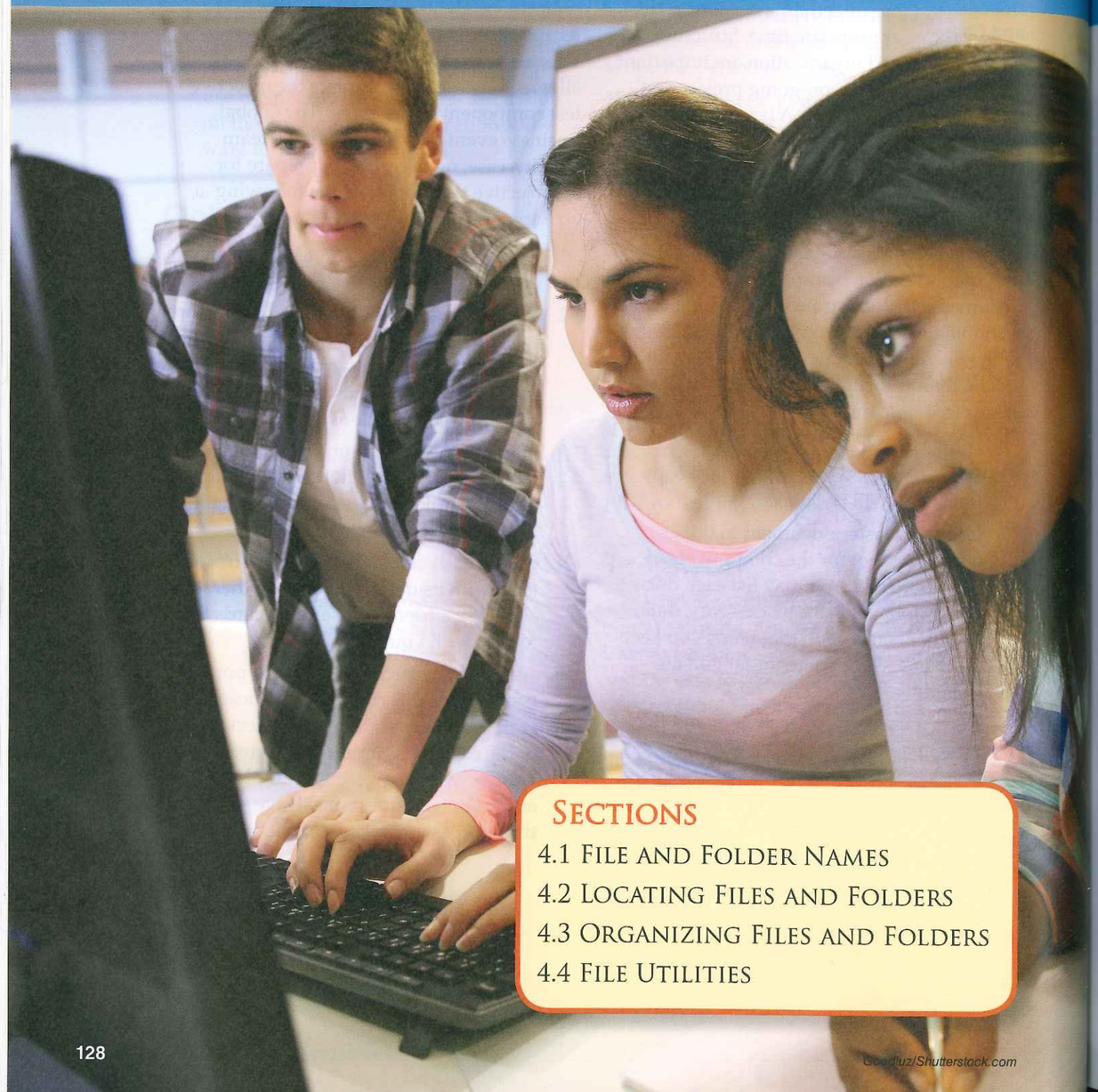
4 File Management



Sections

Check Your IT IQ

Before you begin this chapter, see what you already know about information technology by scanning the QR code to take the chapter pretest. If you do not have a smartphone, visit www.g-wlearning.com.

Good file management means that the user knows how to organize information on a computer. Not only do files need to be named in a meaningful way, the user must be able to locate files when necessary. A sign of poor file management is file names that do not indicate what the file contains. Not keeping track of where files are saved is also a sign of poor file management.

Files can be lost for many reasons: accidental deletion, unintentional overwriting with another file, theft, misplaced removable media, hard disk failure, or loss of the computer. Part of good file management is keeping multiple copies of a file in case of a loss. Good file management also implies that the user has created a safe location for saving the files. In a networked environment, many opportunities are present for other users to accidentally or intentionally cause file losses.

IC3 Certification Objectives

Computing Fundamentals

Domain 1.0
Operating system
Objective 1.2
Manage computer files and folders

Domain 3.0
Computer software and concepts
Objective 3.4
Software Tools

Domain 4.0
Troubleshooting
Objective 4.4
Backup/restore

Key Applications

Domain 1.0
Common Features and Commands
Objective 1.3
Navigating

College and Career Readiness

Reading Prep. Arrange a study session to read the chapter aloud with a classmate. Take turns reading each section. Stop at the end of each section to discuss what you think its main points are. Take notes of your study session to share with the class.

SECTION 4.1

File and Folder Names

Essential Question

How is a file-naming scheme important to good computing?

A computer file is a collection of 1s and 0s that has meaning. This collection resides in computer memory or in a storage location. Software programs may create temporary files that are deleted when the software program no longer needs them. Other files contain information created by a user, and the software allows the user to save and open the file for further use. When a file is saved, it is given a file name so that the file can be located and used again. It is a good practice to assign meaningful and memorable file names so you or another person can recognize the files.

Windows uses a system of named folders to catalog and contain files. Notice that the names in Windows echo activities in an office or school setting. When students save paper files that belong together, they often use a manila folder. A Windows folder performs the same function for electronic files. Folders allow similar files or all files for a project to be organized together. This section discusses the naming of files and folders.

Terms

CamelCase
file association
file name
file name extension
file path
file tree
folder
folder name
library
naming convention
nested
reserved symbols
subfolder

Learning Goals

- Explain how to create meaningful, legal file names.
- Use Windows Explorer to rename files and folders.

Windows File and Folder Names

The **file name** is a label that identifies a unique file on a computer system. There are three parts to a file name in the Windows operating system:

- the file name
- a period (or "dot")
- the file name extension

For example, consider abcde.ext as the file name. In this example, abcde is the file name and ext is the file name extension. The period separates the file name and the file name extension. Notice that Windows uses the term *file name* for both the whole name and the part of the name before the period.

A **folder** is a container in which files are stored. A **subfolder** is a folder contained within another folder. A subfolder is said to be **nested** within the parent folder. There may be several levels of nesting, as a subfolder may itself contain a subfolder that in turn contains another subfolder, as shown in Figure 4-1. A **folder name** is a label that identifies a unique folder on a computer system. In the Windows operating system, a folder name consists of only a name. There is no extension, so there is no period, either.

FYI

The terms *folder* and *directory* are used interchangeably. They mean the same thing.

Legal Names

Computing Fundamentals 1.2.1

File names in Windows are limited by the number of characters in the folders and subfolders that hold the file. For example, C:\Program Files\abcde.ext indicates a file named abcde.ext that is located in

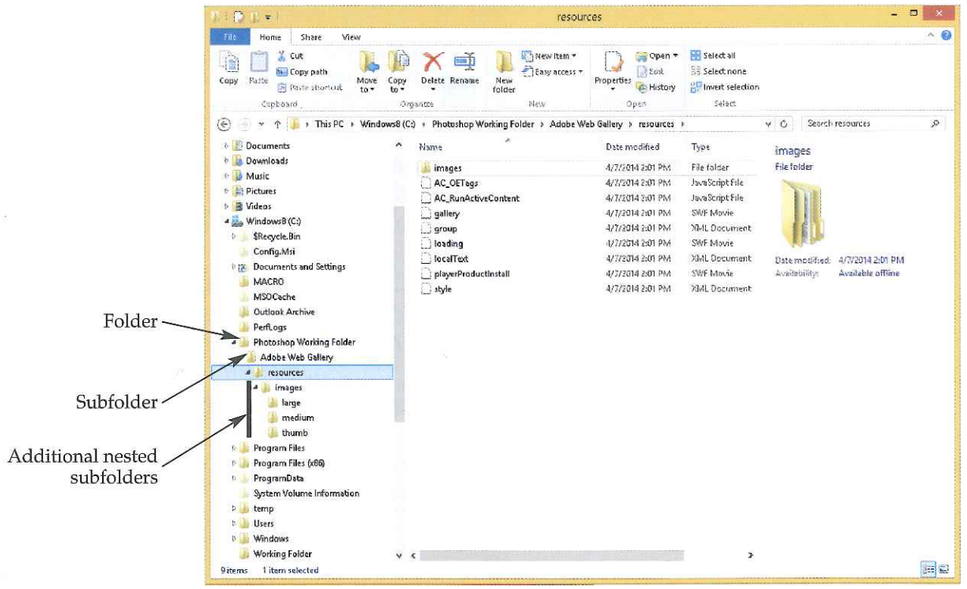


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Figure 4-1. A folder may contain many subfolders, each of which may contain additional subfolders.

Green Tech

Sustainability Training

Green companies lead by example and educate their employees on sustainable business practices. Through sustainability training, employees learn the importance of *going green* at work and the best practices to reduce waste and lower energy consumption. Training employees in simple green procedures can not only help save the environment, but save the company money, too.

the Program Files folder on the C: drive. This string is called the **file path**, which is the drive and folder location of a file plus its file name. The total number of characters in the file path cannot exceed 260 characters. Notice that the path includes the colon (:) for the drive letter and backslashes (\) to indicate where there is a change in folder.

The file path can be seen in the **Properties** dialog box. Right-click on a file, and click **Properties** in the shortcut menu. The file name is listed at the top of the **General** tab, and the path to the folder containing the file is shown in the **Location:** area, as shown in Figure 4-2. The full file path is the location plus the file name.

The limit of 260 characters provides ample space for writing a clear and unique name for each file and folder. Any character from the keyboard may be used in a name *except* for a few reserved symbols. **Reserved symbols** are characters that Windows uses for special meaning. The reserved symbols are shown in Figure 4-3.

Although Windows allows spaces in names, spaces cause problems in other software environments. Some software will stop reading the name at the first space. A URL or web address that contains a space will be misinterpreted. For example:

http://www.pages.com/my document.doc

will be read as:

http://www.pages.com/my

For this reason, it is best to not use spaces in file and folder names.

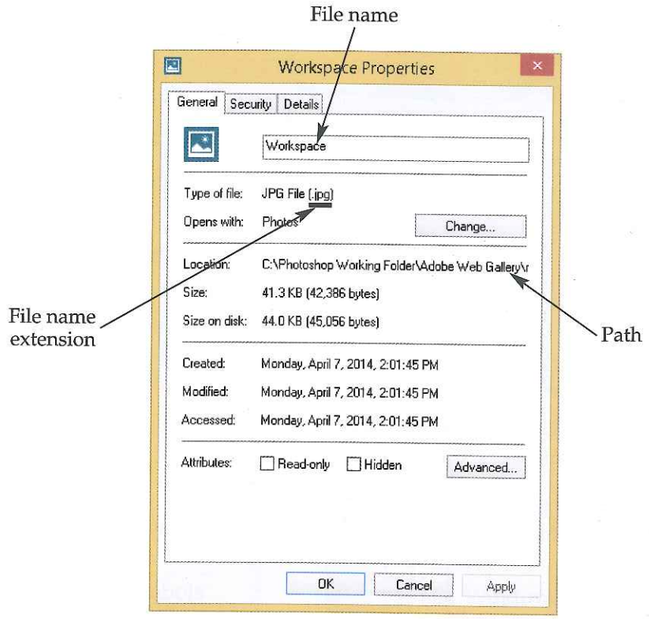

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Figure 4-2. The file name, file name extension, and file path are shown in the **Properties** dialog box.

