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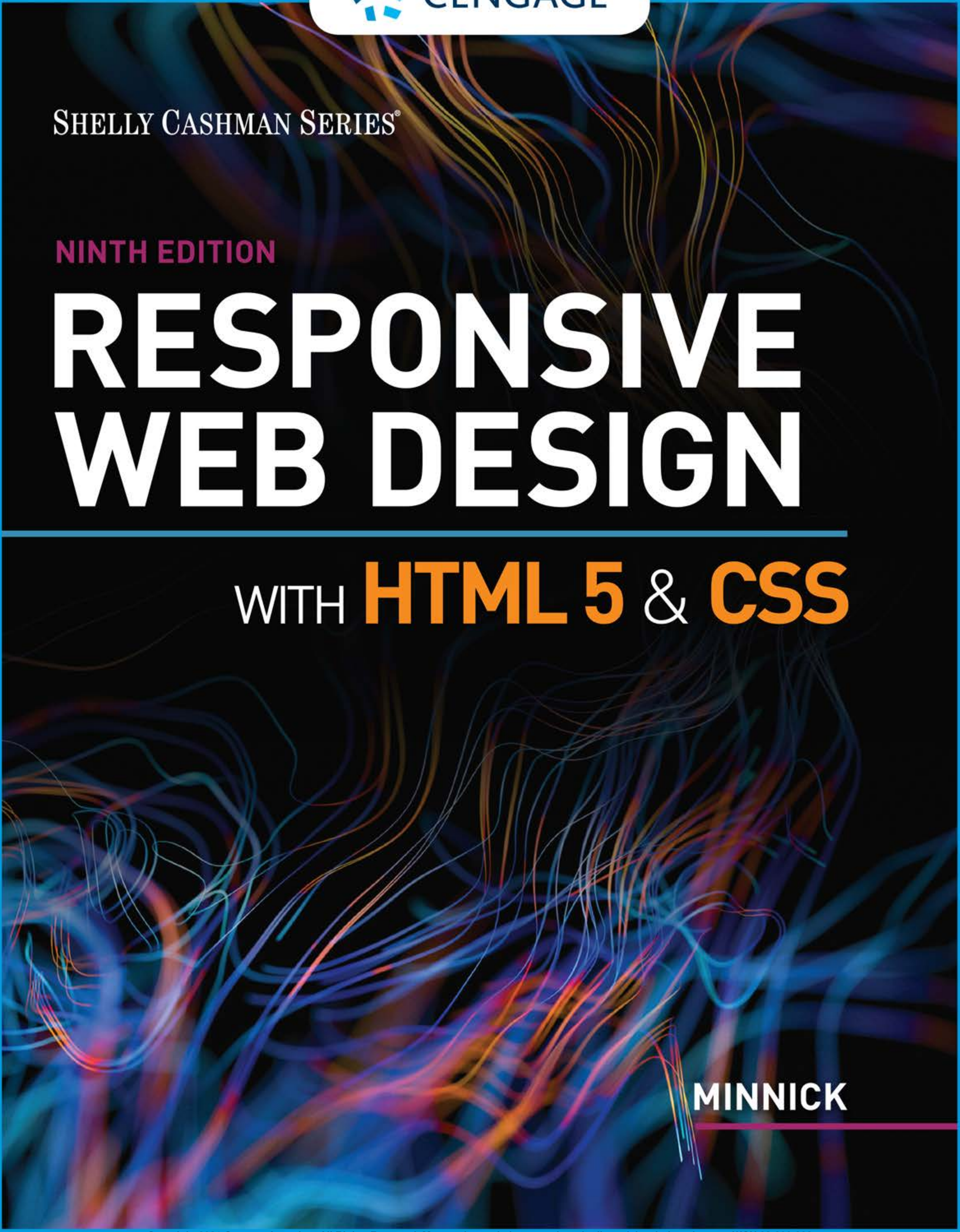

SHELLY CASHMAN SERIES®

NINTH EDITION

RESPONSIVE WEB DESIGN

WITH HTML 5 & CSS

MINNICK

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Responsive Web Design with HTML 5 and CSS, 9th Edition
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Responsive Web Design with HTML 5 & CSS

Ninth Edition

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Preface

The Shelly Cashman Series® offers the finest textbooks in computer education. We are proud that our previous web design and development books have been so well received. With each new edition of our HTML and CSS books, we make significant improvements based on web technology and comments made by instructors and students. For *Responsive Web Design with HTML 5 and CSS, Ninth Edition*, the Shelly Cashman Series development team carefully reviewed our pedagogy and analyzed its effectiveness in teaching today's student. Contemporary students read less, but need to retain more. As they develop and perform skills, students must know how to apply the skills to different settings. Today's students need to be continually engaged and challenged to retain what they're learning.

