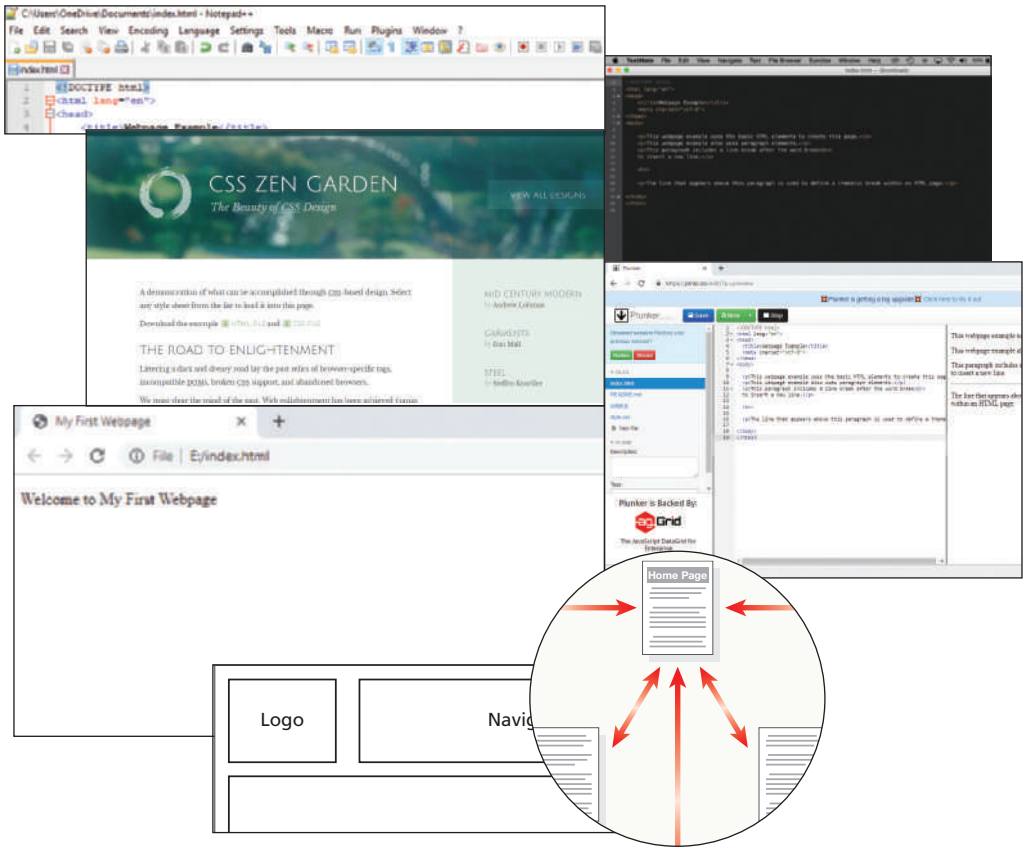
1 Introduction to the Internet and Web Design



Objectives

You will have mastered the material in this chapter when you can:

- Define the Internet and associated key terms
- Recognize Internet protocols
- Discuss web browsers and identify their main features
- Describe the types and purposes of websites
- Plan a website for a target audience
- Define a wireframe and a site map
- Explain how websites use graphics, navigation tools, typography, and color
- Design for accessibility
- Design for multiplatform display
- Define Hypertext Markup Language (HTML) and HTML elements
- Recognize HTML versions and web programming languages
- Identify web authoring tools
- Download and use a web authoring tool
- Create and view a basic HTML webpage

1 Introduction to the Internet and Web Design

Introduction

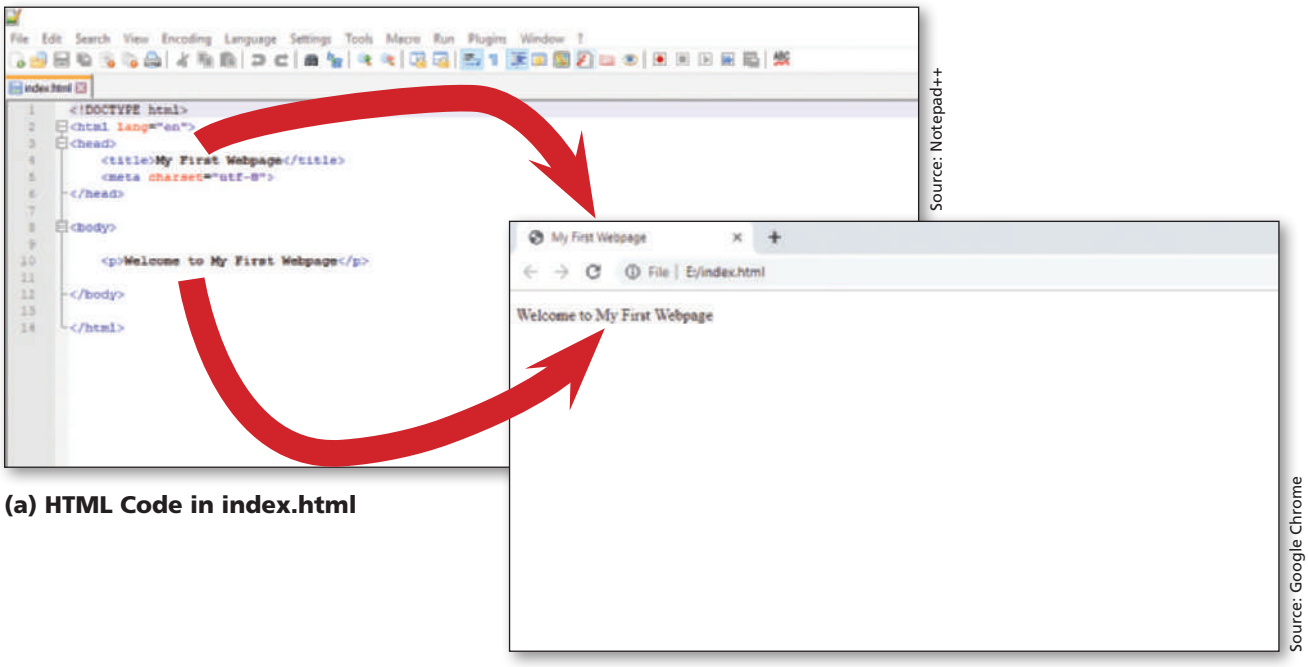
Today, millions of people worldwide have access to the Internet, the world's largest network. Billions of webpages providing information on any subject you can imagine are currently available on the web. People use the Internet to search for information, to communicate with others around the world, and to seek entertainment. Students use the Internet to register for classes, pay tuition, and find out final grades. Businesses and other organizations rely on the Internet and the web to sell products and services. Hypertext Markup Language (HTML) and Cascading Style Sheets (CSS) are two of the technologies that make this possible.

HTML 5.2 is the most recent version of HTML and is called HTML 5. Before exploring the details of creating webpages with HTML 5 and CSS, it is useful to look at how these technologies relate to the development of the Internet and the web. In this chapter, you learn some basics about the Internet and the web, and the rules both follow to allow computers to communicate with each other. You review types of websites and learn how to properly plan a website so that it is appealing and useful to your target audience. You also explore web browsers, HTML, and its associated key terms. Lastly, you create a basic webpage using a text editor.

Project — Create a Basic Webpage

People and organizations create webpages to attract attention to information such as products, services, multimedia, news, and research. Although webpages display content including text, drawings, photos, animations, videos, and links to other webpages, they are created as documents containing only text.

The project in this chapter follows general guidelines and uses a text editor to create the webpage shown in Figure 1–1. Figure 1–1a shows the **code**, meaningful combinations of text and symbols that a web browser interprets to display the webpage shown in Figure 1–1b. Content is displayed in two areas within the web browser. One part of the code indicates that text should be displayed as the webpage title, which appears in the browser tab. Another part of the code specifies that a line of text should appear as a paragraph within the browser window.



(a) HTML Code in index.html

(b) Webpage in Google Chrome

Figure 1–1

Roadmap

In this chapter, you learn how to create the webpage shown in Figure 1–1. The following roadmap identifies general activities you perform as you progress through this chapter:

1. RUN a TEXT EDITOR and CREATE a BLANK DOCUMENT.
2. ENTER HTML TAGS in the document.
3. ADD TEXT to the webpage.
4. SAVE the WEBPAGE as an HTML document.
5. VIEW the WEBPAGE in a browser.

At the beginning of step instructions throughout the chapter, you see an abbreviated form of this roadmap. The abbreviated roadmap uses colors to indicate chapter progress: gray means the chapter is beyond that activity; blue means the task being shown is covered in that activity; and black means that activity is yet to be covered. For example, the following abbreviated roadmap indicates the chapter would be showing a task in the 4 SAVE WEBPAGE activity.

1 RUN TEXT EDITOR & CREATE BLANK DOCUMENT | 2 ENTER HTML TAGS
3 ADD TEXT | 4 SAVE WEBPAGE | 5 VIEW WEBPAGE

Use the abbreviated roadmap as a progress guide while you read or step through the instructions in this chapter.

