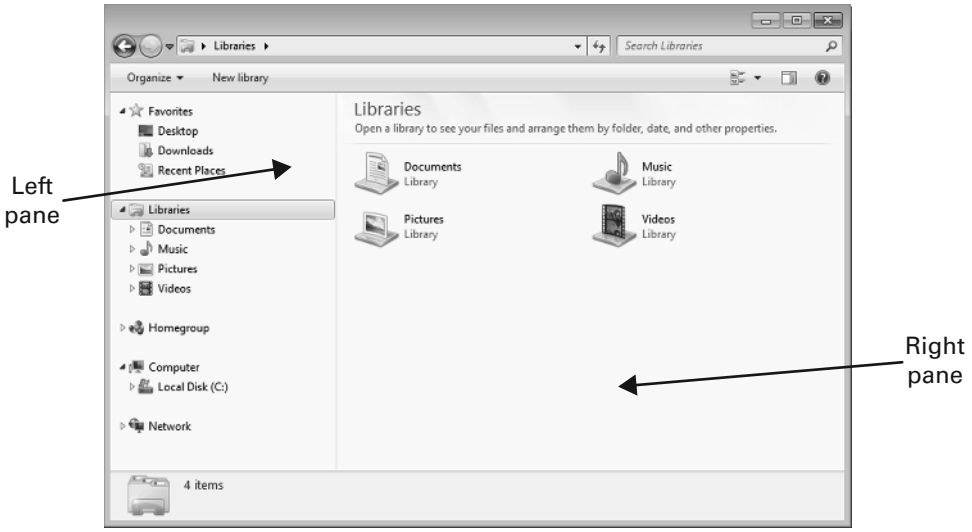
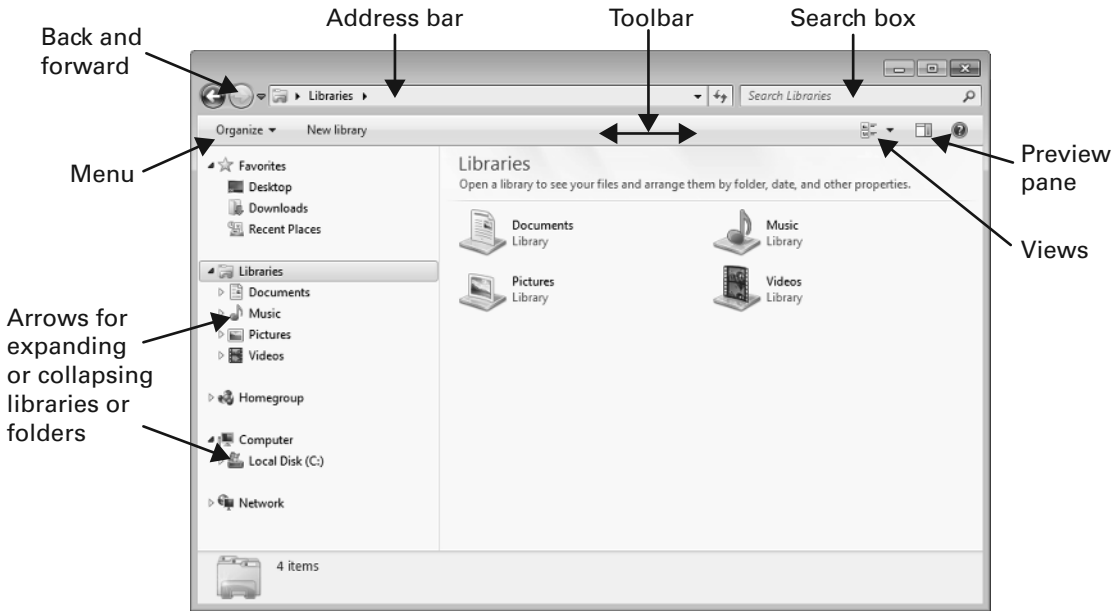


FIGURE 1.14 The different navigation elements of the Windows Explorer window



Now let's discuss them one by one:

Address Bar On the very top of the Windows Explorer window you will see a bar that initially says Libraries. As you navigate through your computer, this bar will always tell you where you are on your computer.

Back and Forward On the left side of the address bar you have two buttons pointing left and right. The left button is for going back, and the right is for going forward through the folder structure in your computer.

Search Box On the right side of the address bar is a box that you can use to quickly search for a file or folder. If you enter the name of a file and press Enter on your keyboard, Windows will start searching for files and folders that correspond to the search term you are using.

Toolbar The toolbar is displayed just beneath the address bar. This bar includes contextual buttons depending on where you are on your computer. You will notice that as you browse your files and folders, the number of buttons available changes. The toolbar tries to adapt and present you with options that help you be more productive depending on what you are doing.

Menus On the left side of the toolbar you will find the Organize menu. As you can see, this menu has an arrow pointing downward. Each time you see that arrow for an item on the toolbar, it means that it is a menu that can be opened.

Views On the right side of the toolbar you will notice another button with an arrow pointing downward, signaling that it is actually a menu. If you click it, you will be able to change the way you view the files and folders displayed in the right pane. Your files and folders remain the same; only the way they are presented here changes, depending on which view you select. We will discuss views in more detail shortly.

Preview Pane On the right side of the toolbar, near the Views menu, you will find the button for enabling or disabling the Preview pane. When it's enabled, a third pane is displayed on the right side of the Windows Explorer window. When you select a file in the middle pane, you can see a preview of its content in this Preview pane. If you have a larger screen that can accommodate this pane, it is a good idea to enable it because it can be useful when navigating the files on your computer.

Arrows In the Navigation pane on the left side of the Windows Explorer window you will notice that many elements have a small arrow to the left of their name. You can use these arrows to expand or collapse the element. For example, if you click the arrow for Libraries, it will collapse them. Click it again and it will expand them.

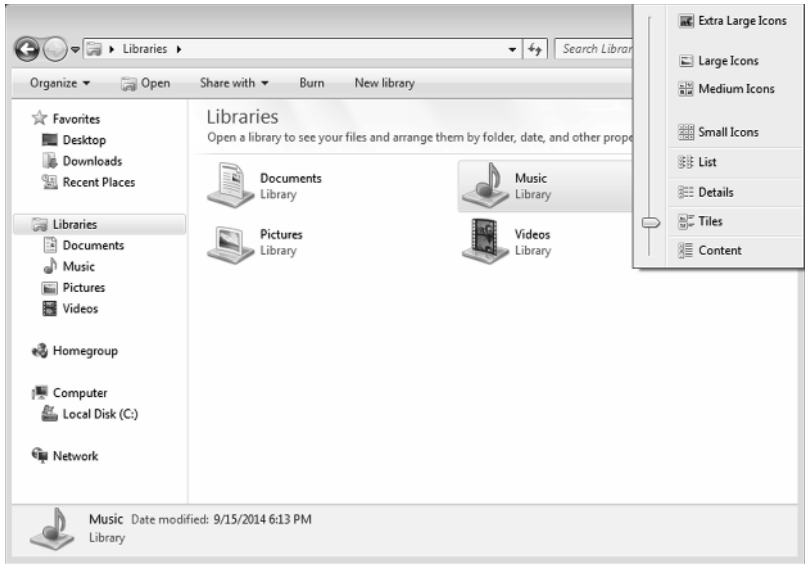
Your computer stores not just your data but also lots of files and folders that are installed by the operating system and the applications that you are using. All this data is always stored in the Local Disk (C:) drive on your computer. You will always find this drive in the Navigation pane. Please note that the C: drive may have a different name because it can be easily customized, but on most computers it is named Local Disk.

When navigating this drive, you will see plenty of folders with names like Windows (this is where Windows is installed), Program Files (this is where applications are

installed), or Users (this is where your user files and folders are stored as well as those of other users on the same computer). You can double-click any of these folders and explore their content. However, you should refrain from deleting or changing anything. Most of your work should be done in the Users folder. If you open it, you will see a subfolder for each user that has been created on your computer, and one of them will be yours. If you open your subfolder, then you will see your Documents, Pictures, and Music folders, and so on.

We mentioned earlier the concept of views. They are just different ways of viewing your files and folders. The views you can use in Windows Explorer are the following, as shown in Figure 1.15:

FIGURE 1.15 The views that are available in Windows Explorer



Extra Large Icons Displays the contents of your libraries and folders using very large icons. This view is generally useful for people with vision disabilities.

Large Icons Displays the contents of your libraries and folders using large icons. This view is useful when you want to see the pictures found on your computer and you want to see a preview of them instead of a small icon.

Medium Icons Displays the contents of your libraries and folders using medium icons.

Small Icons Displays the contents of your libraries and folders using small icons.

List Displays the contents of your libraries and folders in a list that contains only the name of each file and its respective icon.

Details Displays the contents of your libraries and folders by providing detailed information about each item, including its name, the date when it was last modified, its type, its size, and so on. This view is very useful when you want to learn more about each file and folder before opening it.

Tiles This view displays medium-sized icons for each file and folder, as well as information about their type and size.

Content When using this view, each file and folder are placed on a separate row. Each row has detailed information about each file and folder: the date when it was last modified, its size, its author, and so on.

You should definitely experiment with each view and learn how they work (Exercise 1.5) so that you can use them effectively depending on what you want to do.

EXERCISE 1.5

Using Views and the Preview Pane in Windows Explorer

1. On the taskbar, click the Folder icon.
2. In the Navigation pane, click Pictures in the Libraries section.
3. In the right pane, double-click Sample Pictures.
4. Click the Views menu and click Extra Large Icons.

   Notice how the pictures are now displayed.
5. Click the Views menu again and then Details.

   Notice how the way pictures are displayed has changed.
6. Click the Preview pane button. Note that a new pane appears on the right.
7. Click any picture in the middle pane to see a preview of it in the Preview pane.
8. Click the Preview pane button again to hide this pane.
9. Click the Views menu and choose Large Icons.
10. Click the X in the top-right corner of the Windows Explorer window to close it.