Symbol	Description
<	Less than symbol or left chevron
>	Greater than symbol or right chevron
:	Colon
"	Double quote
/	Forward slash
\	Backslash
|	Vertical bar or pipe
?	Question mark
*	Asterisk

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Figure 4-3. Reserved symbols cannot be used in file or folder names.

All files and folders should have unique names. Although most operating systems will allow you to create many files with the same name as long as they are in different folders or drives, this is not a good idea. When looking for a specific file and several appear, the user will not know which one is correct.

Meaningful Names

The file name should clearly describe what is in the file. For example, suppose a student uses labReport to name a biology project. This may be satisfactory if there is only one lab report. However, if another lab report is created later, it would not be clear which file is for which report. Instead, more descriptive file names such as LabReportBio and LabReportDNA better describe the content of the files. A **naming convention** is a pattern that is followed whenever a file name is created.

Without spaces between words, long file names can be hard to read. For example, the name reportforlabexperiment is difficult to read. This name would be easy to read if there was an indication of the individual words. **CamelCase** is a naming convention in which the beginning of each word in the name is capitalized. This allows the file name to be read easily. For example, the name reportforlabexperiment becomes ReportForLabExperiment in CamelCase. The CamelCase naming convention got its name due to the apparent humps the capital letters make in the name, as shown in Figure 4-4.

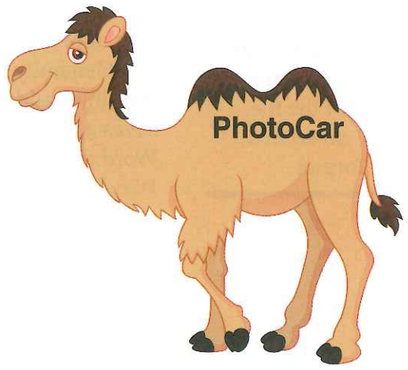

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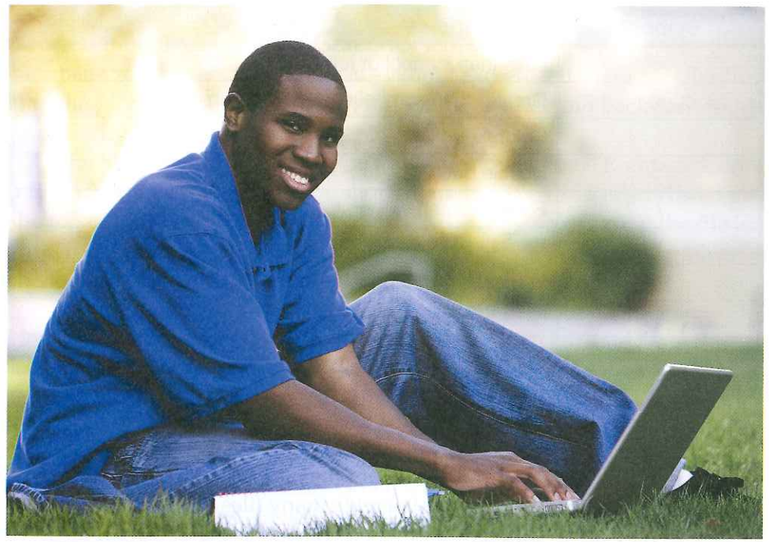
Figure 4-4. CamelCase is using a capital letter for the first letter in each word in a file name.



Monkey Business Images/Shutterstock.com

Computer files for schoolwork can be arranged in folders to keep everything orderly.

Computing Fundamentals
1.2.3

FYI

Changing the file name extension does not change the format of the file. To change the format of the file, it must be saved in a different format.

File Name Extensions

The second part of the file name is the period. Although the first part of the file name may contain periods as well, the last period on the right is the one Windows uses to begin the file name extension.

The third part of the file name is the file name extension, which follows the last dot. The **file name extension**, or file extension, tells the Windows operating system which software to use to open the file. The file name extension *indicates* the format of the file, but does not control the format of the file. The software saving the file controls the format.

Generally, when saving a file, the user adds the file name and Windows adds the correct file name extension. For example, if the user saves a document from Microsoft Word, the software saves the file as a Word document and adds the extension of .docx. It is good practice to let Windows choose the file name extension. Windows determines the file name extension based on the software program used to create the file. When performing a "save as" in many programs, the user can select one of many different file types in which to save the file. For example, image editing software, such as Photoshop or GIMP, may have a native file format, but also allows saving in several other formats, such as TIFF or JPEG.

When a file icon is double-clicked, Windows will locate software to open the file, launch the software, and load the file. This is made possible by a feature called file association. **File association** is a process in which Windows links a file name extension to a software program. For example, if a file has an extension of .docx, double-clicking on the file icon causes Windows to launch Microsoft Word and load the file into Word.

Figure 4-5 shows a few common file name extensions and the Windows program commonly associated with the file type. In Windows,

Extension	File Type	Associated Application
.avi	Video	Windows Media Player
.css	Cascading style sheet	Default browser
.doc, .docx	Document	Microsoft Word
.exe	Executable application	Windows operating system
.htm, .html	Hypertext markup (web page)	Default browser
.jpg, .jpeg	Compressed image	Default image editor
.m4a	Audio-only MPEG4	Windows Media Player
.mp3	Music or sound	Windows Media Player
.pdf	Portable Document Format	Adobe Reader
.pps	Slide show	Microsoft PowerPoint
.ppt	Presentation	Microsoft PowerPoint
.rtf	Rich text format document	Default document editor
.swf	Flash format	Flash Player
.tif, .tiff	Compressed image file	Windows Photo Viewer
.txt	Text	Notepad
.wpd	Document	Corel WordPerfect
.xls, .xlsx	Spreadsheet	Microsoft Excel
.zip	Compressed archive	Windows Explorer

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Figure 4-5. These are common file name extensions.

these associations may be changed using the **File Associations** dialog box. To access this, open the Control Panel window, click **Programs**, click **Default Programs**, and then click **Associate a file type or protocol with a program**.

Do not manually change a file name extension unless there is a very good reason to do so. Changing the extension removes the file association. Additionally, some software will not recognize or open a file using **File>Open** unless the file has the proper extension.

Naming a Group of Related Files

A project may contain several related files. Using a similar word pattern in the file names of these files reminds the user that the files are all related. For example, after completing a science experiment on determining the boiling points of different liquids, the students have been asked to record the following.

- hypothesis and methods in a text document
- data and charts in a spreadsheet
- experiment setup in a photograph
- photograph and results on a web page
- results in a presentation

FYI

If similar files begin with the same word, they will be displayed together in a folder, which can make it easy to keep track of the project files.

A good way to organize similar files is to begin each file name with a common word. In this example, all documents relate to the boiling lab, so the word boiling can start each file name followed by the detail of each document:

- BoilingDescription.doc
- BoilingData.xls
- BoilingSetup.jpg
- BoilingResults.htm
- BoilingPresentation.ppt

Another naming convention is to include the creation date in the file name. The date a file was created or last updated is automatically recorded and can be displayed in Windows File Explorer. However, in some cases, adding a date to the file name is more useful because that will not change each time the file is saved. This is often done to maintain a date record or to help in sorting files. For example, the file name 160513LabResults.doc refers to the result of a lab test conducted in the year 2016 (16), in the month of May (05), and on the thirteenth day (13). Using this naming convention allows lab results from many different dates to be sorted by the year, then the month within a year, and finally by the day within a month regardless of when the content of the file had been updated.

Windows File Explorer

Windows File Explorer is a file-management utility with a graphical user interface that can be used to find anything in the computer's storage areas. The Windows File Explorer is part of the Windows operating system and controls parts of the GUI, including the desktop and the **Apps** or **Start** menu. In Windows 7, the utility is named Windows Explorer. In Windows 8, the utility is named File Explorer.

The first version of Windows contained MS-DOS Executive as the file utility. It also served as the graphical user interface instead of the **Apps** or **Start** menu and desktop found in later versions of Windows. MS-DOS Executive gave way to File Manager in Windows 3.0, at which time the program no longer served as the GUI and was strictly a file management utility. Windows File Explorer and the **Start** menu first appeared in Windows 95. At this point, the program again became part of the GUI. The **Apps** menu first appeared in Windows 8.

Windows File Explorer contains the address bar and ribbon or toolbar at the top of the window, as shown in Figure 4-6. Along the left-hand side of the window is the navigation pane. This pane contains a list of the available drives and folders shown in a tree format. On the right-hand side of the window is the file list. This shows the files and folders contained within what is selected in the navigation pane. Above the file list is the search box. This is used to locate files and folders, as discussed in the next section.

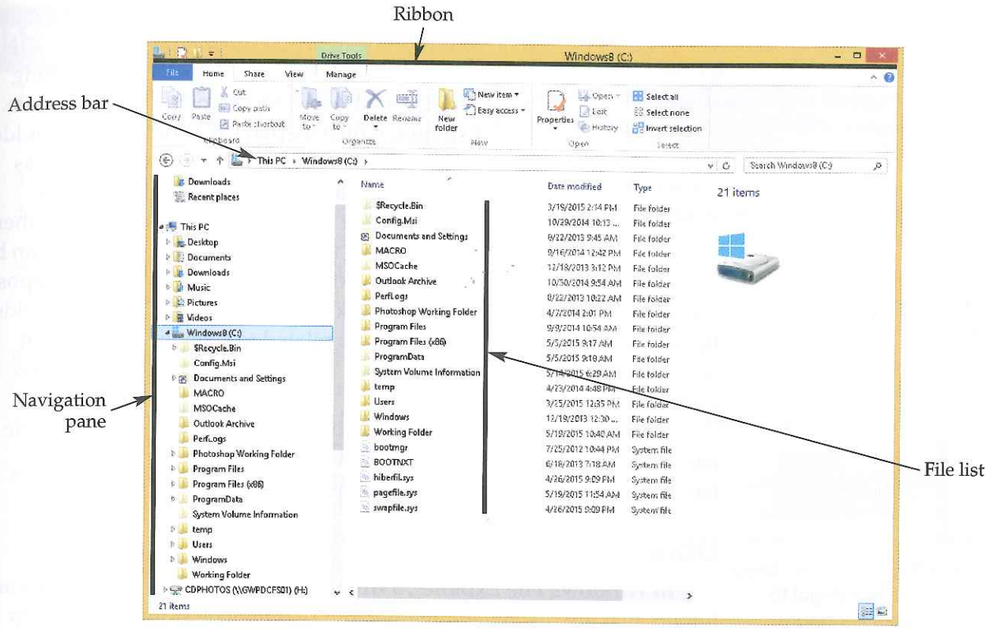

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Figure 4-6. Windows File Explorer is used to locate and manage files in the Windows operating system.

The list of available drives and folders shown in the navigation pane is a tree. A **file tree** can be expanded to display subfolders and the files contained within them, as shown in Figure 4-7. Each folder in the tree is called a branch. The last item in an expanded branch is called a leaf. To expand a branch in the file tree, move the mouse over the folder name until a triangle is displayed to the left of the folder icon. Then, click the triangle. If the folder contains subfolders, they will be displayed indented below the parent folder. To collapse a branch in the file tree, click the triangle next to an expanded branch.

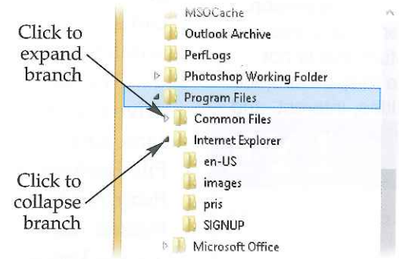

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Figure 4-7. The navigation pane displays the folder structure using a tree metaphor.

There are several folder views in which the content of a folder can be displayed. Some of these views include changing the size of the icons for files and folders, displaying the icons in a list, and displaying detailed information about the files and folders.