Exploring the Internet

Every day, millions of people use a computer to connect to the Internet. The **Internet** is a worldwide collection of computers linked together for use by businesses, governments, educational institutions, other organizations, and individuals using modems, phone lines, television cables, satellite links, fiber-optic connections, radio waves, and other communications devices and media (Figure 1–2).

nmedia/Shutterstock.com

Figure 1–2

The Internet was developed in the 1960s by the Department of Defense Advanced Research Projects Agency (ARPA). ARPANET (as the Internet was originally called) had only four nodes and sent its first message in 1969. A **node** is any device, such as a computer, tablet, or smartphone, connected to a **network**, which is a collection of two or more computers linked together to share resources and information. The Internet has billions of nodes on millions of networks. The **Internet of Things** is a term used to describe the ever-growing number of devices connecting to a network, including televisions and appliances. Today, high-, medium-, and low-speed data lines connect networks. These **data lines** allow data (including text, graphical images, audio, and video) to move from one computer to another. The **Internet backbone** is a collection of high-speed data lines that link major computer systems located around the world. An **Internet service provider (ISP)** is a company that has a permanent connection to the Internet backbone. ISPs use high- or medium-speed data lines to allow personal and business computer users to connect to the backbone for access to the Internet. A home Internet connection is generally provided through a cable or fiber-optic line that connects to an ISP.

Billions of people in most countries around the world connect to the Internet using computers in their homes, offices, schools, and public locations such as libraries. In fact, the Internet was designed to be a place in which people could share information and collaborate. Users with computers connected to the Internet can access a variety of popular services, including email, social networking, and the web.

World Wide Web

Many people use the terms Internet and World Wide Web interchangeably, but these terms have different meanings. The Internet is the infrastructure, or the physical networks of computers. The **World Wide Web**, also called the **web**, is the service that provides access to information stored on web servers, the high-capacity, high-performance computers that power the web. The web consists of a collection of linked files known as **webpages**, or pages for short. Because the web supports text, graphics, audio, and video, a webpage can display any of these multimedia elements in a browser.

A **website**, or site for short, is a related collection of webpages created and maintained by a person, company, educational institution, or other organization, such as the U.S. Department of Education (Figure 1–3). Each website contains a **home page**, which is the main page and the first document users see when they access the website. The home page typically provides information about the website's purpose and content, often by including a list of links to other webpages on the website.

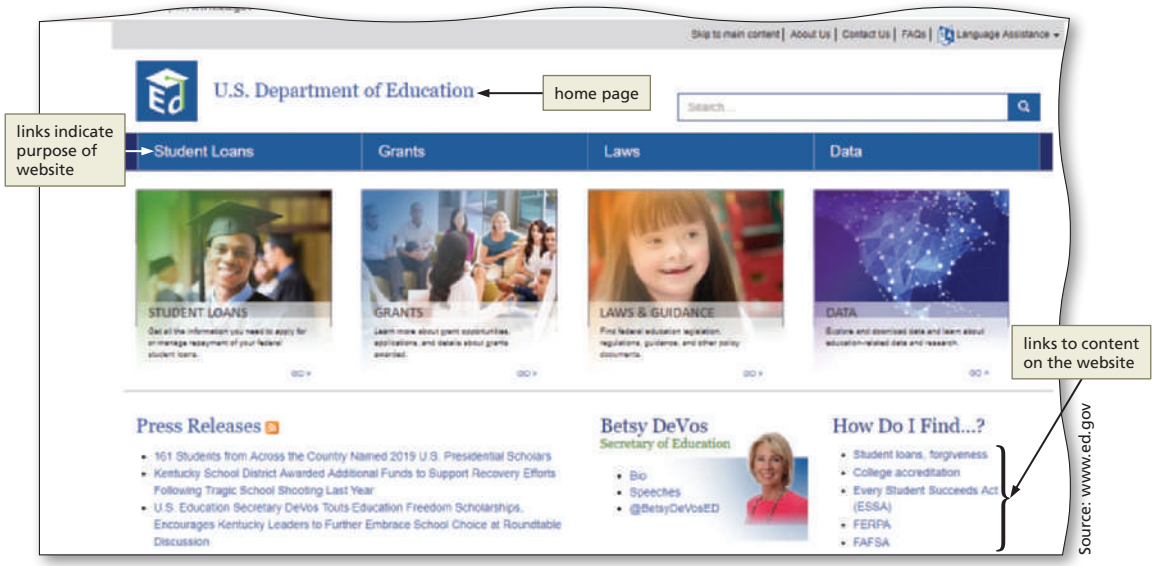


Figure 1–3

Hyperlinks are an essential part of the web. A **hyperlink**, more commonly called a **link**, is an element that connects one webpage to another webpage on the same server or to any other web server in the world. Tapping or clicking a link allows you to move quickly from one webpage to another without being concerned about where the webpages reside. You can also tap or click links to move to a different section of the same webpage.

With hyperlinks, you do not necessarily have to view information in a linear way. Instead, you can tap or click the available links to view the information in a variety of ways, as described later in this chapter. Many webpage components, including text, graphics, and animations, can serve as links. Figure 1–4 shows examples of several webpage components used as hyperlinks.

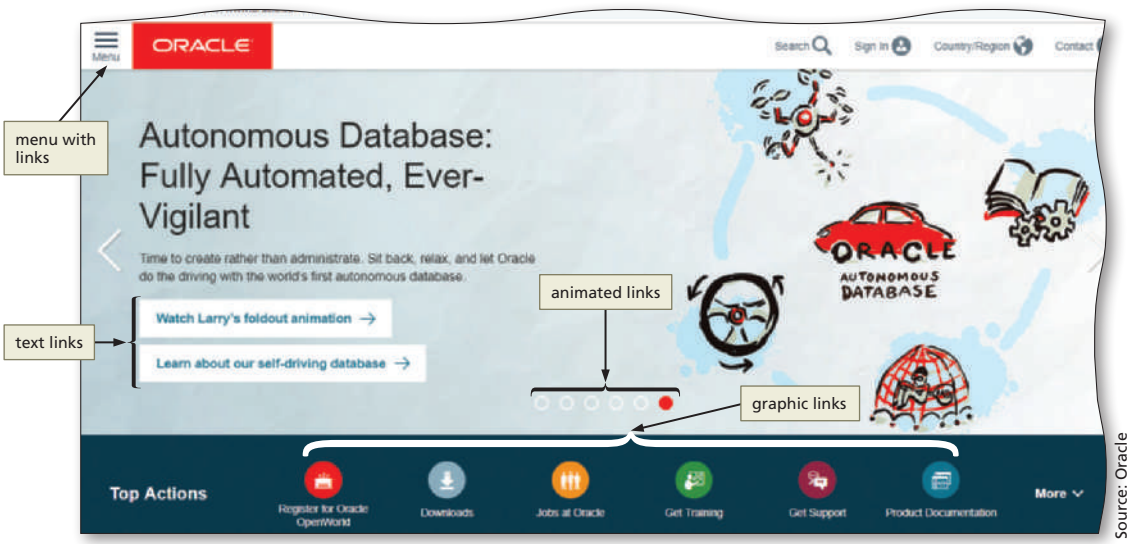
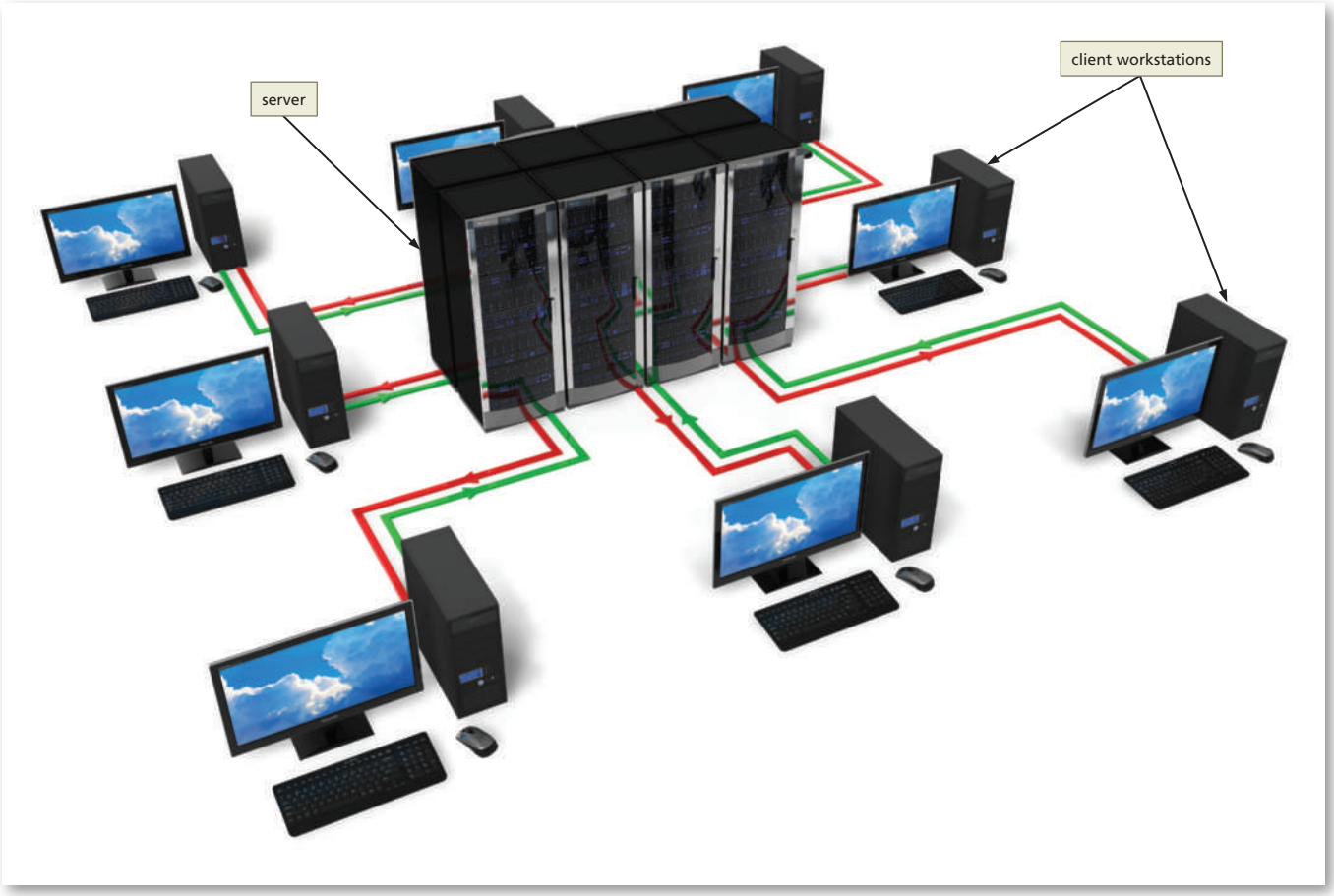


Figure 1–4

Protocols

A computer is also referred to as a client workstation. Client workstations connect to the Internet through the use of a protocol. A **protocol** is a set of rules that defines how a client workstation can communicate with a server. A client workstation uses a protocol to request a connection to a server. The **server** is the host computer that stores resources and files for websites (Figure 1–5).