Understanding File Types

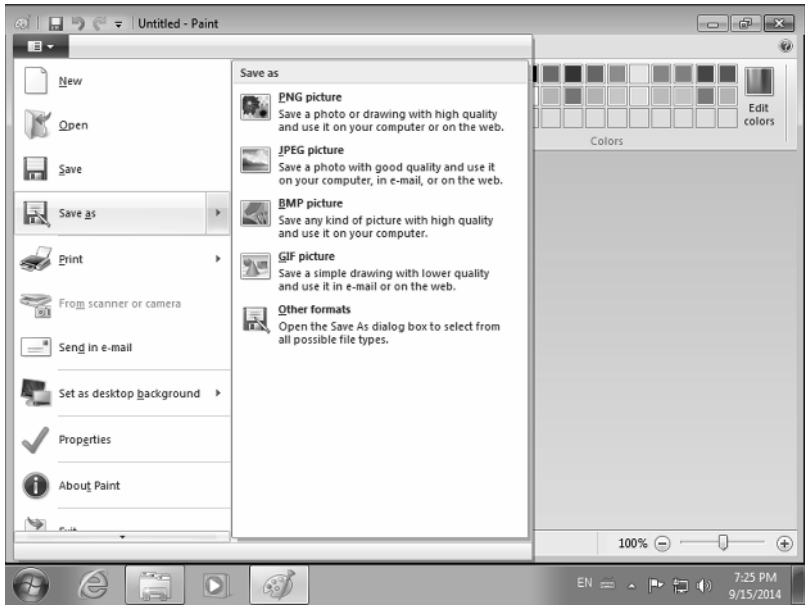
When working on your computer, you will create many types of files: documents, spreadsheets, presentations, music files, and so on. When you save a file, you are prompted to give a name to the file and choose a file type. If you get the file from somewhere else, it has already been assigned a file type.

When browsing your files in Windows Explorer, you can see the file type of each file when you are using the Content, Tiles, and Details views. The file type is generally denoted

by a three- or four-letter extension that follows the filename and also by the icon used by Windows Explorer to display that file. For example, `document·docx` means a file named `document` with the extension `·docx`. The dot separates the name of the file from its extension. The file extension is hidden by default in Windows when viewing files, but it is added automatically when saving them.

You can opt to change the file type when multiple options are available and change from the default file extension to something else. In Figure 1.16 you can see Paint open and the options that are available for saving a file. To save a file, click the Save As option, choose a file type, and then type the name of the file. If you make changes to the same file later, you need only click Save.

FIGURE 1.16 The Save As options that are available in Paint



Some of the most common types of files are the following:

- Microsoft Office files
  - Microsoft Word (.doc and .docx)
  - Microsoft PowerPoint (.ppt and .pptx)
  - Microsoft Excel (.xls and .xlsx)
  - Microsoft Publisher (.pub and .pubx)
  - Microsoft OneNote (.one)

- Picture files
  - JPEG files
  - GIF files (`.gif`)
  - Bitmap files (`.bmp`)
  - PNG files (`.png`)
  - TIFF files (`.tif` and `.tiff`)
  - RAW files (`.raw`)
- Music files
  - Windows audio files (`.wav`)
  - MP3 audio files (`.mp3` and `.m3u`)
  - Windows Media audio files (`.asx`, `.wm`, `.wma`, and `.wmx`)
  - Free Lossless Audio Codec files (`.flac`)
  - AAC files (`.aac`)
- Video files
  - Audio Video Interleaved files (`.avi`)
  - Motion JPEG files (`.avi` and `.mov`)
  - Windows Media files (`.wm`, `.wmv`, and `.asf`)
  - Matroska multimedia files (`.mkv`)
  - Apple QuickTime files (`.mov` and `.qt`)
  - MPEG Movie files (`.mp4`, `.mov`, `.m4v`, `.mpeg`, `.mpg`, `.mpe`, `.m1v`, `.mp2`, `.mpv2`, `.mod`, `.vob`, and `.m1v`)

Other types of popular files are the following:

Executable Files (`.exe`) Executable files can be run with a double-click.

Text Files (`.txt`) Simple text documents without any kind of formatting.

Portable Document Format Files (`.pdf`) A very popular type of files that is generally used for sharing non-editable documents that need to look the same on all the devices on which they are used, no matter what operating system is used.

OpenOffice and LibreOffice Documents (`.odt`,`.ott`,`.oth`, and `.odm`) Documents created using free open-source office applications like OpenOffice and LibreOffice.

Managing Your Files and Folders

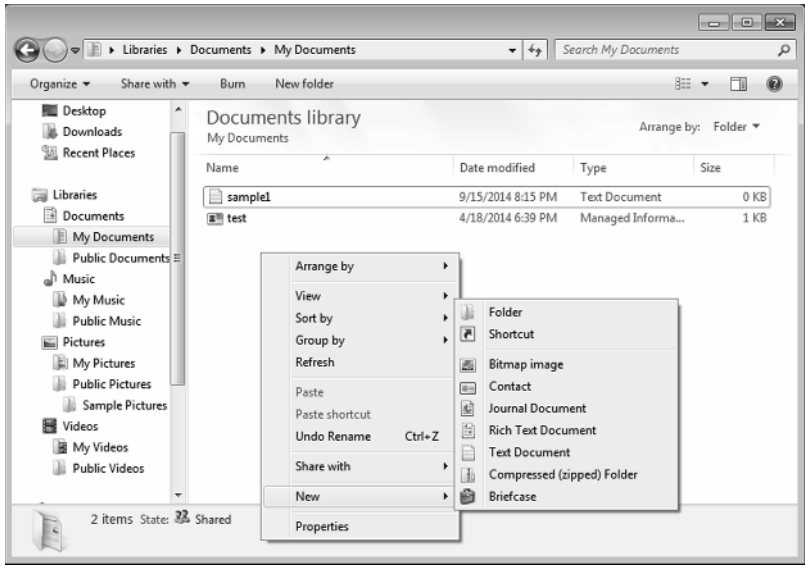
While working on your computer, it is better that you organize your work so that you will have an easier time finding the files you need later on. For starters, use the libraries provided by Windows 7 to store your files depending on their type. Save your pictures in the Pictures library, your documents in the Documents library, and so on.

Once things get too crowded, you will want to create your own folders and subfolders, move files around, and delete those that you do not need. Let's take each file and folder management activity and see how it is done:

Create a File You can create files from applications like Microsoft Office, but you can also create empty files directly from Windows Explorer. To do so, follow these steps:

1. Open the folder where you want to store the file.
2. Right-click anywhere in the available empty space and select New and then one of the available file types, as shown in Figure 1.17.
3. Type the name of the file and press Enter on your keyboard.

FIGURE 1.17 The types of files that can be created using the context menu in Windows Explorer



A new file is created, with the name and type you have provided. However, the file is empty because it has no contents. If you double-click it, you can open it and edit it in the appropriate application for files of that type. Don't forget to save your edits so that they are stored inside the file.

Create a Subfolder Subfolders are helpful when you want to better organize your files. You can create subfolders with different names and then move files into them, according to your way of organizing things. To create a subfolder, do the following:

1. Navigate to the desired parent folder and click New Folder on the Windows Explorer toolbar.
2. Type a name for the folder and press Enter on your keyboard.

Alternatively, you can use the keyboard shortcut Ctrl+Shift+N or right-click somewhere in the available empty space and select New and then Folder.

Copy You may want to copy a file or folder to another location. Here's how it is done:

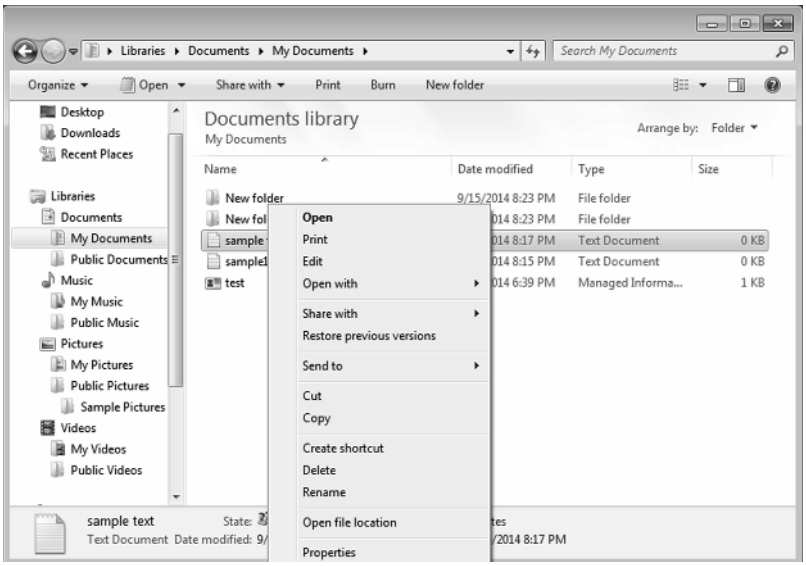
1. Select the file or folder that you want to copy somewhere else.
2. Use the Copy command to copy it to a part of memory called the Clipboard.

The Clipboard holds this information temporarily so that you can paste it somewhere else. You'll want to use the Paste command immediately after you use the Copy command. This is because the Clipboard can hold only one thing at a time. If you copy another item, the previous one is removed from the Clipboard. When you use the Copy command, the original file or folder stays where it is and is not moved. When you use Paste after the Copy command, a copy of that item is created in the desired location.

There are several options for accessing the Copy command:

- Click the file or folder you want to copy and use the keyboard shortcut Ctrl+C.
- Click the file or folder you want to copy and from the Organize menu in Windows Explorer click Copy.
- Right-click the file or folder to copy and click Copy (Figure 1.18).

