CONNECTING AND COMMUNICATING ONLINE: The Internet, Websites, and Media

2

The Internet provides a variety of ways to communicate online.

"I use the Internet and web to shop for bargains, browse Google for all sorts of information, manage my fantasy sports teams, download music, check email on my phone, and so much more! What more could I gain from using the Internet?"

While you may be familiar with some of the content in this chapter, do you know how to . . .

- Use a public Wi-Fi hot spot safely?
- Register a domain name?
- Identify a cybersquatter?
- Browse the web safely?
- Tag digital content?
- Protect yourself from identity theft?
- Improve search results?
- Publish a website?
- Download digital media from online services?
- Set up a personal VoIP service?
- Combat cyberbullying?
- Determine your IP address?
- Search for a job online?

In this chapter, you will discover how to perform these tasks along with much more information essential to this course. For additional content available that accompanies this chapter, visit the free resources and premium content. Refer to the Preface and the Intro chapter for information about how to access these and other additional instructor-assigned support materials.

✅ Objectives

After completing this chapter, you will be able to:

1 Discuss the evolution of the Internet

2 Briefly describe various broadband Internet connections

3 Describe the purpose of an IP address and its relationship to a domain name

4 Describe features of browsers and identify the components of a web address

5 Describe ways to compose effective search text

6 Explain benefits and risks of using online social networks

7 Describe uses of various types of websites: search engines; online social networks; informational and research; media sharing; bookmarking; news, weather, sports, and other mass media; educational; business, governmental, and organizational; blogs; wikis and collaboration; health and fitness; science; entertainment; banking and finance; travel and tourism; mapping; retail and auctions; careers and employment; e-commerce; portals; content aggregation; and website creation and management

8 Explain how the web uses graphics, animation, audio, video, and virtual reality

9 Explain how email, email lists, Internet messaging, chat rooms, online discussions, VoIP, and FTP work

10 Identify the rules of netiquette

The Internet

One of the major reasons business, home, and other users purchase computers and mobile devices is for Internet access. The **Internet** is a worldwide collection of networks that connects millions of businesses, government agencies, educational institutions, and individuals. Each of the networks on the Internet provides resources that add to the abundance of goods, services, and information accessible via the Internet.

Today, billions of home and business users around the world access a variety of services on the Internet using computers and mobile devices. The web, messaging, and video communications are some of the more widely used Internet services (Figure 2-1). Other Internet services include chat rooms, discussion forums, and file transfer. To enhance your understanding of Internet services, the chapter begins by discussing the history of the Internet and how the Internet works and then explains each of these services.

Evolution of the Internet

The Internet has its roots in a networking project started by the Pentagon's Advanced Research Projects Agency (ARPA), an agency of the U.S. Department of Defense. ARPA's goal was to build a network that (1) allowed scientists at different physical locations to share information and work together on military and scientific projects and (2) could function even if part of the network were disabled or destroyed by a disaster such as a nuclear attack. That network, called *ARPANET*, became functional in September 1969, linking scientific and academic researchers across the United States.

The original ARPANET consisted of four main computers, one each located at the University of California at Los Angeles, the University of California at Santa Barbara, the Stanford Research Institute, and the University of Utah. Each of these computers served as a host on the network. A *host*, more commonly known today as a server, is any computer that provides services and connections to other computers on a network. Hosts often use high-speed communications to transfer data and messages over a network. By 1984, ARPANET had more than 1,000 individual computers linked as hosts. Today, millions of hosts connect to this network, which now is known as the Internet.

access information

send or post messages

videoconference or video call

Figure 2-1 People around the world use the Internet in daily activities, such as accessing information, sending or posting messages, and conversing with others from their computers and mobile devices.

The Internet consists of many local, regional, national, and international networks. Both public and private organizations own networks on the Internet. These networks, along with phone companies, cable and satellite companies, and the government, all contribute toward the internal structure of the Internet.

Discover More: Visit this chapter's free resources to learn about Internet2.

☀ **CONSIDER THIS**

Who owns the Internet?
No single person, company, institution, or government agency owns the Internet. Each organization on the Internet is responsible only for maintaining its own network.

The World Wide Web Consortium (*W3C*), however, oversees research and sets standards and guidelines for many areas of the Internet. The mission of the W3C is to ensure the continued growth of the web. Nearly 400 organizations from around the world are members of the W3C, advising, defining standards, and addressing other issues.

Connecting to the Internet

Users can connect their computers and mobile devices to the Internet through wired or wireless technology and then access its services free or for a fee. With wired connections, a computer or device physically attaches via a cable or wire to a communications device, such as a modem, that transmits data and other items over transmission media to the Internet. For wireless connections, many mobile computers and devices include the necessary built-in technology so that they can transmit data and other items wirelessly. Computers without this capability can use a wireless modem or other communications device that enables wireless connectivity. A *wireless modem*, for example, uses a wireless communications technology (such as cellular radio, satellite, or Wi-Fi) to connect to the Internet. Figure 2-2 shows examples of modems. The wireless modem shown in the figure is known as a *dongle*, which is a small device that connects to a computer and enables additional functions when attached.

Today, users often connect to the Internet via *broadband* Internet service because of its fast data transfer speeds and its always-on connection. Through broadband Internet service, users can download webpages quickly, play online games, communicate in real time with others, and more. Table 2-1 shows examples of popular wired and wireless broadband Internet service technologies for home and small business users.

Figure 2-2   Using a modem is one way to connect computers and mobile devices to the Internet.
Courtesy of Zoom Telephonics Inc; © Oleksiy Mark / Shutterstock.com; Source: Microsoft; © Kristina Postnikova / Shutterstock.com; Kristina Postnikova / Shutterstock.com; © Cengage Learning; © DR / Fotolia

Table 2-1   Popular Broadband Internet Service Technologies

	Technology	Description
Wired	Cable Internet service	Provides high-speed Internet access through the cable television network via a cable modem
	DSL (digital subscriber line)	Provides high-speed Internet connections through the telephone network via a DSL modem
	Fiber to the Premises (FTTP)	Uses fiber-optic cable to provide high-speed Internet access via a modem
Wireless	**Wi-Fi** (wireless fidelity)	Uses radio signals to provide high-speed Internet connections to computers and devices with built-in Wi-Fi capability or a communications device that enables Wi-Fi connectivity
	Mobile broadband	Offers high-speed Internet connections over the cellular radio network to computers and devices with built-in compatible technology (such as 3G, 4G, or 5G) or a wireless modem or other communications device
	Fixed wireless	Provides high-speed Internet connections using a dish-shaped antenna on a building, such as a house or business, to communicate with a tower location via radio signals
	Satellite Internet service	Provides high-speed Internet connections via satellite to a satellite dish that communicates with a satellite modem

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Many public locations, such as shopping malls, coffee shops, restaurants, schools, airports, hotels, and city parks have Wi-Fi hot spots. Recall that a **hot spot** is a wireless network that provides Internet connections to mobile computers and devices. Although most hot spots enable unrestricted or open access, some require that users agree to terms of service, obtain a password (for example, from the hotel's front desk), or perform some other action in order to connect to the Internet. Read Secure IT 2-1 for ways to use a public Wi-Fi hot spot safely.

SECURE IT 2-1

Using Public Wi-Fi Hot Spots Safely

Connecting wirelessly to a public hot spot at your local coffee shop or at the airport can be convenient and practical. Using this free service can be risky, however, because cyber-criminals may lurk in public Wi-Fi hot spots, hoping to gain access to confidential information on your computer or mobile device. Follow these guidelines for a safer browsing experience:

• **Avoid typing passwords and financial information.** Identity thieves are on the lookout for people who sign in to accounts, enter their credit card account numbers in shopping websites, or conduct online banking transactions. If you must type this personal information, be certain the website's web address begins with "https," signifying a secure connection. If the website's web address changes to "http," indicating an unsecure connection,

sign out to end your Internet session immediately.

• **Sign out of websites.** When finished using an account, sign out of it and close the window.

• **Disable your wireless connection.** If you have finished working online but still need to use the computer, disconnect from the wireless connection.

• **Do not leave your computer or mobile device unattended.** It may seem obvious, but always stay with your computer or mobile device. Turning your back to talk with a friend or to refill your coffee gives thieves a few seconds to steal sensitive information that may be displayed on the screen.

• **Beware of over-the-shoulder snoopers.** The person sitting behind you may be watching or using a camera

phone to record your keystrokes, read your email messages and online social network posts, and view your photos and videos.

Consider This: How will you apply these precautions the next time you use a public Wi-Fi hot spot? Should businesses post signs alerting customers about Wi-Fi security issues?

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Home and small business users can share and provide wireless Internet connections by creating their own Wi-Fi hot spot through a communications device in the home or business that is connected to broadband Internet service. Instead of a stationary Wi-Fi hot spot, some users opt to create mobile hot spots through mobile broadband Internet service via a separate communications device or a tethered Internet-capable device (Figure 2-3). *Tethering* transforms a smartphone or Internet-capable tablet into a portable communications device that shares its Internet access with other computers and devices wirelessly. Users may pay additional fees for mobile hot spot and tethering services.

Internet Research

What is a MiFi device?

Search for: mifi

communications device as a mobile hot spot

tethered smartphone as a mobile hot spot

mobile broadband Internet service

Internet

mobile hot spot range

Figure 2-3   You can create a mobile hot spot using a communications device or by tethering a smartphone.
Courtesy of Verizon Wireless; © figarro / Can Stock Photo; © iStockphoto / Dane Wirtzfeld; © amfoto / Shutterstock.com; © Alex Staroseltsev / Shutterstock.com; Source: Microsoft; © Cengage Learning

Employees and students typically connect their computers and mobile devices to the Internet wirelessly through a business or school network, which, in turn, usually connects to a high-speed Internet service. When away from the office, home, or school, mobile users often access the Internet using Wi-Fi, mobile hot spots, or tethering services. Hotels and airports often provide wireless Internet connections as a free service to travelers. Many hotels have computers in their lobbies for customers to check email, browse the web, or print travel documents. Customers often bring their laptops or tablets to coffee shops, restaurants, libraries, hotels, and malls that offer free Wi-Fi as a service to their patrons.

✳ CONSIDER THIS

Does everyone use broadband Internet?

No. Some home users connect computers and devices to the Internet via slower-speed dial-up access because of its lower cost or because broadband access is not available where they live. Dial-up access takes place when a modem in a computer connects to the Internet via a standard telephone line that transmits data and information using an *analog* (continuous wave pattern) signal.

Internet Service Providers

An **Internet service provider** (**ISP**), sometimes called an Internet access provider, is a business that provides individuals and organizations access to the Internet free or for a fee. ISPs often charge a fixed amount for an Internet connection, offering customers a variety of plans based on desired speeds, bandwidth, and services. In addition to Internet access, ISPs may include additional services, such as email and online storage.

Bandwidth represents the amount of data that travels over a network. A higher bandwidth means more data transmits. Data sizes typically are stated in terms of megabytes and gigabytes. A *megabyte* (**MB**) is equal to approximately one million characters, and a *gigabyte* (**GB**) is equal to approximately one billion characters. Table 2-2 shows approximate data usage for various Internet activities.

BTW

Byte
A byte is the basic storage unit on a computer or mobile device and represents a single character.

Table 2-2 Data Usage Examples		
Activity	**Quantity**	**Approximate Data Usage**
Send and receive email messages (with no attachments)	100 messages	3–6 MB
Post on online social networks (text only)	100 posts	25–50 MB
Upload or download photos	50 photos	50 MB
Send and receive email messages (with attachments)	100 messages	0.75–1 GB
Visit webpages	200 visits	1 GB
Talk with others using VoIP (without video)	1 hour	1.25 GB
Listen to streaming music	1 hour	1–2 GB
Play online games	1 hour	1.75 GB
Watch smaller, standard-quality streaming video	1 hour	2–5 GB
Download apps, games, music, e-books	25 downloads	3 GB
Talk with others using VoIP (with video)	1 hour	5–7.5 GB
Watch HD streaming video	1 hour	5–20 GB

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Internet Research

Can I check the speed of my Internet connection?

Search for: internet speed test

✳ **CONSIDER THIS**

Does the term data have multiple meanings?

In the technology field, as discussed in Chapter 1, data can refer to unprocessed items that computers often process into information. Data also refers to the content that is stored on media or transmitted over a network. For example, when you select a data plan for your smartphone, the mobile service provider typically limits the amount of data (number of bytes) you can transfer each month depending on the plan you selected.

Wi-Fi networks often provide free Internet access, while some charge a daily or per use fee. Instead of locating a hot spot, some users prefer to subscribe to a mobile service provider, such as Verizon Wireless, so that they can access the Internet wherever they have mobile phone access. A **mobile service provider**, sometimes called a wireless data provider, is an ISP that offers wireless Internet access to computers and mobile devices with the necessary built-in wireless capability (such as Wi-Fi), wireless modems, or other communications devices that enable wireless connectivity. An antenna on or built into the computer or device, wireless modem, or communications device typically sends signals through the airwaves to communicate with a mobile service provider.

Discover More: Visit this chapter's free resources to learn more about Internet service providers.

How Data Travels the Internet

Computers and devices connected to the Internet work together to transfer data around the world using servers and clients and various wired and wireless transmission media. On the Internet, your computer or device is a client that can access data and services on a variety of servers. Wired transmission media includes phone line, coaxial cable, and fiber-optic cable. Wireless transmission media includes radio waves and satellite signals.

The inner structure of the Internet works much like a transportation system. Just as interstate highways connect major cities and carry the bulk of the automotive traffic across the country, several main transmission media carry the heaviest amount of **traffic**, or communications activity, on the Internet. These major carriers of network traffic are known collectively as the *Internet backbone*.

In the United States, the transmission media that make up the Internet backbone exchange data at several different major cities across the country. That is, they transfer data from one network to another until reaching the final destination (Figure 2-4).

How a Home User's Request for a Webpage Might Travel the Internet Using Cable Internet Service

Step 1
You send a request to the Internet. For example, you enter the web address of a webpage you want to visit in the address bar of your browser.

Step 2
A cable modem transfers the computer's digital signals to the cable television line in your house.

Step 3
Your request (digital signals) travels through cable television lines to a central cable system, which is shared by up to 500 homes in a neighborhood.
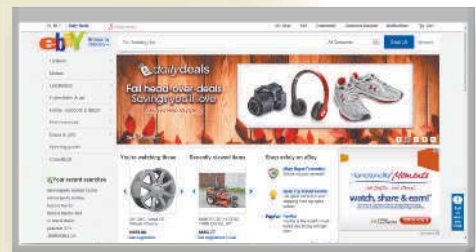
Step 4
The central cable system sends your request over high-speed fiber-optic lines to the cable operator, who often also is the ISP.

Step 6
The server retrieves the requested webpage and sends it back through the Internet backbone to your computer.

Step 5
The ISP routes your request through the Internet backbone to the destination server (in this example, the server that contains the requested webpage).

Figure 2-4　This figure shows how a home user's request for eBay's webpage might travel the Internet using cable Internet service.
© romakoma / Shutterstock.com; © Pablo Eder / Shutterstock.com; © dotshock / Shutterstock.com; © TonyV3112 / Shutterstock.com; © iStockPhoto / loops7; © iStockphoto / luismmolina; Source: eBay

IP Addresses and Domain Names

The Internet relies on an addressing system much like the postal service to send data to a computer or device at a specific destination. An **IP address**, short for Internet Protocol address, is a sequence of numbers that uniquely identifies the location of each computer or device connected to the Internet.

The Internet uses two IP addressing schemes: IPv4 and IPv6. Due to the growth of the Internet, the original IPv4 addresses began dwindling in availability. The IPv6 scheme increased the available number of IP addresses exponentially. Because lengthy IP addresses can be difficult to remember, the Internet supports domain names. A **domain name** is a text-based name that corresponds to the IP address of a server that hosts a website (Figure 2-5). A domain name is part of the web address that you type in a browser's address bar to access a website.

IPv4 address   ⟶   74.125.224.72

IPv6 address   ⟶   2001:4860:4860::8844

Domain name   ⟶   google.com

top-level domain

Figure 2-5 The IPv4 and IPv6 addresses, along with the domain name for Google's website.
© Cengage Learning

The suffix of the domain name, called the *top-level domain* (*TLD*), identifies the type of organization associated with the domain. In Figure 2-5, for example, the .com is the TLD. Table 2-3 lists some of the original TLDs. New TLDs are being introduced to give individuals and businesses flexibility and creativity when purchasing domain names. For example, .museum, .technology, .name, and .biz have been introduced as TLDs within recent years.

The organization that approves and controls TLDs is called *ICANN* (pronounced EYE-can), which stands for Internet Corporation for Assigned Names and Numbers. For websites outside the United States, the suffix of the domain name may include a country code TLD (*ccTLD*), which is a two-letter country code, such as au for Australia. For example, www.philips.com.au is the domain name for Philips Australia. Read How To 2-1 to learn how to register a domain name.

Table 2-3 Original TLDs	
TLD	**Intended Purpose**
.com	Commercial organizations, businesses, and companies
.edu	Educational institutions
.gov	Government agencies
.mil	Military organizations
.net	Network providers or commercial companies
.org	Nonprofit organizations

Discover More: Visit this chapter's free resources for an expanded table of popular TLDs.
© Cengage Learning

⚙ HOW TO 2-1

Register a Domain Name
Individuals and companies register domain names so that people can find their websites easily using a browser. You register a domain name through a *registrar*, which is an organization that sells and manages domain names. When creating a website to post online, register a domain name that is easy to remember so that visitors can navigate to your website quickly. The following steps describe how to register a domain name.

1. Run a browser.
2. Use a search engine to locate a domain name registrar and then navigate to the website. You may want to evaluate several domain name registrars before deciding which one to use. Domain name registrars often offer various pricing models for registering domain names.

3. Perform a search on the domain name registrar's website for the domain name you wish to register. If the domain name is not available or costs too much, continue searching for a domain name that is available and within your price range, or explore various TLDs. For example, if the domain name you wish to register is not available or too expensive with the ".com" TLD, consider using another TLD such as ".net" or ".org."

4. Follow the steps on the domain name registrar's website to select and complete the purchase and registration of the desired domain name.

✸ **Consider This:** What domain name based on your name would you register for your personal website? If your preferred domain name is not available, what are three alternative domain names you would consider?

The *domain name system* (*DNS*) is the method that the Internet uses to store domain names and their corresponding IP addresses. When you enter a domain name (i.e., google.com) in a browser, a DNS server translates the domain name to its associated IP address so that the request can be routed to the correct computer (Figure 2-6). A *DNS server* is a server on the Internet that usually is associated with an ISP. Read Ethics & Issues 2-1 to consider issues related those who purchase unused or lapsed domain names for nefarious purposes.

How a Browser Displays a Requested Webpage

Step 1
Run the browser and enter the web address in the browser's address bar.

web address contains domain name

google.com

74.125.224.72
2001:4860:4860::8844

Step 2
The browser communicates with a DNS server maintained by your ISP or another provider. The DNS server looks up the domain name portion of the web address, finds its associated IP address, and then sends the IP address to your computer or mobile device.

DNS server

74.125.224.72
2001:4860:4860::8844

Step 3
The browser uses the IP address to contact the web server at the specified IP address to request the content of the desired webpage. The web server fulfills the user's request by sending the desired content to the user's browser, which formats the page for display on the screen.
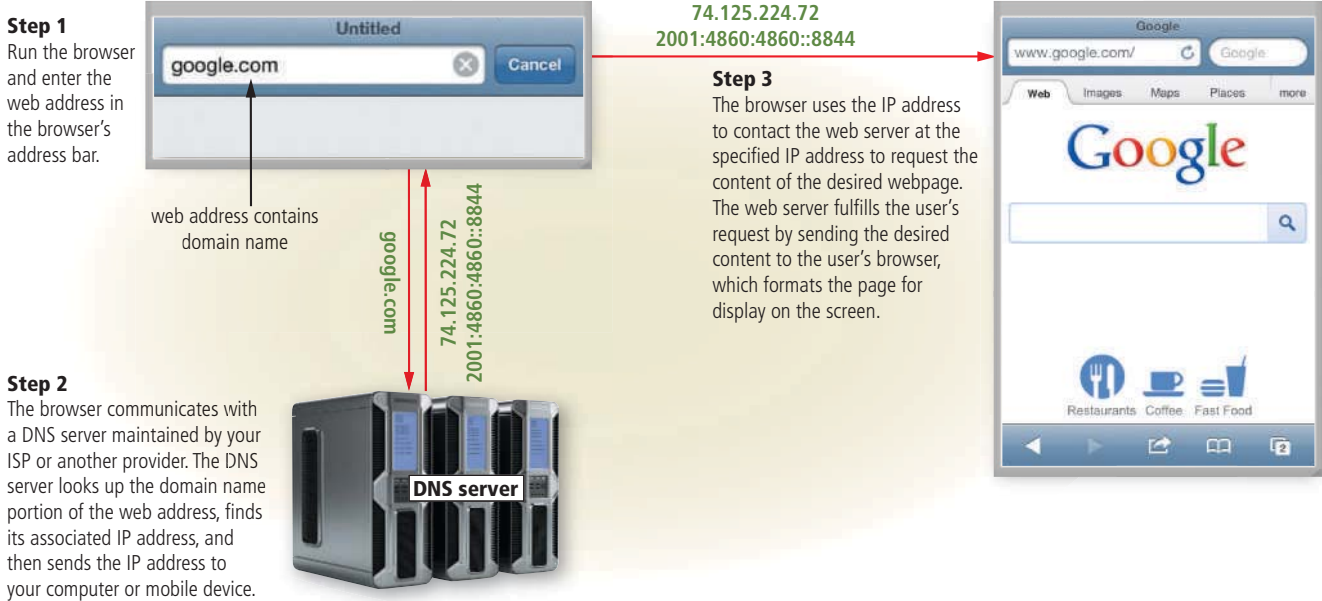
🖥 **Figure 2-6**   This figure shows how a user's entered domain name (google.com) uses a DNS server to display a webpage (Google, in this case).
Apple Inc.; © Cengage Learning; © Cengage Learning; © Sashkin / Shutterstock.com; Source: Google Inc.