Oleksiy Mark/Shutterstock.com

Figure 1–5

Hypertext Transfer Protocol (HTTP) is the fundamental protocol used on the web to exchange and transfer webpages. HTTP is a set of rules for exchanging text, graphics, audio, video, and other multimedia files on the web. When you tap or click a link on a webpage, your computer uses HTTP to connect to the server containing the page you want to view, and then to request and display the appropriate page.

File Transfer Protocol (FTP) is used to exchange files from one computer to another over the Internet (not the web). The sole purpose of FTP is to exchange files; this protocol does not provide a way to view a webpage. Businesses commonly use FTP to exchange files with vendors and suppliers. Web designers often use FTP to transfer updated website content to a web hosting server, the computer that stores webpages and other related content for a website.

Transmission Control Protocol/Internet Protocol (TCP/IP) is a pair of protocols used to transfer data efficiently over the Internet by properly routing it to its destination. TCP oversees the network connection between the data source and destination and micromanages the data. When data is sent over the Internet, TCP breaks the data into packets. Each packet contains addressing information, which the IP manages. One way to better understand TCP/IP is through an analogy of the postal system. The tasks TCP performs are similar to those workers or machines perform

when handling a bundle of packages in a post office. In this analogy, the packages are addressed to one destination, but are too large to send as a single bundle. TCP breaks up the bundle into manageable pieces and then sends them out for delivery. When each piece arrives at the destination, TCP reassembles the bundle of packages.

Internet Protocol (IP) ensures data is sent to the correct location. In the postal system analogy, the IP part of TCP/IP refers to the street address and zip code to route a piece of mail. Just as people have a unique mailing address, every client workstation and server on the Internet has a unique IP address. An example of an IP address is 192.168.1.5. Every website has a unique IP address, which makes it easy for computers to find websites. However, most people have difficulty in remembering and using IP addresses to access websites. The **Domain Name System (DNS)** was created to resolve this issue. The DNS associates an IP address with a domain name. For example, the DNS associates the IP address 204.79.197.200 with the domain name bing.com.

BTW

WhatIsMyIPAddress.com

You can look up the IP address for any domain using WhatIsMyIPAddress.com.

Web Browsers

To access a website and display a webpage, a computer, tablet, or mobile device must have a web browser. A **web browser**, also called a **browser**, is a program that interprets and displays webpages so you can view and interact with them. Computing devices such as smartphones, tablets, laptops, and desktops include their own default browser, but you also have the option to download and use the browser of your choice. Microsoft Edge, Mozilla Firefox, Google Chrome, Apple Safari, and Opera (Figure 1–6) are popular browsers. You use a browser to locate websites, to link from one webpage to another, to add a favorite or bookmark a webpage, and to choose security settings.

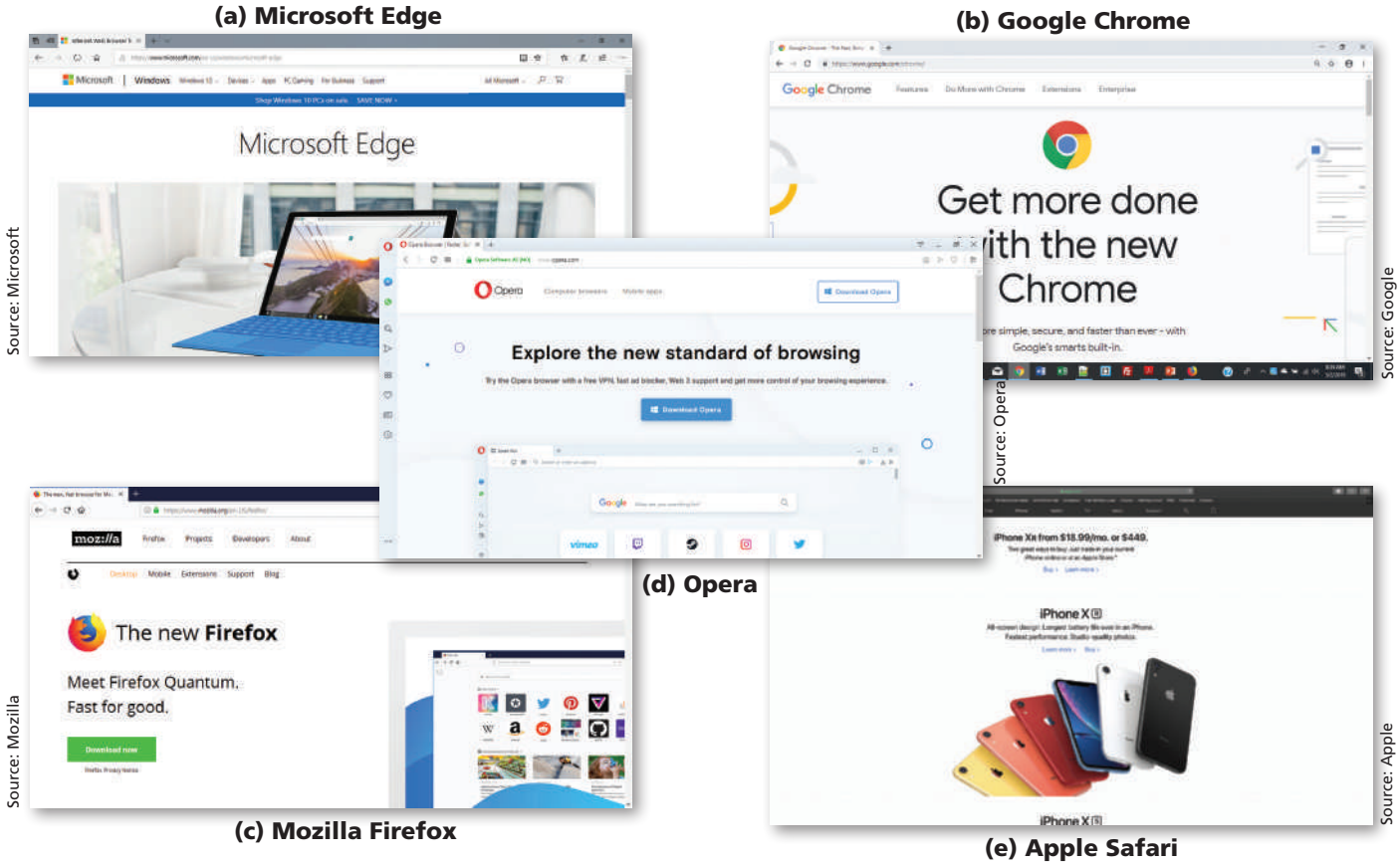


Figure 1–6

BTW

Apple Safari

Apple Safari is only available for download on Apple devices, including iPhones and Mac computers. It previously ran on the Windows operating system, but as of 2018, Apple no longer offers Safari for Windows.

BTW

Browser Interface Updates

The user interface of a browser is updated regularly. If you are using Google Chrome, it may look slightly different from the figures due to recent updates.

Besides varying by publisher, browsers vary by version. Most browsers do not display webpages identically. In fact, older versions of some browsers do not support the most recent HTML 5 standards. As you are designing your website, you must view it using various browsers to ensure that it looks and functions as you intended.

Google Chrome (Figure 1–7) provides tools for visiting webpages and an array of options to customize settings. As with all browsers, you can use Google Chrome to enter a website address in the address bar to display a particular webpage, designate a specific webpage or set of webpage tabs to display when you run the browser, and bookmark frequently visited websites as favorites for easy access. At the time of this writing, Google Chrome is the most popular browser, with more than 60 percent market share worldwide. You can download Google Chrome for free at google.com/chrome. Important features of Google Chrome are summarized in Table 1–1.