Folders

Folders provide an organizational tool that can be used to keep similar files together. Similar files may be related to the same event, of the same file type, or for any reason meaningful to the user. A folder having

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Figure 4-8. The user's Documents folder appears by default on the Windows desktop.

the current user's name appears by default on the Windows desktop, as shown in Figure 4-8. This is the user's Documents folder. Double-clicking a folder on the desktop launches Windows File Explorer, which displays the content of the folder.

A general rule of thumb is to keep only as many files in a folder as can be displayed in Windows File Explorer without scrolling. If there are more files than that, it is likely the files can be organized into subfolders. For example, suppose a user creates a folder name SchoolWork within his or her Documents folder. Items in the Documents folder that are related to schoolwork can then be moved into the SchoolWork folder. This reduces the number of files located in the Documents folder.

A folder is simply a special type of file. Therefore, follow the same naming rules used for other files. However, as stated earlier, a folder name does not have a file name extension.

Ethics

Tax Returns

It is unethical and illegal to file a fraudulent tax return. In a fraudulent tax return, a person deliberately reports information that is not correct. A person who intentionally files a tax return that is not accurate may be subject to penalties, interest, and possible prison time.

Libraries

In Windows File Explorer, a **library** is a collection of similar files and folders that are displayed together, but that may be stored in different locations. A library displays all of the common files available to all users and the current user's files in the same view. The library structure was introduced in Windows 7 to help multiple users run the same computer. Unlike a folder, there is no file or folder connected to a library. If a library is deleted, the files and folders displayed in the library are unaffected.

The idea behind a library is there may be several folders on the disk drive containing similar files that commonly need to be accessed at the same time. For example, the Pictures library, which appears in Windows File Explorer in the Libraries branch, displays the folders My Pictures and Public Pictures. These folders are not subfolders within a *folder* named Pictures, they are simply displayed in the *library* named Pictures for easy access. This is the concept of libraries.

HANDS-ON EXAMPLE 4.1.1

WINDOWS FILE EXPLORER

The ability to effectively use Windows File Explorer is an essential skill for any computer user. Begin by learning the different elements of Windows File Explorer and how to navigate the folder and library structures. Note: libraries are disabled by default in Windows 8.1.

1. In Windows 8, launch File Explorer by clicking the **Apps** button and then clicking **File Explorer** in the **Windows System** group of the **Apps** menu. In Windows 7, right-click on the **Start** menu button, and click **Open Windows Explorer** in the shortcut menu.

HANDS-ON EXAMPLE 4.1.1 (CONTINUED)

2. In Windows 8, click the **View** tab, click the **Navigation Pane** button, and click **Show libraries** in the drop-down menu so it is checked. Leave it checked if already checked. This ensures libraries are visible.
3. Locate the elements of the Windows File Explorer window shown in Figure 4-6.
4. Single-click the Libraries branch in the navigation (left-hand) pane. The defined libraries are displayed in the file list in the right-hand pane.
5. Double-click the Pictures library in the file list. The Libraries branch is expanded in the navigation pane, the Pictures branch is highlighted, and the content of the Pictures library is displayed in the file list.
6. In Windows 7, double-click the Sample Pictures library in the file list. Note: Windows 8 does not include any of the sample files and folders found in Windows 7.
7. In Windows 8, click the **View** tab, and click **Medium Icons** in the **Layout** group. In Windows 7, click the **View** pull-down menu, and click **Medium Icons** in the menu.
8. Applying what you have learned, expand the tree in the navigation pane to show the folders on the local drive, the subfolders within the Windows folder, the subfolders within the Web subfolder, the subfolders within the Wallpaper subfolder, and the files within the Windows subfolder (C:\Windows\Web\Wallpaper\Windows). This nested folder should contain at least one image file.
9. Select an image file by single-clicking it. Notice the details pane updates with information about the file and the menu bar contains more options. The details pane is turned off by default in Windows 8. To turn it on, click the **Details Pane** button in the **Pages** group on the **View** tab of the ribbon.

Displaying File Name Extensions

By default, the file name extensions are hidden by the operating system. This can lead to confusing situations if there are several files with the same name, but different file name extensions. Turning on the display of file name extensions can help the user tell one file from another file with the same name.

For example, it is a common practice to name image files by the content of the image. The files Jellyfish.jpg and Jellyfish.bmp are both image files. However, with the file name extensions hidden, the user will see both files as only Jellyfish when viewed in Windows File Explorer. It is only when the file name extensions are displayed that the difference between the files becomes clear, as shown in Figure 4-9.

FYI

The icon associated with a file helps indicate the file type, but many file types share the same icon or similar icons.

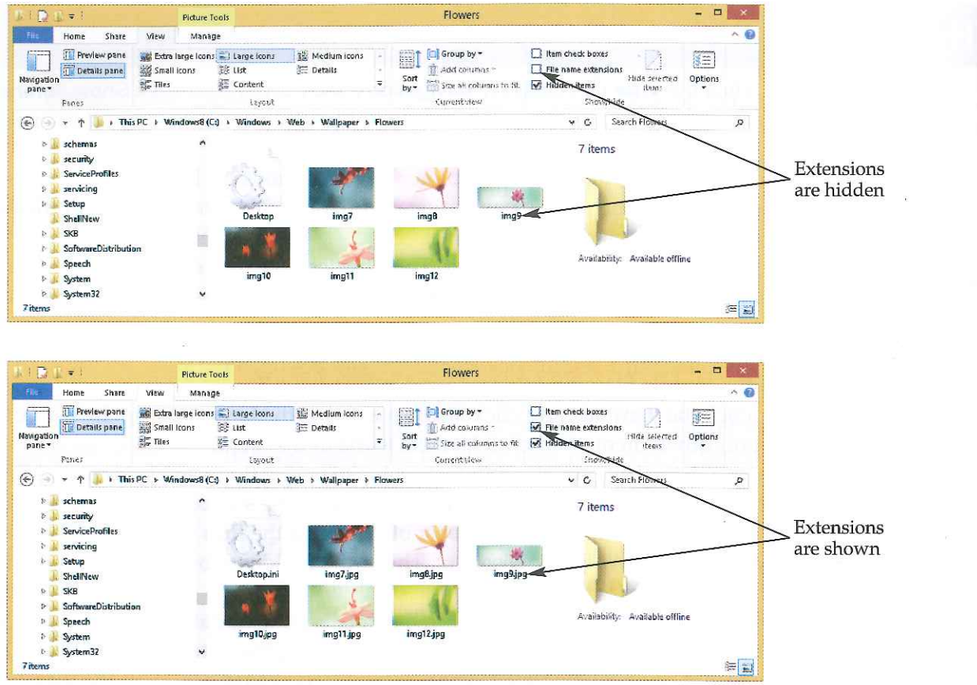

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Figure 4-9. File name extensions are hidden by default, but can be displayed.

TITANS OF TECHNOLOGY

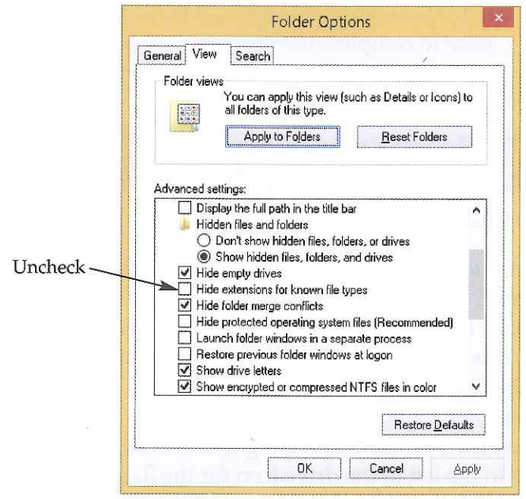
David A. Huffman, a computer scientist and inventor, was an early pioneer in the development of computers. He won many awards. However, the one he earned in 1998 from the IEEE Information Theory Society made a big impact on data compression technologies. This award recognized his invention of the Huffman minimum-length lossless data-compression code. The compression code was the topic of a term paper he wrote while a graduate student at the Massachusetts Institute of Technology in 1952. Before his method was used, file compression tended to lose some or much of the fidelity of the original file. Huffman's idea defined a compression scheme whereby none of the data were lost. Decompression restored the file to its original fidelity. This data compression method has since been used to compress image files as well as the data stream for high-definition television (HDTV) broadcasts. The technology is also used in fax machines and modems. The compression method is known as Huffman encoding. Huffman was also very interested in origami, the ancient Japanese art of paper folding. He contributed to the branch of mathematics involved in the paper folding techniques.

HANDS-ON EXAMPLE 4.1.2

DISPLAYING FILE NAME EXTENSIONS

File name extensions are hidden by default. However, many users prefer to have file name extensions visible. This is a simple setting in Windows.

1. In Windows 8, launch File Explorer. In Windows 7, launch Windows Explorer.
2. Applying what you have learned, navigate to the C:\Windows\Web\Wallpaper\Windows folder.
3. In Windows 8, click the **View** tab, and click the **Options** button (not the drop-down arrow below it). In Windows 7, click the **Organize** button on the toolbar, and click **Folder and search Options** in the drop-down menu that is displayed. The **Folder Options** dialog box is displayed.
4. Click the **View** tab in the dialog box. Notice all of the settings for how files are displayed.
5. Scroll down in the **Advanced Settings** list, and uncheck the **Hide extensions for known file types** check box, as shown.



6. Click the **Apply to Folders** button at the top of the tab so file name extensions will be displayed in *all* folders.
7. Click the **OK** button to apply the change and close the dialog box. Notice the file name extension is displayed for the file in the folder. In this case, the file in the folder is in the JPG format, which is a graphics file.
8. Double-click on the file to open it in the program associated with the .jpg file extension.

Renaming Files and Folders

FYI

Two single clicks must have enough time between them so the operating system will not interpret the clicks as a double-click.

Often, a file or folder must be renamed. This may be done to correct spelling, make the name more descriptive, or simply to change the name to suit the user. However, only the file name should be changed, not the file name extension. If the file name extension is changed, the file association may be broken. This may make the file unrecognizable by the associated software.

There are several ways to rename a file or folder in Windows File Explorer. One way is to right-click on the file or folder and click **Rename** in the shortcut menu. Another way is to single-click twice on the file or folder in the file list. A third way is to select the file or folder in the file list, and then in Windows 8, click the **Rename** button in the **Organize** group on the **Home** tab of the ribbon. In Windows 7 click **Rename** in the **File** pull-down menu. With any of these methods, the file name is replaced with an edit box, and the current file name is highlighted and ready for editing. Once the file name is highlighted, edit the name, and press the [Enter] key once to complete the process.

HANDS-ON EXAMPLE 4.1.3

NAMING FOLDERS

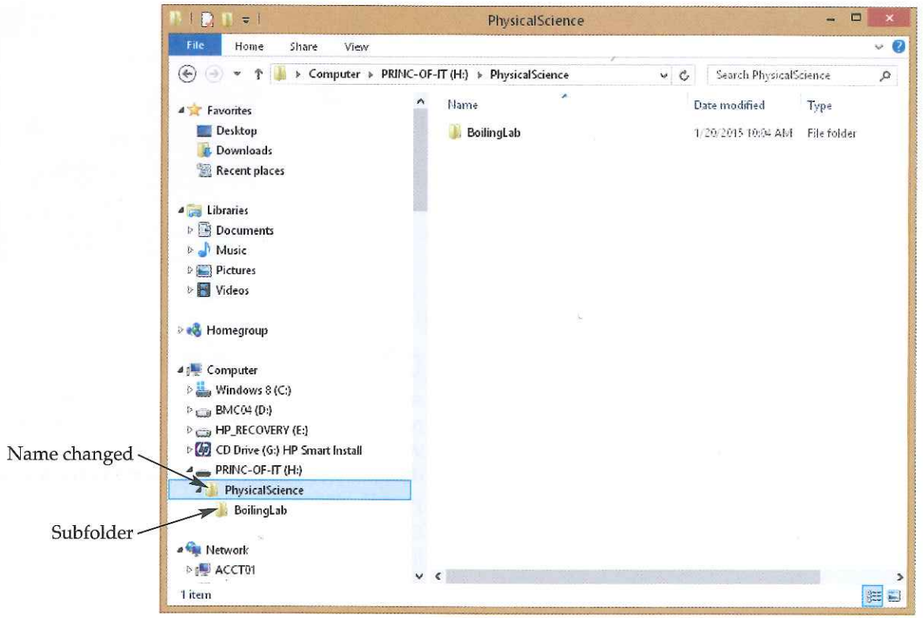
Removable media, such as flash drives, are commonly used by students to maintain schoolwork. In Chapter 2, you began setting up a flash drive for use in this class. Now you will add folders to this device for a class named Physical Science.