✳ **ETHICS & ISSUES 2-1**

📑 **Should Cybersquatters Be Prosecuted?**
You learn from a registrar that a domain name containing your company name is not available. When you enter the web address in a browser, a webpage appears that contains ads, false content, or a notice that the domain is available for purchase, likely by a cyber-squatter. Cybersquatters purchase unused or lapsed domain names so that they can profit from selling them. Cybersquatters sometimes will sell you the domain name, but some take advantage of people trying to reach a more popular website to promote their own business or needs. One example is when a politician registered several domain names that included his opponent's names and redirected them to his own campaign website.

Website owners periodically must renew domain names. Cybersquatters look for out-of-date registrations and buy them so that the original website owner must buy them back. Cybersquatters often purchase domain names with common words, alternate spellings of trademarked terms, or celebrity names. With the constant increase of new TLDs, cybersquatting cases are on the rise. Experts recommend purchasing your domain name with as many TLDs as you can afford, as well as to register your own name and that of your children.

More than 15 years ago, lawmakers enacted the *Anticybersquatting Consumer Protection Act* (ACPA). The ACPA's goal is to protect trademark owners from having

to pay a cybersquatter for a domain name that includes their trademark. To win a case against a cybersquatter, the owners must prove that the cybersquatters acted in bad faith, meaning they tried knowingly to profit from purchasing a domain name with a trademarked term, or a common misspelling or nickname of a trademarked term. Critics say that the ACPA prohibits free speech and free market.

Consider This: Should cybersquatting be illegal? Why or why not? Is it ethical to profit from cybersquatting? Why or why not? How should companies protect their brands when registering for domain names?

The World Wide Web

While the Internet was developed in the late 1960s, the World Wide Web emerged in the early 1990s as an easier way to access online information using a browser. Since then, it has grown phenomenally to become one of the more widely used services on the Internet.

As discussed in Chapter 1, the **World Wide Web** (**WWW**), or **web**, consists of a worldwide collection of electronic documents. Each electronic document on the web is called a **webpage**, which can contain text, graphics, animation, audio, and video. Some webpages are static (fixed); others are dynamic (changing). Visitors to a *static webpage* all see the same content each time they view the webpage. With a *dynamic webpage*, by contrast, the content of the webpage generates each time a user displays it. Dynamic webpages may contain customized content, such as the current date and time of day, desired stock quotes, weather for a region, or ticket availability for flights. The time required to download a webpage varies depending on the speed of your Internet connection and the amount of graphics and other media involved.

A **website** is a collection of related webpages and associated items, such as documents and photos, stored on a web server. A **web server** is a computer that delivers requested webpages to your computer or mobile device. The same web server can store multiple websites.

As web technologies matured in the mid-2000s, industry experts introduced the term *Web 2.0* to refer to websites that provide a means for users to share personal information (such as online social networks), allow users to modify website content (such as wikis), and provide applications through a browser (such as web apps).

Navigating the Web

Recall from Chapter 1 that a **browser** is an application that enables users with an Internet connection to access and view webpages on a computer or mobile device. Internet-capable mobile devices such as smartphones use a special type of browser, called a *mobile browser*, which is designed for their smaller screens and limited computing power. Many websites can detect if you are accessing their content on a mobile device (Figure 2-7).
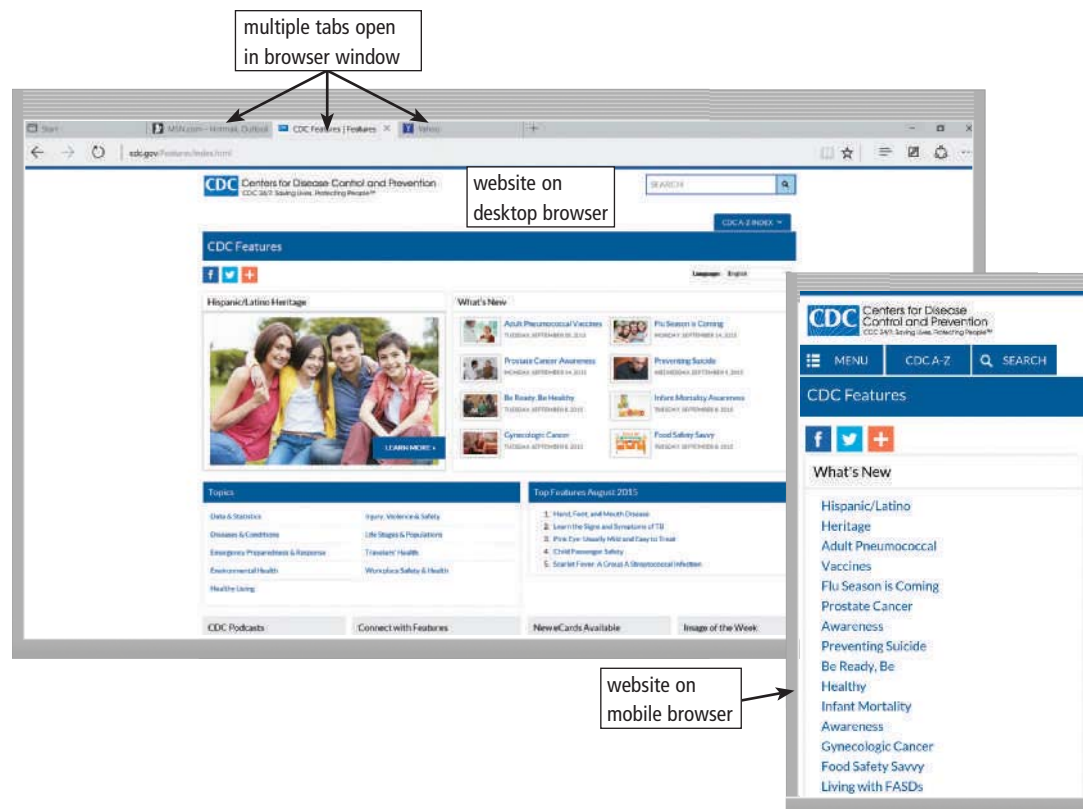
BTW
Web vs. Internet
Recall that the terms web and Internet should not be used interchangeably. The World Wide Web is a service of the Internet.

BTW
Technology Innovator
Discover More: Visit this chapter's free resources to learn about Tim Berners-Lee (creator of the World Wide Web).

multiple tabs open in browser window

website on desktop browser

website on mobile browser

Figure 2-7 Many websites, such as the Centers for Disease Control and Prevention shown here, provide a mobile version that is designed specifically for display on a mobile browser.
Source: Centers for Disease Control and Prevention

When you run a browser, it may retrieve and display a starting webpage, sometimes called a home page. The initial home page that is displayed is specified in the browser. You can change your browser's home page at any time through its settings, options, or similar commands.

Another use of the term, **home page**, refers to the first page that is displayed on a website. Similar to a book cover or a table of contents, a website's home page provides information about its purpose and content. Many websites allow you to personalize the home page so that it contains areas of interest to you.

Current browsers typically support **tabbed browsing**, where the top of the browser shows a tab (similar to a file folder tab) for each webpage you display (shown in Figure 2-7). To move from one displayed webpage to another, you tap or click the tab in the browser. Tabbed browsing allows users to have multiple home pages that automatically are displayed when the browser runs. You also can organize tabs in a group, called a tab group, and save the group as a favorite, so that at any time you can display all tabs at once.

Because some websites attempt to track your browsing habits or gather personal information, current browsers usually include a feature that allows you to disable and/or more tightly control the dissemination of your browsing habits and personal information. Read Secure IT 2-2 for safe browsing tips.

⊗ SECURE IT 2-2

📑 **Safe Browsing Techniques**

Browsing the web is similar to crossing a busy street: you need to exercise caution and look carefully for unexpected traffic. Cybercriminals are on the lookout to prey upon unsuspecting users, so you should follow these guidelines when browsing:

- **Verify the website is safe.** Type the website address of your email, banking, online social network, and other personal accounts directly in a browser; never visit these websites merely by tapping or clicking links found in email messages. Before you sign in, double-check the web address to verify it is correct. Most browsers change the color of the address bar to verify the website is legitimate. Also, check that the web address begins with https instead of the less secure http, and look for a closed padlock symbol beside it.
- **Turn off location sharing.** At times, you may want allow *location sharing*, which gives websites access to your current location. This feature is handy when you want to obtain current weather conditions or use a navigation app. This information could be misused

by dishonest individuals, however, so it is recommended you turn off location sharing.

- **Clear your browsing history.** A copy of every website you visit is stored in the browser's *cache* (pronounced cash) folder. If you perform online banking or view your credit card transactions, the cache could contain personal information, such as passwords and account numbers. You can specify to clear cache automatically each time you close a browser.
- **Never store passwords.** Many browsers can store your passwords so that you do not need to type them each time you visit the same websites. Although you may consider this feature a convenience, keep in mind that anyone who accesses your computer can view these secure websites easily using your account information.
- **Use a phishing filter.** *Phishing* is a scam in which a perpetrator attempts to obtain your personal and/or financial information. Many browsers include a *phishing filter*, which is a program that warns or blocks you from potentially fraudulent or suspicious websites.
- **Enable a pop-up or pop-under blocker.** Malicious software creators can develop a

pop-up ad or pop-under ad, which are Internet advertisements that suddenly appear in a new window on top of or behind a webpage displayed in a browser. A **pop-up blocker** is a filtering program that stops pop-up ads from displaying on webpages; similarly a **pop-under blocker** stops pop-under ads. Many browsers include these blockers. You also can download them from the web at no cost.

- **Use private browsing.** Prevent people using your computer or mobile device from seeing the websites you viewed or searches you conducted by using *private browsing*. The browser discards passwords, temporary Internet files, data entered into forms, and other information when you exit the browser.
- **Use a proxy server.** To protect your online identity, use a *proxy server*, which is another computer that screens all your incoming and outgoing messages. The proxy server will prevent your browsing history, passwords, user names, and other personal information from being revealed.

✳ **Consider This:** Which pop-ups have you encountered while browsing? What new techniques will you use to browse the web safely?

Mini Feature 2-1: Browsers

The decision of which browser to use is a topic of discussion among computer experts and novices alike. Read Mini Feature 2-1 to learn about features of specific browsers.

🜨 **MINI FEATURE 2-1**

Browsers

All browsers can retrieve and display webpages, but their features and ease of use vary. Many factors can affect the decision to choose the browser that best fits your needs.

Configuring Options

Users can customize some settings to improve their browsing experience, such as those listed below.

- **Favorites**, also called *bookmarks*, are links to preferred websites. When you add a website to the list of favorites, you can visit that website simply by tapping or clicking its name in a list instead of typing its web address. Favorites can be organized into folders, alphabetized, and sorted by date or how frequently you view the websites.

- Security features, such as filters and secure connections, help protect you from fraudulent and malicious websites that might attempt to steal your identity and personal information. These features also can block websites you do not want to be displayed and can instruct the browser to save passwords.

- Privacy features help prevent thieves from accessing information about your browsing history, such as websites you have visited, data about your browsing session, and content you have seen on specific webpages.

Obtaining Browsers

A browser often is included in the operating system of a computer or mobile device. For example, many computer manufacturers include Edge or Internet Explorer when they install Windows and include Safari when they install Mac OS. Use a search engine to locate the browser you want to install, and visit its website to download the most recent version. Most browsers are available for download at no cost. Keep your browser up to date to prevent security holes. You can set your browser to perform updates automatically.

Making a Decision

Selecting the best browser for your needs involves some careful thought. You may decide to install several and then use each one for specific needs. Perform some research to compare browsers and then consider the following factors:

- How old is your computer or mobile device? A newer browser may not work properly on older hardware.

- How much memory is in your computer or mobile device? Some browsers work best with a lot of memory.

- Which operating system are you using? Some browsers are available for specific operating systems. For example, Internet Explorer and Edge are available only for Windows operating systems.

- What do you want the browser to do? Some browsers are best suited for performing simple searches, while others excel when running websites containing media.

Specific Browsers

- **Chrome:** Google's Chrome was first released in 2008. This free browser is available for Windows and Mac OS and must be downloaded and installed. Chrome has independent tabbed browsing; if one tab develops a problem, the other tabs continue to function.

- **Firefox:** Developed by the Mozilla Corporation for Windows, Mac OS, and Linux, Firefox is known for its extensive array of plug-ins (discussed later in the chapter). This free browser was first released in 2004 and must be downloaded and installed. It has enhanced privacy and security features, a spelling checker, tabbed browsing, and a password manager.

- **Internet Explorer:** Internet Explore is a free browser, available primarily for Microsoft Windows and comes pre-installed. First released in 1995, features protection against it phishing and malware, and settings to delete information about searches performed and webpages visited.

- **Edge:** Edge is a Microsoft web browser included in the Windows 10 operating system. It is the default browser for Windows 10 on most devices, and is not compatible with prior versions of Windows. Features include integration with Cortana and OneDrive, along with annotation and reading tools.

- **Opera:** This second-oldest browser is free, fast, and small. Used on both computers and mobile devices, Opera must be downloaded and installed. It began as a research project in Norway in 1994 and introduced several features found on most of today's browsers.

- **Safari:** Preinstalled on Apple computers and devices, Safari has been the default browser for Mac OS since 2003 and is relatively new to Windows. The browser has built-in sharing with online social networks, fast performance, parental controls, and ease of use.

Mobile Browsers

Many browsers are included by default with some mobile devices and smartphones. Their features vary greatly. Some allow users to zoom and use keyboard shortcuts with most websites, while others display only websites optimized for mobile devices. The more popular mobile browsers are Chrome, Firefox, Internet Explorer, Edge, Safari, and Opera Mini.

Discover More: Visit this chapter's free resources to learn more about filters and secure connections, shareware websites, research to compare browsers, and specific browsers.

✳ **Consider This:** Which browser or browsers have you used? Would you consider using another browser? Why or why not? When first invented, their only function was to browse the web. Can you recommend a more descriptive name for today's browsers?

Chrome

Firefox

Internet Explorer

Edge

Opera

Safari

Google Inc; Mozilla Foundation; Microsoft; Opera Software; Apple Inc

🜨 **Internet Research**

What is the Silk browser?

Search for: silk browser

Web Addresses

A webpage has a unique address, called a **web address** or *URL* (Uniform Resource Locator). For example, the web address of http://www.nps.gov identifies the U.S. Department of the Interior National Park Service home page. A browser retrieves a webpage using its web address.

If you know the web address of a webpage, you can type it in the address bar of the browser. For example, if you type the address http://www.nps.gov/history/places.htm in the address bar and then press the ENTER key or tap or click the Search, Go, or similar button, the browser downloads and displays the associated webpage (Figure 2-8). The path, history/places.htm, in this web address identifies a webpage that is specified in a file named places.htm, which is located in a folder named history on the server that hosts the nps.gov website. When you enter this web address, after obtaining the IP address for the nps.gov domain name, the browser sends a request to the web server to retrieve the webpage named places.htm, and delivers it to your browser to be displayed.

✸ CONSIDER THIS

Although you entered the web address correctly, your screen does not match Figure 2-8. Why?
Organizations may update or redesign their websites, which may cause your screens to look different from those shown in this book.
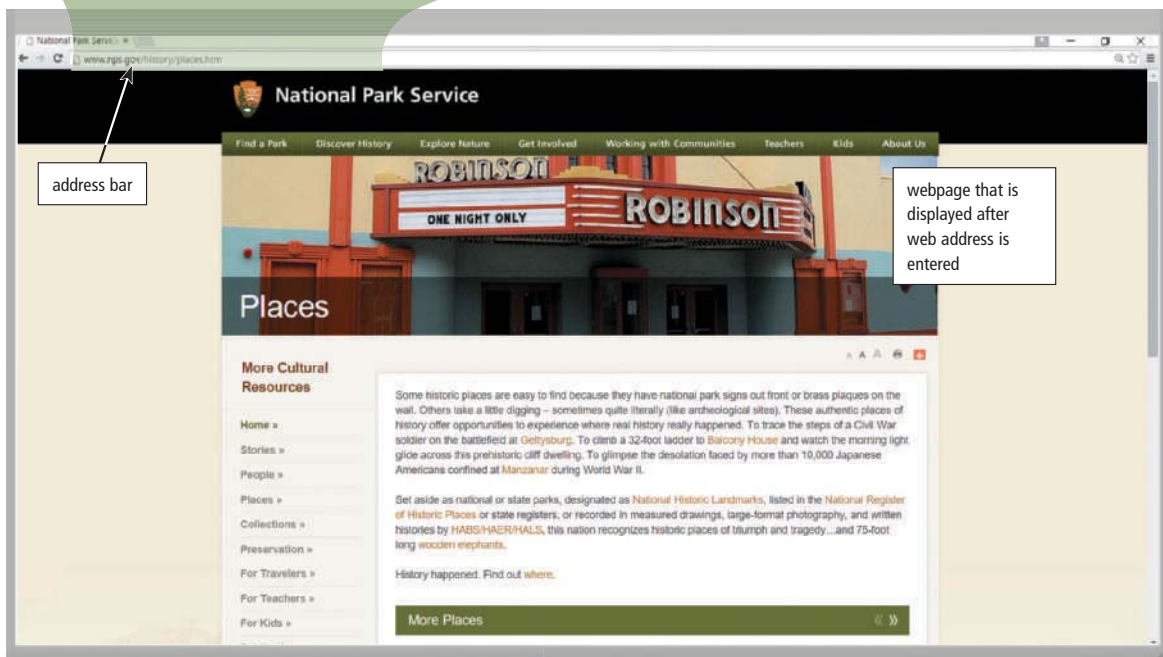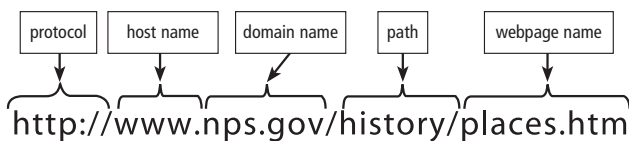

Figure 2-8 After entering http://www.nps.gov/history/places.htm in the address bar and then pressing the ENTER key or tapping or clicking the Search, Go, or similar button in a browser, the U.S. Department of the Interior National Park Service home page is displayed.
Source: National Park Service U.S. Department of the Interior

A web address consists of a protocol, domain name, and sometimes the host name, path to a specific webpage, or file name of the webpage. The *http*, which stands for Hypertext Transfer Protocol, is a set of rules that defines how webpages transfer on the Internet. Many web addresses begin with http:// as the protocol. The text between the protocol and the domain name, called the host name, identifies the type of Internet server or the name of the web server. The www, for example, indicates a web server.

✺ **CONSIDER THIS** ——————————————

Do you need to type the protocol and host name in a web address?
Many browsers and websites do not require that you enter the http:// or the host name www in the web address. For example, you could enter nps.gov instead of http://www.nps.gov. As you begin typing a web address or if you enter an incorrect web address, browsers often display a list of similar addresses or related websites from which you can select. If, however, the host name is not www, you will need to type the host name as part of the web address. For example, the web address of schools.nyc.gov for the New York City schools website does not contain a www and thus requires entry of the entire web address.

When you enter a web address in a browser, you request, or pull, information from a web server. Another way users can pull content is by subscribing to a *web feed*, which contains content that has changed on a website. Mass media, blogs, and online social networks often provide web feeds, saving users the time spent checking the websites for updated content. Most browsers contain the capability to read web feeds.

Discover More: Visit this chapter's free resources to learn about Internet protocols.

⚡ **Internet Research**
How do I read web feeds?
Search for: rss reader

Web Apps and Mobile Apps

Recall from Chapter 1 that a *web app* is an application stored on a web server that you access through a browser. Users typically interact with web apps directly on a website, sometimes referred to as the host. Web app hosts usually provide storage for users' data and information on their servers, known as *cloud storage*.