With this web design book, we continue our commitment to focusing on the user and how they learn best.

Objectives of This Textbook

Responsive Web Design with HTML 5 and CSS, Ninth Edition, is intended for a first course that offers an introduction to HTML, CSS, and responsive web design techniques. No experience with webpage development or computer programming is required. The objectives of this book are:

- To teach the fundamentals of how to plan and organize the webpages for a new website
- To thoroughly apply two fundamental webpage technologies to realistic case studies: HTML for structure and CSS for style and layout
- To provide an exercise-oriented approach that reinforces learning by doing
- To introduce students to new web technologies and trends, including responsive web design and mobile-first design strategies
- To demonstrate current techniques for incorporating audio and video and for integrating interactivity using CSS and JavaScript
- To promote curiosity and independent exploration of web resources
- To support current, professional webpage development best practices
- To encourage independent study and support distance learners

The Shelly Cashman Approach

Proven Pedagogy with an Emphasis on Project Planning

Each chapter presents a practical problem to be solved, within a project planning framework. The project orientation is strengthened by the use of the Roadmap, which provides a visual guide for the project. Step-by-step instructions with supporting screens guide students through the steps. Instructional steps are supported by the Q&A, Other Ways, Experimental Steps, and BTW features.

Visually Engaging Book That Maintains Student Interest

The step-by-step tasks with supporting figures create a rich visual experience for the student. Callouts on the screens that present both explanatory and navigational information provide students with information they need when they need to know it.

Supporting Reference Materials (Appendices)

The appendices provide additional information about the details of HTML and CSS so that students can quickly look up information about web design terms, HTML elements, attributes, and valid values as well as CSS properties and values.

End-of-Chapter Student Activities

Extensive end-of-chapter activities provide a variety of reinforcement opportunities for students where they can apply and expand their skills. To complete some of these assignments, you will be required to use the Data Files for Students. Please contact your instructor for information about accessing the required files.

New to This Edition

Fresh, Industry-Leading Website Design Practices

For this edition, the development team made a huge leap forward in bringing up-to-date, forward-thinking website development practices into focus and application.

Custom Fonts

Learn how to integrate custom fonts. You are no longer limited to standard browser fonts. Expand your font options by integrating custom Google fonts.

Design Single- and Multiple-Column Layouts

Learn how to design single-column and multiple-column layouts using the CSS Grid Layout. Create a single-column design for a mobile layout and a multiple-column layout for progressively larger screens.

Interactivity with CSS and JavaScript

Learn how to integrate transforms and animations, which provide interactivity to a webpage. Create a working hamburger icon menu exclusively for a mobile viewport.

Design for Accessibility

Learn how to add closed captions to videos.

Introduction to Bootstrap

Learn how to use Bootstrap, a popular web framework, to create an entire webpage.

All New Projects

This edition contains a wealth of contemporary projects that logically build in complexity and probe for understanding. Our goal is not only to help you teach valid HTML and CSS, but to reveal deeper conceptual issues essential to the field of web development. Using the technologies of today's web developers results in websites that are worthy candidates for an electronic portfolio.

Professional Best Practices

With the advent of today's powerful content management systems and website builder tools, do you still need to learn how to create HTML and CSS files from scratch in a text editor? Professionals in the field answer that question with a united, enthusiastic yes! Mastering these technologies is essential to all web-related careers.

Instructor Resources

The Instructor Resources include both teaching and testing aids and can be accessed via www.cengage.com/login.

Instructor's Manual Includes lecture notes summarizing the chapter sections, figures, and boxed elements found in every chapter, teacher tips, classroom activities, lab activities, and quick quizzes in Microsoft® Word® files.

Figure Files Illustrations for every figure in the textbook in electronic form.

PowerPoint Presentations A multimedia lecture presentation system that provides slides for each chapter. Presentations are based on chapter objectives.

Data Files for Students Includes all the files that are required by students to complete the exercises.

Solutions to Exercises Includes solutions for all end-of-chapter exercises and chapter reinforcement exercises.