1. Insert the flash drive set up in Chapter 2 into the computer. If the **AutoPlay** dialog box appears, cancel it.
2. Launch Windows File Explorer.
3. In the navigation pane on the left, highlight the PRINC-OF-IT flash drive.
4. Click the arrow to the left of the drive icon for the flash drive to expand the folder tree for the drive. Currently, the drive contains no folders (unless folders have previously been added), so there is nothing to expand.
5. Make sure the flash drive is highlighted in the navigation pane. When creating a folder, it will be placed in whatever location is currently highlighted in the navigation pane.
6. In Windows 8, click the **New Folder** button in the **New** group on the **Home** tab of the ribbon. In Windows 7, click the **New Folder** button on the toolbar. A new folder is added to the file

HANDS-ON EXAMPLE 4.1.3 (CONTINUED)

list, and the default name of New Folder is highlighted for editing. The folder tree for the flash drive also is automatically expanded in the navigation pane.

7. Change the default name to SciencePhysical, and press the [Enter] key to finish creating the folder.
8. Highlight the SciencePhysical folder in the navigation pane.
9. Applying what you have learned, add a subfolder named BoilingLab in the SciencePhysical folder.
10. Click the arrow to the left of the SciencePhysical folder in the navigation pane to expand the folder tree. The BoilingLab folder is displayed below the SciencePhysical folder in the tree, which indicates it is a subfolder.
11. Right-click on the SciencePhysical folder in the navigation pane, and click **Rename** in the shortcut menu.
12. Change the name of the folder to PhysicalScience, and press the [Enter] key. Notice how the BoilingLab subfolder remains in the parent folder even after the parent is renamed, as shown.



4.1 Section Review

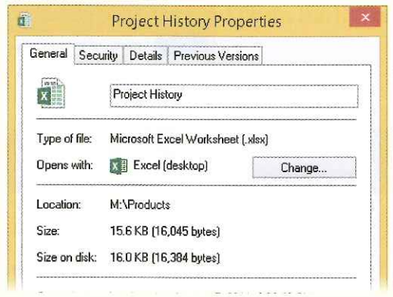
Check Your Understanding

1. What are the three parts of a file name?
2. What are the two parts of the file path?
3. Write this file name in CamelCase: My Picture of Venice.jpg.
4. What is a library in Windows Explorer?
5. Why would you turn on the display of file name extensions?

IC3 Certification Practice

The following question is a sample of the types of questions presented on the IC3 exam.

1. The dialog box displays the properties of a file. What is the file size?
   A. 16,045 KB
   B. Not displayed
   C. 15.6 KB
   D. 15.6 MB



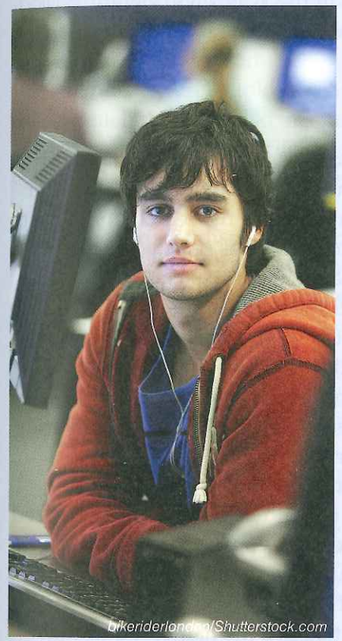
Build Your Vocabulary

As you progress through this course, develop a personal IT glossary. This will help you build your vocabulary and prepare you for a career. Write a definition for each of the following terms and add it to your IT glossary.

CamelCase
file association
file name
file name extension
file path
file tree
folder
folder name
library
naming convention
nested
reserved symbols
subfolder

Section 4.2

Locating Files and Folders



Essential Question

How does your ability to locate files impact your productivity?

It is not unusual to hear novice computer users say that they cannot find files they created. This may be explained by the fact that disk drives may have gigabytes or terabytes of storage space and contain hundreds or thousands of folders. However, being unable to locate a file often means the user did not have a plan for saving and locating files.

Windows provides an organizational plan for collecting files of a similar type in one location. This organizational scheme includes folders for My Documents, My Music, My Pictures, and My Videos. However, many users create custom folders to group files according to their own ways of working. Some choose to group files by creation dates, while others group files around a certain topic, such as vacations or school courses. Each person should choose a scheme that makes sense for him or her and that will support rapid retrieval of each file. A good guide is the English proverb, "A place for everything and everything in its place."

Terms

file management
root
sorting
wildcards

Learning Goals

- Locate files and folders on a computer system.
- Sort the list of files in a folder.

Computing Fundamentals 1.2.1

Locating Files and Folders

File management is working with files on the hard disk or other storage medium. Good management involves organizing files in logical locations. Doing so makes it easier for users to recall where a file is saved.

All files are stored in a hierarchy that begins at the top folder of the drive. This top folder is called the **root**. For example, some folders that exist at the root of the primary hard drive in the Windows operating system include Program Files, Users, and Windows. The file path begins at the drive root.

Searching for Files

Key Applications 1.3.5

The search box in Windows File Explorer is used to locate files and folders. To conduct a search, first highlight the drive, folder, or subfolder to search in the navigation pane. The default text in the search box reflects what is selected. For example, if the Desktop branch is selected in the navigation pane, the default text in the search box is Search Desktop.

FYI

A file search will take less time if the search is the content of a specific folder rather than an entire drive.

Next, click in the search box and enter the name of the file or folder for which to look. If the entire name is not known, a partial name can be entered. When the [Enter] key is pressed, the search begins. A green bar slides across the address bar to indicate the search progress. Every file found matching the search criteria will be displayed in the file list. Scroll through the list to locate the correct file or folder.

Sometimes the list of files found is longer than a user wants to sift through. Suppose a user was hunting for a picture file and simply entered pictures in the search box. Many unwanted files would be suggested. Narrowing the search criteria will speed up locating the file. **Wildcards** can be used in the search box to represent unknown characters. An asterisk (*) represents one or more characters in a file name. A question mark (?) represents just one character.

For example, to find all of the boiling lab files, enter boiling*. To find the boiling lab files that end in 1, enter boilinglab?1. This will return the files boilinglab01 and boilinglab11. However, the file boilinglab111 will not be returned because there is an extra character and the ? wildcard allows for one character.

It is possible to search for only files of a certain type by entering the asterisk wildcard and the file name extension. For example, to locate all JPEG images, enter *.jpg. This method can be combined with part of the file name to limit the search by file type. For example, to locate all boiling lab files that are in Excel format, enter boiling*.xlsx or boilinglab*.xlsx.

Searching Inside Files

By default, Windows File Explorer searches inside certain file types. During a search, Windows not only looks for file and folder names that meet the search criteria, but also looks at the content of these files. For example, the DOC and DOCx file types are by default set to have the content of the file searched. If a search is conducted with the phrase boiling, the results would include not only the files BoilingLab01.xlsx and BoilingLab02.xlsx, but also the file Results.docx if the word *boiling* is contained in that document.

Windows can be told to search the content of *all* file types. This may be useful, but it may also increase the amount of time it takes to conduct a search. In Windows 8, click the **Options** button on the right-hand side of the **View** ribbon of File Explorer. In Windows 7, click **Folder options...** in the **Tools** pull-down menu of Windows Explorer. In the **Folder Options** dialog box that is displayed, click the **Search** tab, as shown in Figure 4-10. In Windows 8, check the **Always search file names and contents** check box. In Windows 7, click the **Always search file names and contents** radio button. Click the **OK** button to apply the setting and close the dialog box.

FYI

Instead of setting Windows to search the content of all file types, it is possible to add specific file types to the list of files whose content will be searched using the **Indexing Options** link in the Control Panel window.

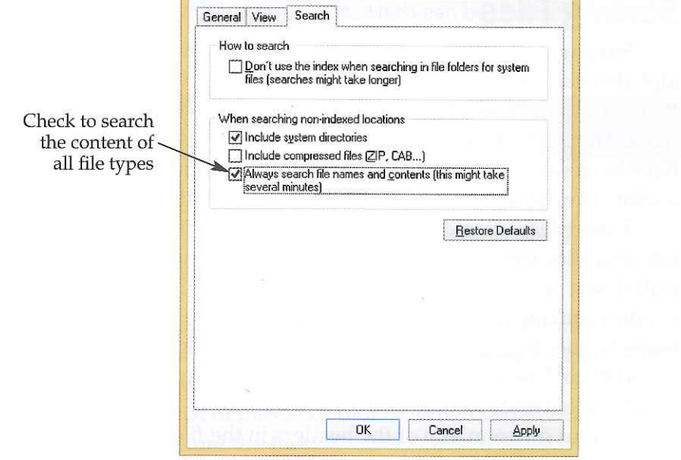


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Figure 4-10. By default, Windows searches the content of certain file types, but it can be set to search the content of all file types.

HANDS-ON EXAMPLE 4.2.1

SEARCHING FOR FILES AND FOLDERS

The ability to search for files is critical to becoming a successful computer user. It is not uncommon for a computer user to work with hundreds if not thousands of files over the course of a year. Even the best computer users will need to search for files and folders.

1. Launch Windows File Explorer.
2. Expand the folder tree for the primary hard drive (C:) in the navigation pane on the left, and highlight the Windows folder. The search box should display Search Windows.
3. Click in the search box. The default text is replaced with a vertical bar cursor. For a few seconds, a list of recent search phrases is also displayed.
4. Enter *.jpg in the search box. When the [Enter] key is pressed, the search begins.
5. A green bar appears in the address bar to indicate the progress of the search. When the green bar reaches the right-hand side of the address bar and disappears, the search is complete. The file list displays the files found in the Windows folder, as well as all of its subfolders, that are of the JPG type.

Sorting Files

Sorting is arranging a list by a certain criterion, such as alphabetically, by date, or by size. This can help locate the file or folder. By default, Windows File Explorer shows files sorted alphabetically by name, from A to Z. Sorting files by date is also useful to show which files have been saved more recently than others. Sorting by date is especially useful if multiple versions of the same file exist in different locations.

To sort files, display the details view. In Windows 8, click the **View** tab, and click **Details** in the **Layout** group. In Windows 7, click the **View** pull-down menu, and click **Details** in the menu. In the details view, headers are displayed in the file list, as shown in Figure 4-11. Clicking the Name header toggles between sorting the files alphabetically from A to Z and from Z to A. Clicking the Date header toggles between sorting the files from oldest to newest and newest to oldest. A small triangle pointing either up or down in one of the headers in the file list indicates which header is used as the sort criterion. The direction the triangle is pointing indicates if the sort is *ascending* (A to Z, for example) or *descending* (Z to A, for example).

FYI

Click the drop-down arrow in the header in the file list to show additional sorting options.