Many web app hosts provide free access to their software. Others offer part of their web app free and charge for access to a more comprehensive program. Many include advertisements in the free version and charge for an advertisement-free version. Some allow you to use the web app free and pay a fee when a certain action occurs. For example, you can prepare your tax return for free, but if you elect to print it or file it electronically, you pay a minimal fee.

A *mobile app* is an application you download from a mobile device's app store or other location on the Internet to a smartphone or other mobile device. Mobile apps often take advantage of features of the device, such as touch screens, digital cameras, microphones, and embedded GPS receivers, to enable you to enter and capture data.

✺ **CONSIDER THIS** ——————————————

What are GPS receivers?
GPS (global positioning system) is a navigation system that consists of one or more earth-based receivers that accept and analyze signals sent by satellites in order to determine the receiver's geographic location. A **GPS receiver** is a handheld, mountable, or embedded device that contains an antenna, a radio receiver, and a processor. Most smartphones include embedded GPS receivers so that users can determine their location, obtain directions, and locate points of interest. Read Ethics & Issues 2-2 to consider issues related to apps that track your location.
GPS receivers determine their location on Earth by analyzing at least 3 separate satellite signals from 24 satellites in orbit.

Discover More: Visit the High-Tech Talk in Chapter 1's free resources to learn about how GPS receivers use triangulation.

✳ ETHICS & ISSUES 2-2

Should Apps Be Allowed to Track Your Location?

When you install an app on your smartphone, you unintentionally may be allowing the app to send personal data. Apps can transmit your location, as well as the time you spend using the app. Apps also can collect personal information, including gender and birth year, if you access the app through an online social network profile. Although apps often present an option to review their security policies, some track user data without permission, or require you to enable tracking before you can use the app. You may see the results of tracking in the ads you see when browsing the web or using an app. Other apps may track your location without your knowledge, such as apps that parents use to pinpoint a child's whereabouts.

If you search for driving directions, coupons, or restaurant tips based on your current location or past activities, you might be using apps that openly use this type of tracking. For example, a check-in app posts your location to online social networks, and another app enables you to locate friends by tracking their Bluetooth signals. Even when you opt to share data, use of these types of apps is not without risk. When people use location-tracking apps, for instance, they run the risk of someone stalking or robbing them. One positive use of location-tracking apps is with emergency services. Lawmakers have struggled with whether law enforcement officials can use location-tracking without a user's knowledge. The U.S. Supreme Court recently ruled that police must get a warrant before searching a user's phone or reading text messages.

Consider This: Should app makers be able to require you to enable tracking or track your activity without your knowledge? Why or why not? Should the police be able to track GPS data without warrants? Why or why not? Would you use apps that post your location to your online social network profile or otherwise alert others of your whereabouts? Why or why not?

⚡ Internet Research

What are popular mobile apps?

Search for: top mobile apps

Web apps and mobile apps often work together (Figure 2-9). You might access your cloud storage website from a laptop or desktop. The cloud storage website hosts web apps to upload, download, browse, organize, and view files. The website also may provide a mobile app that you install on a smartphone so that you can access the same information or perform the same tasks from a mobile device. Because the data and information for each app is stored on cloud storage, all data is synchronized and accessible from anywhere you have an Internet connection, regardless of the computer or device used. The functionality of the app across computers and devices generally is the same, although the mobile app sometimes has fewer features. Some tasks may be easier to accomplish on one device or the other. For example, if a lot of typing is required, you may opt to use the web app on a laptop so that you can use a standard keyboard.

Discover More: Visit this chapter's free resources to learn more about mobile device app stores.

web app on Smart TV

web app on browser window

mobile app on tablet

mobile app on smartphone

Figure 2-9 Web and mobile apps often work together, enabling you to access your content from a variety of computers and devices.
Courtesy of Microsoft Corporation

✔ **NOW YOU SHOULD KNOW** ——————————————————————————————

Be sure you understand the material presented in the sections titled The Internet, Connecting to the Internet, and The World Wide Web, as it relates to the chapter objectives.
Now you should know…

- Why you interact with hosts and networks on the Internet (Objective 1)
- Which broadband Internet service and ISP is best suited to your needs (Objective 2)
- How a browser works with domain names and IP addresses when you enter a web address (Objectives 3 and 4)
- Which browser(s) you would use and why (Objective 4)

Discover More: Visit this chapter's premium content for practice quiz opportunities.

Types of Websites

The web contains several types of websites: search engines; online social networks; informational and research; media sharing; bookmarking; news, weather, sports, and other mass media; educational; business, governmental, and organizational; blogs; wikis and collaboration; health and fitness; science; entertainment; banking and finance; travel and tourism; mapping; retail and auctions; careers and employment; e-commerce; portals; content aggregation; and website creation and management. Many websites fall into more than one of these types. All of these websites can be accessed from computers or mobile devices but often are formatted differently and may have fewer features on mobile devices.

Search Engines

A web **search engine** is software that finds websites, webpages, images, videos, news, maps, and other information related to a specific topic. You also can use a search engine to solve mathematical equations, define words, and more.

Thousands of search engines are available. Some search engines, such as Bing, Google, and Yahoo!, are helpful in locating information on the web for which you do not know an exact web address or are not seeking a specific website. Those that work with GPS devices or services are location based, meaning they display results related to the device's current geographical position. For example, your smartphone may be able to display all gas stations within a certain distance of your current location. Some search engines restrict searches to a specific type of information, such as jobs or recipes.

Search engines typically allow you to search for one or more of the following items:

- Images: photos, diagrams, and drawings
- Videos: home videos, music videos, television programs, and movie clips
- Maps: maps of a business or address, or driving directions to a destination
- Audio: music, songs, recordings, and sounds
- Publications: news articles, journals, and books
- People or Businesses: addresses and phone numbers
- Blogs: specific opinions and ideas of others

Search engines require that you enter a word or phrase, called *search text*, to describe the item you want to find. Search text can be broad, such as spring break destinations, or more specific, such as walt disney world. If you misspell search text, search engines typically correct the misspelling or identify alternative search text. Some also provide suggested search text, links, and/or images as you type your search text.

Depending on your search text, search engines may respond with thousands to billions of search results, sometimes called *hits*. The content of the search results varies depending on the type of information you are seeking and your search text. Some search results contain links to webpages or articles; others are media, such as images or videos. Most search engines sequence the search results based on how close the words in the search text are to one another in the titles and descriptions of the results. Thus, the first few links probably contain more relevant information.

If you enter a phrase with spaces between the words in search text, most search engines display results that include all of the keywords. Because keywords describe content, search

🔘 BTW

Technology Innovators
Discover More: Visit this chapter's free resources to learn about Yahoo! and Google.

🟣 **Internet Research**
What is a natural language search engine?
Search for: natural language search

🟣 **Internet Research**
What is a search engine spider?
Search for: search engine spider

results exclude articles, conjunctions, and other similar words (e.g., to, the, and). Table 2-4 lists some operators you can use in search text to refine searches. Instead of working with operators to refine search text, many search engines provide an advanced search feature or search tools that assist with limiting search results based on items such as date, TLD, language, etc.

Table 2-4   Search Engine Operators

Operator	Description	Examples	Explanation
Space or +	Display search results that include specific words.	art + music art music	Results have both words, art and music, in any order,
OR	Display search results that include only one word from a list.	dog OR puppy	Results have either the word, dog, or the word, puppy.
		dog OR puppy OR canine	Results have the word, dog, or the word, puppy, or the word, canine.
( )	Combine search results that include specific words with those that include only one word from a list.	Kalamazoo Michigan (pizza OR subs)	Results include both words, Kalamazoo Michigan, and either the word, pizza, or the word, subs.
–	Exclude a word from search results.	automobile-convertible	Results include the word, automobile, but do not include the word, convertible.
" "	Search for an exact phrase in a certain order.	"19th century literature"	Results include the exact phrase, 19th century literature.
*	Substitute characters in place of the asterisk.	writer*	Results include any word that begins with the text, writer (e.g., writer, writers, writer's)

© Cengage Learning

✹ CONSIDER THIS

How can you improve search results?
You may find that many items listed in the search results have little or no bearing on the item you are seeking. You can eliminate superfluous items in search results by carefully crafting search text and use search operators to limit search results. Other techniques you can use to improve your searches include the following:
- Use specific nouns.
- Put the most important terms first in the search text.
- List all possible spellings, for example, email, e-mail.
- Before using a search engine, read its Help information.
- If the search is unsuccessful with one search engine, try another.
- Practice search techniques by performing the Internet Research: Search Skills exercise in each chapter of this book.

Subject Directories   A *subject directory* classifies webpages in an organized set of categories, such as sports or shopping, and related subcategories. A subject directory provides categorized lists of links arranged by subject. Using a subject directory, you locate a particular topic by tapping or clicking links through different levels, moving from the general to the specific. A disadvantage with a subject directory is that users sometimes have difficulty deciding which categories to choose as they work through the menus of links presented.

   Discover More: Visit this chapter's free resources to learn more about search engines and subject directories.

Mini-Feature 2-2: Online Social Networks
   Recall from Chapter 1 that an **online social network**, or *social networking site*, is a website that encourages members in its online community to share their interests, ideas, stories, photos, music, and videos with other registered users. Some online social networks also enable users to communicate through text, voice, and video chat, and play games together online. You interact with an online social network through a browser or mobile app on your computer or mobile device. Read Mini Feature 2-2 for features and uses of popular online social networks.

⚙ **MINI FEATURE 2-2**

Online Social Networks

People you know through personal and professional circles form your social networks. You share common interests, work or spend leisure time together, and know many of one another's friends. Online social networks allow you to manage your social networks online.

Your account on an online social network includes profile information, such as your name, location, photos, and personal and professional interests. You might create accounts on several online social networks to separate your personal and professional activities. Online social networks allow you to view the profiles of other users and designate them as your *friends* or contacts. Some sites, such as Facebook and LinkedIn, require friends to confirm a friendship, while others, such as Twitter and Google+, allow users to follow one another without confirmation.

You can expand your online social network by viewing your friends' friends and then, in turn, designating some of them as your friends. Friends of your friends and their friends form your *extended contacts*.

© iStockphoto / temizyurek

- Extended contacts on a personal online social network such as Facebook can introduce you to others at your college or from your hometown, connect you with long-distance friends or relatives, or enable you to stay in touch with those who have interests similar to yours.

- Extended contacts on a professional online social network such as LinkedIn can introduce you to people who work at companies where you might be seeking employment. You can share employment history and skills in your profile, enabling potential employers who look at your profile to learn about your specific skills.

Read Secure IT 2-3 for tips about securing your privacy when using online social networks.

Personal Uses

Personal uses of online social networks include sharing photos and videos, greetings, or status updates.

A *status update* informs friends about what you are doing. You can *like*, or show appreciation for, online content such as photos or videos

© iStockphoto / Lentz Photography

on online social networks such as Facebook and Google+. When you do, people who see the same content will know that you liked it, and the person who posted it is notified. All of your updates, likes, posts, and events appear in the activity stream associated with your account. Activity updates from friends may appear on a separate page associated with your account, often called a *news feed*.

On many online social networks, updates can include hashtags to identify their topics. A *hashtag* is a word(s) preceded by a # symbol that describes or categorizes a post. Users can search for posts on a topic by searching for a hashtag. Some online social networks list trending topics based on popular hashtags. Many television broadcasts, advertisements, and businesses post hashtags to encourage viewers and customers to share comments on Twitter or Facebook.

When accessing an online social network with a GPS-enabled mobile device, the location where you check in may be revealed as part of a status update. An online social network's mobile app can share your location with friends, find others nearby, and alert you to promotional deals from local businesses.

Follow button

© iStockphoto / hocus-focus

Business Uses

Businesses use online social networks to connect with their customers, provide promotional offers, and offer targeted advertising. For example, users who recommend online content about travel services may see travel-related advertising on their online social network's webpage.

Businesses also use data from online social networks to better connect with and understand customers. They can review comments from customers about their experiences using companies' products or services. Monitoring these feeds continuously gives companies immediate feedback from customers.

Nonprofit organizations use online social networks to promote activities and causes, accept donations, and allow volunteers to contact one another online.

Discover More: Visit this book's chapter's free resources to learn more about specific online social network websites and mobile apps.

✳ **Consider This:** How can businesses and individuals use online social networks to bring people together in support of a common goal? What benefits and risks are involved when using online social networks?

📑 **Privacy and Security Risks with Online Social Networks**

Online social networks can be excellent places to share messages, photos, and videos. They can, however, be risky places to divulge personal information. Follow these tips to help protect against thieves who are following the network traffic and attempting to invade private facets of your life.

- **Register with caution.** During the registration process, provide only necessary information. Do not disclose your birthdate, age, place of birth, or the city where you currently are living. If an email address is required, consider using a new address so that the online social network cannot access your email address book. Online social networks occasionally ask users to enter their email address and password to determine if their friends also are members of the network. In turn, the network obtains access to contacts in your address book and can send spam (unsolicited email messages) to your friends.

- **Manage your profile.** Check for privacy settings, usually found on the Settings or Options tabs, to set permissions so that you can control who can review your profile and photos, determine how people can search for you and make comments, and if desired, block certain people from viewing your page. Be aware that online social networks may change privacy settings. Periodically check your settings to ensure you have the most up-to-date settings.

- **Choose friends carefully.** You may receive a friend request that appears to be from someone you know. In reality, this message may originate from an identity thief who created a fake profile in an attempt to obtain your personal information. Confirm with the sender that the request is legitimate.

- **Limit friends.** While many online social networks encourage the practice, do not try to gather too many friends in your social network. Some experts believe that a functional online social network should not exceed 150 people. Occasionally review what your friends are posting about you.

- **Divulge only relevant information.** Write details about yourself that are relevant to the reasons you are participating in an online social network. When posting information, be aware that the message may be accessible publicly and associated with your identity permanently. Do not post anything you would not want to be made public.

- **Be leery of urgent requests for help.** Avoid responding to emergency pleas for financial assistance from alleged family members. In addition, do not reply to messages concerning lotteries you did not enter and fabulous deals that sound too good to be true.

- **Read the privacy policy.** Evaluate the website's privacy policy, which describes how it uses your personal information. For example, if you watch a video while signed in to your account, an external website or app may have access to this information and post this activity as an entry in both your activity stream and your friends' news feeds.

✳ **Consider This:** Should online social networks do a better job of telling their users what information is safe or unsafe to share? What role should parents play in overseeing their child's involvement in online social networks?

Informational and Research

An informational and research website contains factual information. Examples include libraries, encyclopedias, dictionaries, directories, guides (Figure 2-10), and other types of reference. You can find guides on numerous topics, such as health and medicine, research paper documentation styles, and grammar rules. Many of the other types of websites identified in this section also are used to research information.
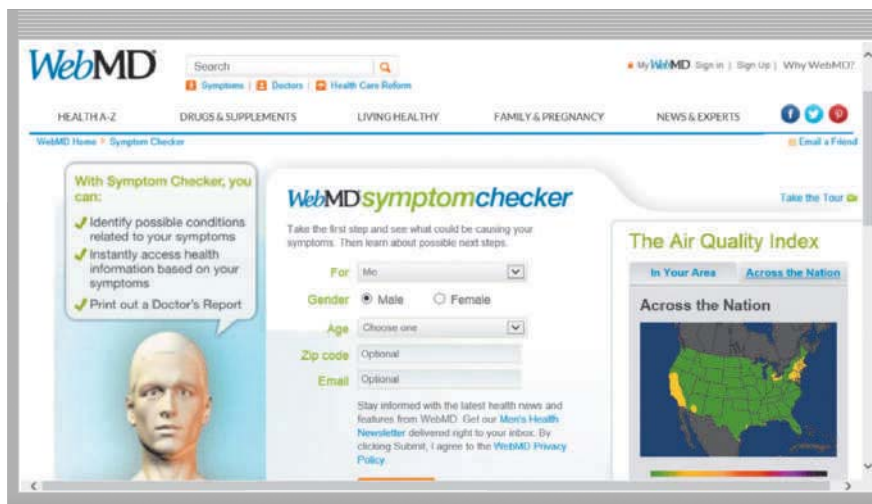

Figure 2-10 You can research health conditions from your symptoms on a medical website, such as WebMD.
Source: WebMD, LLC

Media Sharing

A *media sharing site* is a website that enables members to manage and share media such as photos, videos, and music. These websites are sometimes called photo sharing sites, video sharing sites (Figure 2-11), and music sharing sites, respectively. Media sharing sites, which may be free or charge a fee, provide a quick and efficient way to upload, organize, store, share, and download media.
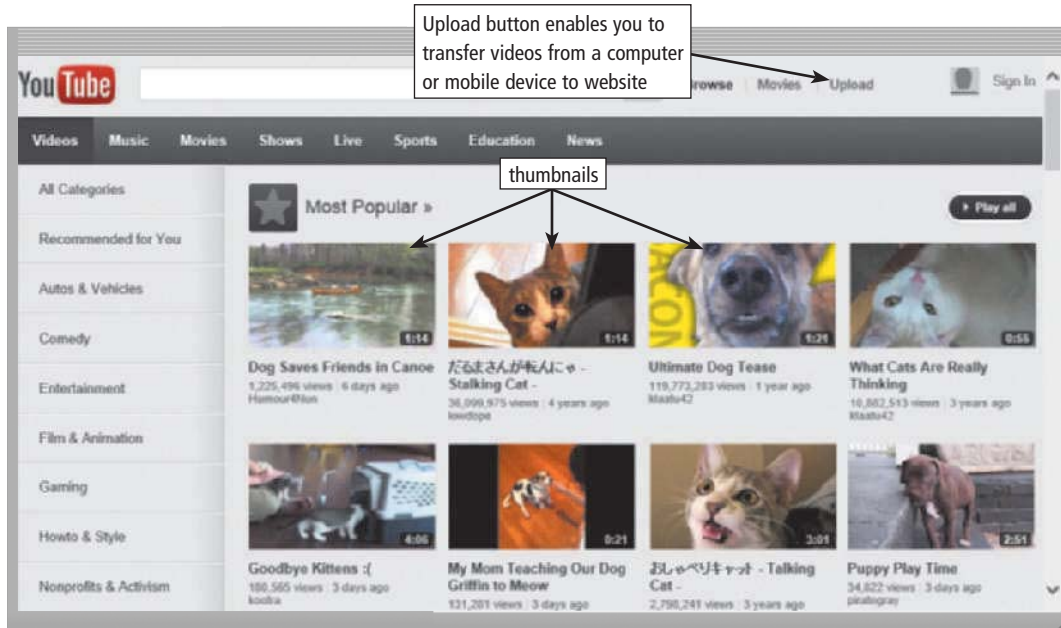

Figure 2-11 YouTube is an example of a video sharing site. You tap or click the thumbnail to view the video.
Source: YouTube, Inc.

✺ **CONSIDER THIS**

Why would you use a media sharing site instead of an online social network?
Although the lines between media sharing sites and online social networks are becoming blurred, some users chose a traditional media sharing site if they simply want to post photos, videos, or music to share with others and do not require the full functionality of an online social network. Before you allow someone to take your photo or record video of you, however, remember that the photo or video may be posted on a media sharing site. These photos or videos may be accessible publicly and associated with your identity for a long time. Also, once posted, you may be giving up certain rights to the media. Further, do not post photos or videos that are protected by copyright.

Bookmarking

A *bookmarking site* is a website that enables members to organize, tag, and share links to media and other online content (Figure 2-12). A **tag** is a short descriptive label that you assign to webpages, photos, videos, blog posts, email messages, and other digital content so that it is easier locate at a later time. Many websites and web apps support tagging, which enables users to organize their online content. Read How To 2-2 to learn how to tag digital content.
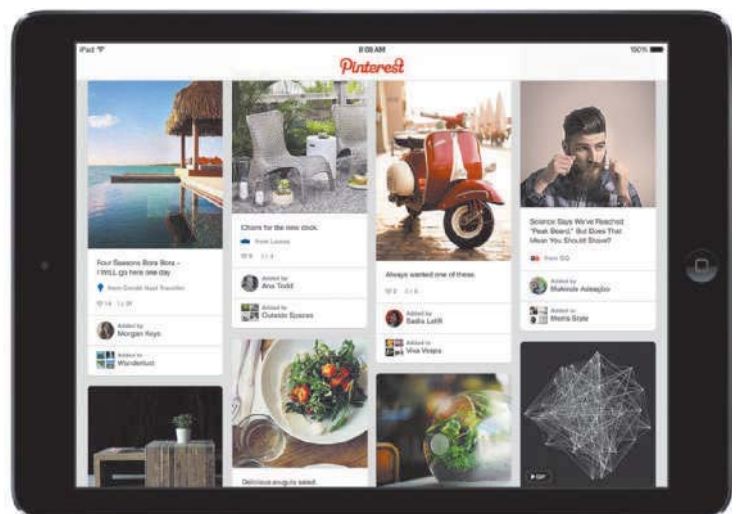

Figure 2-12 Pinterest is an example of a bookmarking site.