FIGURE 1.18 The options available in the context menu when right-clicking a file



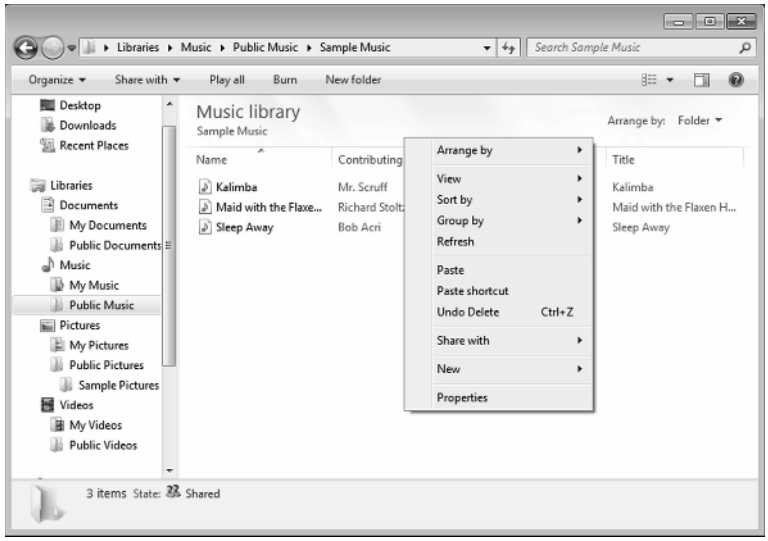
Paste Once you've copied something to the Clipboard, using one of the methods shared earlier, you can use the Paste command to perform the actual task of copying the item to its new location.

1. Navigate to the location where you'd like to paste the file or folder.

   This might be a new subfolder you created, a library, or even the Desktop.

2. Then use one of the following options:
   - Use the keyboard shortcut Ctrl+V.
   - Click the Organize menu in Windows Explorer and then click Paste.
   - Right-click the empty area inside the folder or on the Desktop and click Paste (Figure 1.19).

FIGURE 1.19 The Paste option in the context menu



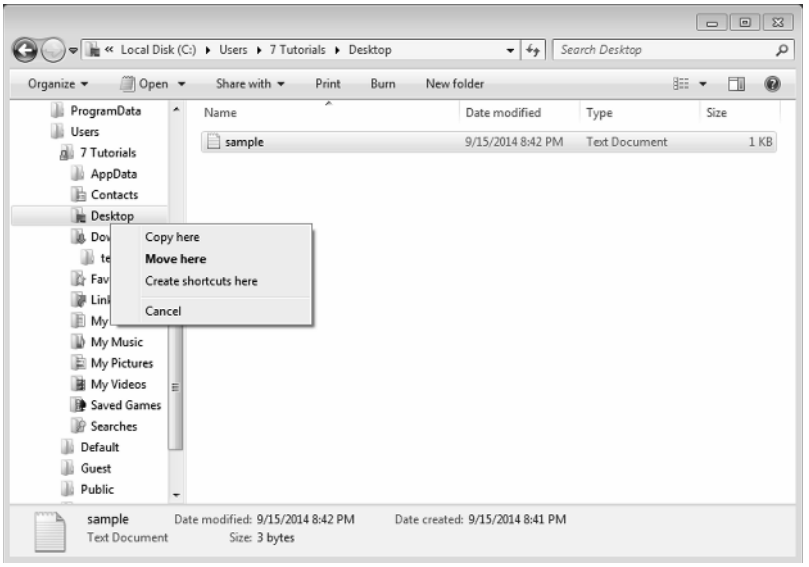
Cut This command works like the Copy command, except that the selected file or folder is removed from its original location and can be moved to the new one. Be careful when using Cut and make sure that you use Paste immediately after. The problem with using Cut is that if anything fails during the moving process (after you use Paste), then you will lose the selected file or folder. That's why it is better to use the Copy command instead and then delete the selected file or folder from the original location once its copy has been made in the new location. There are several options for accessing the Cut command:

- Click the file or folder to cut and use the keyboard shortcut Ctrl+X.
- Click the file or folder to cut and from the Organize menu in Windows Explorer click Cut.
- Right-click the file or folder to cut and click Cut.

Move Here You can use the Move Here command to move a file or folder. It works like Cut and Paste; the item will be moved, and the original item will no longer appear in its original location. To use this command, follow these steps:

1. Right-click the file or folder to move, and hold down the right mouse button while you drag the file on top of its new location, in the Navigation pane.
2. Let go of the right mouse button and click Move Here (Figure 1.20).

FIGURE 1.20 The Move Here option



Alternatively, you can use the Cut and Paste commands for the same effect.

Rename You can rename both files and folders. This can be done in several ways:

- Select the item by clicking it. Press the F2 key on the keyboard. Type the new name.
- Click the item one time, wait a second or two, and then click it again. Type the new name.
- Right-click the item to rename and click Rename. Type the new name.

Delete You can remove both files and folders from your computer. This can be done in several ways. Here's one method:

1. Select the item by clicking it.
2. Press the Delete key on the keyboard and confirm that you want to delete that item.

   The item is moved to the Recycle Bin and can be recovered in case you decide that you need it again.

You can also do the following:

1. Right-click the item to delete.
2. Click Delete and confirm that you want to delete that item.

Alternatively, you can drag the item to the Recycle Bin using the mouse.

To delete an item without moving it to the Recycle Bin, follow these steps:

1. Select the item by clicking it.
2. Then, hold down the Shift key and the Delete key.

But be aware that this way the item cannot be recovered if you need it again.

Create a Shortcut If you need to access a file or folder from another location but you do not want to copy or move it, you can create a shortcut. You can tell which files are shortcuts because they have an arrow in their icon and Shortcut included in the filename. Shortcuts are only references to other files and folders and do not hold any data except for what's required to point their target location. The option to create a shortcut is available from the options that appear when you right-click the item. There are several ways of creating a shortcut. Here's the first way:

1. Right-click the item you want to create a shortcut for.
2. Click Create Shortcut.

   The shortcut is created in the same location.
3. You can now cut and paste that shortcut to another location like the Desktop.

The original file should be kept in its initial location; otherwise the shortcut won't work.

You can also do the following:

1. Right-click the file or folder.
2. Click Send To and then click Desktop (Create Shortcut), as shown in Figure 1.21.

   A shortcut is created for that item on the Desktop.

And finally, you can use this method:

1. Press and hold down Ctrl+Shift while you drag that item to the location you want to create a shortcut to.
2. Release the item in the location where you want to create a shortcut for it.

Search for a File There are many ways to search for a specific file, provided you know something about it. One way is to use the Search box on the top-right of the Windows Explorer window:

1. Select the library or folder where you want to perform the search.
2. Click inside the Search box (Figure 1.22) and type the name of the file you are looking for.

FIGURE 1.21 The Send To menu in Windows Explorer

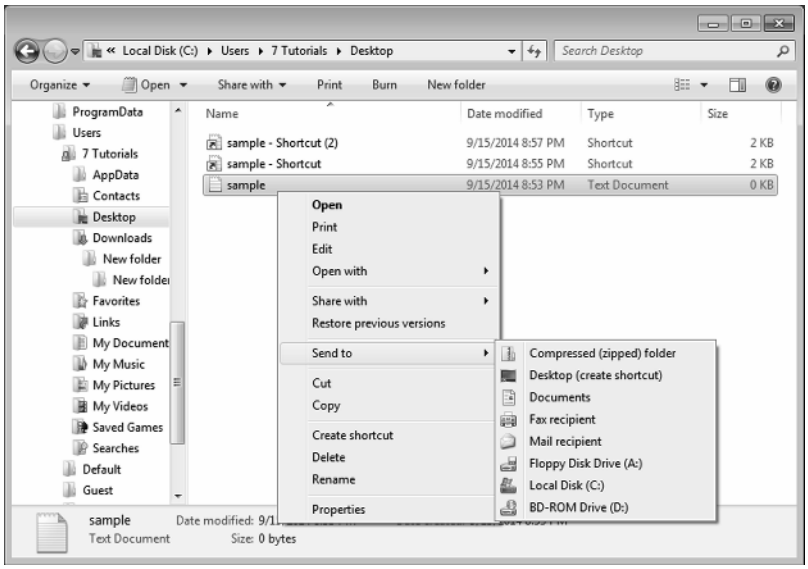
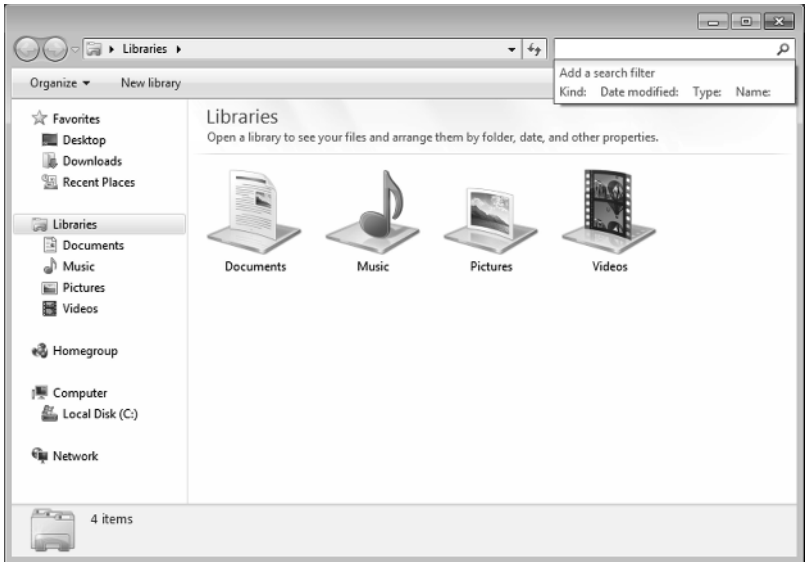


FIGURE 1.22 The Search box in Windows Explorer



If you want to search for a file on the whole computer, do this:

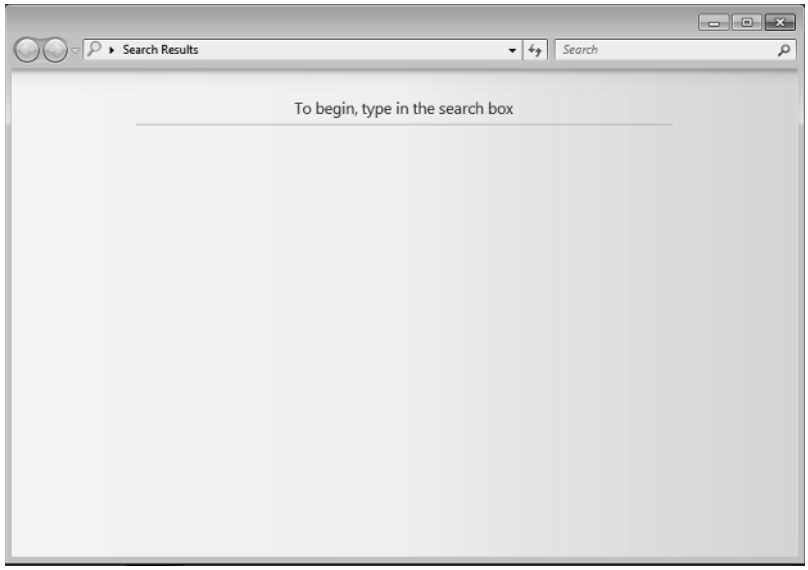
1. Select Local Disk (C:) in the Computer section of the Navigation pane.
2. Then use the Search box.