Test Bank & Test Engine Test banks include questions for every chapter, featuring objective-based and critical thinking question types. Cengage Learning Testing Powered by Cognero is a flexible, online system that allows you to:

- author, edit, and manage test bank content from multiple Cengage Learning solutions
- create multiple test versions in an instant
- deliver tests from your LMS, your classroom, or wherever you want

Textbook Walk-Through

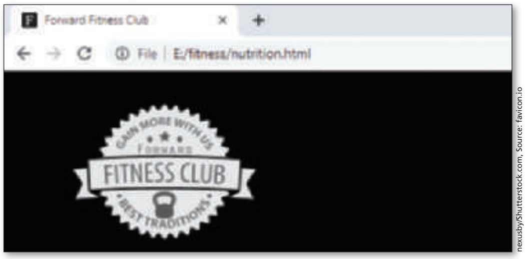
The Shelly Cashman Series Pedagogy: Project-Based — Step-by-Step — Variety of Assessments

Roadmaps provide a visual guide to each project, showing the students where they are in the process of creating each project.

Step-by-step instructions now provide a context beyond point-and-click. Each step provides information on why students are performing each task, or what will occur as a result.

Q&A boxes anticipate questions students may have when working through the steps and provide additional information about what they are doing right where they need it.

HTML 340 **HTML Chapter 7** Improving Web Design with New Page Layouts



nexusby/Shutterstock.com, Source: favicon.io

Figure 7–3

Roadmap

In this chapter, you will learn how to create the webpages shown in Figures 7–1, 7–2, and 7–3. The following roadmap identifies general activities you will perform as you progress through this chapter:

1. MODIFY the HOME PAGE.
2. STYLE the HOME PAGE elements.
3. MODIFY the ABOUT US PAGE.
4. CREATE AND STYLE the NUTRITION PAGE elements.
5. ADD a FAVICON.

At the beginning of step instructions throughout the chapter, you will 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 CREATE & STYLE NUTRITION PAGE activity.

1 MODIFY HOME PAGE | 2 STYLE HOME PAGE | 3 MODIFY ABOUT US PAGE
4 CREATE & STYLE NUTRITION PAGE | 5 ADD FAVICON

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

Using HTML 5 Semantic Elements

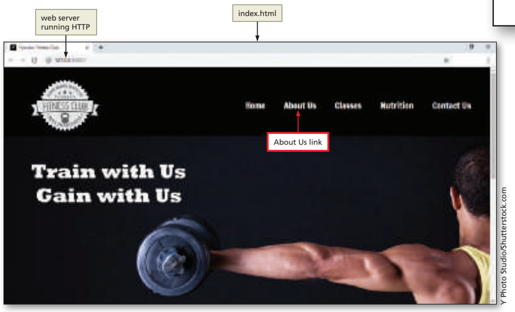
Recall from Chapter 2 that HTML 5 semantic elements are a set of starting and ending HTML tags that provide meaning about the content of the tags. For example, the navigation system is contained within the <nav> and </nav> tags; likewise, footer content is contained within the <footer> and </footer> tags.

Use HTML 5 semantic elements for specific types of content within a webpage. The name of the tag reflects its purpose. Using semantic HTML 5 elements provides a standard naming convention for webpage content, making webpages more universal, accessible, and meaningful to search engines.

Integrating Audio and Video **HTML Cha**

3
- Tap or click the Select Folder button to select the fitness folder.
- Tap or click the Web Server URL(s) link http://127.0.0.1:8887 to open the Forward Fitness Club websit Server for Chrome (Figure 9–32).

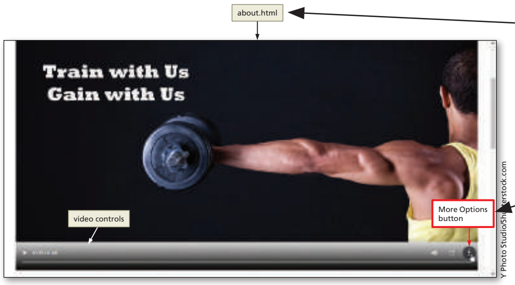
Q&A Why did the home page open?
Unless specified otherwise, Web Server for Chrome opens the index.html file by default.



Y Photo Studio/Shutterstock.com

Figure 9–32

4
- Tap or click the About Us link to open the webpage.
- Locate the More Options button on the right side of the video controls to prepare to display the video options (Figure 9–33).



Y Photo Studio/Shutterstock.com

Figure 9–33

Explanatory callouts summarize what is happening on screen.

Navigational callouts in red show students where to tap or click.

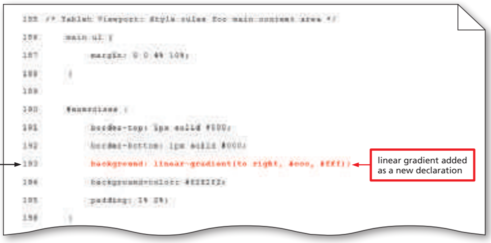
To Add a Linear Gradient

1 ADD TABLET MEDIA QUERY & STYLES | 2 ADD DESKTOP MEDIA QUERY & STYLES | 3 MODIFY VIEWPORT BREAKPOINTS
4 INSERT & STYLE PSEUDO-CLASSES | 5 ADD LINEAR GRADIENT

Add a linear gradient to the div element with the id attribute exercises for the tablet viewport. ***Why?*** *A gradient background enhances the appearance of the webpage for tablet and desktop displays.* The following steps create a new style rule to apply a linear gradient to the #exercises selector as desired for the tablet viewport.