⚙ **HOW TO 2-2**

Tag Digital Content
When you post digital content online, it is a good idea to tag the content so that it is easy for you and others to locate and organize. After you have uploaded digital content to a media sharing site, follow the instructions on the website to apply tags to the digital content you uploaded. Consider the following suggestions when tagging digital content:

• Apply tags to all digital media, such as photos, music, and videos.

• If you are using multiple tags to identify one file, separate each tag with a separator. The website to which you are posting will inform you how to separate multiple tags (such as a space, comma, or semicolon).

• Choose tags that are descriptive of the content you are posting. For example, if you are posting a photo from a recent family vacation to Hammonasset Beach State Park, you might choose

"Hammonasset" and "vacation" as two of your tags for this photo.

• After you have tagged the digital content, perform a search on the media sharing site for your content, using the tags as your search criteria, to verify your content is displayed as intended.

✸ **Consider This:** Why else is it important to tag digital content? What tags might you assign to your favorite song in your music library?

Discover More: Visit this chapter's free resources to learn more about websites that support tagging.

✸ **CONSIDER THIS**

What are the various kinds of social media?
Social media consists of content that users create and share online, such as photos, videos, music, links, blog posts, Tweets, wiki entries, podcasts, and status updates. Social media websites facilitate the creation or publishing of social media online and include media sharing sites (for photo, video, and audio files), bookmarking sites, blogs and microblogs, wikis, podcasts, online social networks, and online gaming sites.

⚙ **BTW**

Technology Innovator
Discover More: Visit this chapter's free resources to learn about Arianna Huffington (founder of *The Huffington Post* news website).

News, Weather, Sports, and Other Mass Media

News, weather, sports, and other mass media websites contain newsworthy material, including stories and articles relating to current events, life, money, politics, weather (Figure 2-13), and sports. You often can customize these websites so that you can receive local news or news about specific topics. Some provide a means to send you alerts, such as weather updates or sporting event scores, via text or email messages.
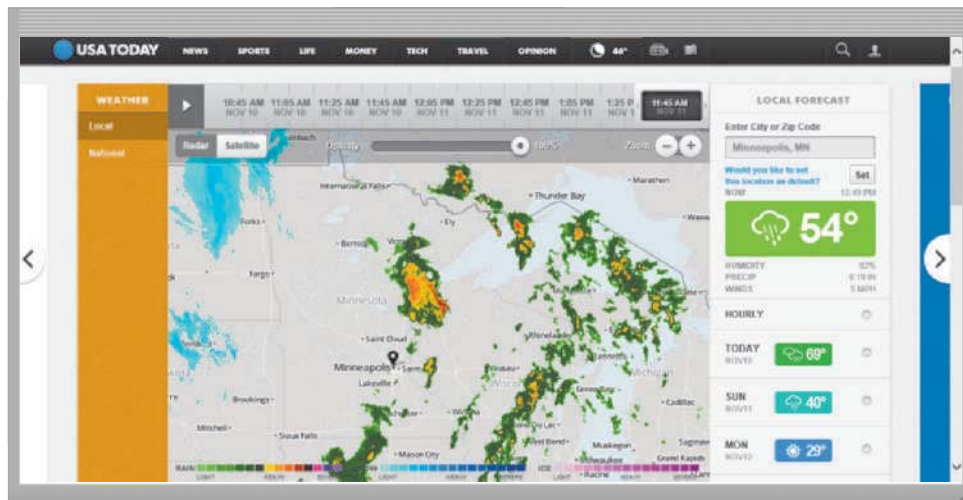
News on the web is not replacing the newspaper but enhancing it and reaching different populations. Although some exist solely online, many magazines and newspapers sponsor websites that provide summaries of printed articles, as well as articles not included in the printed versions. Newspapers, magazines, and television and radio stations often have corresponding news, weather, or sports websites and mobile apps. Read Ethics & Issues 2-3 to consider the issues related to using fake names on websites.

Figure 2-13 Forecasts, radar, and other weather conditions are available on the WEATHER webpage on USA TODAY's website.
Source: Gannett

Is It Ethical to Use a Fake Name or ID on a Website?
You are signing up for an account on an online social network, an online dating website, or a news website that enables you to post comments. Should you use your real name?

Many argue that it is harmless to protect your anonymity by using a fake name but believe that it is not right to create a fake profile to mislead others or leave malicious comments on a website. The latter has become so prevalent that terms have emerged to describe this behavior. For example, *catfishing* is when someone creates a fake online social network or online dating profile and forms relationships with unsuspecting users. A *troll* is a user who posts negative, inflammatory comments on a blog post or article with the intent of inciting other users.

One website creates very thorough, but completely fake, personas, which include email addresses, Social Security numbers, phone numbers, and more. Although law enforcement has raised concerns over the potential misuses of fake profiles, it technically is legal, even though the names and personas are not real. Legitimate uses for fake name generators include testers of large databases, such as ones for hospitals.

Facebook currently requires members to use their real names. Twitter's policy is that anyone can create a fake account, but it has a verification process to identify the official account of a celebrity or public figure. Most fake Twitter accounts are harmless, and often are flattering. Although some argue that creating a fake account constitutes identity theft, unless the intent is to harm or embarrass the real person, it is not unethical or illegal. When a journalist created a fake account for a politician and posted discriminatory quotes and Tweets in the politician's name, many considered it an ethics violation, because journalists are supposed to report the truth.

Consider This: Is it ever acceptable to use a fake name online? Why or why not? Is it unethical to create fake personas for others to use? Why or why not? Should websites require you to use a real name, or have a verification process? Why or why not?

Educational

An educational website offers exciting, challenging avenues for formal and informal teaching and learning. The web contains thousands of tutorials from learning how to fly airplanes to learning how to cook a meal. For a more structured learning experience, companies provide online training to employees, and colleges offer online classes and degrees. Instructors often use the web to enhance classroom teaching by publishing course materials, grades, and other pertinent class information.

Business, Governmental, and Organizational

A business website contains content that increases brand awareness, provides company background or other information, and/or promotes or sells products or services. Nearly every enterprise has a business website. Examples include Allstate Insurance Company, Apple Inc., General Motors Corporation, Kraft Foods Inc., and Walt Disney Company.

Most United States government agencies have websites providing citizens with information, such as census data, or assistance, such as filing taxes (Figure 2-14). Many other types of organizations use the web for a variety of reasons. For example, nonprofit organizations raise funds for a cause and advocacy groups present their views or opinions.
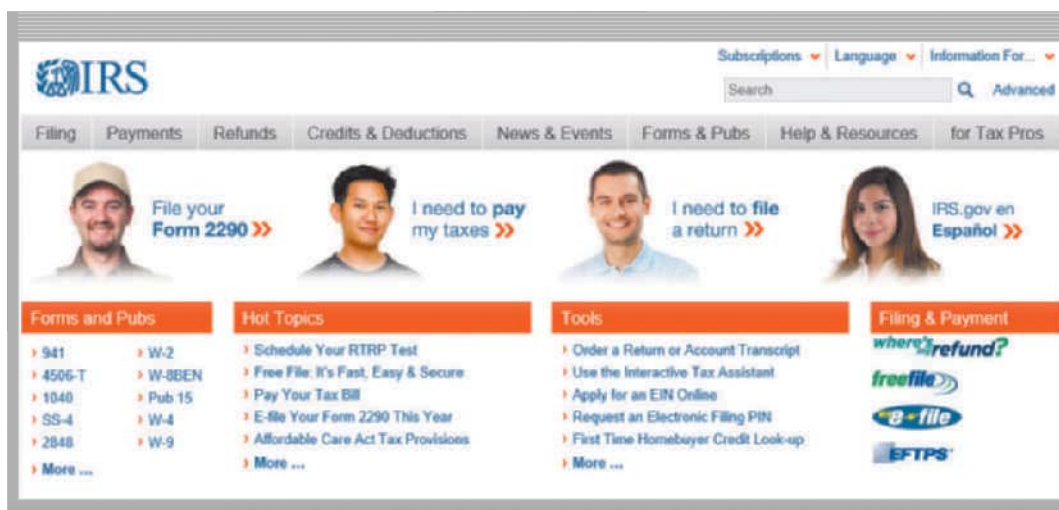

Figure 2-14 Government agencies, such as the IRS webpage shown here, have websites providing assistance and information to citizens.
Source: IRS

Tweets present current events and technology news

Blogs

As described in Chapter 1, a **blog** (short for weblog) is an informal website consisting of time-stamped articles, or posts, in a diary or journal format, usually listed in reverse chronological order. The term *blogosphere* refers to the worldwide collection of blogs. A blog that contains video sometimes is called a video blog, or vlog. A *microblog* allows users to publish short messages usually between 100 and 200 characters, for others to read. The collection of a user's Tweets, or posts on Twitter, for example, forms a microblog (Figure 2-15).

✳ **CONSIDER THIS**

How can you locate Tweets about certain topics?
When searching Twitter, you can use hashtags to find related posts. Similarly, you can tag any word(s) in your Tweets by typing it as a hashtag, such as #election.

Similar to an editorial section in a newspaper, blogs reflect the interests, opinions, and personalities of the author, called the **blogger**, and sometimes website visitors. Blogs have become an important means of worldwide communications. Businesses create blogs to communicate with employees, customers, and vendors. They may post announcements of new information on a corporate blog. Teachers create blogs to collaborate with other teachers and students. Home users create blogs to share aspects of their personal lives with family, friends, and others.

Wikis and Collaboration

Whereas blogs are a tool for publishing and sharing messages, wikis enable users to organize, edit, and share information. A **wiki** is a type of collaborative website that allows users to create, add, modify, or delete the website content via a browser. Wikis can include articles, documents, photos, or videos. Some wikis are public, accessible to everyone (Figure 2-16). Others are private so that content is accessible only to certain individuals or groups. Many companies, for example, set up wikis as an intranet for employees to collaborate on projects or access information, procedures, and documents. (An *intranet* is an internal network that uses Internet technologies.)

Figure 2-15 When you 'follow' @DiscoveringComp on Twitter, you will see Tweets such as those shown here posted by the Discovering Computers user "Shelly Cashman", in your account's timeline, along with Tweets from others whom you are following. As a student in this class, you should 'follow' @DiscoveringComp so that you easily can keep current with relevant technology changes and events in the computing industry.
Source: Twitter

Figure 2-16 Wikipedia is a popular public wiki.
Source: Wikimedia Foundation

Contributors to a wiki typically must register before they can edit content or add comments. Wikis usually hold edits on a webpage until an editor or website manager can review them for accuracy. Unregistered users typically can review the content but cannot edit it or add comments.

Other types of collaboration sites enable users to share and edit any type of project — including documents, photos, videos, designs, prototypes, schedules, and more, often at the same time. On these websites, comments or edits are seen by other connected users. Most of these websites also enable users to communicate via chat windows, and some provide a whiteboard.

Discover More: Visit this chapter's free resources to learn more about public wikis and other collaboration websites.

Health and Fitness

Many websites provide up-to-date medical, fitness, nutrition, or exercise information for public access. Some offer users the capability of listening to health-related seminars and discussions. Consumers, however, should verify the online information they read with a personal physician. Health service organizations store your personal health history, including prescriptions, lab test results, doctor visits, allergies, and immunizations. Doctors use the web to assist with researching and diagnosing health conditions.

Science

Several websites contain information about space exploration, astronomy, physics, earth sciences, microgravity, robotics, and other branches of science. Scientists use online social networks to collaborate on the web. Nonprofit science organizations use the web to seek public donations to support research.

Entertainment

An entertainment website offers music, videos, shows, performances, events, sports, games, and more in an interactive and engaging environment. Many entertainment websites support streaming media. **Streaming** is the process of transferring data in a continuous and even flow, which allows users to access and use a file while it is transmitting. You can listen to streaming audio or watch streaming video, such as a live performance or broadcast, as it downloads to your computer, mobile device, or an Internet-connected television.

Sophisticated entertainment websites often partner with other technologies. For example, you can cast your vote on a television show via your phone or online social network account.

Banking and Finance

Online banking and online trading enable users to access their financial records from anywhere in the world, as long as they have an Internet connection. Using online banking, users can access accounts, pay bills, transfer funds, calculate mortgage payments, and manage other financial activities from their computer or mobile device (Figure 2-17). With online trading, users can invest in stocks, options, bonds, treasuries, certificates of deposit, money market accounts, annuities, mutual funds, and so on, without using a broker. Read Secure IT 2-4 for tips about protecting your bank accounts and other personal information from identity theft.
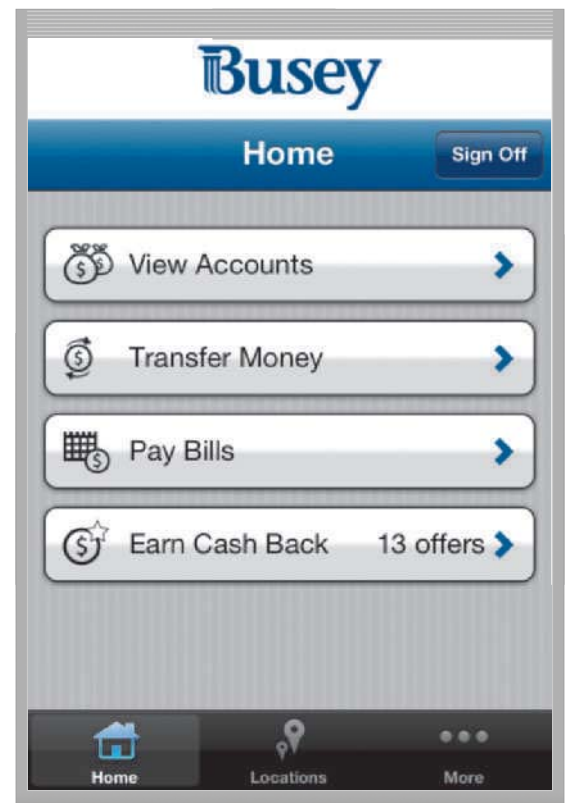

Figure 2-17   Many banks, such as Busey shown here, provide mobile versions of their online banking website so that users can manage financial accounts from their smartphones.
Source: First Busey Corporation

SECURE IT 2-4

Protecting Yourself from Identity Theft

The fastest growing crime in the United States is identity theft. More than nine million people fall victim each year, with the unauthorized use of an existing credit card accounting for much of the problem. The National Crime Victimization Survey reports that household identity theft losses amount to more than $13 billion each year, and that figure does not account for the aggravation and time required to repair the accounts. Practice these techniques to thwart attempts to steal your personal data:

- Do not tap or click links in or reply to spam for any reason.
- Install a personal firewall (software that protects network resources from outside intrusions).
- Clear or disable web cookies (small text files that web servers store on a computer) in your browser. This action might prevent some cookie-based websites from functioning, but you will be able to decide which cookies to accept or reject.
- Turn off file and printer sharing on your Internet connection.
- Set up a free email account. Use this email address for merchant forms.

- Sign up for email filtering through your ISP or use an anti-spam program.
- Shred financial documents before you discard them.
- Provide only the required information on website forms.
- Avoid checking your email or performing banking activities on public computers. These computers are notorious for running *keyloggers*, which record keystrokes in a hidden file, and other tracking software. If you must use a public computer for critical activities, be certain to sign out of any password-protected website and to clear the browser's cache.
- Request a free copy of your medical records each year from the Medical Information Bureau.
- Obtain your credit report once a year from each of the three major credit reporting agencies and correct any errors. Enroll in a credit monitoring service.
- Request, in writing, to be removed from mailing lists.
- Place your phone number on the National Do Not Call Registry.
- Avoid shopping club and buyer cards.

- Do not write your phone number on charge or credit receipts. Ask merchants not to write this number or any other personal information, especially your Social Security number and driver's license number, on the back of your personal checks.
- Do not preprint your phone number or Social Security number on personal checks.
- Fill in only the required information on rebate, warranty, and registration forms.
- Learn how to block your phone number from displaying on the receiver's system.

If your identity has been stolen, immediately change any passwords that may have been compromised. If you have disclosed your debit or credit card numbers, contact your financial institutions. You also should visit the Federal Trade Commission website or call the FTC help line.

Consider This: Do you know anyone who has been a victim of identity theft? What steps will you take to protect your identity using some of these guidelines?

Travel and Tourism

Travel and tourism websites enable users to research travel options and make travel arrangements. On these websites, you typically can read travel reviews, search for and compare flights and prices, order airline tickets, book a room, or reserve a rental car.

Discover More: Visit this chapter's free resources to learn more about travel websites.

Mapping

Several mapping website and web apps exist that enable you to display up-to-date maps by searching for an address, postal code, phone number, or point of interest (such as an airport, lodging, or historical site). The maps can be displayed in a variety of views, including terrain, aerial, maps, streets, buildings, traffic, and weather. These websites also provide directions when a user enters a starting and destination point (Figure 2-18). Many work with GPS to determine where a user is located, eliminating the need for a user to enter the starting point and enabling the website to recommend nearby points of interest.

Discover More: Visit this chapter's free resources to learn more about mapping web apps.
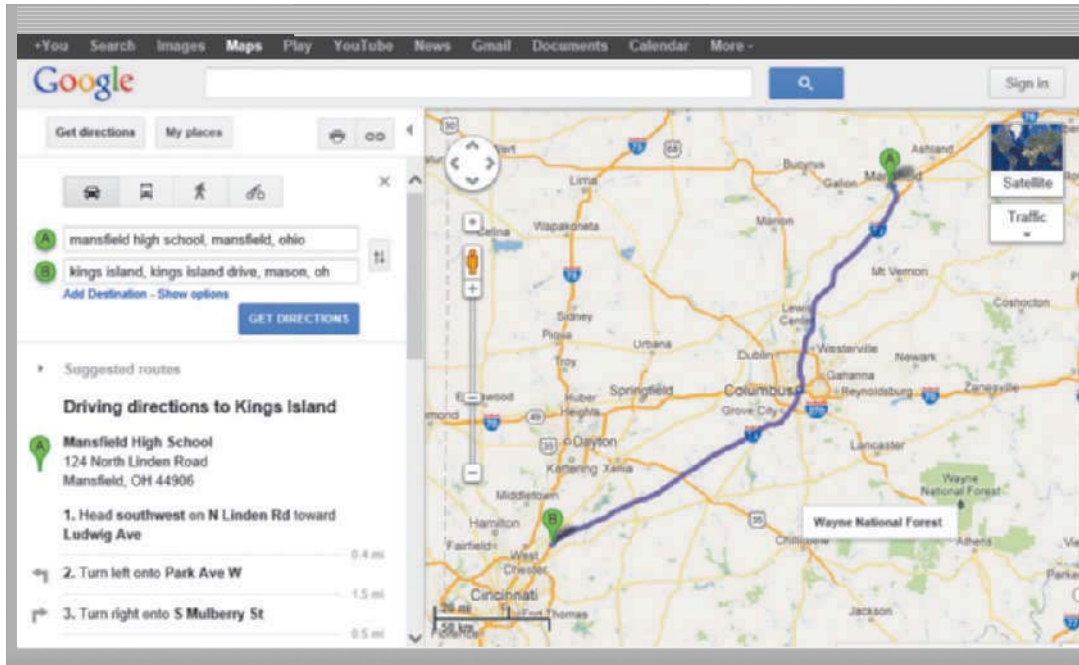
Figure 2-18   Using mapping web apps, such as Google Maps shown here, you can obtain driving directions from one destination to another.
Source: Google Inc.

Retail and Auctions

You can purchase just about any product or service on the web, a process that sometimes is called *e-retail* (short for electronic retail). To purchase online, the customer visits the business's *electronic storefront*, which contains product descriptions, images, and a shopping cart (Figure 2-19). The *shopping cart* allows the customer to collect purchases. When ready to complete the sale, the customer enters personal data and the method of payment, which should be through a secure Internet connection.
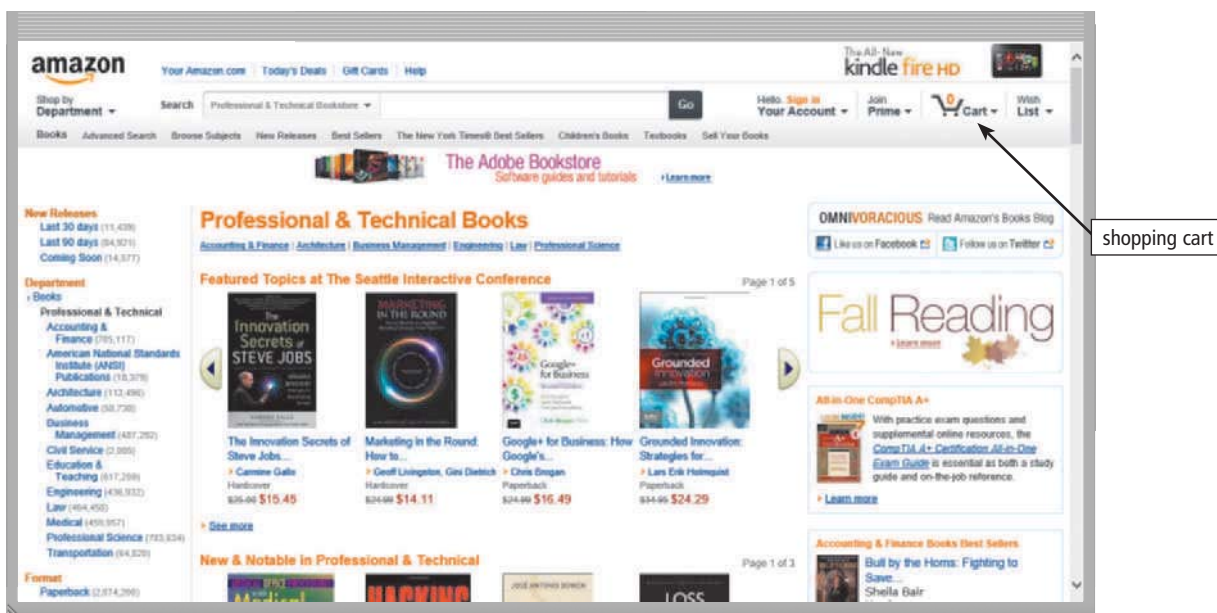

shopping cart

Figure 2-19   Shown here is Amazon's storefront for Professional and Technical Books.
Source: Amazon.com, Inc.