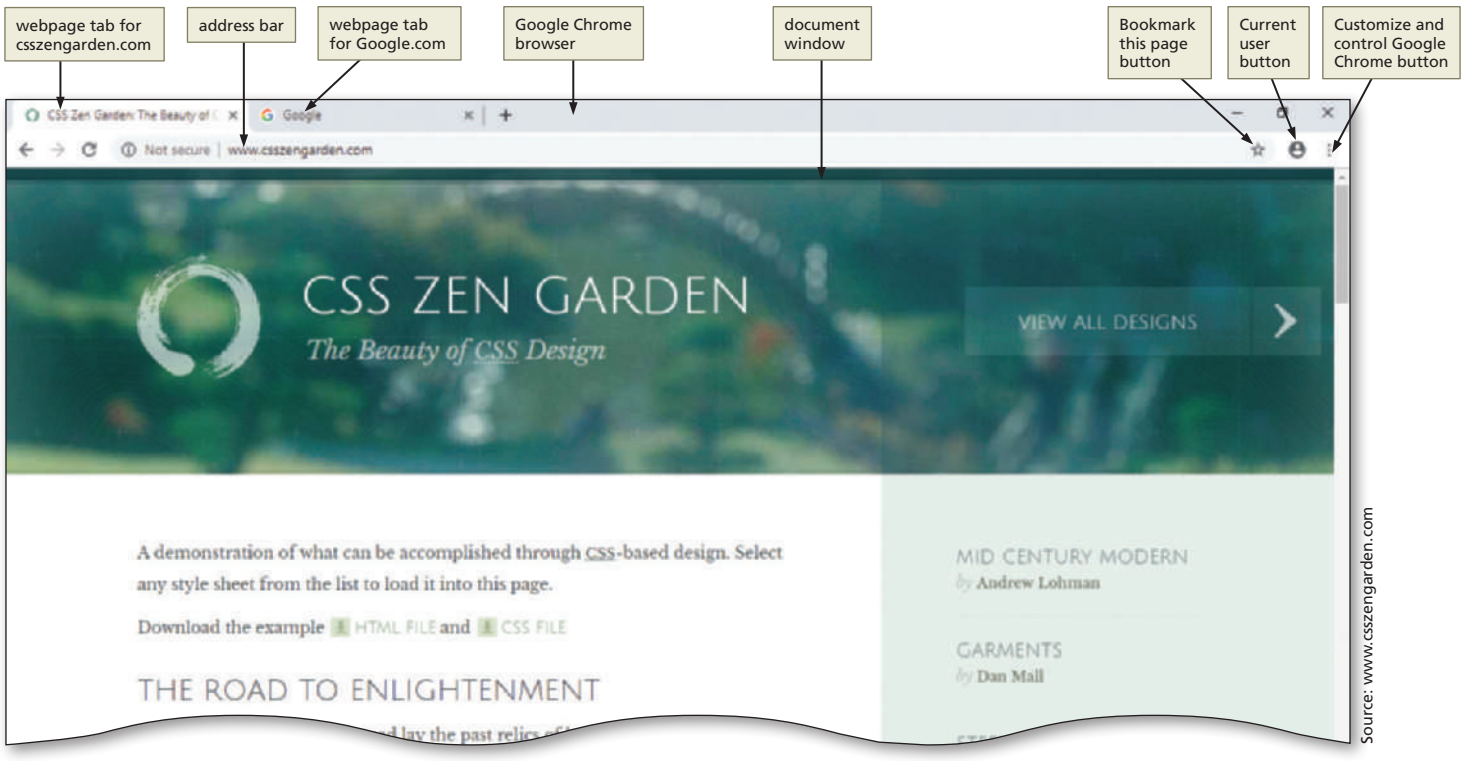


Figure 1–7

Table 1–1 Features of Google Chrome

Feature	Description
Address bar	Displays the website address of the webpage you are viewing
Webpage tab	Displays the title of the webpage; you can open multiple tabs to view multiple webpages
Current user button	Allows you to sign in to Google and manage your passwords, payments, and addresses
Bookmark this page button	Allows you to save and view your favorite webpages
Customize and control Google Chrome button	Provides access to print, zoom, and history features and lets you view downloads and manage extensions
Document window	Displays the current webpage content

CONSIDER THIS

What is the difference between a website's home page and a web browser's home page?
A website's home page is the default page displayed when you enter a web address such as www.cengage.com into the address bar of a browser. As mentioned earlier, this type of home page is the introductory page of a website and provides links to access other parts of the site. A browser also has a home page, which appears when you open a browser or tap or click the Home button in the browser window. You can specify any webpage as the default home page of a browser.

A web address, or **Uniform Resource Locator (URL)**, is the address of a document or other file accessible on the Internet and identifies the network location of a website, such as www.w3.org.com. To access a website using a browser, you type the webpage's URL in the browser's address bar (Figure 1–8).

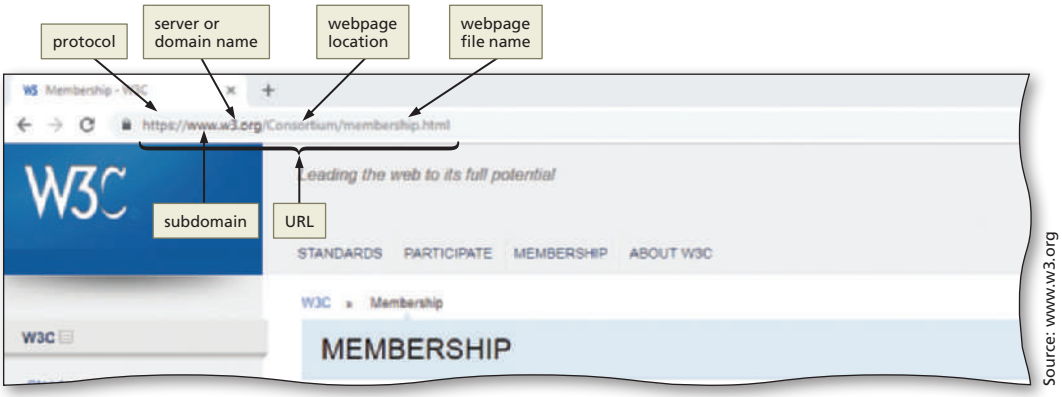


Figure 1–8

The URL in Figure 1–8 indicates to the browser to use the HTTPS communications protocol to locate the membership.html webpage in the Consortium folder on the w3.org server or domain. A **domain** is an area of the Internet a particular organization or person manages. In this case, w3.org is the name of the domain, with the .org indicating it is registered as a nonprofit organization. The www part of the URL is short for World Wide Web and is a common subdomain used in a URL. The www is not required and can be omitted or replaced with another meaningful name for the subdomain. You can find webpage URLs in a wide range of places, including school catalogs, business cards, product packaging, and advertisements.

CONSIDER THIS

How do you use a subdomain within a URL?
A subdomain further identifies an area of content. For example, the URL support.microsoft.com indicates that support is a subdomain name used in the microsoft.com domain or server. This subdomain contains helpful information to support Microsoft products.

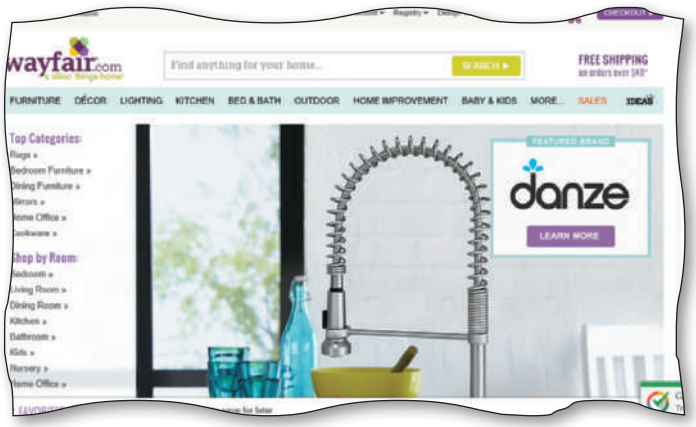
Types of Websites

An **Internet site** is another term for a website that is generally available to anyone with an Internet connection. Other types of websites include intranets and extranets, which also use Internet technology, but limit access to specified groups. An **intranet** is a private network that uses Internet technologies to share company information among employees. An intranet is contained within an organization's network, which makes it private and available only to those who need access. Organizations often distribute documents such as policy and procedure manuals, employee directories, company newsletters, product catalogs, and training manuals on an intranet.

An **extranet** is a private network that uses Internet technologies to share business information with select corporate partners or key customers. Companies and other organizations can use an extranet to share product manuals, training modules, inventory status, and order information. An extranet might also allow retailers to purchase inventory directly from their suppliers or to pay bills online.

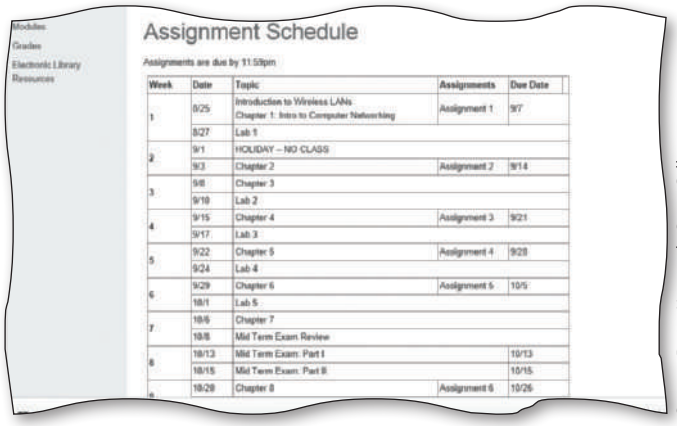
Companies use websites to advertise or sell their products and services worldwide, as well as to provide technical and product support for their customers. Many company websites also support **electronic commerce (e-commerce)**, which is the buying and selling of goods and services on the Internet. Using e-commerce technologies, these websites allow customers to browse product catalogs, compare products and services, and order goods online. Figure 1–9a shows wayfair.com, a company that uses an e-commerce website to sell and distribute home furnishings. Many e-commerce websites also provide links to order status information, customer service, news releases, and customer feedback tools to solicit comments from their customers.