Here's another way:

1. Close Windows Explorer and press the F3 key on the keyboard.
2. This brings up a Search window where you can type the name of the file (Figure 1.23).

If you don't know the filename, you can search based on the date you believe it was created, by the kind of file it is, by the type, and other criteria. Your search will be made across your whole computer.

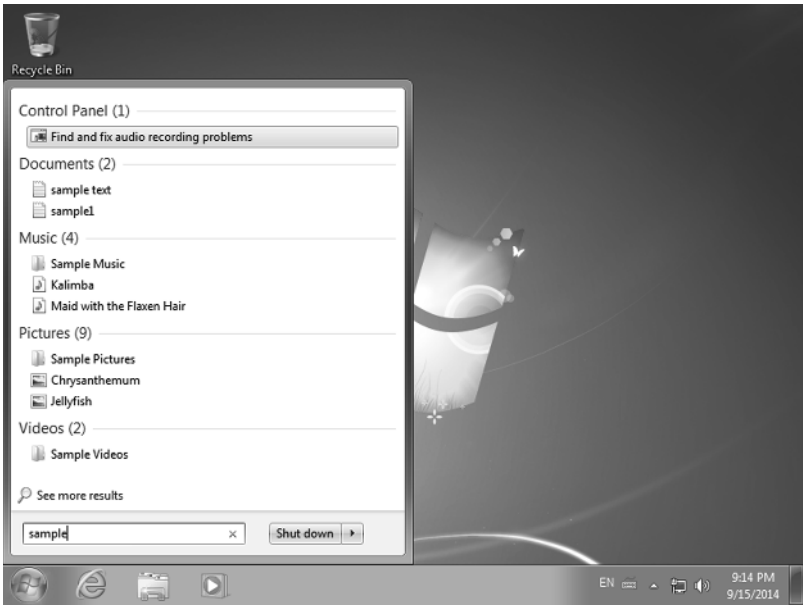
FIGURE 1.23 The Search window that is accessed by pressing F3



You can also click the Start button on the Desktop and start typing the name of the file (Figure 1.24). Searches are performed automatically as you type but only in locations that are indexed by Windows, like your libraries. To access a file or folder, click it in the list of results. If you want to perform a computer-wide search, the previous methods work better.

Although we provided the necessary keyboard shortcuts that you can use while working with files and folders in Windows, there are many more keyboard shortcuts for you to discover. You can find a complete list of keyboard shortcuts on Microsoft's Knowledge Base, here: `http://support.microsoft.com/kb/126449`. Don't hesitate to consult it and learn how each keyboard shortcut works. They will surely make you more productive when using Windows.

FIGURE 1.24 The Start menu search



Customizing Your Computer

All modern operating systems give you plenty of options for configuring the way they look and how you use them. The most basic customizations are about changing the way the operating system looks. For example, in Windows 7, you can change the resolution of the screen, the Desktop background, the theme, and so on. Obviously, you can go into a lot of detail and customize more advanced settings, but there's no need to, unless you have very specific needs.

When you first use a computer, most probably you will want to change the way Windows looks, the language used for typing, the time and the date, and how accessible the computer is, in case you have a disability.

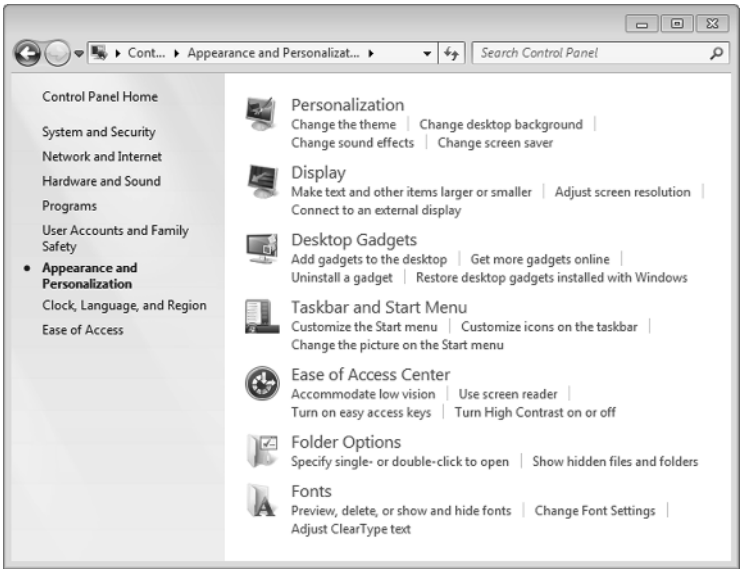
Another aspect that you might want to customize is how many user accounts there are on your computer and who is allowed to use it and who the administrator is.

Let's look at the most common types of customizations that are performed on a computer and see how they are done.

Customizing the Desktop

All the visual customization options that are available in Windows are found in the Control Panel. To access them, click Start ➢ Control Panel ➢ Appearance And Personalization, as shown in Figure 1.25.

FIGURE 1.25 The Appearance And Personalization section in the Control Panel



In this panel you will find that Windows offers lots of visual customizations:

- You can change the theme used by Windows, the Desktop background, sound effects, and the screensaver.
- You can change the resolution of the screen and make text and other items larger or smaller.
- You can add gadgets to the Desktop, which provide additional information like weather data or the calendar. Please note that this feature of Windows has been discontinued, and Microsoft doesn't provide any new gadgets except those already found in Windows 7.
- You can customize the icons on the taskbar and the items that are displayed by the Start menu.
- You can improve the level of accessibility and turn on features like High Contrast or a screen reader, in case you have disabilities that do not allow you to use your computer without help.
- You can install new fonts, view those that are installed, and adjust their settings.
- You can also set how files and folders are displayed when using Windows Explorer.

Customizing the Screen Resolution

The display of any computer or device has a specific size that is measured in inches (for example, 9″, 24″, and so on). This number tells you the diagonal measurement of the screen, measured from the bottom-left corner to the top-right corner.

All displays are split into really small squares that are used to display color. Think of the image on your display like a puzzle with really small pieces. Pixels are the smallest squares that could be manufactured and used to display color. How many pixels are on the screen depends on the size of the screen. The total number of pixels is communicated using the screen resolution. It is usually quoted as width × height, with the units in pixels; for example, 1366×768 means the width is 1366 pixels and the height is 768 pixels.

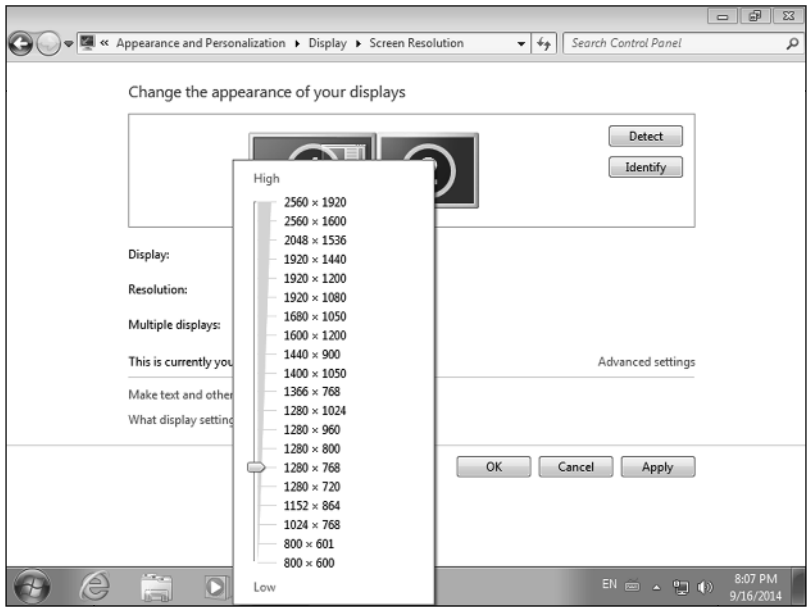
The bigger the resolution, the clearer the image is because there's more room for displaying small details on the screen. When you increase the resolution, items on the screen appear smaller. The opposite happens when you lower the screen resolution. Computer displays have a maximum resolution that can be set, depending on their size and the actual number of pixels available. However, their resolution can be lowered if needed. Exercise 1.6 demonstrates how to change the screen resolution so that items on the screen appear bigger, if you need them to.

EXERCISE 1.6

Changing the Resolution of Your Screen

1. Click the Start button and then click Control Panel.
2. Click Appearance And Personalization and then Adjust Screen Resolution, under Display.
3. Click the drop-down list next to Resolution and use the slider to set a lower resolution like 1024×768, if it is available, as shown in Figure 1.26.

FIGURE 1.26 The Resolution slider from the Screen Resolution window



4. Click Apply.
5. If you like the new resolution, click Keep Changes. Otherwise, click Revert and repeat steps 3 and 4.
6. Click OK.