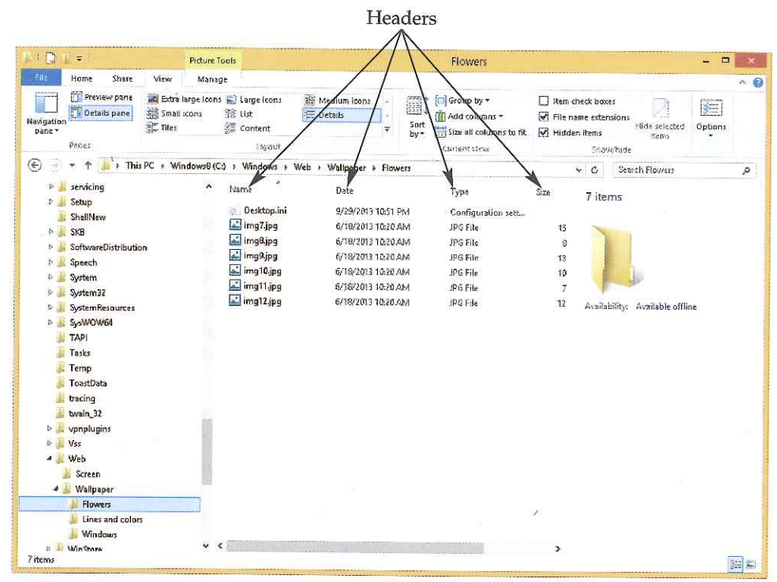

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Figure 4-11. The details view displays headers, which can be used to sort files.

HANDS-ON EXAMPLE 4.2.2

SORTING FILES

Sorting files is useful when a search returns a long list of files. However, sorting can be useful anytime the content of a folder is displayed.

1. Launch Windows File Explorer.
2. Highlight the Windows folder in the navigation pane on the left.
3. In Windows 8, click the **View** tab, and click **Details** in the **Layout** group. In Windows 7, click the **View** pull-down menu, and click **Details** in the menu.
4. Scroll through the list of files and folders. When sorted in ascending alphabetical order, all folders are listed before the files.
5. Click the Date modified header so the triangle points down. Notice that the file list displays the files at the top in ascending order of when they were last modified. In ascending order of date, the most recent file is at the top. The folders are at the bottom of the list after the files and are also sorted in ascending order by date.
6. Click the Date modified header to toggle the sort to descending order. Now the folders appear first in the list with the oldest one at the top. The files appear after the list, also sorted in descending order.
7. Click the Name header so the triangle points up. All of the files and folders are now in ascending alphabetical order with the folders at the top of the list and the files after the folders.

4.2 Section Review

Check Your Understanding

1. What is the top folder of the file tree called?
2. In which utility is the file search option found in Windows?
3. Which wildcard represents a single unknown character?
4. What should be entered to search for all image files with the .jpg file name extension?
5. How are files sorted by date in Windows Explorer?

IC3 Certification Practice

The following question is a sample of the types of questions presented on the IC3 exam.

1. Select the best choice for the statement. A computer icon is a(n):
   A. file containing the full image of the small one displayed.
   B. folder.
   C. small image on a Windows screen that represents a file or folder.
   D. embedded computer.

Build Your Vocabulary

As you progress through this course, develop a personal IT glossary. This will help you build your vocabulary and prepare you for a career. Write a definition for each of the following terms and add it to your IT glossary.

file management
root
sorting
wildcards

Section 4.3

Organizing Files and Folders


Ermolaev Alexander/Shutterstock.com

Essential Question

What is the most efficient way to copy a file from one folder to another?

Operating systems allow users to create their own folders and subfolders. Organizing personal storage locations helps the user to save and retrieve data. Using Windows File Explorer, the user can easily view and create new folders. When using an external drive, it is a good idea to create the same folder hierarchy that is used on the internal drive. Having the same organizational scheme across devices will provide a more efficient transfer of files folders from one device to another. Locating files on the external drive will be easier, too.

When files or folders are transferred from one device to another, they can be either copied or moved. There is a big difference between copying a file or folder and moving it. There is an even bigger difference when files or folders are copied or moved across devices. This section explains how to copy and move files and folders.

Terms

copy
destination
drag and drop
move
recycle bin
shortcut menu
source

Learning Goals

- Explain the difference between copying files and moving files.
- Delete files and folders from a computer system.

Computing Fundamentals
1.2.2

Copying and Moving Files and Folders

Files and folders can be easily moved around any storage drive or between devices. The **source** is the folder where the file or folder being transferred is originally located. The **destination** is the folder to where the file or folder is being transferred. The transfer can be move or copy.

There are often several methods to accomplish a task in Windows. Copying and moving files and folders are examples of where there is more than one way to do something. Particularly useful is the shortcut menu. The **shortcut menu** is a point-of-use menu displayed by right-clicking. Many software programs, including the Windows OS, have various shortcut menus. A shortcut menu is context-sensitive and anticipates common actions that a user may take. *Context-sensitive* means what is displayed in the menu is based on what was right-clicked. For example, to copy a file from one drive to another, right-click on that file and click **Copy** in the shortcut menu, as shown in Figure 4-12.

FYI

Most standard open and save dialog boxes in Windows can be used to perform some file management, such as copying, moving, renaming, and deleting files or folders.

Selecting Files and Folders

To select, or highlight, a single file or folder, simply single-click it in Windows File Explorer. However, there are a couple of ways to select multiple files or folders. Once a selection is made, whether it consists of a single file or folder or multiple ones, it can be copied, moved, or deleted.

One way to select multiple files or folders is to drag a selection window around them in Windows File Explorer. Click in a blank area above the first file or folder name to select, hold down the left mouse button, and drag to the last file or folder to select. As you drag, a box

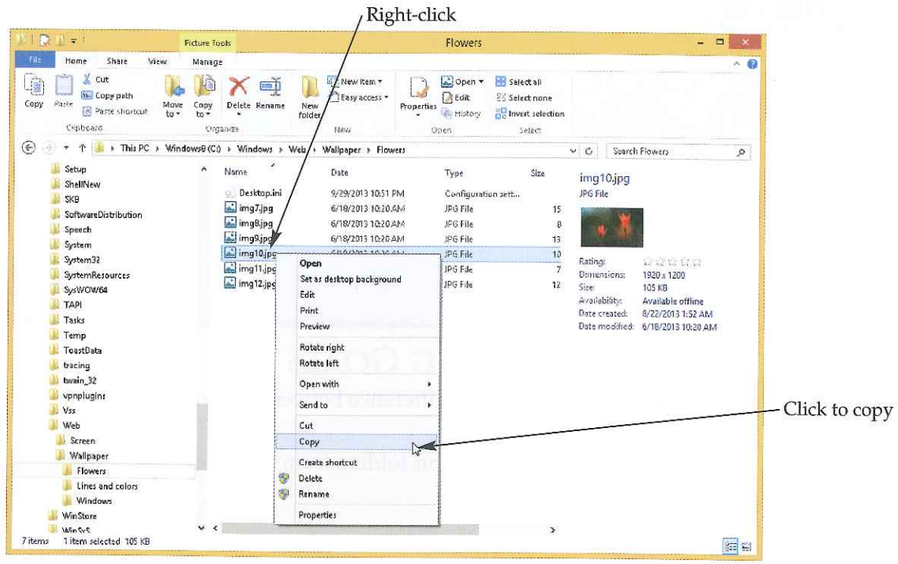

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Figure 4-12. The shortcut menu can be used to copy or move a file.

called a selection window is drawn. Any files or folders within the selection window will be selected, as shown in Figure 4-13. When the files and folders to select are highlighted by the selection window, release the left mouse button. This method only works to select files or folders in sequence.

Another way to select files or folders in sequence is to use the [Shift] key. This is often easier than trying to drag a selection window. To use this method, click the first file or folder to select it. Then, hold down the [Shift] key, and click the last file or folder in sequence. The first and last file or folder and all files or folders between them are selected.

To select individual files or folders that are not in sequence, the [Ctrl] key must be used. Hold down the [Ctrl] key, and then click the files and folders to select. The files and folders do not need to be in sequence, but they must be in the same parent folder.

Copying Files and Folders

A **copy** of a file or folder is an exact duplicate of the original at the time the copy was made. When a file or folder is copied from one folder to another, there are two versions of the file. One version exists in the source folder and one version exists in the destination folder. To copy a file or folder using the shortcut menu:

1. Right-click on the file in the source folder. This selects the file and displays the shortcut menu.
2. Click **Copy** in the shortcut menu. A copy of the file is placed on the system clipboard.

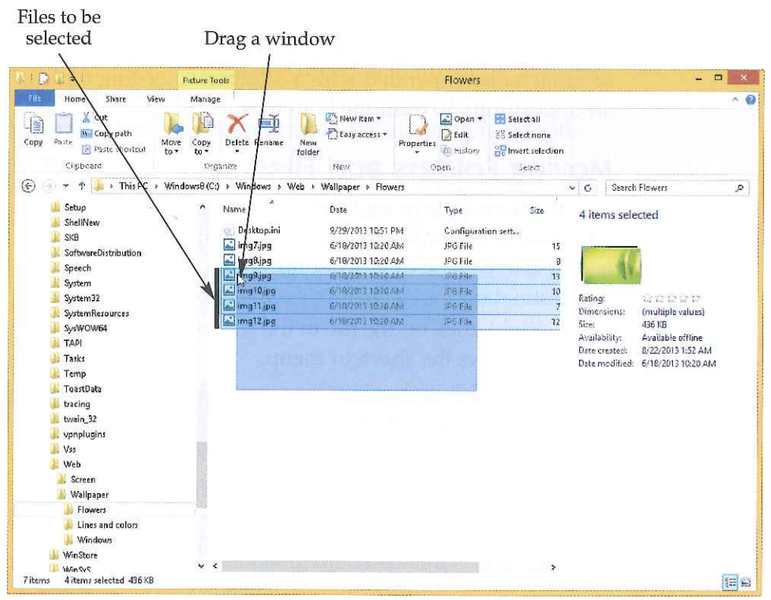

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Figure 4-13. Multiple files can be selected by dragging a window around them.

FYI

If the source and destination folders are the same, the copy is automatically renamed to end with – Copy to avoid conflicting file names.

3. Select the destination folder in the navigation pane.
4. Right-click in a blank area of the file list, and click **Paste** in the shortcut menu. A copy of the original file is created from the content on the system clipboard and placed in the destination folder.

On occasion, a file of the same name may be in the destination folder. Windows will prompt the user to choose what to do, as shown in Figure 4-14. There are three options:

- **Copy and Replace**
- **Don't copy**
- **Copy, but keep both files**

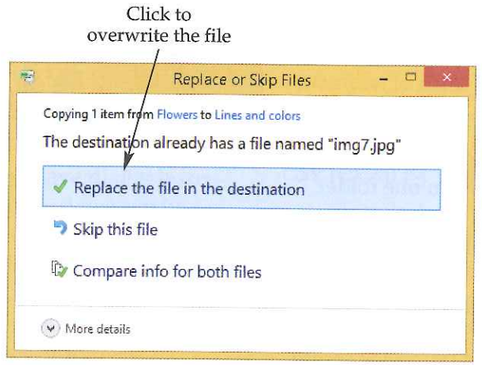

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Figure 4-14. If a file of the same name exists in the destination folder, you are asked what to do.

The **Copy and Replace** option overwrites the file or folder of the same name in the destination folder. This means the original file in the destination folder will be gone. It is important to be sure that it is appropriate to overwrite the file or folder in the destination folder before choosing this option.

The **Don't copy** option cancels the action. The file or folder remains in the source folder. The file or folder of the same name in the destination folder is also unaffected. Choosing this option provides an opportunity to go to the destination folder, determine whether or not the file or folder with the same name may be deleted, and then restart the copy procedure, if appropriate.

The **Copy, but keep both files** option preserves the file in the destination folder. The copy being created is placed in the destination folder with the original name appended with a number. Choosing this method provides an opportunity to examine both files.

Moving Folders and Files

To **move** a file or folder means to remove it from the source folder and place it in the destination folder. When a file or folder is moved, there is only one version of it. After the action, the file or folder appears only in the destination folder. To move a file or folder using the shortcut menu:

1. Right-click on the file in the source folder. This selects the file and displays the shortcut menu.
2. Click **Cut** in the shortcut menu. The original file is removed from the source folder and placed on the system clipboard.
3. Select the destination folder in the navigation pane.
4. Right-click in a blank area of the file list, and click **Paste** in the shortcut menu. The original file is placed in the destination folder. It also remains on the system clipboard.

The only difference between the procedures for copying and moving using the shortcut menu is the file or folder is *cut* instead of *copied*. Cutting removes the original from the source folder and places it in the

destination folder. In effect, the file or folder is moved to the destination folder. If the destination folder contains a file or folder with the same name as the original, the user is prompted to choose what to do, just as with copying a file.