(a) Wayfair



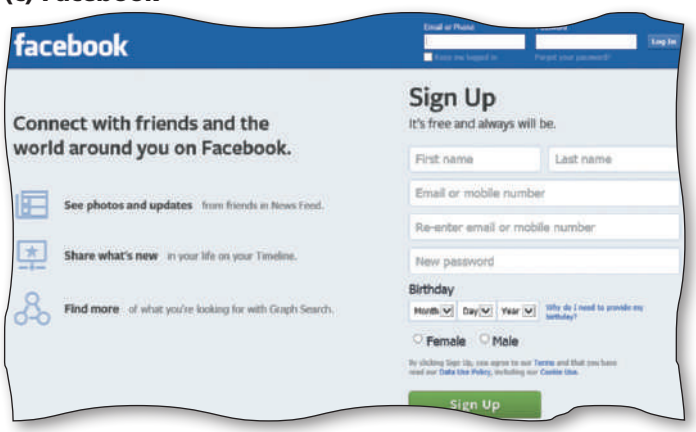
Source: Wayfair

(b) LMS



Source: Pasco-Hernando State College

(c) Facebook



Source: Facebook

(d) Blog

Figure 1–9

Colleges, universities, and other schools use websites to distribute information about areas of study, provide course information, and register students for classes online. Many educational institutions use a **Learning Management System (LMS)** to simplify course management. An LMS is a web-based software application designed to facilitate online learning. Instructors use the LMS to communicate announcements, post questions on reading material, list contact information, and provide access to

lecture slides and videos. Students use the LMS to find information related to their courses, including project instructions and grades. Many LMS tools allow instructors to write their own webpage content that provides further information for their students. For example, the LMS webpage in Figure 1–9b is an HTML page written by an instructor to provide an assignment schedule to students.

While organizations create commercial and academic websites, individuals might create personal websites to share information with family and friends. Families and other groups can exchange photographs, video and audio clips, stories, schedules, or other information through websites. Many individual websites allow password protection, which creates a safer environment for sharing information. Another popular type of website is a social media site, such as Facebook, Twitter, or LinkedIn (Figure 1–9c). These websites encourage their users to share information, pictures, videos, and job-related skills. Many business websites also include links to their social media pages.

People use search engine websites to research topics. Popular search engine sites include Google, Bing, and Yahoo!. A news website provides information about current events. Another type of common website is a blog, which is short for weblog. A single person or small group creates and oversees a blog, which typically reflects the author's point of view on a particular topic (Figure 1–9d).

Planning a Website

When visiting a physical retail store, visitors are more likely to make a purchase if the store is clean and well organized and offers quality products and services. Likewise, computer users have several expectations when visiting a website. They expect the website to load quickly in the browser. If a website takes more than a few seconds to load, a visitor is likely to leave and find another site, possibly belonging to a competitor. Website visitors also expect an attractive design and color scheme that enhances the experience of visiting the site and makes it easy to read and view information. They expect a clear navigation system that helps them quickly find the products, services, or information they are seeking. A poor design, distracting color scheme, or confusing website navigation tools also prompt visitors to switch to another website. An attractive, useful, and well-organized website is not created by accident. Building a successful website starts with a solid strategic plan.

Web designers begin planning activities by meeting with key business personnel to ask several important questions to understand the purpose of the website and the goals of the business. If you are a web designer working as a consultant or contractor, you meet with your clients to plan the website. If you are a web designer providing services within an organization, you meet with decision makers and others who are sponsoring the web design project. In either case, you begin by identifying the purpose of the website and goals of the business to help shape the design and type of website you are developing.

Purpose of the Website

The purpose of a commercial business website is related to the goal of selling products or services. A business can take a direct approach and use a website to sell products and services through e-commerce or through information that prompts website users to visit a physical location such as a store or restaurant. As an alternative, a business can take an indirect approach and use a website to generate leads to potential customers, promote the expertise of the business, raise the public profile of the business, or inform and educate its customers. Each purpose demands a different type of website and design. For example, if the purpose of a website is to serve as an

online store, the website should allow easy access to product information, reviews, and e-commerce tools. If the purpose of the website is to build a company's reputation, the website should feature articles about the company, its employees, and its products and integrate with social media sites such as Facebook.

Every business needs to have a mission statement that clearly addresses the purpose and goal of the business. For example, the mission statement of a bank might be "Our mission is to provide world-class service while helping our customers achieve their financial goals." The business website should promote the mission statement. Web designers often ask their clients for a copy of the mission statement and use it as the foundation for the website plan. The more you know about the purpose of the website, the more likely you are to be successful with a web development project.

Target Audience

In addition to understanding the website's purpose, you should understand the people who will use the website, also known as the target audience. Knowing the makeup of your target audience — including age, gender, general demographic background, and level of computer literacy — helps you design a website appropriate for them. Figure 1–10 shows the website for The Home Depot, a home improvement store. Its target audience includes people who need supplies for home improvement projects. The home page displays an image customized for the spring season and offers special savings to further entice its target audience to make a purchase. The simple navigation bar near the top of the page makes it easy for a customer to shop, access a specific department, or find inspiration. A search tool above the navigation bar provides quick access to products. Knowing the information that your target audience is searching for means you can design the site to focus on that information, which enhances the shopping and purchasing experience for your audience.

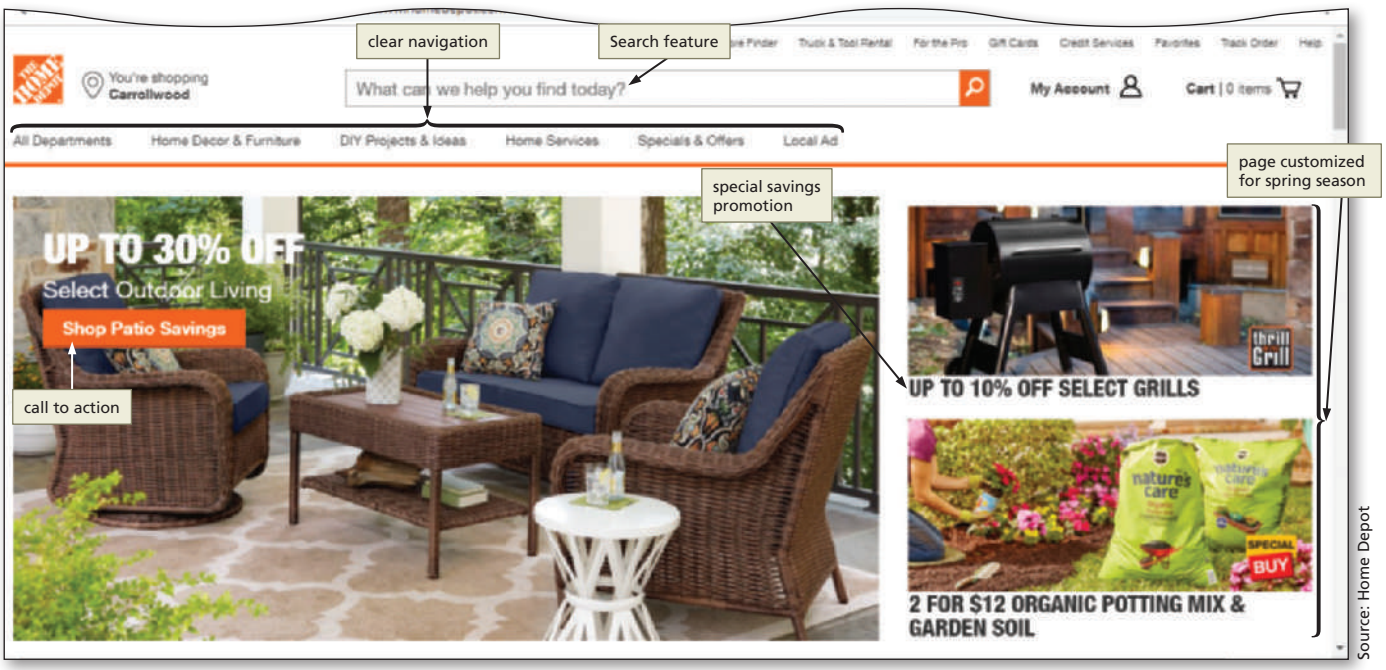
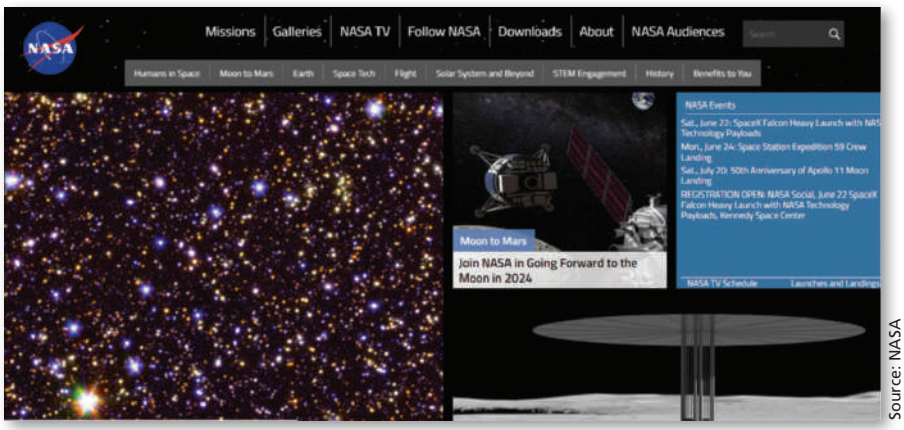


Figure 1–10

Multiplatform Display

Today, users can access a website with computing devices ranging from desktop computers to laptops, tablets, and smartphones. In fact, people are rapidly increasing their use of a mobile device to access websites. According to Pew Research, young people in advanced and emerging economies are likely to have a smartphone and use it to access the Internet and participate in social media. Today, more than 80 percent of Americans own a smartphone, and more than 50 percent of smartphone owners use their phone to access the Internet. In addition, more than 30 percent of those who access the Internet do so exclusively with their smartphones. These trends are only expected to increase. Yet many webpages are designed for a large display screen on a desktop or laptop and do not translate well to the smaller screen of a tablet or smartphone. This problem leads to another question web developers must ask: "How do I consistently reach the people in my target audience when they are using so many difference devices?" The solution is to use **responsive design**, which allows you to create one website that provides an optimal viewing experience across a range of devices. The website itself responds and adapts to the size of screen on the visitor's device. For example, Figure 1–11 shows the responsive design of NASA.gov in desktop, tablet, and mobile screen sizes. Chapter 5 provides much more information about responsive design.