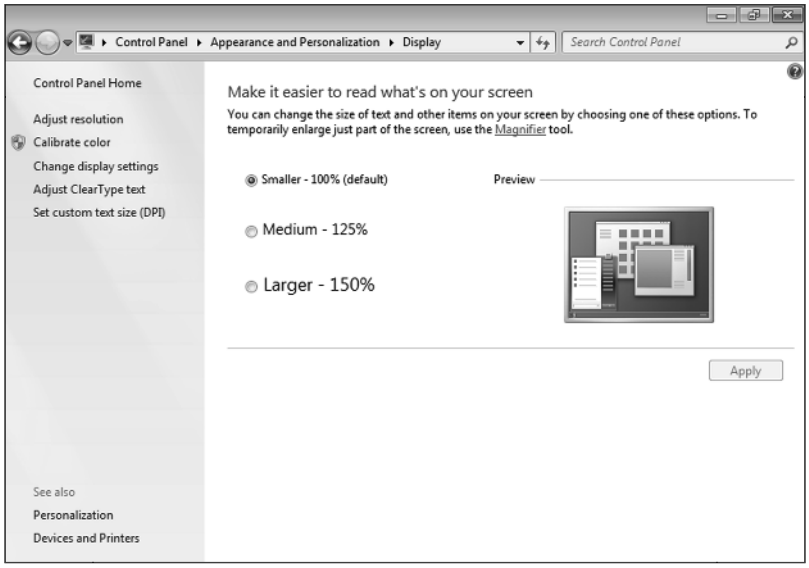
If you want to make the text and other items larger than they are and you do not want to change the resolution, you can do that. Exercise 1.7 shows you how.

EXERCISE 1.7

Changing the Size of the Items on Your Screen

1. Click the Start button and then click Control Panel.
2. Click Appearance And Personalization and then Display.
3. Change the size you want for the text and other items. You can choose Smaller, Medium, or Larger (Figure 1.27).

FIGURE 1.27 The Display window



4. Click Apply.
5. You are asked to log off your computer to apply these changes. Make sure that you do not have any unsaved work and then click Log Off Now.
6. Log back into Windows.

Customizing the Desktop Appearance

Windows allows you to change the background image that is displayed on the screen as well as the general visuals and the sounds that are used through the operating system. To make things simpler and easier to manage, Microsoft uses the concept of themes in its Windows operating system. A *theme* is the collection of all the visual settings and sounds that are used by Windows: the Desktop background, the color used to display the user interface, the sounds that are played when messages are displayed, and the screensaver that is displayed when you have kept your computer turned on but you are not using it.

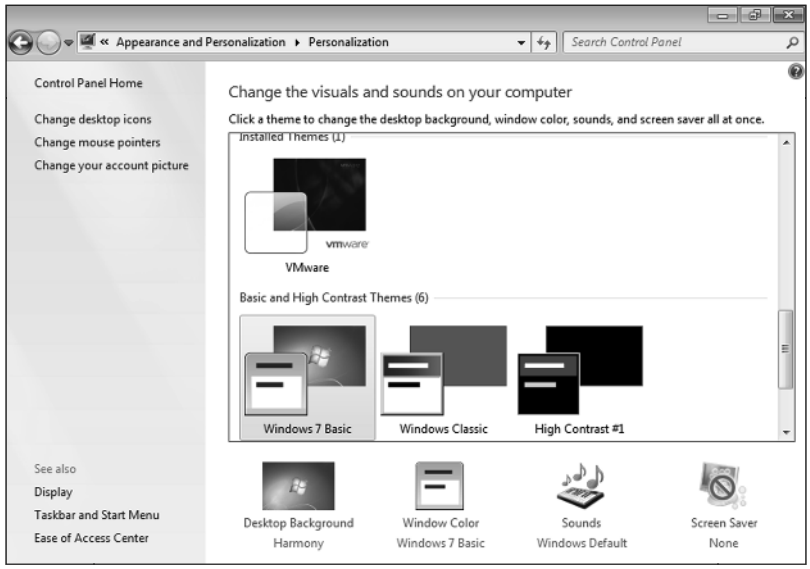
For starters let's see how to change the Desktop background in Windows. Exercise 1.8 demonstrates everything you need to know.

EXERCISE 1.8

Changing the Desktop Background

1. Click the Start button and then click Control Panel.
2. Click Appearance And Personalization and then Personalization (Figure 1.28).

FIGURE 1.28 The Personalization window



3. Click Desktop Background and choose one of the available images (Figure 1.29).

FIGURE 1.29 The Desktop Background window

4. Set the picture position and then click Save Changes.
5. Close the Personalization window in order to see the new Desktop background.

Themes can also be changed from the Personalization window. They are displayed in the center of the window and are split into categories like My Themes, Aero Themes, and Basic And High Contrast Themes. Browse through the available themes and select the one that you want to apply. You will notice that each theme uses a different Desktop background, different visuals, and so on. When you have found a theme that you are happy with, close the Personalization window.

Customizing the Language You Are Using

Windows 7 offers you the ability to change both the language that you use for typing (the keyboard input language) as well as the language used to display everything on the screen (the display language). Changing the keyboard input language can be done in all versions of Windows 7. Unfortunately, changing the display language is possible only in the more expensive versions of Windows 7: Windows 7 Ultimate and Windows 7 Enterprise. Affordable versions like Windows 7 Home and Windows 7 Professional do not include this useful feature.

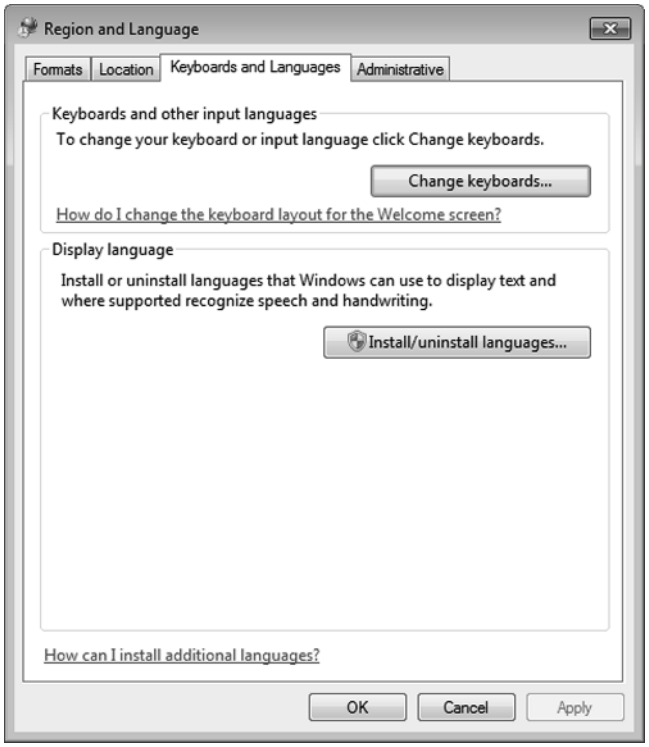
First, you'll learn how to change the language used for typing, using the instructions shared in Exercise 1.9.

EXERCISE 1.9

Adding a New Keyboard Input Language

1. Click the Start button and then click Control Panel.
2. Click Clock, Language, And Region and then Region And Language.
3. Select the Keyboards And Languages tab (Figure 1.30).

FIGURE 1.30 The Keyboard And Languages tab in the Region And Language window



4. Click the Change Keyboards button.
5. In the new Text Services And Input Languages window, click Add.

6. Double-click the keyboard input language that you want to add, to expand it (Figure 1.31).

FIGURE 1.31 The Add Input Language window where you can add a new input language

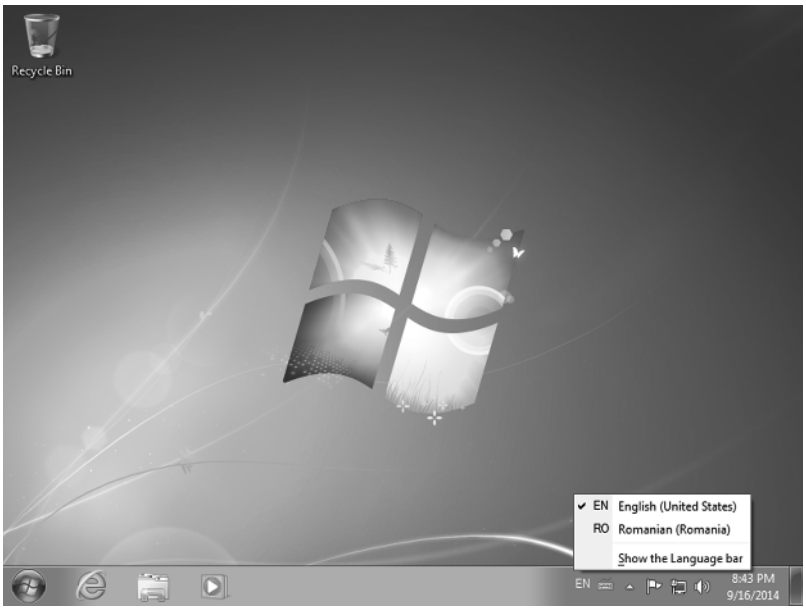
7. Then double-click Keyboard and select the type you want to add.
8. Click OK and then click OK again in the windows that remain open.

You can add as many keyboard input languages as you wish and then switch between them. This is very helpful if you are a multilingual person who works using more than one language.

You can switch between languages for typing at any time during your work. All you have to do is to click the two-letter language code near the keyboard icon that is shown on the taskbar (the bar on the bottom of the screen) and select the language that you want to use (Figure 1.32). You can also use the keyboard shortcut Alt+Shift for the same effect.

If you have Windows 7 Ultimate or Windows 7 Enterprise, you can also change the display language that is used. Exercise 1.10 shows how.

FIGURE 1.32 The keyboard input language switcher



EXERCISE 1.10

Adding a New Display Language

1. Click the Start button and then click Control Panel.
2. Click Clock, Language, And Region and then Region And Language.
3. Select the Keyboard And Languages tab.
4. Click the Install/Uninstall Languages button.
5. In the new Install Or Uninstall Display Languages window, click Install Display Languages (Figure 1.33) and then Launch Windows Update.
6. In the Windows Update window, click the link that says how many optional updates are available (Figure 1.34).
7. Scroll down to Windows 7 Language Packs and select the display language that you want to install (Figure 1.35).