With an **online auction**, users bid on an item being sold by someone else. The highest bidder at the end of the bidding period purchases the item. eBay is one of the more popular online auction websites.

✺ CONSIDER THIS

Is it safe to enter financial information online?
As an alternative to entering credit card, bank account, or other financial information online, some shopping and auction websites allow consumers to use an online payment service such as PayPal. To use an online payment service, you create an account that is linked to your credit card or funds at a financial institution. When you make a purchase, you use your online payment service account, which transfers money for you without revealing your financial information.

Careers and Employment

You can search the web for career information and job openings. Job search websites list thousands of openings in hundreds of fields, companies, and locations. This information may include required training and education, salary data, working conditions, job descriptions, and more. In addition, many organizations advertise careers on their websites.

When a company contacts you for an interview, learn as much about the company and the industry as possible before the interview. Many have websites with detailed company profiles.

Discover More: Visit this chapter's free resources to learn more about job search websites.

E-Commerce

E-commerce, short for electronic commerce, is a business transaction that occurs over an electronic network, such as the Internet. Anyone with access to a computer or mobile device, an Internet connection, and a means to pay for purchased goods or services can participate in e-commerce. Some people use the term *m-commerce* (mobile commerce) to identify e-commerce that takes place using mobile devices. Popular uses of e-commerce by consumers include shopping and auctions, finance, travel, entertainment, and health.

Three types of e-commerce websites are business-to-consumer, consumer-to-consumer, and business-to-business.

- *Business-to-consumer* (*B2C*) *e-commerce* consists of the sale of goods and services to the general public, such as at a shopping website.
- *Consumer-to-consumer* (*C2C*) *e-commerce* occurs when one consumer sells directly to another, such as in an online auction.
- *Business-to-business* (*B2B*) *e-commerce* occurs when businesses provide goods and services to other businesses, such as online advertising, recruiting, credit, sales, market research, technical support, and training.

Portals

A **portal** is a website that offers a variety of Internet services from a single, convenient location (Figure 2-20). A wireless portal is a portal designed for Internet-capable mobile devices. Most portals offer these free services: search engine; news, sports, and weather; web publishing; yellow pages; stock quotes; maps; shopping; and email and other communications services.

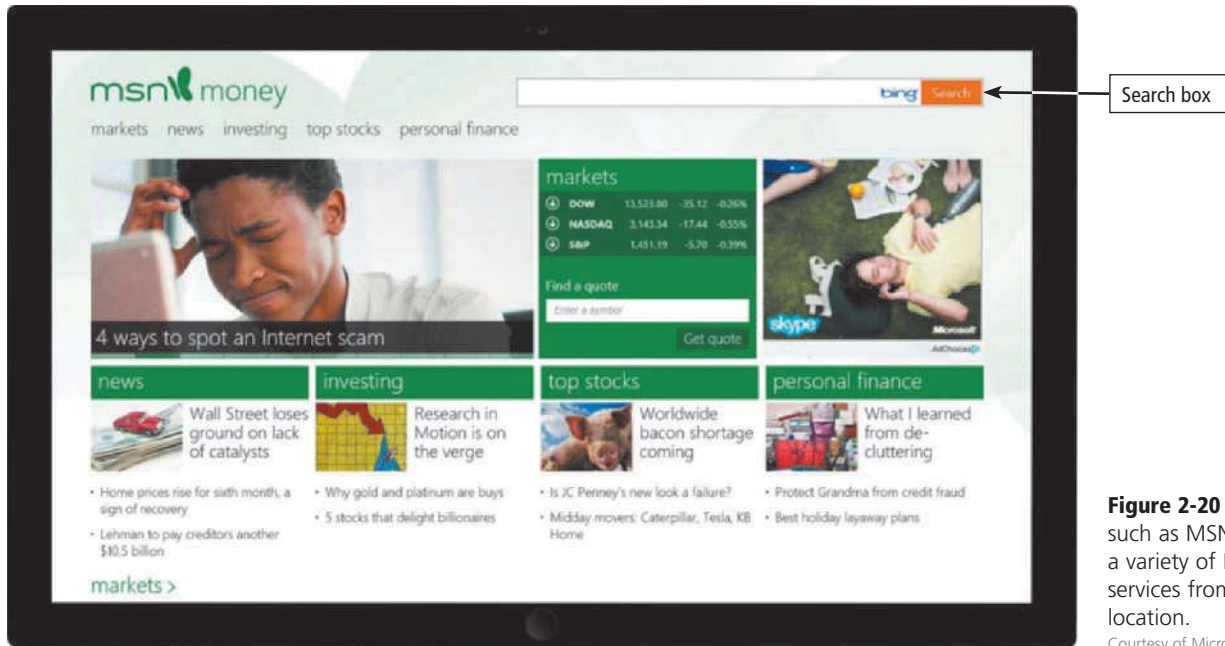**Discover More:** Visit this chapter's free resources to learn more about portals.

Figure 2-20 Portals, such as MSN, offer a variety of Internet services from a single location.
Courtesy of Microsoft Corporation

Content Aggregation

A **content aggregation** website or web app, sometimes called a *curation website*, allows users to collect and compile content from a variety of websites about a particular topic or theme (Figure 2-21). Types of content that may be compiled includes news, reviews, images, videos, podcasts (discussed later in this chapter), and blogs. Content aggregation websites save users time because they need to visit only one website (the content aggregation website) instead of visiting multiple websites to obtain information.

Discover More: Visit this chapter's free resources to learn more about content aggregation websites.
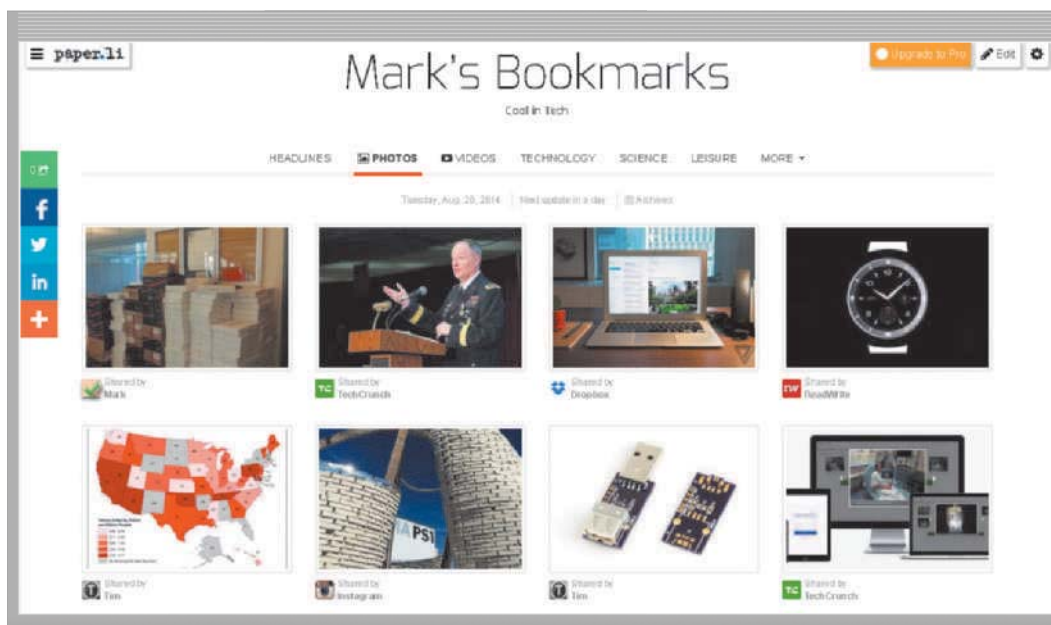

Figure 2-21 A content aggregation web app that compiles news from a variety of online sources.
Source: SmallRivers

Website Creation and Management

By creating their own websites, businesses and individuals can convey information to billions of people. The content of the webpages ranges from news stories to product information to blogs to surveys. Web creation and management sites provide tools that support the steps in **web publishing**, which is the creation and maintenance of websites. To create a website, you do not have to be a computer programmer. For the small business or home user, web publishing is fairly easy as long as you have the proper tools. Table 2-5 outlines the five main steps in web publishing.

Table 2-5 Steps in Web Publishing	
Step	**Description**
1. Plan the website.	Identify the purpose of the website and the characteristics of the people you want to visit the website.
	Determine ways to differentiate your website from other similar ones.
	Decide how visitors will navigate the website.
	Register the desired domain name.
2. Design the website.	Design the appearance and layout of elements on the website.
	Decide colors and formats.
	Determine content for links, text, graphics, animation, audio, video, virtual reality, and blogs.
	You may need specific hardware, such as a digital camera, webcam, video camera, scanner, and/or audio recorder.
	You also may need software that enables you to create images or edit photos, audio, and video.
3. Create the website.	To create a website, you have several options:
	a. Use the features of a word processing program that enable you to create basic webpages from documents containing text and graphics.
	b. Use a *content management system*, which is a tool that assists users with creating, editing, and hosting content on a website.
	c. Use website authoring software to create more sophisticated websites that include text, graphics, animation, audio, video, special effects, and links.
	d. More advanced users create sophisticated websites by using a special type of software, called a text editor, to enter codes that instruct the browser how to display the text, images, and links on a webpage.
	e. For advanced features, such as managing users, passwords, chat rooms, and email, you may need to purchase specialized website management software.
4. Host the website.	Options for transferring the webpages from your computer to a web server include the following:
	a. A *web hosting service* provides storage space on a web server for a reasonable monthly fee.
	b. Many ISPs offer web hosting services to their customers for free or for a monthly fee.
	c. Online content management systems usually include hosting services for free or for a fee, depending on features and amount of storage used.
5. Maintain the website.	Visit the website regularly to ensure its contents are current and all links work properly.
	Create surveys on the website to test user satisfaction and solicit feedback.
	Run analytics to track visitors to the website and measure statistics about its usage.

BTW

Technology Trend
Discover More: Visit this chapter's free resources to learn more about responsive web design.

Some websites are dedicated to one portion of web publishing; others provide a variety of web publishing tools, including website design, content management, web hosting, website marketing, website analytics, survey development, and more. Because users view websites on a variety of computers and devices, many website developers use an approach called **responsive web design** (RWD) that adapts the layout of the website to fit the screen on which it is being displayed.

Discover More: Visit this chapter's free resources to learn more about website creation and management.

✺ **CONSIDER THIS** ——————————————————————

Can you assume that content on a website is correct and accurate?
No. Any person, company, or organization can publish a webpage on the Internet. No one oversees the content of these webpages.

Use the criteria below to evaluate a website or webpage before relying on its content.

- Affiliation: A reputable institution should support the website without bias in the information.
- Audience: The website should be written at an appropriate level.
- Authority: The website should list the author and the appropriate credentials.
- Content: The website should be well organized and the links should work.
- Currency: The information on the webpage should be current.
- Design: The pages at the website should download quickly, be visually pleasing, and be easy to navigate.
- Objectivity: The website should contain little advertising and be free of bias.

✓ **NOW YOU SHOULD KNOW** ——————————————————————

Be sure you understand the material presented in the section titled Types of Websites as it relates to the chapter objectives.
Now you should know …

- How to enter search text and improve your search results (Objective 5)
- How you can benefit from online social networks (Objective 6)
- When you would use specific types of websites (Objective 7)
- How you can publish your own website (Objective 7)

Discover More: Visit this chapter's premium content for practice quiz opportunities.

Digital Media on the Web

Most webpages include *multimedia*, which refers to any application that combines text with media. Media includes graphics, animation, audio, video, and/or virtual reality. The sections that follow discuss how the web uses these types of media.

Graphics

A **graphic** is a visual representation of nontext information, such as a drawing, chart, or photo. Many webpages use colorful graphics to convey messages (Figure 2-22). As shown in the figure, some websites use thumbnails on their pages because larger graphics can be time-consuming to display. A *thumbnail* is a small version of a larger image. You usually can tap or click a thumbnail to display the image in full size.

Figure 2-22   Many webpages use colorful graphics to convey messages. For example, the variety of colors, images, shapes, and thumbnails on the San Diego Zoo webpage visually separate and draw attention to areas of the webpage, making the webpage more dynamic and enticing.
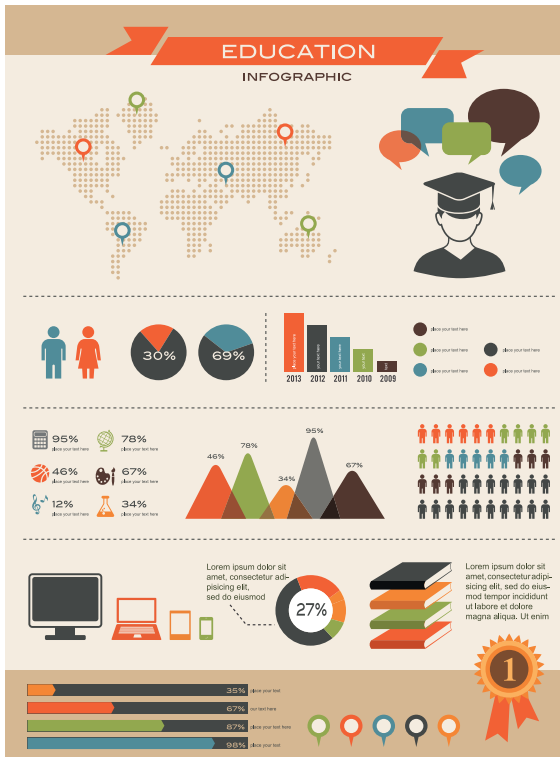Source: Zoological Society of San Diego

Figure 2-23   An infographic presents complex concepts at a glance.
© Marish / Shutterstock

The web often uses infographics to present concepts, products, and news. An *infographic* (short for information graphic) is a visual representation of data or information, designed to communicate quickly, simplify complex concepts, or present patterns or trends (Figure 2-23). Many forms of infographics exist: maps, signs, charts, and diagrams.

Of the graphics formats for displaying images on the web (Table 2-6), the JPEG and PNG formats are more common. *JPEG* (pronounced JAY-peg) is a compressed graphics format that attempts to reach a balance between image quality and file size. With JPG files, the more compressed the file, the smaller the image and the lower the quality. *PNG* (pronounced ping) is a patent-free compressed graphics format that restores all image details when the file is viewed. That is, the PNG format does not lose image quality during compression.

Table 2-6 Graphics Formats Used on the Web		
Abbreviation	**Name**	**Uses**
BMP	Bitmap	Desktop backgrounds Scanned images
GIF	Graphics Interchange Format	Images with few colors Simple diagrams Shapes
JPEG	Joint Photographic Experts Group	Digital camera photos Game screenshots Movie still shots
PNG	Portable Network Graphics	Comic-style drawings Line art Web graphics
TIFF	Tagged Image File Format	Photos used in printing industry

© Cengage Learning

✳ **CONSIDER THIS**
What is a PDF file?
PDF, which stands for Portable Document Format, is an electronic image format by Adobe Systems that mirrors the appearance of an original document. Users can view a PDF without needing the software that originally created the document.

Animation   Many webpages use *animation*, which is the appearance of motion created by displaying a series of still images in sequence. For example, text that animates by scrolling across the screen can serve as a ticker to display stock updates, news, sports scores, weather, or other information. Web-based games often use animation.

Audio

On the web, you can listen to audio clips and live audio. *Audio* includes music, speech, or any other sound. Simple applications consist of individual audio files available for download to a computer or device. Once downloaded, you can play (listen to) the content of these files. Read How To 2-3 for instructions about downloading digital media from online services. Other applications use streaming audio so that you can listen to the audio while it downloads.

⚙ **HOW TO 2-3**

Download Digital Media from Online Services

Online services make various forms of digital media available, such as books, music, movies, and apps. You typically can use a program, such as iTunes, or an app, such as the Google Play Store, to access digital media. Digital media also may be available from these services' websites. The following steps describe how to download digital media from online services when you know the name or keyword(s) for the digital media you want to find.

1. On a computer or mobile device, run the program or app from which the digital media is available. If a program or app is not accessible easily, navigate to the online service using a browser.

2. Enter the name or keyword(s) in the Search box.
3. Tap or click the Search button to perform the search.
4. Navigate through the search results and then tap or click the search result for the item you want to download.
5. Locate and then tap or click the Download button or link to download the digital media to your computer or mobile device.

The following steps describe how to browse for and download digital media.

1. On your computer or mobile device, run the program or app from which the digital media is available. If a program or app is not accessible easily, navigate to the online service using a browser.

2. Tap or click the category corresponding to the type of digital media you want to browse. Common categories include music, movies, books, and apps.
3. Browse the items in the category.
4. When you find an item you want to download, tap or click the item to display additional information.
5. Look for and then tap or click the Download button or link to download the digital media to your computer or mobile device.

✳ **Consider This:** In addition to the online services listed in this box, what are three additional resources from which you can download digital media?

Audio files are compressed to reduce their file sizes. For example, the *MP3* format reduces an audio file to about one-tenth its original size, while preserving much of the original quality of the sound.

To listen to an audio file on your computer, you need special software called a *media player*. Most current operating systems contain a media player; for example, the Windows operating system includes Windows Media Player (Figure 2-24). Some audio files, however, might require you to download a media player. Media players available for download include iTunes and RealPlayer. You can download media players free from the web.

Discover More: Visit this chapter's free resources to learn more about audio file formats.

Figure 2-24 Windows Media Player is a popular media player, through which you can listen to music and watch video.
Source: Microsoft Corporation

Video

On the web, you can view video clips or watch live video. *Video* consists of images displayed in motion. Most video also has accompanying audio. You also can upload, share, or view video clips at a video sharing site. Educators, politicians, and businesses use video blogs and video podcasts to engage students, voters, and consumers.

Simple video applications on the web consist of individual video files, such as movie or television clips, that you must download completely before you can play them on a computer or mobile device. Video files often are compressed because they are quite large in size. Videos posted to the web often are short in length, usually less than 10 minutes, because they can take a long time to download. As with streaming audio files, streaming video files allows you to view longer or live videos by playing them as they download to your computer.

Discover More: Visit this chapter's free resources to learn more about video file formats.

🔵 **Internet Research**
What is a Smart TV?
Search for: smart tv

Virtual Reality **Virtual reality** (VR) is the use of computers to simulate a real or imagined environment that appears as a three-dimensional (3-D) space. VR involves the display of 3-D images that users explore and manipulate interactively. Using special VR software, a developer

Figure 2-25 Users can explore a VR world using a touch screen or their input device. For example, users can explore the inside of the Gemini 7 space capsule, located at the Smithsonian Air and Space Museum in Washington, D.C., from their computer or mobile device.
Source: World VR

Internet Research
What is HTML5?
Search for: html5

creates an entire 3-D environment that contains infinite space and depth, called a VR world (Figure 2-25). A VR world on the web, for example, might show a house for sale where potential buyers walk through rooms in the VR house by sliding their finger on a touch screen or moving an input device forward, backward, or to the side.

In addition to games and simulations, many practical applications of VR also exist. Science educators create VR models of molecules, organisms, and other structures for students to examine. Companies use VR to showcase products or create advertisements. Architects create VR models of buildings and rooms so that clients can see how a completed construction project will look before it is built.

Plug-Ins

Most browsers have the capability of displaying basic multimedia elements on a webpage. Sometimes, however, a browser requires an additional program, called a plug-in, to display multimedia. A *plug-in*, or add-on, is a program that extends the capability of a browser. For example, your browser may require Adobe Reader to view and print PDF files. You typically can download plug-ins at no cost from various websites. Some plug-ins run on all sizes of computers and mobile devices; others have special versions for mobile devices.