Other Methods to Copy and Move

Computing Fundamentals
1.2.2

There are keyboard shortcuts that can be used to copy and move files and folders. To copy a file or folder, first select the item. Then, press the [Ctrl][C] key combination. This copies the file or folder to the system clipboard. To move a file or folder, select the item, and press the [Ctrl][X] key combination to cut the item. To complete either operation, select the destination folder in the navigation pane, and press the [Ctrl][V] key combination to paste the content of the system clipboard. To undo an operation, press the [Ctrl][Z] key combination. Note that the keys [Z], [X], [C], and [V] are next to each other on the keypad, which makes it easy to complete these common tasks with the left hand.

FYI

The keyboard shortcuts for copy, cut, and paste can be used in many software programs to edit content. The [Ctrl][Z] key combination is standard for reversing an action.

Another alternate method to copy or move a file or folder is to drag and drop it. **Drag and drop** is a procedure in which an item is selected in one location, moved with the mouse, and placed in another location. To drag, click the item in the source location, hold down the left mouse button, and move the mouse to the destination location. To drop, release the mouse button. To cancel a drag and drop, press the [Esc] key before dropping the item. When drag and drop is used between two drives, the operation is *copy*. When drag and drop is used between locations on the same drive, the operation is *move*. It is important to remember this default behavior.

The default drag and drop behavior can be modified with the [Ctrl] and [Shift] keys. To copy a file or folder, regardless of whether the operation is between drives or on the same drive, hold down the [Ctrl] key, then drag and drop the item into the destination location. To move a file or folder, hold down the [Shift] key, then drag and drop the item into the destination location.

Another way to modify the default drag and drop behavior is to right-click instead of left-click. Right-click on the item to copy or move, hold down the right mouse button, and drop the item in the destination location. When the item is dropped, a shortcut menu is displayed that contains options to copy or move the item or cancel the operation.

HANDS-ON EXAMPLE 4.3.1

COPYING FILES

The ability to copy and move files is a critical skill for a successful computer user. Many users prefer to drag and drop files instead of using the keyboard.

1. Insert your PRINC-OF-IT flash drive into the computer.
2. Launch Windows File Explorer.

HANDS-ON EXAMPLE 4.3.1 (CONTINUED)

3. Applying what you have learned, search the Windows folder for any file with the .jpg file extension.
4. Select any one image file in the file list by left-clicking on it once.
5. Hold down the [Ctrl] key, and click any two other image files to select them. Because the [Ctrl] key is held down, the files do not need to be sequential to the first file.
6. Press the [Ctrl][C] key combination to copy the selected image files.
7. Select the PRINC-OF-IT flash drive in the navigation pane.
8. Applying what you have learned, create a folder on the flash drive named Images.
9. Select the new folder in the navigation pane.
10. Press the [Ctrl][V] key combination to paste the copied image files into the Images folder.
11. Applying what you have learned, search the Windows folder for any file with the .jpg file extension.
12. Click and hold any image file in the file list, drag the file to the Images folder on the flash drive, and drop the file. If the file tree for the flash drive is not expanded, hold the file over the flash drive icon for a couple of seconds until the tree is automatically expanded. Then, drop the file into the Images folder. Because this operation is across drives, not within the same drive, it is a copy operation, not a move operation.

Deleting Files and Folders

In order to effectively manage files, you need to be able to remove files and folders that are no longer useful. In Windows, deleting a file or folder is a simple process. Restoring a deleted file or folder is also a simple process.

FYI

Select a group of files or folders to delete the entire group in one step.

Deleting

To delete a file or folder, select it and press the [Delete] key or right-click on it and click **Delete** in the shortcut menu. In Windows 8, you can also click the **Delete** button in the **Organize** group on the **Home** tab of the ribbon in File Explorer. In Windows 7, you can also click the **Organize** button on the Windows Explorer toolbar and then click **Delete** in the drop-down menu. No matter which method is used, a dialog box appears asking to confirm the deletion. Click the **Yes** button to delete the selected file or folder. Click the **No** button to cancel the operation.

Restoring

When asked to confirm a deletion, the dialog box asks Are you sure you want to move this folder to the Recycle Bin? Windows uses the concept of a recycle bin as an *undelete* function for deleted files and folders. The **recycle bin** is a special folder used as a collection point for all files and folders that have been deleted. It can hold a certain volume of deleted material, and the maximum size can be changed. As long as a deleted file or folder is stored in the recycle bin, it can be restored or undeleted.

To restore a file or folder, display the content of the recycle bin. This can be done by double-clicking the **Recycle Bin** icon on the desktop or, in Windows 7, by selecting the Recycle Bin branch in the navigation pane in Windows Explorer. With the content of the recycle bin displayed, right-click on the file or folder to restore, and click **Restore** in the shortcut menu. In Windows 8, you can also select the file or folder, and click the **Restore the selected items** button in the **Restore** group on the **Manage** on-demand tab in the ribbon. In Windows 7, you can also select the file or folder, and click the **Restore this item** button on the toolbar. Once restored, the item is removed from the recycle bin and placed in the location from where it was deleted.

The recycle bin is a folder, and its content takes up storage space. To free this storage space, the recycle bin can be emptied. However, doing so permanently removes the deleted files and folders, and they cannot be restored. To empty the recycle bin, display its contents. Then, in Windows 8, click the **Empty Recycle Bin** button in the **Manage** group on the **Manage** on-demand tab of the ribbon. In Windows 7, click the **Empty Recycle Bin** button on the toolbar. A message appears asking to confirm removing the items from the recycle bin. Click the **Yes** button to remove the items or the **No** button to cancel the operation.

Career Skills

Graphic Artist

Graphic artists are often called on to determine which file format to use for an online production. They must learn to balance the image quality with the file size. Their aim is to produce the finest quality image while ensuring the smallest file size for fast transmission, all without violating the integrity of the original image.

4.3 SECTION REVIEW

CHECK YOUR UNDERSTANDING

1. The _____ is a point-of-use menu displayed by right-clicking.
2. How do you select a file or folder in Windows Explorer?
3. What is the difference between copying a file and moving it?
4. What is the key combination for cutting a file instead of copying it?
5. What is the location in Windows from where a deleted file can be restored?

IC3 CERTIFICATION PRACTICE

The following question is a sample of the types of questions presented on the IC3 exam.

1. Perform this simulation.
   Locate the file named Lighthouse.jpg in the C:\Libraries\Pictures\Sample Pictures folder, and move it to the folder C:\Libraries\Pictures\Sample Pictures\Flowers.

BUILD YOUR VOCABULARY

As you progress through this course, develop a personal IT glossary. This will help you build your vocabulary and prepare you for a career. Write a definition for each of the following terms and add it to your IT glossary.

copy
destination
drag and drop
move
recycle bin
shortcut menu
source

SECTION 4.4

File Utilities

Essential Question

How would society be impacted if social media websites did not back up their data?

Windows Explorer is an example of a file utility. File utilities perform common functions such as backing up and restoring files as well as displaying and editing a file's properties. These programs are called utilities because they help the user perform useful, repetitive tasks. One of the most important file-management tasks is to back up files in the event that the original files are lost, deleted, or corrupted. Utilities also assist in determining the most recent version of a file.

Sending large files as attachments to an e-mail message or copying large files to a flash drive may be a problem. Large files take more time to copy or move through the e-mail network. A file utility that can make files smaller is an advantage here. Utility programs can be accessed through the Control Panel window and through the Accessories folder in the **Apps** or **Start** menu.

Steve Cukrov/Shutterstock.com

Learning Goals

- Use the Windows help system.
- Explain the properties associated with a file.
- Describe the process of backing up files and folders.
- Discuss file compression methods.

Terms

backup
extracting
file attribute
file compression
file properties
help
system image

Windows Help

Help is a resource to assist the user in learning how to use a feature of the program. It is a knowledge database of topics related to the software. Help is provided by almost all software programs, including the Windows operating system.

The help feature for Windows File Explorer can be launched by clicking the **Help** button (question mark) in the upper-right corner of the window. The **Windows Help and Support** dialog box is displayed. Because help was accessed from within Windows File Explorer, the initial content displayed is related to file management. However, the **Windows Help and Support** dialog box is the interface for the entire Windows help feature.

At the top of the **Windows Help and Support** dialog box is a search box. Enter a word or phrase related to the topic you wish to view, and click the **Search** button (magnifying glass). A list of related topics is displayed. The name of each topic is a hyperlink. Clicking the hyperlink displays the full article. For example, if the phrase folder management is entered in the search box, a list of topics related to managing files, folders, and other items is displayed.

Windows will try to rank topics in an order most likely to match the search phrase, but do not assume the first topic will contain the information you seek. Carefully read the name of each topic. Evaluate how closely the words in the title match the search phrase. Once you have determined which topic is most likely to contain the information you seek, click the hyperlink. Then, scan the article to see if it appears to contain the information. If not, click the **Back** button and evaluate other topics. Otherwise, read the details of the article.

FYI

The help feature for Windows can also be accessed through the **Apps** or **Start** menu. When accessed in this way, the initial topics are for Windows in general.

File Properties

The **file properties** are all information about the file, but not the data contained within the file. Properties include, among other things, the creation date, date of the last save, current permission setting, and whether or not it is hidden. The file properties are displayed in the **Properties** dialog box. To open this dialog box, right-click on a file, and then click **Properties** in the shortcut menu.

In most cases, there are three tabs in the **Properties** dialog box, as shown in Figure 4-15: **General**, **Security**, and **Details**. In Windows 7, there is usually a fourth tab named **Previous Versions**. In some cases, depending on the file type and system configuration, there may be more tabs. Under each tab are options and settings that may be displayed or edited.

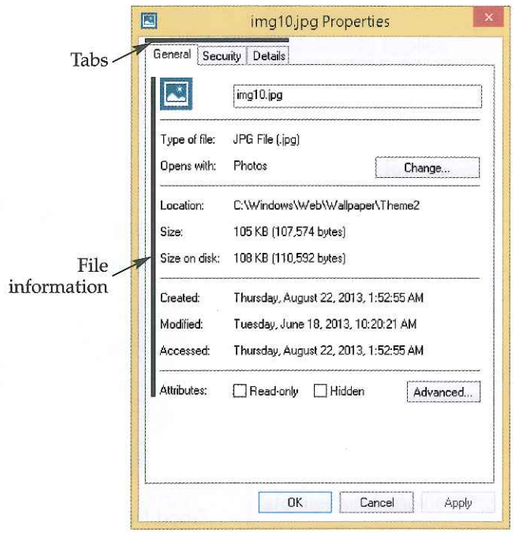

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Figure 4-15. The **Properties** dialog box contains information about the file.

General Tab

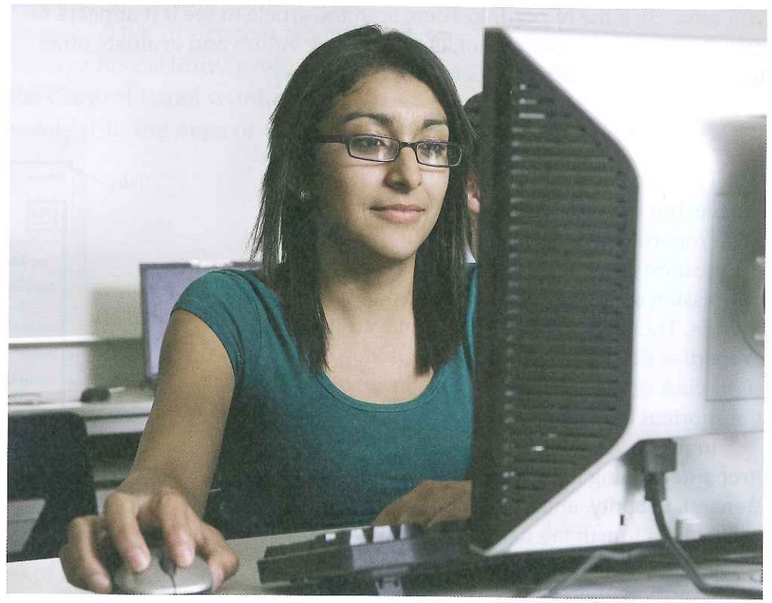
The **General** tab of the **Properties** dialog box lists information such as the file type, the size of the data contained and the size of the file on the disk, and the path to the folder where the file is located. The file name is displayed in a text box at the top of the tab and may be renamed there. Also listed are three dates and times.