FIGURE 1.33 The Install Or Uninstall Display Languages Wizard

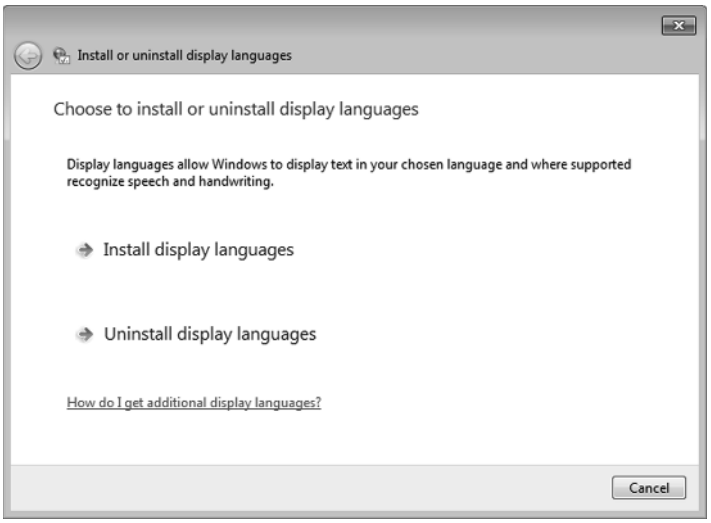
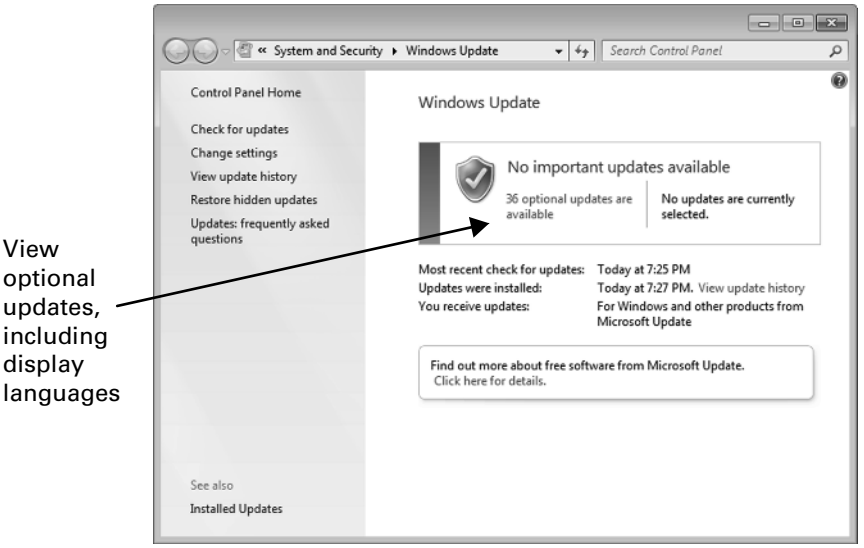
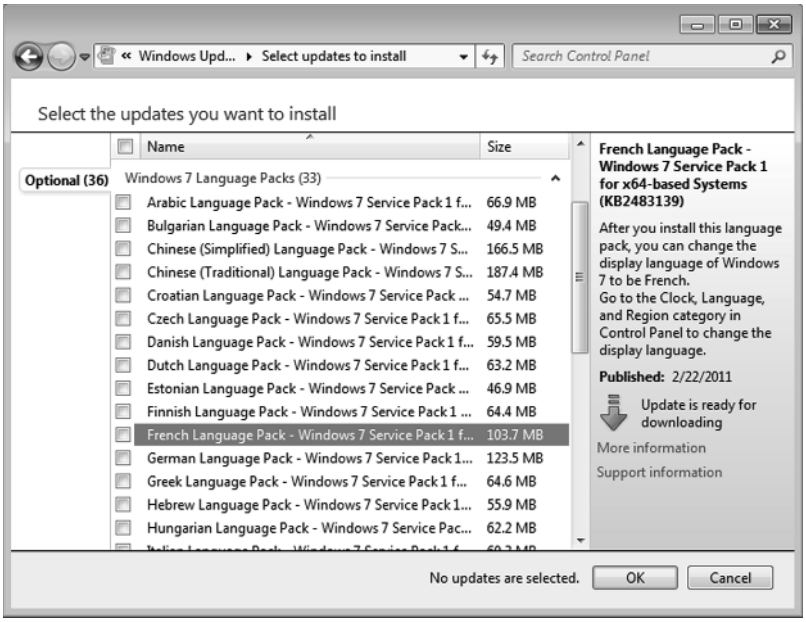


FIGURE 1.34 Windows Update displaying the number of optional updates available



EXERCISE 1.10 *(continued)*

FIGURE 1.35 A list of the optional updates that are available



8. Click OK and then Install Updates.
9. Wait for the display language to be installed.

Changing the display language used by Windows 7 is relatively easy, but it does take more steps than changing the keyboard input language. Also, there's no keyboard shortcut available for this switch. Exercise 1.11 demonstrates the steps involved in changing the display language.

EXERCISE 1.11

Changing the Display Language

1. Click the Start button and then click Control Panel.
2. Click Clock, Language, And Region and then Region And Language.
3. Choose the Keyboard And Languages tab.

4. In the Display Language section, click the Choose A Display Language drop-down list and select the language that you want to use.
5. Click OK, and you will be notified that you need to log off. Close any files that you have open and then click Log Off Now.
6. Log back into Windows 7 and you will see the selected display language used.

Changing the Date and Time

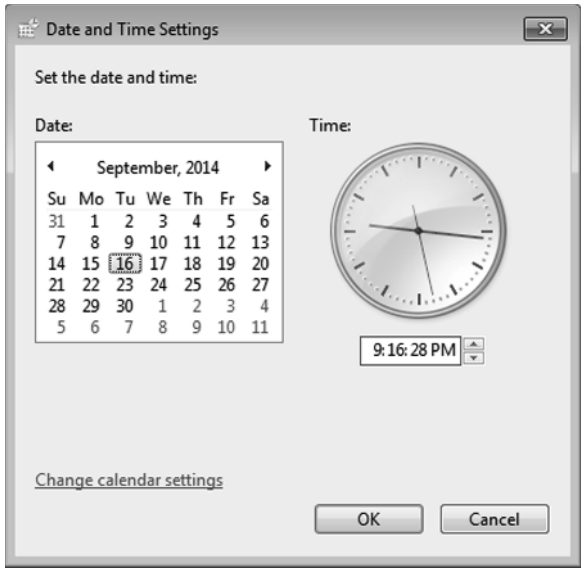
When you set up a new computer or when you have just installed Windows 7, the date and the time might be incorrect. Fortunately, changing them is very easy, and it takes only a few clicks. Exercise 1.12 shows how it is done.

EXERCISE 1.12

Changing the Date and the Time

1. Click the Start button and then click Control Panel.
2. Click Clock, Language, And Region and then Date And Time.
3. Click the Change Date And Time button.
4. Change the date using your mouse and the calendar that is shown on the left in Figure 1.36.

FIGURE 1.36 The Date And Time Settings window



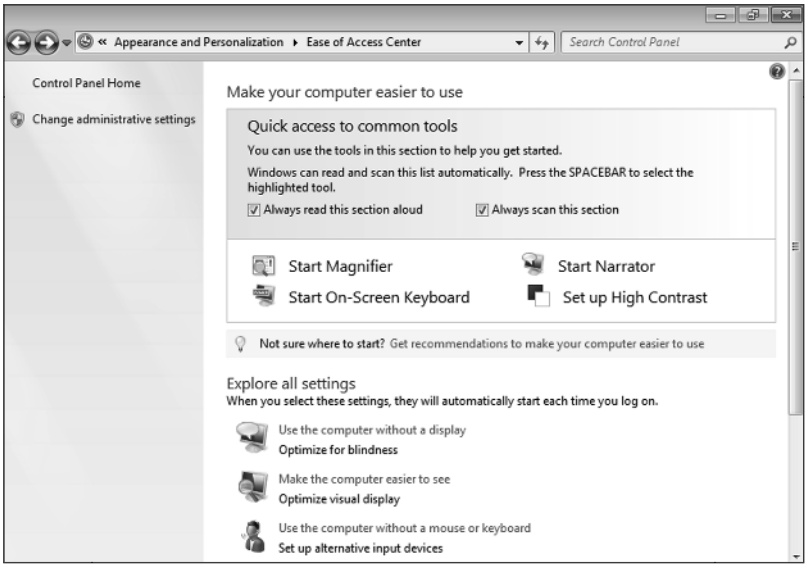
EXERCISE 1.12 *(continued)*

5. Change the time by selecting the hour or the minute and then typing the correct values.
6. When finished, click OK and then click OK again.

Making the Computer More Accessible

If you have a disability that makes it difficult to hear, see, or physically use the computer, there are options and features available that you can configure to make things easier for you. These options are found in the Control Panel by selecting Appearance And Personalization and then Ease Of Access Center, as shown in Figure 1.37.