Some mobile devices and browsers, however, do not support plug-ins. For this reason, web designers are using newer technologies to create websites that display correctly in both desktop and mobile browsers; these technologies generally do not require the use of plug-ins to display media.

Discover More: Visit this chapter's free resources to learn more about plug-ins.

Other Internet Services

As previously mentioned, the web is only one of the many services on the Internet. Other Internet services include the following: email, email lists, Internet messaging, chat rooms, online discussions, VoIP (Voice over IP), and FTP (File Transfer Protocol).

Email

Email (short for electronic mail) is the transmission of messages and files via a computer network. Email was one of the original services on the Internet, enabling scientists and researchers working on government-sponsored projects to communicate with colleagues at other locations.

You use an **email program** to create, send, receive, forward, store, print, and delete email messages. Email programs are available as desktop apps, web apps, and mobile apps. An email message can be simple text or can include an attachment such as a document, a graphic, an audio clip, or a video clip.

Just as you address a letter when using the postal system, you address an email message with the email address of your intended recipient. Likewise, when someone sends you a message, he or she must have your email address.

An *email address* is a combination of a user name and a domain name that identifies a user so that he or she can receive Internet email. A **user name** is a unique combination of characters, such as letters of the alphabet and/or numbers, that identifies a specific user. Your user name must be different from the other user names in the same domain. For example, a user named Rick Claremont whose server has a domain name of esite.com might want to select rclaremont

as his user name. If esite.com already has an rclaremont (for Rita Claremont) user name, then Rick will have to select a different user name, such as rick.claremont or rclaremont2.

Sometimes, organizations decide the format of user names for new users so that the user names are consistent across the company. In many cases, however, users select their own user names, often selecting a nickname or any other combination of characters for their user name. Many users select a combination of their first and last names so that others can remember it easily.

In an Internet email address, an @ (pronounced at) symbol separates the user name from the domain name. Your service provider supplies the domain name. A possible email address for Rick Claremont would be rclaremont@esite.com, which would be read as follows: R Claremont at e site dot com. Most email programs allow you to create a *contacts folder*, which contains a list of names, addresses, phone numbers, email addresses, and other details about people with whom you communicate.

Figure 2-26 illustrates how an email message may travel from a sender to a receiver. When you send an email message, an outgoing mail server determines how to route the message through the Internet and then sends the message. As you receive email messages, an incoming mail server holds the messages in your mailbox until you use your email program to retrieve them. Most email programs have a mail notification alert that informs you via a message and/or sound when you receive a new email message(s).

Discover More: Visit this chapter's free resources to learn more about email programs.

✳ CONSIDER THIS

What are good practices to follow when using email?

1. Keep messages brief.
2. Respond to messages promptly.
3. Use proper grammar, spelling, and punctuation.
4. Never respond to unsolicited messages.
5. Use meaningful subject lines.
6. Read the message before you send it.
7. Use email when you want a permanent record of a communication.

How an Email Message May Travel from a Sender to a Receiver

Step 1
Using an email program, you create and send a message on a computer or mobile device.

Step 2
Your email program contacts software on the outgoing mail server.

Step 3
Software on the outgoing mail server determines the best route for the data and sends the message, which travels along Internet routers to the recipient's incoming mail server.

incoming mail server

Internet router

Step 4
When the recipient uses an email program to check for email messages, the message transfers from the incoming mail server to the recipient's computer or mobile device.

Internet router

Figure 2-26 This figure shows how an email message may travel from a sender to a receiver.

Email Lists

An **email list**, or electronic mailing list, is a group of email addresses used for mass distribution of a message. When a message is sent to an email list, each person on the list receives a copy of the message in his or her mailbox. You *subscribe* to an email list by adding your email address to the mailing list, which is stored on a list server. To remove your name, you *unsubscribe* from the mailing list.

The original use of email lists, such as *LISTSERV*, allowed any subscriber to send a message, which created a discussion-type forum among all subscribers via email. Many mailing lists today, such as in Figure 2-27, however, are one-way communications and do not allow subscribers to send messages.
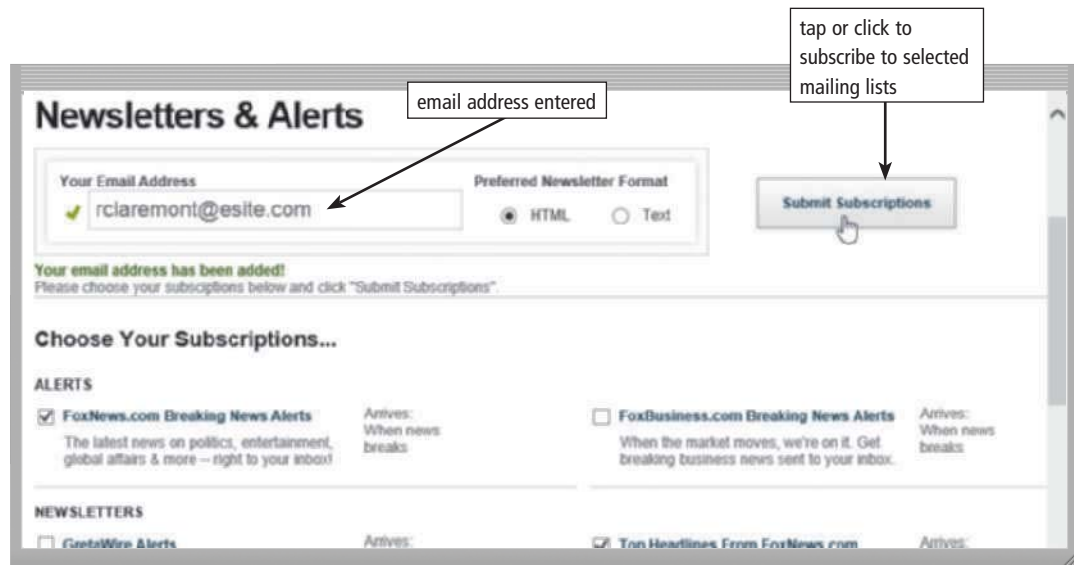

email address entered

tap or click to subscribe to selected mailing lists

Figure 2-27 When you subscribe to a mailing list, you and all others in the list receive messages from the website. Shown here is a user who receives newsletters and alerts from FoxNews.com.
Source: FOX News Network, LLC

Figure 2-28 With Internet messaging services, you and the person(s) with whom you are conversing are online at the same time. The conversation appears on all parties' screens at the same time. Shown here is Facebook messenger.
© iStockphoto / Petar Chernaev; © Cengage Learning; © iStockphoto / Oleksiy Mark; © Cengage Learning

Internet Messaging

Internet messaging services, which often occur in real-time, are communications services that notify you when one or more of your established contacts are online and then allows you to exchange messages or files or join a private chat room with them (Figure 2-28). *Real time* means that you and the people with whom you are conversing are online at the same time. Some Internet messaging services support voice and video conversations, allow you to send photos or other documents to a recipient, listen to streaming music, and play games with another online contact.

For real-time Internet messaging to work, both parties must be online at the same time. Also, the receiver of a message must be willing to accept messages. To use an Internet messaging service, you may have to install messenger software or an app on the computer or mobile device, such as a smartphone, you plan to use.

Many online social networks include a messaging feature. To ensure successful communications, all individuals on the friend list need to use the same or a compatible messenger.
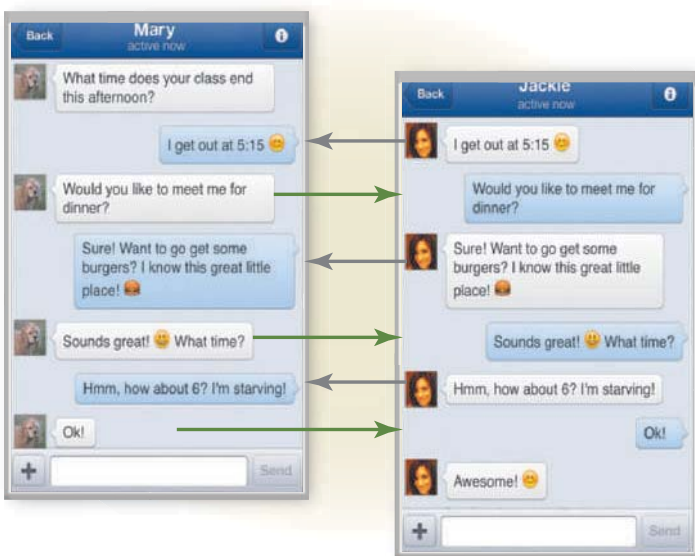
Discover More: Visit this chapter's free resources to learn more about Internet messaging services.

Chat Rooms

A **chat** is a real-time typed conversation that takes place on a computer or mobile device with many other online users. A **chat room** is a website or application that permits users to chat with others who are online at the same time. A server echoes the user's message to everyone in the chat room. Anyone in the chat room can participate in the conversation, which usually is specific to a particular topic. Businesses sometimes use chat rooms to communicate with customers.

As you type on your keyboard, others connected to the same chat room server also see what you have typed (Figure 2-29). Some chat rooms support voice chats and video chats, in which people hear or see each other as they chat. Most browsers today include the capability to connect to a chat server.

Figure 2-29 As you type, others in the same chat room see what you have typed.
Attribution: © ARENA Creative / Shutterstock.com; © Cengage Learning; © topseller / Shutterstock.com; © Alex Staroseltsev / Shutterstock.com; © Oleksiy Mark / Shutterstock.com; © Oleksiy Mark / Shutterstock.com; © Tom Wang / Shutterstock.com; © vlad_star / Shutterstock.com; © artjazz / Shutterstock.com

Online Discussions

An **online discussion**, or *discussion forum*, is an online area in which users have written discussions about a particular subject (Figure 2-30). To participate in a discussion, a user posts a message, called an article, and other users read and reply to the message. A *thread*, or threaded discussion, consists of the original article and all subsequent related replies.

Some discussion forums require that you enter a user name and password to participate in the discussion. For example, an online discussion for students taking a college course may require a user name and password to access the discussion. This ensures that only students in the course
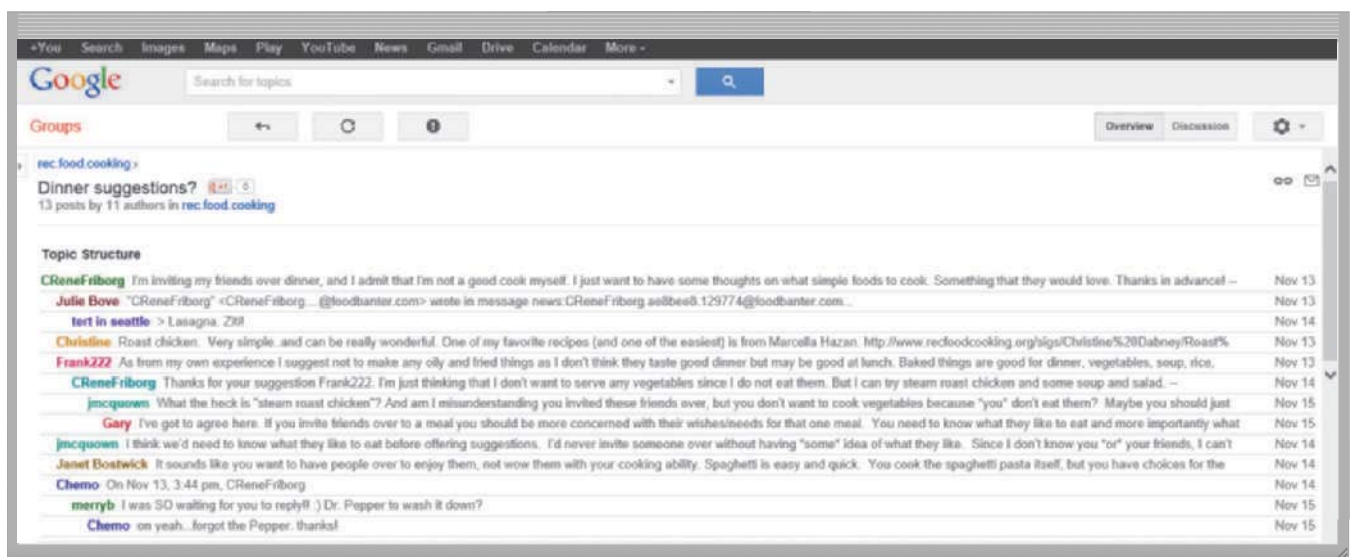

Figure 2-30 Users in an online discussion read and reply to other users' messages.
Source: Google Inc.

participate in the discussion. Posts in an online discussion usually are stored for a certain amount of time, such as a semester, in this example.

VoIP

VoIP, short for Voice over IP (Internet Protocol), enables users to speak to other users via their Internet connection. That is, VoIP uses the Internet (instead of the public switched telephone network) to connect a calling party to one or more local or long-distance called parties.

To place an Internet phone call, you need a broadband Internet connection, a microphone and speaker, both of which are included with a standard computer or mobile device, and VoIP software, such as Skype. Some VoIP services require that you purchase a separate phone and VoIP router, and subscribe to their service. Others offer certain services free and require a subscription for additional services. Read How To 2-4 for instructions about how to set up a personal VoIP service and make a call.

HOW TO 2-4

Set Up a Personal VoIP Service and Make a Call

VoIP services enable you to make free video or voice calls to others around the world. In many cases, the person you are calling also must use the same VoIP service. The following steps describe how to set up a VoIP service and make a call.

1. If you do not know the VoIP service you want to use, search for a program or app that enables you to place and receive VoIP calls.
2. If necessary, download the program or app for the VoIP service you will use.
3. Most VoIP services require you to have an account with their service before you can place or receive a call. When you start the VoIP program or app, search for the button or link to create a new account.

Follow the steps in the program or app to finish creating the account.

4. Once the account has been created, if necessary, sign in to the VoIP service with your user name and password.
5. Make sure the person you are calling also has an account with the same VoIP service. You should know at least one person using this service to successfully place a call. VoIP services typically allow you to locate and call someone by entering their user name or adding them to your list of contacts. If necessary, add the person you want to call to your list of contacts.
6. On the list of contacts, select the person you want to call and then tap or click the appropriate button to place the call.
7. When the other person answers, you can start your voice or video call.

8. When you are ready to end the call, tap or click the button to end the call.
9. When you are finished using the VoIP service, you should sign out of and exit the VoIP program or app.

Consider This: Survey your friends and family to see if they use a VoIP service. If so, which service is the most popular among them?

Source: Microsoft

FTP

FTP (File Transfer Protocol) is an Internet standard that permits file uploading and downloading to and from other computers on the Internet. *Uploading* is the process of transferring files from your computer or mobile device to a server on the Internet. Recall that downloading is the process of transferring files from a server on the Internet to your computer or mobile device. Webpage developers, for example, often use FTP to upload their webpages to a web server.

Many operating systems include FTP capabilities. If yours does not, you can download FTP programs from the web, usually for a small fee.

An *FTP server* is a computer that allows users to upload and/or download files using FTP. An FTP site is a collection of files that reside on an FTP server. Many FTP sites have *anonymous FTP*, whereby anyone can transfer some, if not all, available files. Some FTP sites restrict file transfers to those who have authorized accounts (user names and passwords) on the FTP server.

Discover More: Visit this chapter's free resources to learn more about FTP programs.

Mini Feature 2-3: Digital Communications

Home users, small/home office users, mobile users, power users, and enterprise users interact with technology for many reasons, including communication, productivity, and information. Read Mini Feature 2-3 for examples of how a home user might interact with digital communications.

⚙ **MINI FEATURE 2-3**

Digital Communications

This scenario, which assumes you are a home user with a busy family, presents situations and questions regarding technology use during a single day.

7:30 a.m. You notice a leaky pipe under the kitchen sink. Your regular plumber recently has retired. On your smartphone, you run an app that enables you to use search criteria, GPS, and user reviews. You find a local plumber who has many positive reviews and tap the phone number on the smartphone touch screen to place the call. You leave a message explaining the problem and asking the plumber to call you back.
✹ How can you evaluate reviews for authenticity and bias? How might an app provider use your location information in ways you have not authorized?

8:45 a.m. The plumber calls you back to schedule an appointment time. You open your laptop and use the electronic calendar web app your entire family uses to keep track of appointments. You find a time that works for both of you and update the electronic calendar.
✹ What features enable multiple people, such as a family or small business, to use an electronic calendar? What issues may occur from using a shared calendar?

10:00 a.m. You have a freelance job blogging for a local florist. You are required to post twice weekly to the florist's blog about agreed-upon topics. You use a wiki to confirm the symbolic meaning of different types of roses so that you can include that in your next blog post. You sign in to the blog's content management system and submit your post to the blog.
✹ What responsibility do bloggers have to post accurate, verified information? Should users rely on wikis to verify content?

Credit TK

11:00 a.m. While you are driving to a doctor's appointment, you receive several text messages on your smartphone. You use your Bluetooth headset and your smartphone's speech-to-text feature to respond to the text messages without taking your eyes off of the road.
✹ Is it legal in your state to use hands-free devices while driving? What, if any, are the consequences of noncompliance?

1:00 p.m. Back at home, you flip through today's mail. You received a bill for your monthly mortgage payment. Using your laptop, you navigate to your bank's website

and schedule a recurring payment for the mortgage to ensure you never will be late on a payment.
✹ What precautions should you take when accessing financial information and authorizing payments on the web?

5:30 p.m. Unsure of what to make for dinner, you use your tablet to view recipes you bookmarked on a bookmarking site. You verify that you have the ingredients on hand and follow the recipe on your tablet as you prepare dinner.
✹ Who owns the content posted to social networking or bookmarking sites? What risks are involved with using these types of websites?

Credit TK

8:30 p.m. While helping your daughter with her math homework, you discover a website that includes the answers to questions asked in her textbook. You have a discussion with your daughter about ethical issues surrounding posting and using that type of content.
✹ Should students receive punishment for using answers they find on a website?

9:00 p.m. You sit down to watch your favorite vocal competition reality show, streaming live through your Smart TV. The show enables you to send a text message to vote for your favorite contestant. You debate between two popular singers, then finally send your vote via text message.
✹ How else do TV, movie, and other entertainment websites use the Internet to interact with viewers or listeners?

Credit TK

10:30 p.m. You use the calendar app on your smartphone to confirm your schedule for tomorrow and then head to bed.
✹ How does technology enhance the daily life of a home user?

Discover More: Visit this chapter's free resources for additional scenarios for small/home office users, mobile users, power users, and enterprise users.

Netiquette

Netiquette, which is short for Internet etiquette, is the code of acceptable behaviors users should follow while on the Internet; that is, it is the conduct expected of individuals while online. Netiquette includes rules for all aspects of the Internet, including the web, social media, Internet messaging, chat rooms, online discussions, and FTP. Figure 2-31 outlines some of the rules of netiquette, with respect to online communications. Read Ethics & Issues 2-4 to consider issues related to an extreme misuse of online communications — online bullying.

Discover More: Visit this chapter's free resources to learn more about emoticons.

Netiquette Guidelines for Online Communications
Golden Rule: Treat others as you would like them to treat you.

Be polite. Avoid offensive language.

Avoid sending or posting *flames*, which are abusive or insulting messages. Do not participate in *flame wars*, which are exchanges of flames.

Be careful when using sarcasm and humor, as it might be misinterpreted.

Do not use all capital letters, which is the equivalent of SHOUTING!

Use **emoticons** to express emotion. Popular emoticons include:

:) Smile   :| Indifference   :o Surprised   :(Frown   :\ Undecided   ;) Wink

Use abbreviations and acronyms for phrases:

BTW	by the way	IMHO	in my humble opinion	FWIW	for what it's worth
FYI	for your information	TTFN	ta ta for now	TYVM	thank you very much

Clearly identify a *spoiler*, which is a message that reveals an outcome to a game or ending to a movie or program.

Be forgiving of other's mistakes.

Read the *FAQ* (frequently asked questions), if one exists.

Figure 2-31 Some of the rules of netiquette, with respect to online communications.
© Cengage Learning

✳ ETHICS & ISSUES 2-4

Who Is Responsible for Monitoring Cyberbullying?
Sending or forwarding threatening text messages, posting embarrassing or altered pictures of someone without his or her permission, or setting up a fake online social network page where others make cruel comments and spread rumors about someone all are examples of cyberbullying. *Cyberbullying* is harassment using technology, often involving teens and preteens. Unlike verbal bullying, the perpetrators can hide behind the anonymity of the Internet and can reach a wide audience quickly. Victims cannot just walk away or ignore bullying that comes in the form of text messages, email, or online social network posts.

Cyberbullying often takes place outside of school hours on personal devices or computers not owned or monitored by a school. Yet the ramifications affect the victim at school. Schools struggle to come up with policies. Many schools are adopting policies that include consequences for any form of student-to-student bullying, even using nonschool resources, if it contributes to a hostile environment for any student or group of students. Some schools specify that students who retaliate against anyone who reports instances of bullying or cyberbullying will receive punishment.