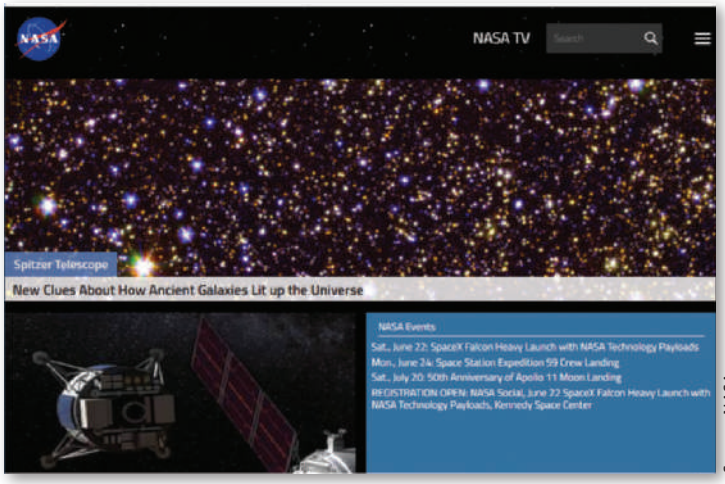


Source: NASA

(a) Desktop Display

Source: NASA

(c) Mobile Display



Source: NASA

(b) Tablet Display

Figure 1–11

CONSIDER THIS

Can I redesign a desktop-only website for multiplatform display?
Yes. If your audience is accustomed to the desktop-only website, retrofitting the website for tablet and mobile display screens makes sense because the site remains familiar to users. You also avoid building a new site from scratch and you can take advantage of design decisions such as color scheme and use media you have already acquired. However, depending on the site content and number of pages, redesigning may be a time-consuming process.

Wireframe

Before web designers actually start creating the first webpage for a website, they sketch the design using a wireframe. A **wireframe** is a simple, visual guide that clearly identifies the location of main webpage elements, such as the navigation area, organization logo, content areas, and images. When you create a wireframe sketch for your webpages, use lines and boxes as shown in Figure 1–12. Also be sure to incorporate plenty of white space within your design to improve readability and to clearly distinguish among the areas on the webpage. You can use two types of white space: active white space and passive white space. **Active white space** is an area on the page that is intentionally left blank. Typically, the goal of active white space is to help balance the design of an asymmetrical page. **Passive white space** is the space between content areas. Passive white space helps a user focus on one part of the page. Proper use of white space makes webpage content easy to read and brings focus to page elements.

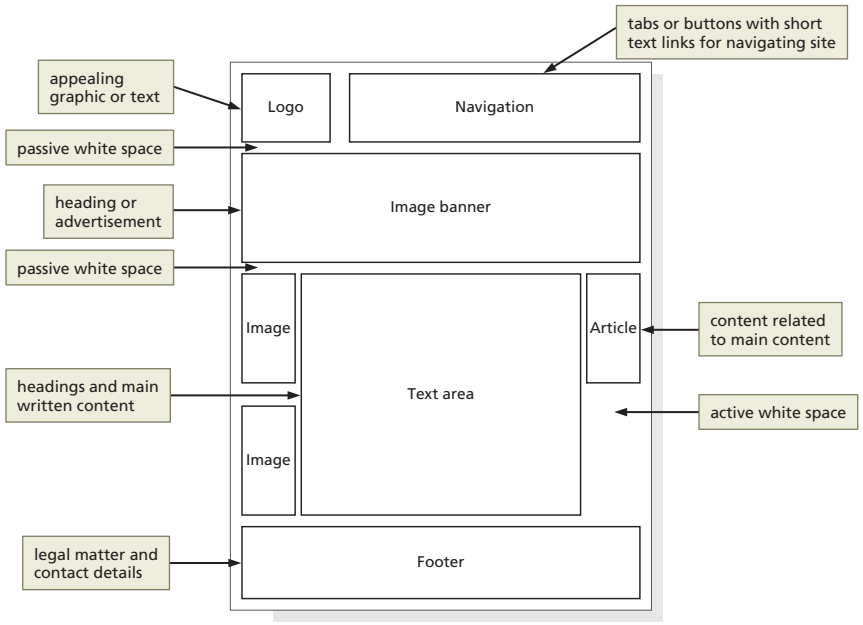


Figure 1–12

CONSIDER THIS

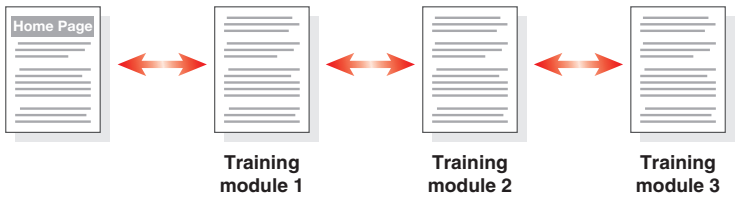
What tools can I use to create a wireframe?
You can use one of several free tools to create a wireframe, including Pencil Project, Mockplus, and Wireframe CC. You can also use drawing tools in Microsoft Word or PowerPoint or a pen and paper.

Site Map

A **site map** is a planning tool that lists or displays all the pages on a website and indicates how they are related to each other. In other words, a site map shows the structure of a website. Begin defining the structure of a website by identifying the information to provide and then organize that information into divisions using the organizing method that makes the most sense for the content. For example, if the website offers three types of products for sale, organize the site by product category. If the website provides training, organize the site in a step-by-step sequence.

Next, arrange the webpages according to a logical structure. A website can use several types of structures, including linear, hierarchical, and webbed. Each structure connects the webpages in a different way to define how users navigate the site and view the webpages. You should select a structure for the website based on how you want users to navigate the site and view the content.

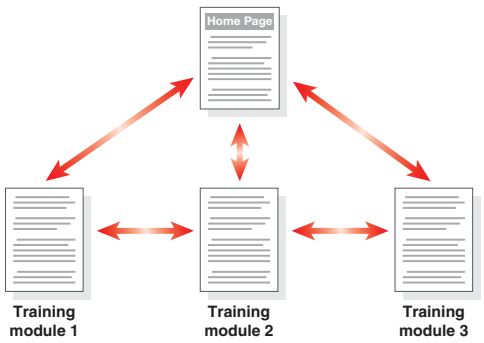
A **linear** website structure connects webpages in a straight line, as shown in Figure 1–13. Each page includes a link to the next webpage and another link to the previous webpage. A linear website structure is appropriate if visitors should view the webpages in a specific order, as in the case of training material in which users need to complete Training module 1 before attempting Training module 2. If the information on the first webpage is necessary for understanding information on the second webpage, you should use a linear structure.



Linear structure

Figure 1–13

In a variation of a linear website structure, each page can include a link to the home page of the website, as shown in Figure 1–14. For some websites, moving from one page to the next page is still important, but you also want to provide users with easy access to the home page at any time. To meet these goals, you provide links from each page to the previous, next, and home pages. In this way, users do not have to tap or click the previous link multiple times to get back to the home page. The home page also includes links to all the pages in the site so users can quickly return to a page.



Linear structure with home page links

Figure 1–14

A **hierarchical** website connects webpages in a treelike structure, as shown in Figure 1–15. This structure works well on a site with a main index or table of contents page that links to all other webpages. With this structure, the main index page displays general information and secondary pages include more detailed information. Notice how logically the information in Figure 1–15 is organized. A webpage visitor can go from the home page to any of the three modules. In addition, the visitor can easily find the first page of Training module 3 by way of the Training module 3 link. One of the inherent problems with this structure and the two linear structures, however, is the inability to move easily from one section of pages to another. As an example, to move from Training module 1, page 2, to Training module 3, visitors must tap or click a link to return to Training module 1, introduction, tap or click another link to return to the home page, and

then tap or click the Training module 3 link. This is moderately annoying for a site with two webpages, but think what it would be like if Training module 1 had 100 webpages.

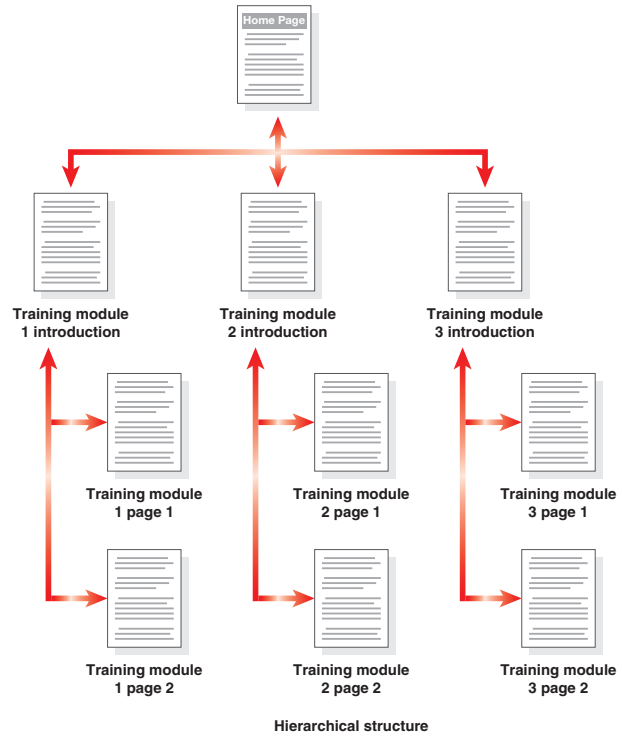


Figure 1–15

To circumvent the problems with the hierarchical model, you can use a webbed model. A **webbed** website structure has no set organization, as shown in Figure 1–16. Visitors can move easily between pages, even if the pages are located in different sections of the website. A webbed structure works best on sites with information that does not need to be read in a specific order and pages that provide many navigation options. The web itself uses a webbed structure, so users can navigate among webpages in any order they choose.