FIGURE 1.37 The Ease Of Access Center in the Control Panel

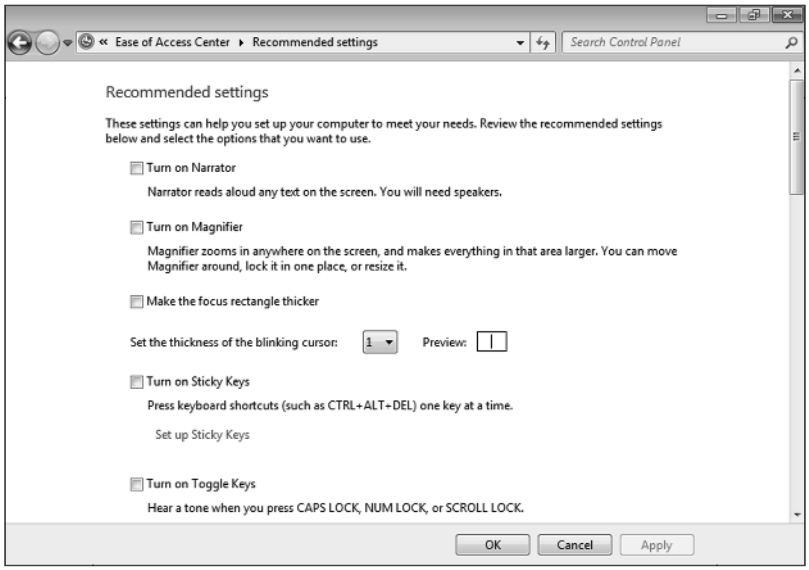


The easiest way to understand what features you should enable is to work through the wizard that is available by clicking the link "Get recommendations to make your computer easier to use." Work through it on your own and select the statements that apply to you. Upon completion, you'll see options to enable features that Windows 7 deems appropriate, based on your answers (Figure 1.38).

Here are some of the items that you might be prompted to enable based on the answers you give:

High Contrast When this option is turned on, you change how the computer displays information on the screen. The colors used to display everything will have a very high contrast so that you have an easier time figuring out the different elements that are displayed.

FIGURE 1.38 The settings recommended by the Ease Of Access Center



Narrator Reads aloud the text that appears on the screen.

Speech Recognition Once you set it up, you can use speech commands like "Open Control Panel" to control the computer, if you have a microphone available. You can also use it to dictate text.

Magnifier Zooms in on areas of the screen that you select. In its default form, you use it like a magnifying glass.

On-Screen Keyboard Lets you type words using a keyboard that appears on the screen. You can type on the keyboard using the mouse or another pointing device.

Understanding User Accounts

In order to use Windows, you need a user account and a password set for it. A *user account* is a collection of settings that Windows uses for understanding your preferences and for controlling the files and folders you access, the tasks you are allowed to perform, the devices and resources you are allowed to use, and so on. User accounts are also used to separate the people that use the same computer and make sure that they can keep their personal files private (like the ones stored in their libraries) and that they do not change each other's settings.

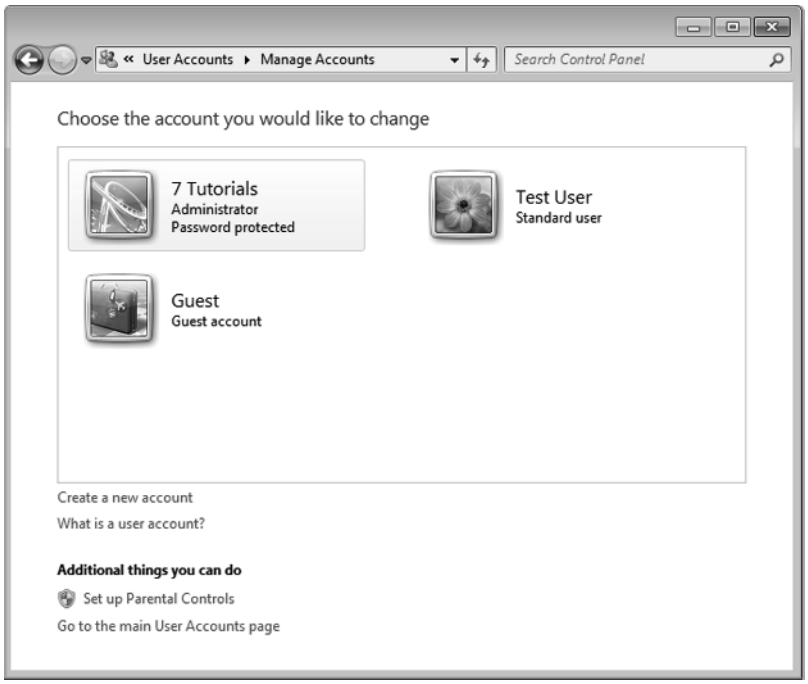
In the Windows 7 operating system there are three types of user accounts that you can choose from (Figure 1.39).

Administrator User accounts of this type have complete control over the operating system, its applications, and its settings. It is the only type of user account that can install or uninstall applications in Windows. Administrators can also manage other user accounts and create new user accounts.

Standard A limited type of user account that can use only existing software applications and cannot install or uninstall applications. Also, this user account cannot modify system settings that affect other users. Standard user accounts can change only their own settings.

Guest A limited type of user account. There is only one Guest user account on a Windows device, and it has no password. It is meant only for temporary access to the PC, and it can be used only for running existing applications. This user account type cannot modify any system settings.

FIGURE 1.39 The Manage Accounts window where you can see the user accounts existing on your computer



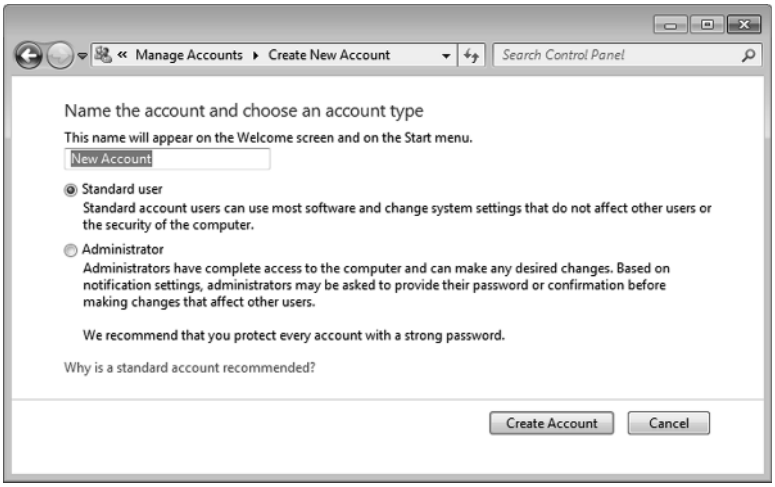
In Windows 7, the first person to create a user account is the administrator. When you create other user accounts, you can choose their type. Also, the Guest account exists by default in Windows 7. It only needs to be enabled in order for it to be used. But first, you'll learn how to create a user account using the instructions in Exercise 1.13.

EXERCISE 1.13

Creating a Standard User Account

1. Click Start and click Control Panel.
2. Under User Accounts And Family Safety, click Add Or Remove User Accounts.
3. Click Create A New Account.
4. Type a name for the account, leave Standard User selected, and click Create Account, as shown in Figure 1.40.

FIGURE 1.40 The Create New Account window



Sharing Folders with Other Users

User accounts are also important when you want to share your work with others. For example, you might share the same computer with another person, and you may want to give the other person access to one of your folders. Or, your computer is connected to a network, and you may want to share a folder with others on the network. Before you do that, you will need to understand one more concept: permissions.

If you want to share a folder with another person (on the same computer or on the same network), you need to set the level of permissions assigned to that person for that folder. The permissions you can give another person are as follows:

Read The other person can only read the files and subfolders that are found in the folder you are sharing. They cannot modify them or delete them.

Read/Write The other person can read the files and folders that are found in the folder you are sharing. They can also modify them and delete them.

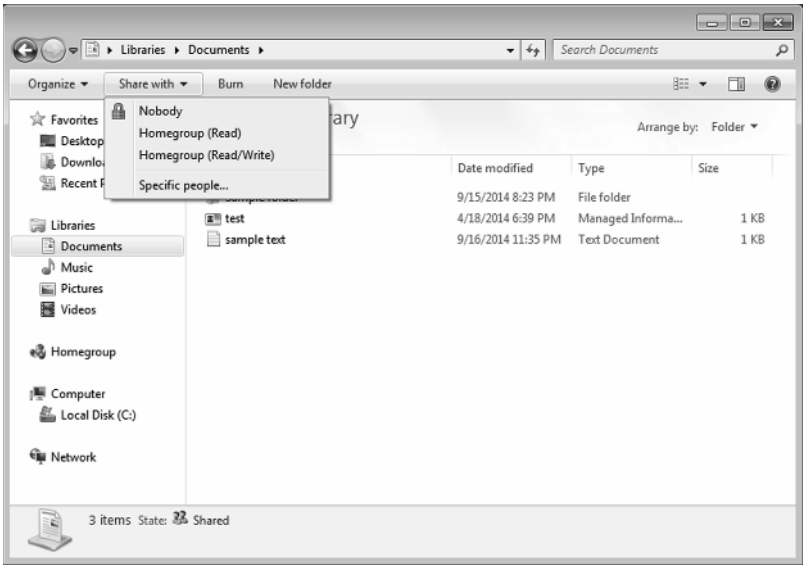
You will see these two options in Windows each time you try to share anything with someone else.

To simplify sharing on small networks like the one in your home or in a small company, Microsoft has introduced the concept of Homegroup. The Homegroup is a group of Windows computers and devices that share content and devices with each other, in the same network. What is shared with the Homegroup is not available to other computers that are on the same network but are not part of the Homegroup. The Homegroup can be joined by Windows 7 and Windows 8 computers and devices.

By design, there's no limit to the number of computers that can join a Homegroup. The Homegroup is protected by a password that you share with the users who want to participate in it. This password is requested only when a new computer joins the Homegroup. You create or join a Homegroup from Control Panel under Network And Internet.

In Windows Explorer, you can easily share a folder by first opening it and then clicking the Share With menu on the toolbar. There you will see several options, including Homegroup (Read) and Homegroup (Read/Write), as shown in Figure 1.41. Read and Read/Write are the permissions you want to assign to the Homegroup for that shared folder.