Anti-bullying laws vary from state to state and often do not include specific language about cyberbullying. One argument against criminalizing cyberbullying is the protection of free speech. Awareness campaigns, school policies, and parent monitoring of technology use are some ways to attempt to prevent cyberbullying. These methods are not always effective. The impact on the victim can lead to poor grades, health issues, mental health concerns, and even suicide.

Consider This: Should schools be responsible for punishing students who cyberbully other students outside of school? Why or why not? What role can parents play in reducing cyberbullying? What are the positive and negative aspects of the freedom to be anonymous on the Internet?

NOW YOU SHOULD KNOW

Be sure you understand the material presented in the sections titled Digital Media on the Web, Other Internet Services, and Netiquette as it relates to the chapter objectives.
Now you should know …

- Why you use media on the web (Objective 8)
- How you can benefit from using email, email lists, Internet messaging, chat rooms, discussion forums, VoIP, and FTP (Objective 9)
- What rules you should follow in online communications (Objective 10)

Discover More: Visit this chapter's premium content for practice quiz opportunities.

Chapter Summary

This chapter presented the evolution of the Internet, along with various ways to connect to the Internet, how data travels the Internet, and how the Internet works with domain names and IP addresses. It discussed the web at length, including topics such as browsing, navigating, web addresses, web apps and mobile apps, searching, and online social networks. It presented various types of websites and media on the web. It also introduced other services available on the Internet, such as email, email lists, Internet messaging, chat rooms, online discussions, VoIP, and FTP. Finally, the chapter listed rules of netiquette.

Discover More: Visit this chapter's free resources for additional content that accompanies this chapter and also includes these features: Technology Innovators: Tim Berners-Lee, Yahoo! and Google, Arianna Huffington, and LinkedIn; Technology Trends: Uses of Bookmarking Sites and Responsive Web Design; and High-Tech Talks: IP Addresses and DNS Servers.

Test your knowledge of chapter material by accessing the Study Guide, Flash Cards, and Practice Test resources from your smartphone, tablet, laptop, or desktop.

TECHNOLOGY @ WORK

Transportation
What is transportation like without computers and mobile devices? Delivery drivers use clipboards to hold their records. Human navigators use paper maps to track routes for pilots. Ship captains rely solely on experience to navigate through shallow waters. Today, the transportation industry relies heavily on computer and mobile device usage.

Many vehicles include onboard navigation systems to help you navigate from one location to another. Some of these systems provide other services, such as dispatching roadside assistance, unlocking the driver's side door if you lock the keys in your vehicle, and tracking the vehicle if it is stolen.

The shipping and travel industries identify items during transport using bar codes, which are identification codes that consist of lines and spaces of different lengths. When you ship a package, the shipping company, such as UPS or FedEx, places a bar code on the package to indicate its destination to a computer. Because a package might travel to its destination by way of several trucks, trains, and airplanes,

computers automatically route the package as efficiently as possible. You are able to visit a website or sign up for text message notifications to track a package's progress during shipment.

When you travel by airplane, baggage handling systems ensure that your luggage reaches its destination on time. When you check in your baggage at the airport, a bar code identifies the airplane on which the bags should be placed. If you change planes, automated baggage handling systems route your bags to connecting flights with very little, if any, human intervention. When the bags reach their destination, they are routed automatically to the baggage carousel in the airport's terminal building.

Pilots of high-technology commercial, military, and space aircraft today work in a glass cockpit, which features computerized instrumentation, navigation, communications, weather reports, and an autopilot. The electronic flight information shown on high-resolution displays is designed to reduce pilot workload, decrease fatigue, and enable pilots to concentrate on flying safely.

Boats and ships also are equipped with computers that include detailed electronic maps, which help the captain navigate, as well as calculate the water depth and provide a layout of the underwater surface so that the captain can avoid obstructions.

As you travel the roadways, airways, and waterways, bear in mind that computers often are responsible for helping you to reach your destination as quickly and safely as possible.

Consider This: In what other ways do computers and technology play a role in the transportation industry?

Digital Vision / Getty Images

Study Guide

The Study Guide exercise reinforces material you should know for the chapter exam.

Discover More: Visit this chapter's premium content to **test your knowledge of digital content** associated with this chapter and **access the Study Guide resource** from your smartphone, tablet, laptop, or desktop.

Instructions: Answer the questions below using the format that helps you remember best or that is required by your instructor. Possible formats may include one or more of these options: write the answers; create a document that contains the answers; record answers as audio or video using a webcam, smartphone, or portable media player; post answers on a blog, wiki, or website; or highlight answers in the book/e-book.

1. Explain how ARPANET contributed to the growth of the Internet.
2. Describe the role of a host on a network.
3. Identify the role of the W3C.
4. Define the terms, dongle and broadband. List popular wired and wireless broadband Internet services.
5. State the purpose of a hot spot, and list tips for using hot spots safely.
6. ISP stands for _____.
7. Briefly describe how data and information travel the Internet.
8. Describe the purpose and composition of an IP address. Differentiate between IPv4 and IPv6.
9. Define the term, domain name. List general steps to register for a domain name.
10. Identify the purpose of several generic TLDs. Identify ICANN's role with TLDs.
11. Describe how and why cybersquatters register domain names.
12. State the purpose of a DNS server.
13. Differentiate between static and dynamic webpages.
14. Distinguish among the web, a webpage, a website, and a web server.
15. Explain the purpose of a browser. Describe the function of tabbed browsing.
16. List ways you can browse safely.
17. Name examples of popular browsers for personal computers and mobile devices.
18. Define the term, web address. Name a synonym.
19. Name and give examples of the components of a web address.
20. Describe the purpose of a web feed.
21. Explain the relationship between web and mobile apps.
22. Describe the purpose of GPS receivers, and why manufacturers embed them in smartphones.
23. Explain the risks and concerns involved in letting apps track your location. List any benefits.
24. Describe how to use a search engine. What are some ways you can refine a search?
25. Besides webpages, identify other items a search engine can find.
26. Differentiate between a search engine and a subject directory.
27. Explain how to use an online social network for personal or business use.
28. List ways to use online social networks securely.
29. Describe the purpose of these types of websites: informational and research; media sharing; bookmarking; news, weather, sports, and other mass media; educational; business, governmental, and organizational; blogs; wikis and collaboration; health and fitness; science; entertainment; banking and finance; travel and tourism; mapping; retail and auctions; careers and employment; e-commerce; portals; content aggregation; and website creation and management.
30. Is it ethical to use a fake name online? Why or why not? List techniques to protect yourself from identity theft.
31. Describe the uses of tags. List steps to tag digital content.
32. Define the term, e-commerce. Differentiate among B2C, C2C, and B2B e-commerce.
33. List uses and benefits of content aggregation websites and apps.
34. Identify and briefly describe the steps in web publishing.
35. The _____ web design approach adapts the layout of the website to fit the screen on which it is displayed.
36. List the seven criteria for evaluating a website's content.
37. _____ refers to any application that combines text with media.
38. Explain how webpages use graphics, animation, audio, video, virtual reality, and plug-ins.
39. Define the terms, thumbnail and infographic.
40. Name the types of graphics formats used on the web and how they use compression.
41. List general steps to download digital media.
42. Describe the purpose of these Internet services and explain how each works: email, email lists, messaging, chat rooms, online discussions, VoIP, and FTP.
43. Describe the components of an email address.
44. _____ refers to Internet communications in which both parties communicate at the same time.
45. List steps to set up a personal VoIP service and make a call.
46. Describe how a home user interacts with digital communications.
47. Define the term, netiquette.
48. Describe cyberbullying, and explain why it is difficult to catch the perpetrators.
49. Describe how the transportation industry uses technology.

You should be able to define the Primary Terms and be familiar with the Secondary Terms listed below.

Discover More: Visit this chapter's premium content to view definitions for each term and to **access the Flash Cards resource** from your smartphone, tablet, laptop, or desktop.

Key Terms

Primary Terms   (shown in **bold-black** characters in the chapter)

blog (78)
blogger (78)
browser (65)
chat (91)
chat room (91)
Chrome (67)
content
   aggregation (83)
domain name (63)
e-commerce (82)
Edge (67)
email (88)
email list (90)
email program (88)
emoticons (94)
favorites (67)

Firefox (67)
FTP (92)
GB (61)
GPS (70)
GPS receiver (70)
graphic (85)
home page (66)
hot spot (59)
Internet (56)
Internet Explorer (67)
Internet messaging (90)
Internet service provider
   (ISP) (61)
IP address (62)
MB (61)
mobile service provider (61)

netiquette (94)
online auction (82)
online discussion (91)
online social network (72)
Opera (67)
PDF (86)
pop-up blocker (66)
pop-under blocker (66)
portal (82)
responsive web design (84)
Safari (67)
search engine (71)
social media (76)
streaming (79)
tabbed browsing (66)
tag (75)

traffic (62)
user name (88)
virtual reality (87)
VoIP (92)
web (65)
web address (68)
web publishing (84)
web server (65)
webpage (65)
website (65)
wiki (78)
World Wide Web
   (WWW) (65)

Secondary Terms   (shown in *italic* characters in the chapter)

analog (60)
animation (86)
anonymous FTP (92)
Anticybersquatting Consumer
   Protection Act (64)
ARPANET (56)
audio (86)
bandwidth (61)
blogosphere (78)
bookmarks (67)
bookmarking site (75)
broadband (58)
business-to-business (B2B)
   e-commerce (82)
business-to-consumer (B2C)
   e-commerce (82)
cable Internet service (59)
cache (66)
catfishing (77)
ccTLD (63)
cloud storage (69)
consumer-to-consumer (C2C)
   e-commerce (82)
contacts folder (89)
content management system (84)
curation website (83)
cyberbullying (94)
discussion forum (91)
DNS server (64)
domain name system (DNS) (64)
dongle (58)

DSL (59)
dynamic webpage (65)
electronic storefront (81)
e-retail (81)
email address (88)
extended contacts (73)
FAQ (94)
Fiber to the Premises (FTTP) (59)
fixed wireless (59)
flames (94)
flame wars (94)
friends (73)
FTP server (92)
gigabyte (61)
hashtag (73)
hits (71)
host (56)
http (69)
ICANN (63)
infographic (86)
Internet backbone (62)
intranet (78)
JPEG (86)
keyloggers (80)
like (73)
LISTSERV (90)
location sharing (66)
m-commerce (82)
media player (87)
media sharing site (75)
megabyte (61)

microblog (78)
mobile app (69)
mobile broadband (59)
mobile browser (65)
MP3 (87)
multimedia (85)
news feed (73)
phishing (66)
phishing filter (66)
plug-in (88)
PNG (86)
pop-up ad (66)
pop-under ad (66)
private browsing (66)
proxy server (66)
real time (90)
registrar (63)
satellite Internet service (59)
search text (71)
shopping cart (81)
social networking site (72)

spoiler (94)
static webpage (65)
status update (73)
subscribe (90)
subject directory (72)
tethering (60)
thread (91)
thumbnail (85)
top-level domain (TLD) (63)
troll (77)
unsubscribe (90)
uploading (93)
URL (68)
video (87)
W3C (58)
Web 2.0 (65)
web app (69)
web feed (69)
web hosting service (64)
Wi-Fi (59)
wireless modem (58)

wiki (78)

Checkpoint

The Checkpoint exercises test your knowledge of the chapter concepts. The page number containing the answer appears in parentheses after each exercise. The Consider This exercises challenge your understanding of chapter concepts.

Discover More: Visit this chapter's premium content to **complete the Checkpoint exercises** interactively; complete the **self-assessment in the Test Prep resource** from your smartphone, tablet, laptop, or desktop; and then **take the Practice Test**.

True/False   Mark T for True and F for False.

_____   1. No single person or government agency controls or owns the Internet. (58)

_____   2. The W3C is responsible for maintaining all networks and content on the Internet. (58)

_____   3. Users typically pay additional fees for mobile hot spot and tethering services. (60)

_____   4. A gigabyte (GB) is the basic storage unit on a computer or mobile device and represents a single character. (61)

_____   5. A dynamic webpage's contents generate each time a user displays the page. (65)

_____   6. Most browsers are available for download at no cost. (67)

_____   7. Mobile apps sometimes have fewer features than a web app. (69)

_____   8. A subject directory is software that finds websites, webpages, images, videos, maps, and other information related to a specific topic. (71)

_____   9. When you post digital content online, it is a good idea to tag it so that it is easy to locate and organize. (76)

_____ 10. The term, blogosphere, refers to the worldwide collection of blogs. (78)

_____ 11. Tethering is the process of transferring data in a continuous and even flow, which allows users to access and use a file while it is transmitting. (79)

_____ 12. One way to protect yourself from identity theft online is to retain all your cookies in your browser. (80)

Multiple Choice   Select the best answer.

1. A(n) _____ is any computer that provides services and connections to other computers on a network. (56)
   a. host
   b. client
   c. FTP site
   d. subject directory

2. A(n) _____ is a sequence of numbers that uniquely identifies the location of each computer or device connected to the Internet. (62)
   a. Internet backbone
   b. domain name
   c. IP address
   d. ccTLD

3. You register a domain name through _____, which is an organization that sells and manages domain names. (63)
   a. a cybersquatter
   b. a registrar
   c. ICANN
   d. an ISP

4. The _____ is the method the Internet uses to store domain names and their corresponding IP addresses. (64)
   a. domain name system (DNS)
   b. top-level domain (TLD)
   c. File Transfer Protocol (FTP)
   d. W3C

5. One way to protect your identity while browsing is to use a(n) _____, which is another computer that screens all your incoming and outgoing messages. (66)
   a. password
   b. anonymous FTP
   c. phishing filter
   d. proxy server

6. _____ is a set of rules that defines how webpages transfer on the Internet. (69)
   a. Top-level domain
   b. Hypertext Transfer Protocol
   c. IPv4
   d. Web 2.0

7. A(n) _____ website contains factual material, such as libraries, encyclopedias, dictionaries, directories, guides, and other types of reference. (74)
   a. wikis and collaboration
   b. media sharing
   c. business
   d. informational and research

8. A _____ is a website that offers a variety of Internet services from a single, convenient location. (82)
   a. LISTSERV
   b. microblog
   c. portal
   d. cache

Checkpoint

Matching   Match the terms with their definitions.

_____ 1. tethering (60)

_____ 2. Internet backbone (62)

_____ 3. domain name (63)

_____ 4. web server (65)

_____ 5. tag (75)

_____ 6. catfishing (77)

_____ 7. wiki (78)

_____ 8. curation website (83)

_____ 9. chat (91)

_____ 10. cyberbullying (94)

a. text-based name that corresponds to the IP address of a server that hosts a website

b. website or web app that allows users to collect and compile content from a variety of websites about a particular topic or theme

c. harassment, often involving teens and preteens, using technology

d. collaborative website that allows users to create, add, modify, or delete website content via a browser

e. technique that transforms a smartphone or Internet-capable tablet into a portable communications device that shares its Internet access with other computers and devices wirelessly

f. real-time typed conversation that takes place on a computer or mobile device with many other online users

g. computer that delivers requested webpages to your computer or mobile device

h. online practice of creating a fake profile to form relationships with unsuspecting users

i. term used to refer to the major carriers of network traffic

j. short descriptive label that you assign to digital content so that it is easier to locate at a later time

✳ Consider This   Answer the following questions in the format specified by your instructor.

1. Answer the critical thinking questions posed at the end of these elements in this chapter: Ethics & Issues (64, 70, 77, 94), How To (63, 76, 87, 92), Mini Features (67, 73, 93), Secure IT (59, 66, 74, 80), and Technology @ Work (95).

2. What were ARPA's original goals? (56)

3. What are the advantages of using a broadband Internet service? (58)

4. What is the relationship between domain names and IP addresses? (62)

5. Is cybersquatting ethical? Why or why not? (64)

6. What is a cybersquatter? (64) What is the goal of the Anticybersquatting Consumer Protection Act (ACPA)? (64)

7. How does a static webpage differ from a dynamic webpage? (65)

8. How does using a proxy server help protect your online identity? (66)

9. What are some safe browsing techniques? (66)

10. What are some popular mobile browsers? (67)

11. How do GPS receivers track their location on earth? (70)

12. What are the advantages and risks associated with allowing an app to track your location? (70)

13. What techniques can you use to improve search results? (72)

14. What precautions can you take to minimize privacy and security risks associated with online social networks? (74)

15. Would you use a public computer to check email or do online banking? Why or why not? What are the risks? (80)

16. How do e-commerce and m-commerce differ? (82)

17. What should you determine during the planning stage of a website? (84)

18. What steps are involved in web publishing? (84)

19. What are some criteria you can use to evaluate a website or webpage before relying on its content? (85)

20. How do JPEG and PNG formats differ? (86)

21. What are some practical applications of virtual reality? (88)

22. Where can you obtain plug-ins? (88)

23. Besides the web, what other Internet services are available? (88)

24. What are some good practices to follow when using email? (89)

25. What elements do you need to place an Internet phone call? (92)

26. What is anonymous FTP? (92)

27. What activities might be considered cyberbullying? (94)

✳ Problem Solving

The Problem Solving exercises extend your knowledge of chapter concepts by seeking solutions to practical problems with technology that you may encounter at home, school, work, or with nonprofit organizations. The Collaboration exercise should be completed with a team.

Instructions: You often can solve problems with technology in multiple ways. Determine a solution to the problems in these exercises by using one or more resources available to you (such as a computer or mobile device, articles on the web or in print, blogs, podcasts, videos, television, user guides, other individuals, electronics or computer stores, etc.). Describe your solution, along with the resource(s) used, in the format requested by your instructor (brief report, presentation, discussion, blog post, video, or other means).

Personal

1. **Cyberbullying Message**   While reviewing the email messages in your email account, you notice one that you interpret as cyberbullying. You do not recognize the sender of the email message, but still take it seriously. What are your next steps?

2. **Unsolicited Friend Requests**   You recently signed up for an account on the Facebook online social network. When you log in periodically, you find that people you do not know are requesting to be your friend. How should you respond?

3. **Unexpected Search Engine**   A class project requires that you conduct research on the web. After typing the web address for Google's home page and pressing the ENTER key, your browser redirects you to a different search engine. What could be wrong?

4. **Images Do Not Appear**   When you navigate to a webpage, you notice that no images are appearing. You successfully have viewed webpages with images in the past and are not sure why images suddenly are not appearing. What steps will you take to show the images?

5. **Social Media Password**   Your social media password has been saved on your computer for quite some time and the browser has been signing you in automatically. After deleting your browsing history and saved information from your browser, the online social network began prompting you again for your password, which you have forgotten. What are your next steps?

Source: Twitter

Professional

6. **Suspicious Website Visits**   The director of your company's information technology department sent you an email message stating that you have been spending an excessive amount of time viewing websites not related to your job. You periodically visit websites not related to work, but only on breaks, which the company allows. How does he know your web browsing habits? How will you respond to this claim?

7. **Automatic Response**   When you return from vacation, a colleague informs you that when she sent email messages to your email address, she would not always receive your automatic response stating that you were out of the office. Why might your email program not respond automatically to every email message received?

8. **Email Message Formatting**   A friend sent an email message containing a photo to your email account at work. Upon receiving the email message, the photo does not appear. You also notice that email messages never show any formatting, such as different fonts, font sizes, and font colors. What might be causing this?

9. **Mobile Hot Spot Not Found**   Your supervisor gave you a mobile hot spot to use while you are traveling to a conference in another state. When you attempt to connect to the hot spot with your computer, tablet, and phone, none of the devices is able to find any wireless networks. What might be the problem, and what are your next steps?

10. **Sporadic Email Message Delivery**   The email program on your computer has been displaying new messages only every hour, on the hour. Historically, new email messages would arrive and be displayed immediately upon being sent by the sender. Furthermore, your coworkers claim that they sometimes do not receive your email messages until hours after you send them. What might be the problem?

Collaboration

11. **Technology in Transportation**   Your project team has been assigned to present a business proposal to a group of potential investors. Because the presentation will take place in Kansas City, Missouri, you will need to transport people and ship some materials to that location. Form a team of three people and determine how to use technology to ship materials and how to make travel arrangements. One team member should research the steps required to use a website to make flight reservations, one team member should determine the steps necessary to print a package shipping label from his or her computer and track the package while it is en route, and another team member should find directions from Kansas City International Airport to a nearby hotel.

The How To: Your Turn exercises present general guidelines for fundamental skills when using a computer or mobile device and then require that you determine how to apply these general guidelines to a specific program or situation.

How To: Your Turn ☀

Discover More: Visit this chapter's premium content to **challenge yourself with this additional How To: Your Turn exercises**, which include App Adventure.

Instructions: You often can complete tasks using technology in multiple ways. Figure out how to perform the tasks described in these exercises by using one or more resources available to you (such as a computer or mobile device, articles on the web or in print, online or program help, user guides, blogs, podcasts, videos, other individuals, trial and error, etc.). Summarize your 'how to' steps, along with the resource(s) used, in the format requested by your instructor (brief report, presentation, discussion, blog post, video, or other means).