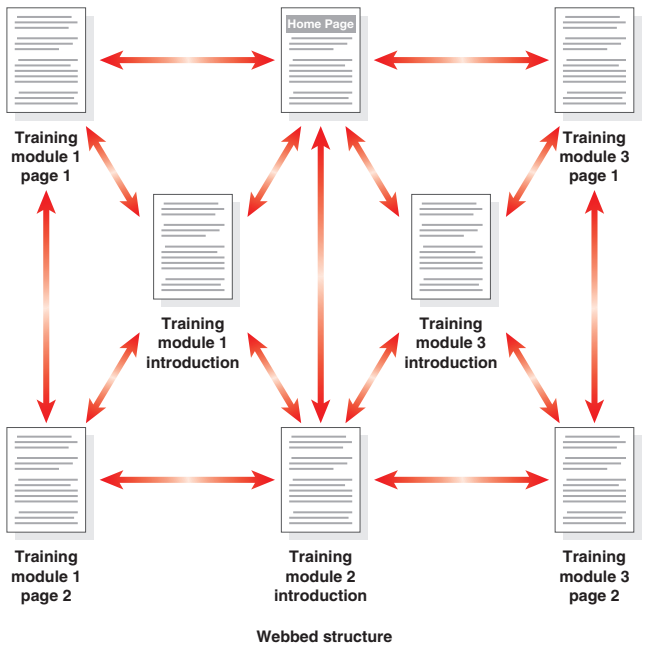


Figure 1–16

With this model, you most often provide a link to the home page from each page. Many websites use a graphical image (usually the organization's logo) in the upper-left corner of each webpage as the home page link. You will use that technique later in the book.

Most websites use a combination of linear, hierarchical, and webbed structures. Some information on the website might be organized hierarchically from an index page, other information might be accessible from all areas of the site, and still other information might be organized in a linear structure to be read in a specific order. Using a combination of the three structures is appropriate if it helps users navigate the site easily. The goal is to get the right information to the users in the most efficient way possible.

Graphics

Graphics add visual appeal to a webpage and enhance the visitor's perception of your products and services. Be sure to use appropriate graphics on your site, those that communicate your brand, products, and services. For example, the website for Panda Express shown in Figure 1–17 on the left displays a primary graphic that serves as the focal point on the website. The graphic communicates to the user that the new dish is fresh, and the smaller graphics in the webpage on the right offer additional visual stimulation and provide an aesthetically pleasing balance to the page. These graphics are simple, yet effective in catching the user's attention.

Figure 1–17

Navigation

As mentioned previously, the navigation of your website should be clear and concise. Each webpage should have a designated navigation area with links to other pages in the site, as shown in Figure 1–18. The navigation area should be prominent and easy to use. Incorporating a search box near the navigation area provides another avenue for customers to find the item they want.

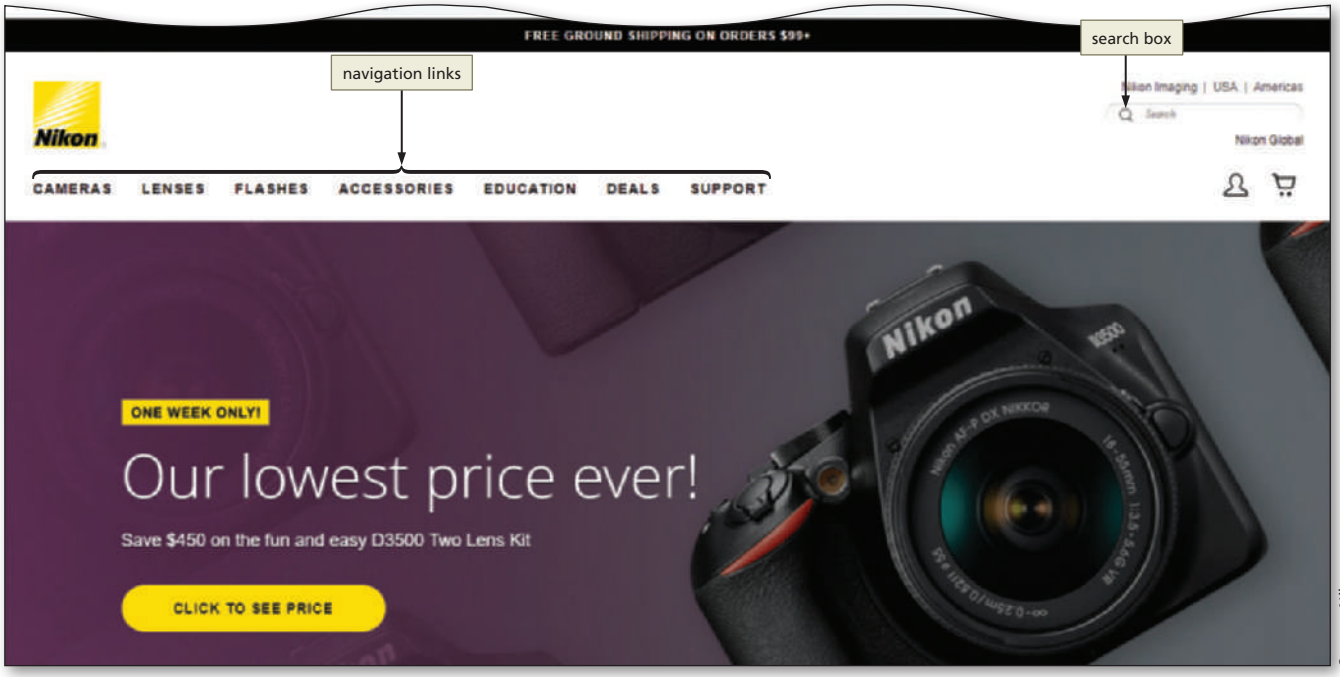


Figure 1–18

Typography

The use of effective typography, or fonts and font styles, enhances the visual appeal of a website. Above all, the text must be legible or the website is useless. Typography also should promote the purpose and goal of the website. For example, review the wedding photography website shown in Figure 1–19. The style of the text conveys an attitude of practical elegance mixed with fun. The typography of the title at the top of the page is elegant and whimsical, while the typography of the navigation links is uncluttered and easy to read.

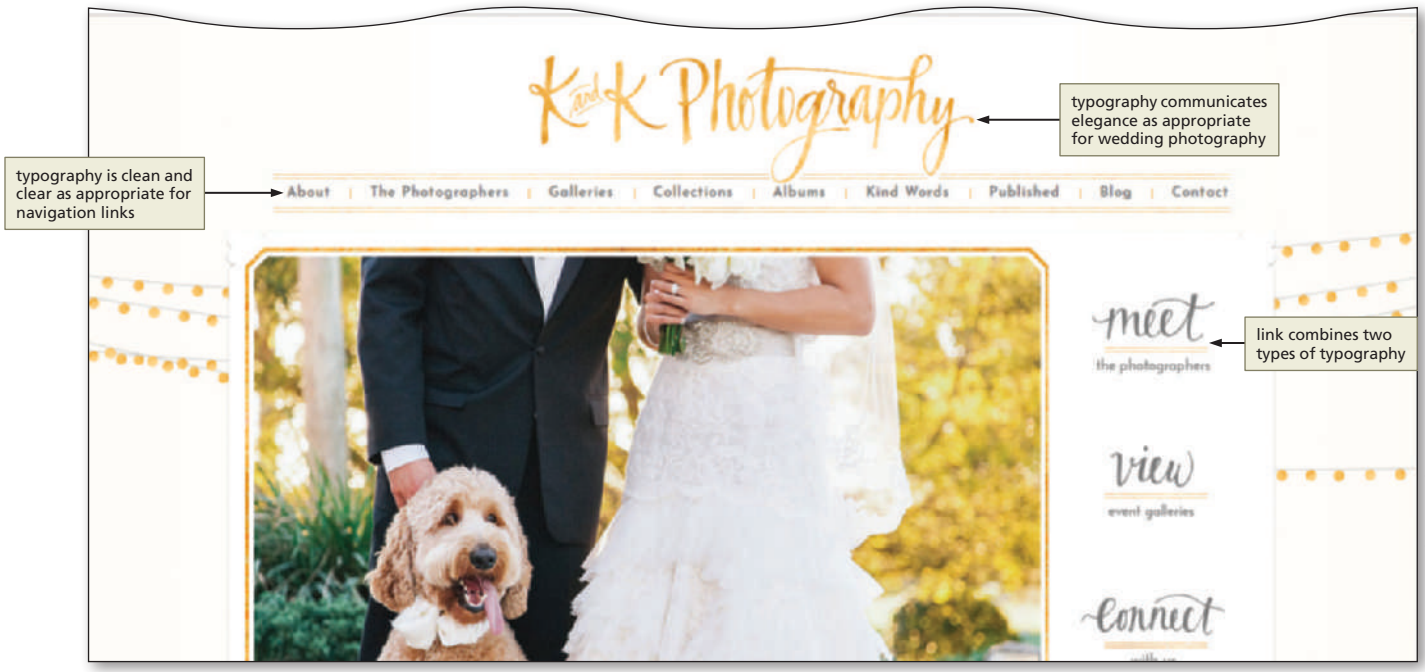


Figure 1–19

Color

All websites use color, even if the colors are black and white. Select a limited number of coordinated colors that help promote your purpose and brand. The combination of colors, also called a color scheme, contributes to the appeal and legibility of the website. Font and background colors must provide high color contrast for readability, so use dark text on a light background or light text on a dark background. Likewise, avoid a color combination such as a primary red background with yellow text, which is hard on the eyes. Aim to strike a balance among the background color, text color, and the color that represents your brand. Many successful color schemes have one main color, such as medium blue, and add at least one lighter and darker shade of the same color, such as sky blue and navy. Even a single shade can serve as a color scheme. Figure 1–20 displays the home page for the grocery store Publix. The store's logo is green. The site reinforces its brand by integrating the same shade of green throughout the site.