FIGURE 1.41 The Share With menu in Windows Explorer



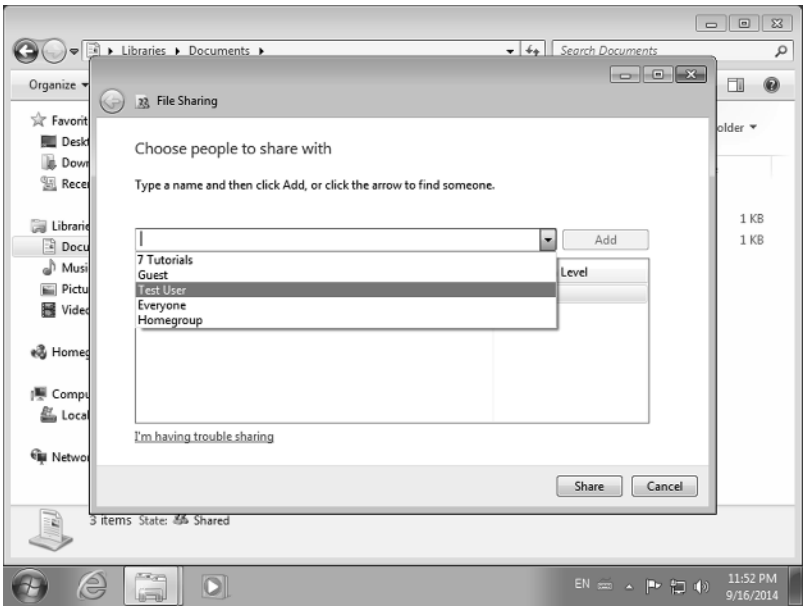
You can also share a folder with another person who has a user account on the same computer. Exercise 1.14 shows you how it is done.

EXERCISE 1.14

Sharing a Folder with Another User Account

1. Open Windows Explorer and select your Documents library.
2. Click the Share With menu on the toolbar and then select Specific People.
3. Click the arrow pointing downward and select the user with whom you want to share your documents (Figure 1.42).

FIGURE 1.42 Choosing with whom to share in the File Sharing Wizard



4. Click Add.
5. Click the arrow beside Read, on the line for the new user.
6. If desired, click Read/Write. If not, leave Read selected.
7. Click Share.

The person with whom you are sharing that folder can access it by opening Windows Explorer and double-clicking Local Disk (C:), Users, and then the name of your user account.

To stop sharing that folder with the user you initially shared it with, repeat steps 1 and 2 from Exercise 1.14, click the name of the user to remove, and then click Remove. Lastly, click Share to update with whom you are sharing that folder.

Managing Permissions in Large Businesses

So far, with regard to creating user accounts and sharing data, we've been focused on small networks like the one in your home or in a small business. In large enterprises, user accounts and permissions are managed differently. Consider what would happen if there were thousands of users who each had their own computer. Think about how hard it would be and how long it would take to create all those user accounts and share data among them, using the aforementioned methods, on every one of those computers and for every one of those users. It just isn't manageable.

To make things more manageable, enterprises create a network domain, and they hire network administrators who create all the network users on a computer called a server. Users' data is saved to this server or others. Because users and their data are centralized, one network administrator can manage all users and all data sharing and assign all permissions to the data and resources that are shared, from a single location.

The set of permissions that the network administrator applies is created and managed through the Group Policy. Just as it sounds, permissions are created for entire groups of users, and those permissions make up a policy that those users are restricted by. So, a network administrator can create a Group Policy that restricts all users in a specific group (say Accountants, Guests, or Marketing), to efficiently place limits on what members of that group can access on the network and what they can do on their own computers.

Real World Scenario

How Organizations Assign Permissions Using Group Policy

In some colleges, users are placed into groups that represent the job they do. There are groups for adjunct faculty, full-time faculty, administrators, human resources, marketing, and so on. There are groups for mobile users too, namely those people who access data remotely from home or on the road. Permissions are assigned to these groups and thus are also applied to the users who are in those groups. This makes it easy to manage access to resources while limiting what users can do once they're connected to that organization's network.

As an example, users in the adjunct faculty group are allowed to access the student database for the purpose of finding a student's phone number or address or to look up a grade for a specific class, but they cannot change this information. Users in the faculty group can do all of these things too, but they also have the ability to change a student's grade in a course. They do not have the ability to change a student's phone number or address. Users in the human resources group have permission to access and alter a student's phone number or address but not their grade. Mobile users might be assigned specific permissions that apply only to them, perhaps to protect access to sensitive data

over an unprotected network such as the Internet. These permissions are easy to manage because they have to be applied only to the group and not the individual users.

Additionally, when new employees are hired, it is easy for the network administrator to add a new user account to the group in which that employee belongs. That user is automatically assigned the permissions for that group. When an employee is laid off or retires, it is equally easy to remove that person from a group. Because the user is no longer a member of the group, they cannot access the group's resources.

Often, users are assigned to more than one group. For the most part, users' permissions are cumulative. So if a user has permission to read one resource in one group and also write to it in a second, the user can both read and write to the resource. Users can also be denied access to specific resources should they be found to abuse them. For example, if a user is overusing the printer, they may be blocked from accessing it.

Summary

Before you can use a computer effectively, you must know a little about what makes it work. A computer must have an operating system and applications. Without those essential elements no work can be done. These two types of software are updated by their manufacturers on a regular basis so that they are kept safe from security problems, their problems are fixed, and new features are introduced.

Once your computer is powered on, you can log on and start using all the applications that are available to create and save data. This data is stored in files, each with its own type and file extension. In order to keep track of your files, the operating system has a file system that allows you to view your files, use them, and manage them as you see fit. In this chapter you learned all the basic commands for working with files in Windows.

In order for users to be truly productive, operating systems on modern computers allow multiple users to use the same computer. Each user should have an individual user account so that each person's data, applications, and settings are kept separate. Obviously, this data can be shared at any time with other users on the same computer or with other users on the network. In this chapter you also learned how to share your folders with others.

Finally, it is important to be able to customize your computer so that it better meets your needs. In this chapter we showed how to customize the way the operating system looks, how to change the language you are using, how to modify the date and time (in case the operating system has the wrong information), and how to improve its accessibility if you have a disability that makes using the computer difficult.

In the next chapter will talk in more detail about hardware and the different hardware components of a typical computer. We will also talk about different types of computers and how to measure and compare their relative performance.

Exam Essentials

Understand the difference between the operating system and software applications. An operating system is the most important software that runs on a device, because without it, interactions with that device would be impossible. The operating system is what makes communication between the user, software applications, and the internal hardware possible. Applications are either included with the operating system or installed on top of the operating system. Applications allow you to create data and use your computer more productively. You should know the differences between the operating system and software applications.

Understand how to power on and power off your computer. In order to use a computer, you should understand how to log into Windows with your account, switch users, log off, and shut down the computer. You should also know that logging off closes all applications and windows, while switching users, locking the computer, or putting the computer to sleep only pauses those things so that you can get to work more quickly when you return.

Know how to browse your computer's files and folders. You cannot be a productive user unless you know what Windows Explorer is and how to use it to browse the files and folders that are found on your computer. Learn how to work with the views that are available and understand the differences between them.

Know how to manage your files and folders. Understand how to organize your files and folders, depending on their type. Use the libraries that are available in Windows to keep things organized, and know how to move your data around. Also, you should learn the keyboard shortcuts for useful commands like Copy, Cut, Paste, Rename, and so on. They will make things easier when working with your files.

Know how to customize Windows 7. There are too many customization options available to discuss them all here. Thus, you'll need to work through all of the options on your own. Know how to change the theme and the Desktop background and how to update the date and the time if your computer is using the wrong data. Knowing this will allow you to personalize your computer and have it look and work the way you want it to. Also, you should understand the basic Accessibility options that are available and how they can help people with disabilities.

Key Terms

Before you take the exam, be certain you are familiar with the following terms:

files

folders

hardware

libraries

operating system

personal identification number

software

Review Questions

1. What does an operating system such as Windows do?
   - **A.** Manages the files and folders on my computer
   - **B.** Displays the image on the screen of my computer
   - **C.** Allows communication between the user, software applications, and the internal hardware of my computer
   - **D.** Powers on the computer when I need to use it and powers it off when I'm finished working
2. Which of these are operating systems? (Choose all that apply.)
   - **A.** Windows
   - **B.** Hardware
   - **C.** Microsoft Office
   - **D.** Android
3. You need to leave your computer unattended for a couple of minutes, and you want to secure it. You do not want to have to close all of your applications or save your work because on your return you want to get back to work quickly, right where you left off. Which of the following options will enable you to do this? (Choose all that apply.)
   - **A.** Log off
   - **B.** Lock the computer
   - **C.** Use the Switch User command
   - **D.** Shut down
4. You want to move a folder to another location. Which two commands do you use to perform this task? (Choose all that apply.)
   - **A.** Copy
   - **B.** Cut
   - **C.** Move
   - **D.** Paste
5. Which views in Windows Explorer allow you to learn the type of each file? (Choose all that apply.)
   - **A.** Content
   - **B.** List
   - **C.** Tiles
   - **D.** Details

6. What two keyboard shortcuts can you use to copy and paste a file to another location?
   - **A.** Ctrl+C and Ctrl+V
   - **B.** Ctrl+X and Ctrl+P
   - **C.** Ctrl+X and Ctrl+V
   - **D.** Ctrl+C and Ctrl+X

7. If everything on the screen is too small to see, what can you do? (Choose all that apply.)
   - **A.** Use the Magnifier.
   - **B.** Decrease the screen resolution.
   - **C.** Increase the screen resolution.
   - **D.** Opt to make text and other items larger from the Display window.

8. Where do you go in Windows 7 in order to change the Desktop background or the theme?
   - **A.** Start ➢ Control Panel ➢ Appearance And Personalization ➢ Display
   - **B.** Start ➢ Control Panel ➢ Clock ➢ Language ➢ Region
   - **C.** Start ➢ Control Panel ➢ Appearance And Personalization ➢ Personalization
   - **D.** Start ➢ Control Panel ➢ Appearance And Personalization ➢ Desktop Gadgets

9. Which of these user accounts has the permission to manage other users?
   - **A.** Homegroup users
   - **B.** Standard users
   - **C.** Homegroup members
   - **D.** Administrators

10. Which sharing permission allows a user to access and view a file but not make any changes to it?
    - **A.** View
    - **B.** Read/Write
    - **C.** Delete
    - **D.** Read