- Created is the date and time when the file was created.
- Modified is the date and time when the file was last changed.
- Accessed is the date and time when the file was last opened, but not saved.

The software program associated with the file type is indicated in the **Opens with:** area. This is the software that will be launched when the file icon is double-clicked in Windows File Explorer. To change the associated software, click the **Change...** button. In the **Open with** dialog box that is displayed, a different software program can be selected. The association is applied to all files of the file type.

A **file attribute** is a characteristic of a file about the display, archiving, and save status of files. There are two file attributes that can be set on the **General** tab:

- read-only
- hidden



bikeriderlondon/Shutterstock.com

Good file management is a key to successful computing.

Read-only permits no editing, saving, or deleting. Check the **Read-only** check box to guard against accidental overwriting. Users may view it, but may not overwrite it. Hidden keeps the file from being listed in Windows File Explorer. Many system files have the **Hidden** check box checked. Clicking the **Advanced** button opens a dialog box in which other settings regarding the save process for a file can be made.

Security Tab

The **Security** tab of the **Properties** dialog box permits the author to modify the permissions for sharing a file with other users on a network. Windows lets users form a workgroup when PCs are connected to a network. In addition, multiple users on a Windows PC may share files with one another. Some users only require need-to-know access to a file's contents. Permissions allow restricted access to a file. Permissions are an extension of the **Read-only** attribute available on the **General** tab.

For example, people may be working on developing a certain project as a group. Instead of carrying the common files around on a flash drive, Windows allows users in a group to see each other's files on their own computers. This means they can allow other users to modify the file or simply read it. One user may create a file and give permission to other users to view the file content, but not change it. For example, it may be a final version that has been adopted in some manner and no one should be able to change it unless authorized. These permissions are settings in the file properties.

Details Tab

The **Details** tab of the **Properties** dialog box provides extra data about the creation of the file and information related to authorship. On this tab, the file can be assigned a title and subject, rated, tags added, and comments added. It is here that the author's name may be entered. The tab also summarizes all of the selections on the first two tabs. This tab is context-sensitive and differs by file format.

Previous Versions Tab

The **Previous Versions** tab of the **Properties** dialog box lists when the file was backed up and supports restoring an earlier version of the file. This is very helpful if changes have been made and the file saved, thereby overwriting the earlier version. If the user decides not to make those changes, an earlier version of the file can be retrieved from the backup files. This function applies only to files that have been backed up with Windows Backup and Restore, which is discussed later.

The information on this tab also helps when a program crashes, or unexpectedly stops working. When Windows crashes, it is expected to try to restore the user's work from previous saved versions. The information on this tab provides details to step through the restore operation.

STEM

Engineering

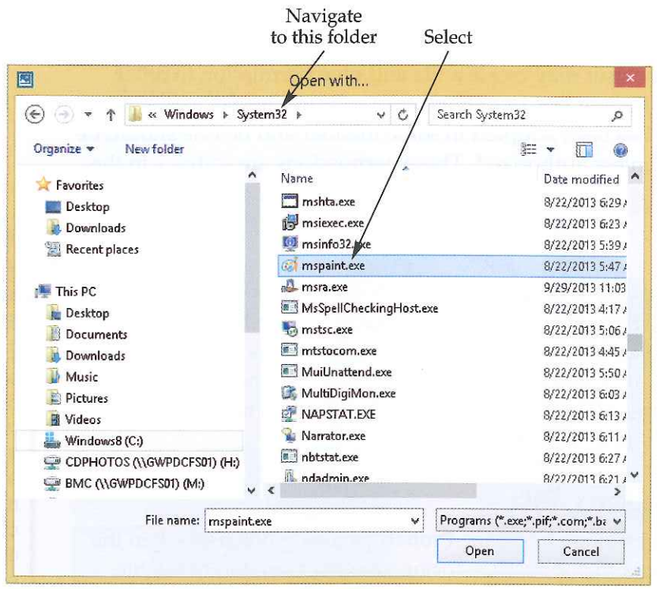
Engineering applies scientific theory to the design of materials for technological use. There are many branches of engineering, but the main branches are chemical engineering, civil engineering, electrical engineering, and mechanical engineering. Each branch has subdisciplines, which each have specialties. For example, a subdiscipline of civil engineering is structural engineering, which specializes in architectural engineering.

HANDS-ON EXAMPLE 4.4.1

FILE ASSOCIATION

By default, in Windows the JPG file type is associated with an image viewer, such as Photos or Windows Photo Viewer. However, it may be more efficient to have the image file opened in an editor, such as Microsoft Paint.

1. Launch Windows File Explorer.
2. Applying what you have learned, search the Windows folder for any file with the .jpg file extension.
3. Right-click on any image file, and click **Properties** in the shortcut menu.
4. Click the **General** tab in the dialog box.
5. Look at the program listed in the **Opens with:** area. The default program is Windows Photo Viewer.
6. Click the **Change...** button. In Windows 8, click **More Options** and then **Look for another app on this PC**. The **Open with** dialog box is displayed, as shown.



7. Navigate to the Windows\System32 folder, and select the mspaint.exe file. Click the **Open** button. The association for the JPG file type is changed to Microsoft Paint. The **Properties** dialog box is updated to reflect this.
8. Click the **OK** button to close the **Properties** dialog box.
9. Double-click on any JPG file in Windows File Explorer. Microsoft Paint is launched, and the image file is loaded into Paint.

File Backups

A **backup** is a copy of a file that can be safely retrieved if anything unfortunate happens to the most recent version of the file. Mishaps are common in file management. Files can be accidentally deleted, overwritten, modified, or corrupted. A file becomes corrupted when something happens to affect the storage location of the file. Users create backups to ensure that all is not lost if something happens to a file.

FYI

Always back up a file before a significant amount of work is to be done and after that work has been completed.

Saving Copies of Files

The simplest way to back up a file is to save it on a different storage device. If the user is saving data files on a course flash drive, the files should also be saved on another flash drive, a server, or in the cloud. An advantage of using the cloud is that the file is offsite. The cloud service being used also has backup measures to protect the file. When creating a backup on a different device, the user must remember where the copy is and to keep it current.

Computing Fundamentals
4.4.1, 4.4.2, 4.4.3

Saving Versions of Files

Another backup scheme is to save versions of the file. This method allows restoring one of many earlier states of a file, thus reversing changes. Most software programs offer a **Save As** function for saving a file under a different name. This function can be used to easily create versions.

Computing Fundamentals
4.4.4

For example, suppose a student is working on a file named TermPaper.docx. It is easy to save a newer version as TermPaperV1.docx, then TermPaperV2.docx, and so on. The student edits the newest version and saves it as the next version number after enough changes have been made that he or she wants to keep intact. After the final version is complete and the earlier versions are no longer needed, they may be deleted to clean up the folder.

When working on a team, it is important to establish the naming convention for creating versions. All members of the team must understand which file should be in use at any given time. The read-only attribute is useful in locking all files that should not be edited.

Windows Backup and Restore

Windows includes a backup and restore utility to help automate these processes. The File History (or Windows Backup and Restore) utility is available through the Control Panel window. This utility compresses all data files and saves them to another disk volume. A *disk volume* acts like a separate physical drive, but is really contained on the same drive. The utility prompts the user through restoring one of the files to the disk. This utility can also be used to create a system image, as shown in Figure 4-16.

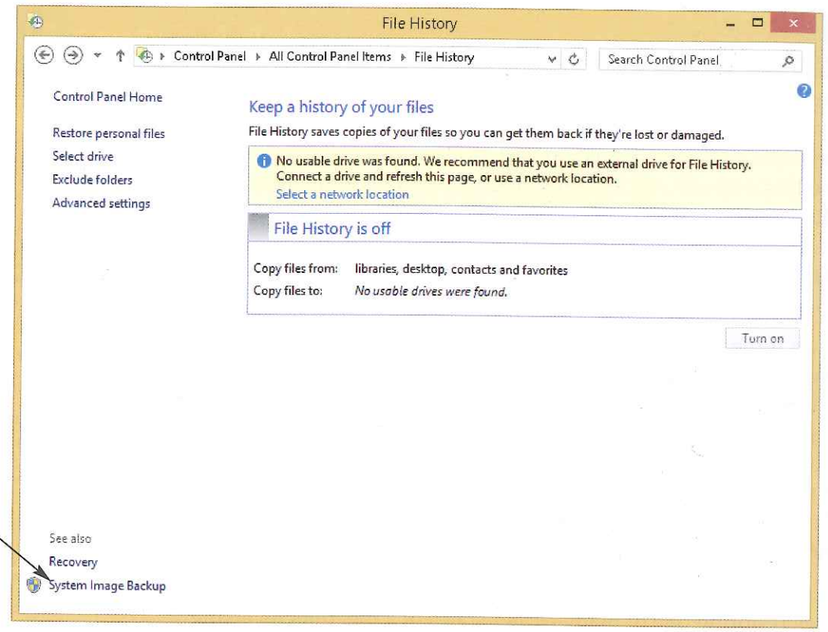


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Figure 4-16. The Windows Backup and Restore utility is used to back up files and create a system image.

A **system image** is a backup that is an exact duplicate of all data on the drive, including the drives required for Windows to run, your system settings, programs, and document files. A system image allows you to completely restore all data to a previous point that was working. This is usually done to correct a serious problem that causes the system to stop working.

There are many third-party backup utilities available. Some are freeware and some are for-purchase software. Most backup programs can be scheduled to automatically run at periodic intervals established by the user. It is common to set a backup utility to run overnight when there is no user activity on the system.

File Compression

Computing Fundamentals
3.4.1, 3.4.3

The amount of space a file takes up on the disk is not as great of a concern today as it was when disk drives were very limited in size. However, when sharing files, file size is a concern. Large files take longer

to move across a network than small files. Many e-mail services limit the size of a file that can be attached to a message. Large files take up more space on an external drive and may quickly fill up the device. The solution is file compression. **File compression** is a process of compacting the data in a file or group of files to reduce the overall size.

When a file is created by a software program, it is generally formatted so that reloading the file is quick and efficient. As a result, the file may be larger than it needs to be. Some file-compression technologies eliminate repeated patterns in a file to reduce the overall size. There are other steps to take to compress a file, but the result is the same. The original content of the file is preserved, but the file is smaller.

Many image file types are automatically compressed. The JPG or JPEG file type is a compressed image file. Trying to compress this file type or any of the other compressed file types will not yield much reduction in file size.

FYI

Some compressed file types, such as JPG, may be "lossy," which means some of the original bits may be removed during compression.

Compress Files Using Windows File Explorer

Windows File Explorer provides a utility that compresses one file or a group of files at the same time. To do this, first select the file, group of files, or a folder. Next, right-click on the selection, and click **Send to>Compressed (zipped) folder** in the shortcut menu. All of the files selected are compressed into a single file, which in Windows is considered a folder. The default name of the ZIP file is the same name as the first file or folder selected based on the current sort. The ZIP file is placed in the same location as the original selection. The original selection is unaltered.

FYI

The ZIP file type is just one of many for compressing files and folders. Other common file types include 7Z, RAR, SIT, and TAR.

Extract Files Using Windows File Explorer

Extracting is what Windows calls the process of taking a file out of a ZIP file. Other software may call this process *unzipping*, *unpacking*, or *unstuffing*. Because the files have been compressed, the original software for the file association no longer recognizes the file as a type it can read. The file must be uncompressed.