1 Determine Your IP (Internet Protocol) Address

Knowing a computer or mobile device's IP address can help you identify it on a network and can help you trouble-shoot any problems you may experience connecting to the Internet or other computers and devices on your network. The following steps guide you through the process of determining your IP address.

a. Run a browser and then navigate to a search engine of your choice.

b. Search for a website that can determine your IP address and then navigate to one of these websites.

c. Your IP address should be displayed upon navigating to the website. If it does not, return to the search results and navigate to a different site.

   or

a. Run a browser and then navigate to a search engine of your choice.

b. Search for a website that explains how to determine the IP address for your specific operating system and version.

c. View the search results and then navigate to the website that provides you with the best guidance.

d. Follow the instructions on your computer or mobile device to determine the IP address.
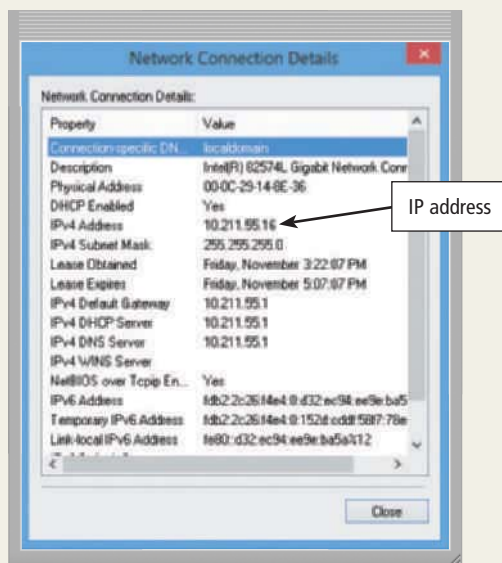
IP address

Source: Microsoft Corporation

Exercises

1. Summarize the process you used to determine your IP address.
2. What is your IP address?
3. Is it possible for a computer to have more than one IP address at the same time? Why or why not?

2 Participate in an Online Auction

Online auctions allow consumers to bid on products that other people are selling. If you are the highest bidder at the end of the bidding period, you often can arrange payment through the online auction. The following steps guide you through the process of participating in an online auction. **WARNING: Do not purchase or bid on an item if you do not intend to purchase it. If you win the auction, you legally may be obligated to provide payment for the item.**

a. Run a browser and then navigate to www.ebay.com.

b. Tap or click the link to register for a new account.

c. Enter the requested information to create the account.

d. Search for an item on which you would like to bid. If you want to browse items in a specific category instead, tap or click the link to browse for items by category.

e. When the search results appear, tap or click an item that interests you to see more details about the item.

f. Review the item details to determine whether you would like to bid on this item. If the item does not interest you, return to the search results and select another item.

g. The seller may have a "Buy It Now" option that allows you to purchase the item immediately at a predetermined price. Alternatively, you can bid on the item by making an offer. The highest bidder at the end of the auction will win the item. **Remember: If you bid on and win an item, you are obligated to provide payment.**

h. You will be notified if you are the winning bidder when the auction closes. At that time, follow the instructions to arrange to pay the seller.

i. When you are finished, sign out of eBay.
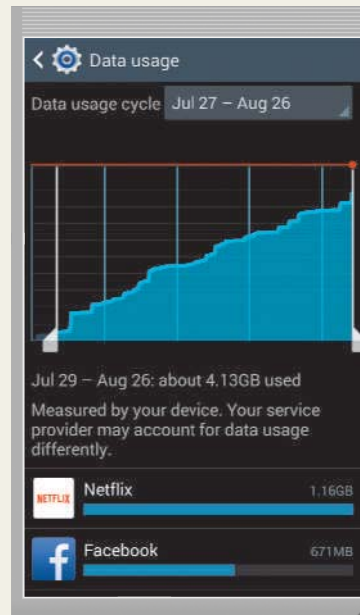
✳ How To: Your Turn

Exercises

1. What item(s) did you view? If the buyer had the "Buy It Now" option available, do you think the asking price was fair?
2. Would you purchase an item from an online auction? Why or why not?
3. What items might you post for sale on an online auction?
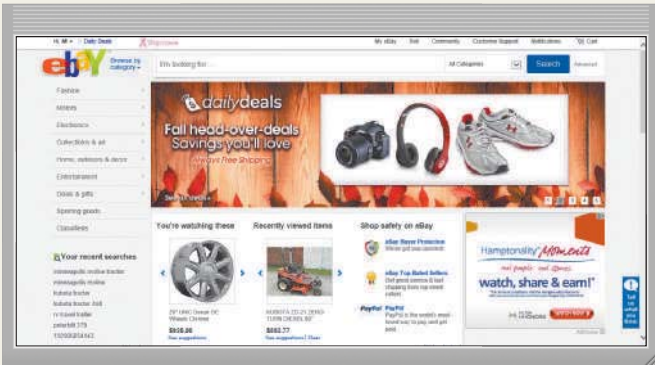
Source: eBay

3 View and Manage Data Usage

Many people have limited data plans, so it is important to know how to view the amount of data you have used on your phone or tablet when you are not connected to the Internet using a Wi-Fi connection. If you are using a phone or tablet where Wi-Fi is available, you should strongly consider using the Wi-Fi connection not only to limit data plan usage, but also to experience faster speed. If you find that your data usage is high each month, you may be able to see which apps are using the most data and adjust usage of those apps accordingly. The following steps guide you through the process of viewing and managing data usage.

a. Display the settings on your mobile device.
b. Select the option to view data usage.
c. If necessary, tap the option to display a list of apps and how much data each app uses. If necessary, select the time period for which you want to see the data usage.
d. If you notice an app using a large amount of data, tap the app to see details for that app. If necessary, disable background data transfer for the app. Background data transfer is data the app downloads and uploads even while you are not actively using the app.
e. If you want your mobile device to notify you when you are approaching your monthly data limit, set the necessary notification option and select a value under your monthly data limit in the appropriate area.

f. If you want your mobile device to turn off data (this does not include Wi-Fi) when you reach a certain limit, set the necessary option and then select a value that is just less than your monthly data limit to ensure you never reach or exceed the limit.
g. Save all changes.

Exercises

1. Do you have a data limit on your mobile data plan? If so, what is it?
2. When you enter an area with Wi-Fi, do you configure your mobile device to connect to the Wi-Fi? Why or why not?
3. Review the mobile data usage on your mobile device. Which app uses the most data? Which app uses the least data?

Source: Google Inc.

4 Search for a Job Online

If you know the company for which you would like to work, you may be able to visit that company's website and search for a webpage with current job postings. If you would like to search for openings in multiple companies, consider using a job search website. The following steps guide you through the process of searching for a job online.

a. Run a browser.
b. Use a search engine to locate a job search website and then navigate to the website.
c. Many job search websites allow you to search for jobs by criteria, such as keyword, category or location. If

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you are searching for a job in a specific field, enter relevant keyword(s) (i.e., software developer) or select an appropriate category (i.e., technology). To limit your search results to a specific geographical area, specify a location (i.e., Atlanta).

d. Some websites allow you to search for jobs based on additional criteria, such as company, salary, job type, education, and experience. Specify these additional criteria by performing an advanced search.

e. After entering the job search criteria, start the search.

f. When the search results appear, scroll through the results. To find out more about a particular job, tap or click the job listing.

g. If desired, follow the instructions in the job listing to apply for the job.

Exercises

1. Review three job search websites. Which one did you like the best? Why?

2. Which keywords would you use on a job search website to search for a job in your desired field?

3. Before completing this exercise, have you ever searched for a job online? Do you think it is better to search for a job using a job search website, or by vising company websites directly and viewing their job postings? Justify your answer.

5 **Send Email Messages Using Various Email Programs and Web Apps**

The process required to send an email message using a computer or mobile device from various email programs and web apps is very similar. The following steps guide you through the process of sending email messages using various email programs and web apps.

a. Run the email program or navigate to the email web app on your computer or mobile device.

b. Locate and then tap or click the button to compose a new email message.

c. Type the recipient's email address in the To text box. If you are sending the email message to multiple recipients, separate each email address with a semicolon (;).

d. If you would like to send a carbon copy of the email message to one or
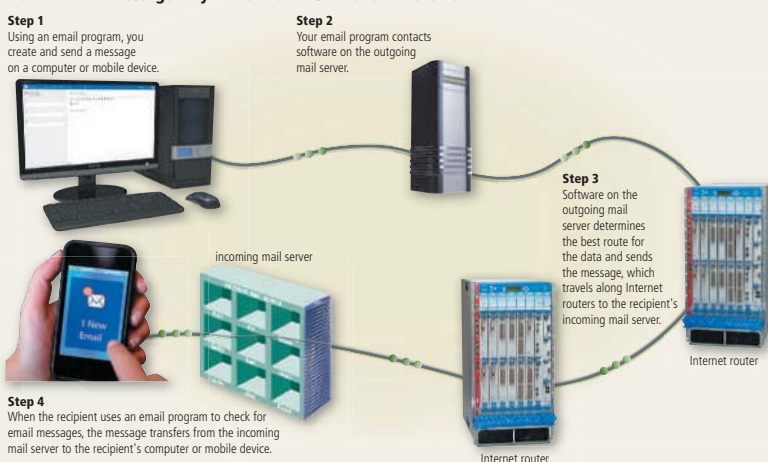
more people, type their email address(es) in the Cc text box (which stands for carbon copy).

e. To send a copy of the email message to someone while hiding his or her email address from the other recipients, enter his or her email address in the Bcc text box (which stands for blind carbon copy). The email recipients listed in the To or Cc text boxes will not be able to see the recipients you specified in the Bcc text box.

f. Enter a descriptive subject in the Subject text box. It is not good practice to leave the subject blank when you send an email message because the recipient's email server may place messages without a subject in a spam or junk mail folder.

g. Type the body of the email message in the appropriate area.

h. If your email program supports it, check the spelling of your email message and correct any errors found.

i. Tap or click the Send button, which sends the email message to everyone listed in the To, Cc, and Bcc text boxes.

Exercises

1. Under what circumstances might you want to send a blind carbon copy of an email message to one or more people?

2. Send an email message to your instructor and put your email address in the Cc text box. Use an appropriate subject and tell your instructor you have successfully completed this exercise.

3. Search for and evaluate three web apps that can send and receive email. Which one is your favorite, and why?

How an Email Message May Travel from a Sender to a Receiver

Step 1
Using an email program, you create and send a message on a computer or mobile device.

Step 2
Your email program contacts software on the outgoing mail server.

Step 3
Software on the outgoing mail server determines the best route for the data and sends the message, which travels along Internet routers to the recipient's incoming mail server.

incoming mail server

Internet router

Step 4
When the recipient uses an email program to check for email messages, the message transfers from the incoming mail server to the recipient's computer or mobile device.

Internet router

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✳ Internet Research

The Internet Research exercises broaden your understanding of chapter concepts by requiring that you search for information on the web.

Discover More: Visit this chapter's premium content to **challenge yourself with additional Internet Research exercises**, which include Search Sleuth, Green Computing, Ethics in Action, You Review It, and Exploring Technology Careers.

Instructions: Use a search engine or another search tool to locate the information requested or answers to questions presented in the exercises. Describe your findings, along with the search term(s) you used and your web source(s), in the format requested by your instructor (brief report, presentation, discussion, blog post, video, or other means).

1 Making Use of the Web
Online Social Networks and Media Sharing

Every second, an average of 5,700 Tweets and 41,000 Facebook posts are created. With these impressive numbers, it is no wonder that online social media have become ubiquitous throughout the world. Twitter, Facebook, and other online social networks, especially those featured in Mini Feature 2-2 in this chapter, are popular among users of all ages. Likewise, media sharing sites, such as YouTube, which is shown in Figure 2-11 in this chapter, are popular means of managing and sharing photos, videos, and music.

   Research This: Visit two of the websites discussed in Mini Feature 2-2 or other online social networks and create a profile if you do not currently have one. What personal information is required to join? Does either website ask for personal information that you are uncomfortable sharing? How does the content of these two websites differ? Which features are beneficial for casual users, and which are targeted toward business or professional users? Then, visit two social media sites. What personal information is required to join? Are these websites supported by advertisements? Locate the instructions for posting media. Are these instructions straightforward? Do these websites impose a limit on the number and/or size of media files a user can post?

Source: Facebook

2 Social Media

Most social media companies have invested millions of dollars to develop and maintain their websites. Unlike other commercial media, such as television, radio, and newspapers, advertisements generally are not used to fund the majority of operating costs, nor are users required to pay monthly or annual fees for basic services that they receive at no cost. One method that social media sites use to generate start-up and ongoing subsidies is through venture capitalists' funding. These investors scrutinize business plans and market trends in an effort to locate Internet start-up companies with the potential to generate substantial returns. Once the businesses are running, additional monies are needed to maintain and improve the websites. At this point, some websites display advertisements. The charge for companies to place an advertisement generally increases as the number of subscribers grows. Another method of generating income is to charge users for accessing premium content. Online dating services use this tactic successfully, for they allow people to browse online profiles free of charge but require them to pay to contact a potential dating match.

   Research This: Locate venture capitalists who are seeking Internet start-up companies. Which criteria do they use to make investment decisions? Who are the successful venture capitalists, and which companies have they funded? Which types of advertisements are displayed on specific social media and online social networks? How does the content of these ads pertain to the demographics and interests of users?

**3 Search Skills**
Understand Search Results

Search results display the most relevant results first. Search results may include links to websites, news stories, images, videos, maps, and information from Wikipedia and other online databases. Results also may show links to similar searches, related people, or posts from online social networks or social media sites.

   Because many search engines rely on advertising for revenue, some search results are paid advertisements. Companies and organizations may pay search providers to display links to their websites prominently in the

Internet Research ❋

search results when search text contains words relevant to their products and services. Paid ads often appear at the top or along the side of a search results page. A search results page may display an icon or use shading to specify that the search result is an advertisement.

When evaluating the reliability of search results, consider the sources of the information provided. Specialized information such as medical advice or stock performance should come from recognizable sources in those areas, while you might rely on reviews from customers when selecting a restaurant or purchasing a smartphone.

image results

from wikipedia

map

ad content
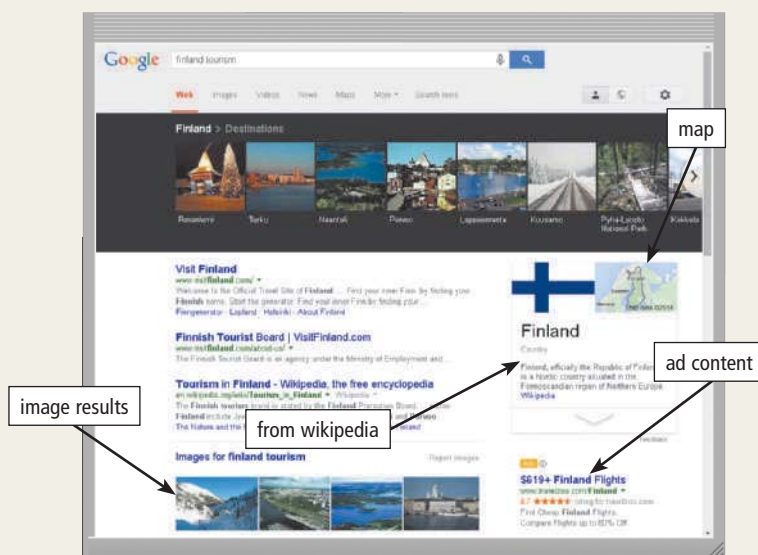
Source: Google.

Research This: Type each search text phrase listed in the paragraph below into the search boxes in Bing, Google, and Yahoo! and then take a screenshot of the first page of search results from each. Compare them, identifying ads, news, images, videos, social media results, information from online databases, search tools, and common links that both search engines returned. Which search engine's results do you find more useful in each case? Why?

Type the following search text: (1) internet service providers, (2) google corporate headquarters, (3) flights from boston to los angeles, and (4) identity theft.

④ Security

Cybercriminals may lurk in public Wi-Fi hot spots, as you learned in Secure IT 2-1 in this chapter. These thieves also may be on the lookout for customers entering their PIN at keypads near cash registers or at ATMs. Body heat from fingers touching the keys remains for a short time, and a device with infrared-scanning capabilities can detect which keys are warmer than others. This device, which is readily available for purchase at cell phone accessories stores, snaps on the back of cell phones. It captures the thermal heat signatures, with the most recently touched keys glowing red and the cooler keys glowing light green. The thief, therefore, knows which keys comprise the PIN and the sequence of numbers by looking at the intensity of colors on the infrared scan.

Research This: How much does a thermal imaging cell phone case cost? Which brand of phone is more commonly used to capture thermal imaging? What steps can consumers take to thwart thieves using infrared scanning? Which key materials are less apt to retain the thermal signatures: metal, rubber, or plastic? Researchers from which university published a paper discussing thermal camera-based attacks?

⑤ Cloud Services
Collaboration and Productivity (SaaS)
Microsoft's Office Online and Google Docs are online productivity suites for creating documents, presentations, spreadsheets, and other projects. Microsoft and Google offer these apps as part of their respective cloud storage services. Because documents are stored on the cloud, you can access them from any computer or device connected to the Internet.

These are examples of SaaS (software as a service), a service of cloud computing that allows access to software using a browser, without the need to install software on a computer or device. As providers update their software, users receive the latest version upon signing in. SaaS apps often allow users to collaborate and share their work with other users. Many providers offer SaaS titles at no cost; others require users to purchase a subscription or pay a fee for the features they use.

Research This: (1) Sign up for accounts on Microsoft OneDrive and Google Drive to create and store documents with Office Online and Google Docs. With each app, create a document, share it with another user, and edit it simultaneously. What is an advantage of sharing documents over sending the files by email to collaborators? (2) How do Microsoft Office Online and Google Docs compare with Microsoft Office installed on your computer? What features are available on the cloud that are not possible on a desktop version?

✦ Critical Thinking

The Critical Thinking exercises challenge your assessment and decision-making skills by presenting real-world situations associated with chapter concepts. The Collaboration exercise should be completed with a team.

Instructions: Evaluate the situations below, using personal experiences and one or more resources available to you (such as articles on the web or in print, blogs, podcasts, videos, television, user guides, other individuals, electronics or computer stores, etc.). Perform the tasks requested in each exercise and share your deliverables in the format requested by your instructor (brief report, presentation, discussion, blog post, video, or other means).

1. Mobile Browser Comparison

Although most mobile devices include a mobile browser, users have the option of downloading and installing other browsers.

Source: Google, Inc.

Do This: Evaluate and compare reviews of at least four mobile browsers, such as Android, Firefox, Opera, Safari, or Silk. Discuss the major differences among the browsers you researched, including number and types of features, which devices are compatible, how they display webpages, security features, and the speed at which they perform. Discuss any experiences you or your classmates have had with various browsers. Include in your discussion which mobile browser you would recommend and why.

2. Acceptable Use Policy

Most businesses provide Wi-Fi and Internet access, as well as compatible computers or devices, to employees while they are at work. While the intention is for employees to use the Internet for work-related purposes, employees often find it easy to become distracted with other activities on the Internet, such as social media, checking personal email messages, playing games, or visiting websites for entertainment. These activities can degrade Internet access for others or lead to poor performance, as well as expose the company to malware or other risks. Many businesses create an acceptable use policy (AUP) that outlines how employees should use the Internet. It also may outline consequences for unauthorized Internet use.

Do This: Locate two AUPs published online. Compare the two policies and then create a policy you believe would be fair to employees of a small business. Include guidelines for Internet use during breaks, use of smartphones, and restrictions for using social media.

3. Case Study

Amateur Sports League You are the new manager for a nonprofit amateur soccer league. The league needs a website. You prepare information about the website to present to the board of directors.

Do This: First, you plan the website by determining its purpose and audience. Use a search engine to locate two sports league websites, and print their home pages. Identify what you like and do not like about each. Think about the design of your website, and select the colors you would recommend. Describe the types of media you would include on the webpage and give specific examples, such as a logo, photos or a slide show, or links to videos. Make a sketch of the home page layout, including navigation, media, and text. Research content management systems. Evaluate whether you could use a preformatted template to meet your needs, and find what types of customization options are available. Determine whether you need a separate ISP for hosting the website, and calculate the costs. List ways you will maintain and update the site content. Compile your findings.

Collaboration

4. Website Evaluation You and three teammates want to open a new chain of fast food sandwich shops. You envision a website that includes a menu, nutritional options, and allergy information, and that has regular promotions and special offers.

Do This: With your teammates, evaluate existing fast food and sandwich websites by comparing the advantages and disadvantages of each. Assign each member the task of evaluating one chain. Team members should print the home page of the assigned website and evaluate each restaurants' website. Pay particular attention to the following areas: (1) design, (2) ease of use, (3) menu, (4) nutritional information, (5) allergy information, (6) special offers, (7) location information and directions, and (8) hours and contact information. Summarize your evaluations and rank the websites in terms of their effectiveness. Be sure to include brief explanations supporting your rankings.