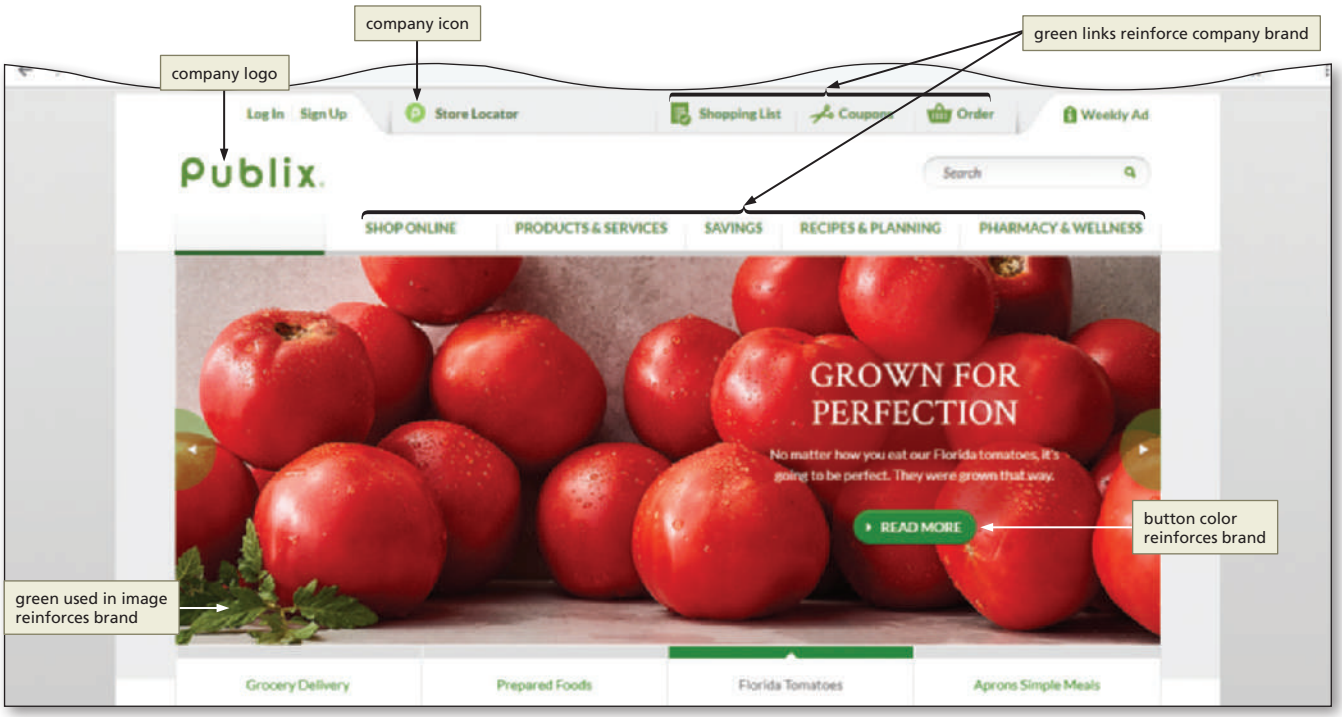


Figure 1–20

Colors convey meanings. For example, green is associated with things that are friendly, fresh, and healthy. Table 1–2 lists colors and their common meanings.

Table 1–2 Common Color Meanings

Color	Common Meaning
Red	Love, romance, anger, energy
Blue	Trust, loyalty, integrity, honesty, dependability
Green	Freshness, friendliness, health, safety, strength
Yellow	Warmth, cheer, joy, excitement, humor
Orange	Energy, warmth, health
Brown	Nature, wholesomeness, simplicity, friendliness
Black	Elegance, tradition, sophistication, formality
White	Purity, honesty, sincerity, cleanliness

Accessibility

Finally, address accessibility and localization issues. A web designer should create pages for viewing by a diverse audience, including people with physical impairments and global users. Consider the software used by those with physical impairments to work with some web features. For instance, for each graphic you include on the website, always include alternative text so people with sight limitations can use screen-reading software to identify the visual content. To support an international audience, use generic icons that can be understood globally, avoid slang expressions in the content, and build simple pages that load quickly over low-speed connections.

The **World Wide Web Consortium (W3C)** develops and maintains web standards, language specifications, and accessibility recommendations. Several companies that use web technologies participate in work groups with the W3C to develop standards and guidelines for the web. The website for W3C is www.w3.org.

BTW
W3C
The mission of the W3C is "to lead the World Wide Web to its full potential by developing protocols and guidelines that ensure the long-term growth of the Web." Information about the membership process is available at www.w3.org/consortium/membership.

Accessibility Standards for Webpage Developers

According to the W3C, the goal of the web is to be accessible to all people, including those with a disability that limits their ability to perform computer tasks. The U.S. Congress passed the Rehabilitation Act in 1973, which prohibits discrimination against those with disabilities. In 1998, Congress amended this Act to reflect the latest changes in information technology. Section 508 requires that any electronic information developed, procured, maintained, or used by the federal government be accessible to people with disabilities. Disabilities that inhibit a person's ability to use the web fall into four main categories: visual, hearing, motor, and cognitive. This amendment has had a profound effect on how webpages are designed and developed. Visit www.section208.gov for more information.

The summary of Section 508 §1194.22 states, "The criteria for web-based technology and information are based on access guidelines developed by the Web Accessibility Initiative of the World Wide Web Consortium." The guidelines help to include everyone as a potential user of your website, including those with disabilities. The Web Accessibility Initiative (WAI) develops guidelines and support materials for accessibility standards. These guidelines are known as the Web Content Accessibility Guidelines (WCAG) 2.0 and 2.1.

The WCAG specifies how to make web content more accessible to people with disabilities. **Web content** generally refers to the information in a webpage or web application, including text, images, forms, and sounds. All web developers should review the information at the official website at w3.org/WAI/intro/wcag.php for complete information on these guidelines and should apply the guidelines to their webpage development.

The WCAG 2.0 and 2.1 guidelines are organized under four principles: perceivable, operable, understandable, and robust. Anyone who wants to use the web must have content that incorporates the principles as follows:

Perceivable: Information and user interface components must be presentable to users in ways they can perceive. Users must be able to perceive the information being presented. (It cannot be invisible to any of their senses.)

Operable: User interface components and navigation must be operable. Users must be able to operate the interface. (The interface cannot require interaction that a user cannot perform.)

Understandable: Information and the operation of the user interface must be understandable. Users must be able to understand the information as well as the operation of the user interface. (The content or operation cannot be beyond their understanding.)

Robust: Content must be robust enough that it can be interpreted reliably by a wide variety of user agents, including assistive technologies. Users must be able to access the content as technologies advance. (As technologies and user agents evolve, the content should remain accessible.)

If these principles are not applied, users with disabilities may not be able to fully access web content. These guidelines will be addressed throughout this book as you progress through each chapter project.

Planning Checklist

The planning items just discussed are only a few of the basic webpage design issues that you need to consider when developing a website. A more sophisticated website requires additional design considerations and research of the business, its competition, and a complete business analysis. Throughout this book, design issues will be addressed as they relate to the chapter project.

The rest of the chapters in this book employ professional web design practices in addition to the development of webpages. You will learn many design and development techniques, including how to add links, styles, layout, graphics, tables, forms, and multimedia to your webpages.

Table 1–3 serves as a checklist of items to consider when planning a website.

Table 1–3 Checklist for Planning a Website

Topic	Web Designer Questions
Purpose of the website	What is the purpose and goal of the website? What is the organization's mission statement?
Target audience	Describe the target audience (age, gender, demographics). What information is most pertinent to the users?
Multiplatform display	Is the website optimized for mobile devices as well as laptops and desktops?
Site map	How many webpages will be included in the website? How will the webpages be organized? What type of website structure is appropriate for the content?
Wireframe	What features will be displayed on each webpage?
Graphics	What graphics will you use on the website?
Color	What colors will you use within the site to enhance the purpose and brand?
Typography	What font styles will you use within the website?
Accessibility	How will the website accommodate people with disabilities?
Budget	What is the budget for the website?
Project Timeline	What is the project timeline for the website?

Break Point: If you want to take a break, this is a good place to do so. To resume at a later time, continue reading the text from this location forward.

Understanding the Basics of HTML

Webpages are created using **Hypertext Markup Language (HTML)**, which is an authoring language used to create documents for the web. HTML consists of a set of special instructions called **tags** to define the structure and layout of content in a webpage. A browser reads the HTML tags to determine how to display the webpage