Double-click on a ZIP file to begin the extraction process. The content of the file is displayed in Windows File Explorer, as shown in Figure 4-17. Notice the **Extract all** button on the ribbon or toolbar. Clicking this button will copy all files and folders in the ZIP file to their uncompressed formats. The user specifies the location to where the files will be extracted. Files and folders can also be extracted using the drag-and-drop file management method.

FYI

Some software can open a file directly from within a compressed file without the need to extract the file.

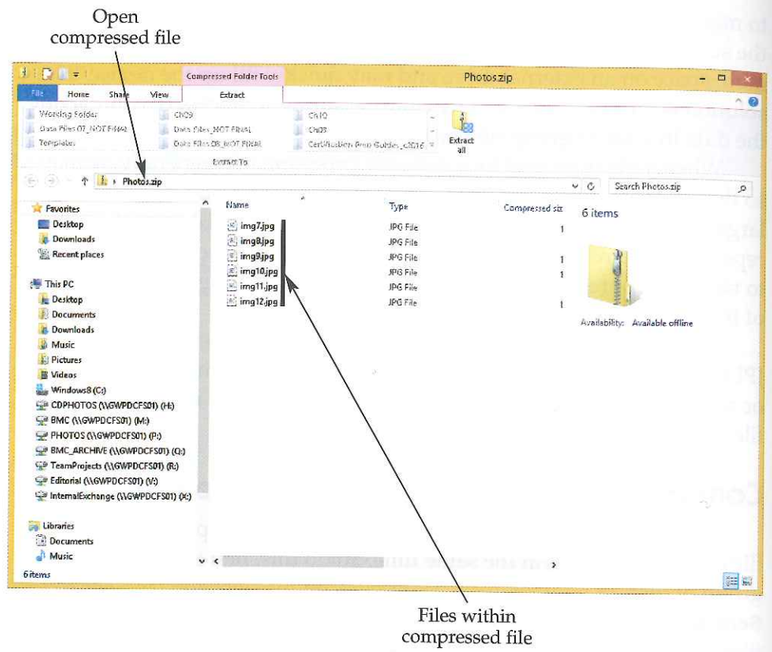

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Figure 4-17. Double-clicking on a ZIP file displays its contents in Windows File Explorer.

HANDS-ON EXAMPLE 4.4.2

COMPRESSING FILES

It is a common practice to compress multiple files into a single ZIP file in order to e-mail them. This not only reduces the overall size, it allows the recipient to save a single ZIP file from the e-mail instead of having to save multiple files.

1. Launch Windows File Explorer.
2. Applying what you have learned, search the Windows folder for any file with the .jpg file extension.
3. Applying what you have learned, select three or four image files.

HANDS-ON EXAMPLE 4.4.2 (CONTINUED)

4. Right-click on the selection, and click **Send to>Compressed (zipped)** folder in the shortcut menu. Because Windows cannot create a ZIP file in the search results, a message appears asking if you would like to create the ZIP file on the desktop. Click the **Yes** button.
5. Display the Windows desktop. The easiest way to do this is to use the [Alt][Tab] key combination to navigate through open windows. When the desktop is displayed, release the [Alt] key.
6. Locate the new ZIP file on the desktop. The icon for the file looks like a folder with a zipper on it. The name of the ZIP file will be the same as the first file you selected in the file list.
7. Double-click the ZIP file to display its contents in Windows File Explorer. Notice that the image files you selected are contained in the ZIP file.

4.4 SECTION REVIEW

CHECK YOUR UNDERSTANDING

1. How is help launched for Windows Explorer?
2. What are file properties?
3. Read-only and hidden are examples of file _____.
4. List three ways to back up your work.
5. How do you compress a group of files selected in Windows Explorer?

IC3 CERTIFICATION PRACTICE

The following question is a sample of the types of questions presented on the IC3 exam.

1. Perform this simulation.
   Select these files and compress them into a zipped folder: Paper.docx, Presentation.pptx, and Results.xlsx.

BUILD YOUR VOCABULARY

As you progress through this course, develop a personal IT glossary. This will help you build your vocabulary and prepare you for a career. Write a definition for each of the following terms and add it to your IT glossary.

backup
extracting
file attribute
file compression
file properties
help
system image

4 Review and Assessment

Chapter Summary

Section 4.1
File and Folder Names

- The file name is a label that identifies a unique file on a computer system. A folder is a container in which files are stored.
- Windows File Explorer is a file-management utility with a graphical user interface that can be used to find anything in the computer's storage areas. The list of available drives and folders shown in the navigation pane is a file tree.

Section 4.2
Locating Files and Folders

- Good file management involves organizing files in logical locations. The ability to locate files is a key skill in good computer use.
- Files and folders can be arranged by a certain criterion, such as alphabetically, by date, or by size. This can help locate a file or folder.

Section 4.3
Organizing Files and Folders

- Files and folders can be easily copied or moved about any storage drive or between devices. The source is the original location, while the destination is the new location.
- Deleting files and folders is an important part of good file management. A deleted file or folder can be restored if needed.

Section 4.4
File Utilities

- Help is a resource to assist the user in learning how to use a feature of the program. Help is provided by almost all software programs, including the Windows operating system.
- The file properties are all information about the file, but not the data contained within the file. The file properties are displayed in the **Properties** dialog box.
- A backup is a copy of a file that can be safely retrieved if anything unfortunate happens to the most recent version of the file. A backup can be created on a different device or versions of the file can be created.
- File compression is a process of compacting the data in a file or group of files to reduce the overall size. File compression can be done to save disk space or to reduce the file size for e-mail transmission.

Now that you have finished this chapter, see what you know about information technology by scanning the QR code to take the chapter posttest. If you do not have a smartphone, visit www.g-wlearning.com.

Chapter 4 Test

Multiple Choice

Select the best response.

1. Using capital letters to show where new words start in a file name is called _____.
   A. CamelCase
   B. title case
   C. uppercase
   D. lowercase

2. Which of the following is not a good file-management practice?
   A. Create descriptive names for folders and files.
   B. Store all of the data files at the top level of the drive to make them easier to find.
   C. Remove folders and files when they are no longer needed.
   D. Make enough subfolders so that the files in any one folder are readily visible.
3. What are used in the search box to represent unknown characters?
   A. digits
   B. characters
   C. blanks
   D. wildcards
4. Which key combination is used to copy a file?
   A. [Ctrl][X]
   B. [Ctrl][C]
   C. [Ctrl][V]
   D. [Ctrl][Z]
5. Where are deleted files and folders stored in Windows?
   A. In the recycle bin.
   B. In the root folder of the drive.
   C. In the original folder.
   D. They are not retained.

Completion

Complete the following sentences with the correct word(s).

6. The three parts of a file path in Windows are the _____.
7. A(n) _____ is a pattern that is followed whenever a file name is created.
8. The asterisk (*) and question mark (?) are _____ to use in names when searching for files or folders.
9. _____ is a procedure in which an item is selected in one location, moved with the mouse, and placed in another location.
10. File properties are displayed in the _____ dialog box.

Matching

Match the correct term with its definition.

A. Subfolder
B. Rename
C. Sort
D. Copy
E. Backup

11. Make copies of files in case of loss.
12. Put a file in a new location while keeping the original file in its place.
13. Nested within the parent folder.
14. Arrange files based on their properties.
15. Single-click twice on the file or folder in the file list.

Application and Extension of Knowledge

1. You and your team must create a display of these ecosystems: desert, rainforest, deciduous forest, tundra, and marine. The display will include images of the ecosystems and the animals, trees, and flowers found in them. There will also be documents for annual rainfall, manufacturing, human habitation, and traffic. Plan a folder structure so that each team member can locate the proper place to store relevant files. Create a naming convention that will make it clear what each file contains.
2. Using the naming convention created in #1, set up the folder structure. Where will the project folder be located? Will each team member have access to this folder?

3. Using Windows Explorer, search the Windows folder and all of its subfolders for any file with the .jpg file name extension. How many files are located? Sort the files by date, from newest to oldest. Copy the newest file to your flash drive.
4. Display the **Properties** dialog box for the image file copied to your flash drive in #3. What is the size of the file? When was the file created? Is the file a read-only file? Display the **Details** tab in the dialog box. Examine the information provided on this tab, and write one paragraph summarizing what is provided.
5. Write one paragraph that summarizes what a system image is, how it is created, and why it is important to create a system image.

Online Activities

Complete the following activities, which will help you learn, practice, and expand your knowledge and skills.

Certification Practice. Complete the certification practice test for this chapter.

Vocabulary. Practice vocabulary for this chapter using the e-flash cards, matching activity, and vocabulary game until you are able to recognize their meanings.

Communication Skills

College and Career Readiness

Speaking. All careers require that individuals be able to participate and contribute to one-on-one discussions. Developing intrapersonal communication skills is one way to achieve career opportunities. As your instructor lectures on this chapter, contribute thoughtful comments when participation is invited.

Listening. Hearing is a physical process. Listening combines hearing with evaluation. Effective leaders learn how to listen to their team members. Listen to your instructor as a lesson is presented. Analyze the effectiveness of the presentation. Listen carefully and take notes about the main points. Then organize the key information that you heard.

Writing. Contributing citizens pay their fair share of taxes to support the government. Select two tax laws that generate funds for government services and analyze how they work. Write several paragraphs to describe how the revenue generated from these taxes help contribute to the betterment of the community.

Internet Research

IT Careers. Using various Internet resources, research the current job opportunities and general qualifications for an IT career that interests you. Use the career clusters as a starting point. Write a one-page report about job prospects that evaluates your findings. Include data from your research in the report. Use correct grammar, punctuation, spelling, and terminology to write and edit the document.

Teamwork

Work with your team to develop a list of questions that could be used to gather information about what electronics are purchased or used by young adults. Next, create a focus group for the research. Appoint a mediator who will ask the questions and a recorder who will record the answers. As a team, interpret the results of the focus group.

Portfolio Development

College and Career Readiness

Digital File Formats. A portfolio will contain documents you created electronically as well as documents that you have in hard copy format that will be scanned. It will be necessary to decide file formats to use for both types of documents.

Before you begin, consider the technology that you might use for creating and scanning documents. You will need access to desktop publishing software, scanners, cameras, and other digital equipment or software.

For documents that you create, consider using the default format to save the files. For example, you could save letters and essays created in Microsoft Word in DOCx format. You could save worksheets created in Microsoft Excel in XLSx format. If your presentation will include graphics or video, confirm the file formats that are necessary for each item. Use the appropriate formats as you create the documents.

Hard copy items will need to be converted to digital format. Portable document format, or PDF, is a good choice for scanned items, such as awards and certificates.

Another option is to save all documents as PDF files. Keep in mind that the person reviewing your digital portfolio will need programs that open these formats to view your files. Having all of the files in the same format can make viewing them easier for others who need to review your portfolio.

1. Establish the types of technology that are available for you to create a digital portfolio. Will you have access to cameras or studios? Do you have the level of skill needed to create videos?
2. Decide the type of presentation you will use. Research what will be needed to create the final portfolio product.

CTSOs

EVENT PREP

Teamwork. Some competitive events for CTSOs have a teamwork component. If it is a team event, it is important that the competing team prepares to operate as a cohesive unit. To prepare for teamwork activities, complete the following activities.

1. Review the rules to confirm whether questions will be asked or if the team will need to defend a case or situation.
2. Practice performing as a team by completing the team activities at the end of each chapter in this text. This will help members learn how to interact with each other and participate effectively.
3. Locate a rubric or scoring sheet for the event on your organization's website to see how the team will be judged.
4. Confirm whether visual aids may be used in the presentation and the amount of setup time permitted.
5. Make notes on index cards about important points to remember. Team members should exchange note cards so that each evaluates the other person's notes. Use these notes to study. You may also be able to use these notes during the event.
6. Assign each team member a role for the presentation. Practice performing as a team. Each team member should introduce himself or herself, review the case, make suggestions for the case, and conclude with a summary.
7. Ask your instructor to play the role of competition judge as your team reviews the case. After the presentation is complete, ask for feedback from your instructor. You may also consider having a student audience listen and give feedback.