1

- Place the insertion point at the end of Line 192 and press the ENTER key to insert a new Line 193.
- On Line 193, type `background: linear-gradient(to right, #ccc, #fff);` to add a new declaration (Figure 6–55).



```
185 /* Tablet Viewport: Style rules for main content area */
186     main ul {
187         margin: 0 0 4% 10%;
188     }
189
190     #exercises {
191         border-top: 1px solid #000;
192         border-bottom: 1px solid #000;
193         background: linear-gradient(to right, #ccc, #fff);
194         background-color: #EEEEEE;
195         padding: 1% 2%;
196     }
```

Figure 6–55

Q&A

Why am I adding this declaration within the tablet media query?

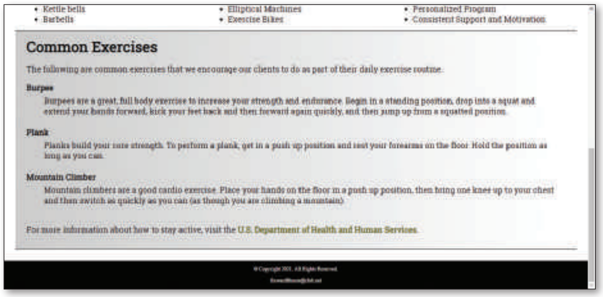
The Common Exercises div is not displayed on a mobile viewport. Now that you have added this gradient for the tablet viewport, subsequent viewports will inherit the change.

2

- Save the styles.css file, and then refresh about.html in your browser to view the changes.

Experiment

- Use Table 6–4 to change the linear gradient to a left to right or to a diagonal gradient, save the styles.css file, and then refresh about.html in your browser.
- Return the background to a linear gradient, save the styles.css file, and then refresh about.html in your browser (Figure 6–56).



- Kettle bells
- Barbells
- Elliptical Machines
- Exercise Bikes
- Personalized Program
- Consistent Support and Motivation

Common Exercises

The following are common exercises that we encourage our clients to do as part of their daily exercise routine.

Burpee

Burpees are a great, full body exercise to increase your strength and endurance. Begin in a standing position, drop into a squat and extend your hands forward, kick your feet back and then forward again quickly, and then jump up from a squatted position.

Plank

Planks build your core strength. To perform a plank, get in a push up position and rest your forearms on the floor. Hold the position as long as you can.

Mountain Climber

Mountain climbers are a good cardio exercise. Place your hands on the floor in a push up position, then bring one knee up to your chest and then switch as quickly as you can (as though you are climbing a mountain).

For more information about how to stay active, visit the U.S. Department of Health and Human Services.

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Figure 6–56

Experiment Steps within the step-by-step instructions encourage students to explore, experiment, and take advantage of web technologies. These steps are not necessary to complete the projects, but are designed to increase confidence and problem-solving skills.

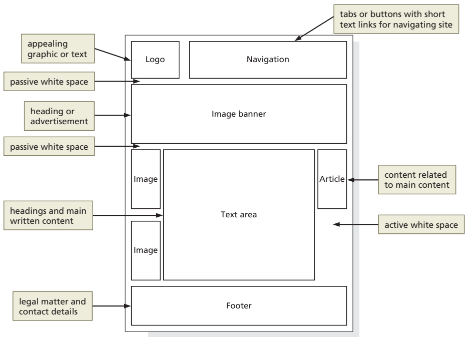
CONSIDER THIS

Can I redesign a desktop-only website for multiplatform displa

Yes. If your audience is accustomed to the desktop-only website, retrofitting makes sense because the site remains familiar to users. You also avoid buildi vantage of design decisions such as color scheme and use media you have a content and number of pages, redesigning may be a time-consuming proces

Wireframe

Before web designers actually start cre they sketch the design using a wireframe. A v clearly identifies the location of main webpa organization logo, content areas, and images your webpages, use lines and boxes as shown plenty of white space within your design to i distinguish among the areas on the webpage 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.



tabs or buttons with short text links for navigating site
appealing graphic or text
passive white space
heading or advertisement
passive white space
headings and main written content
legal matter and contact details
Logo
Navigation
Image banner
Image
Text area
Article
Image
Footer
content related to main content
active white space

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.

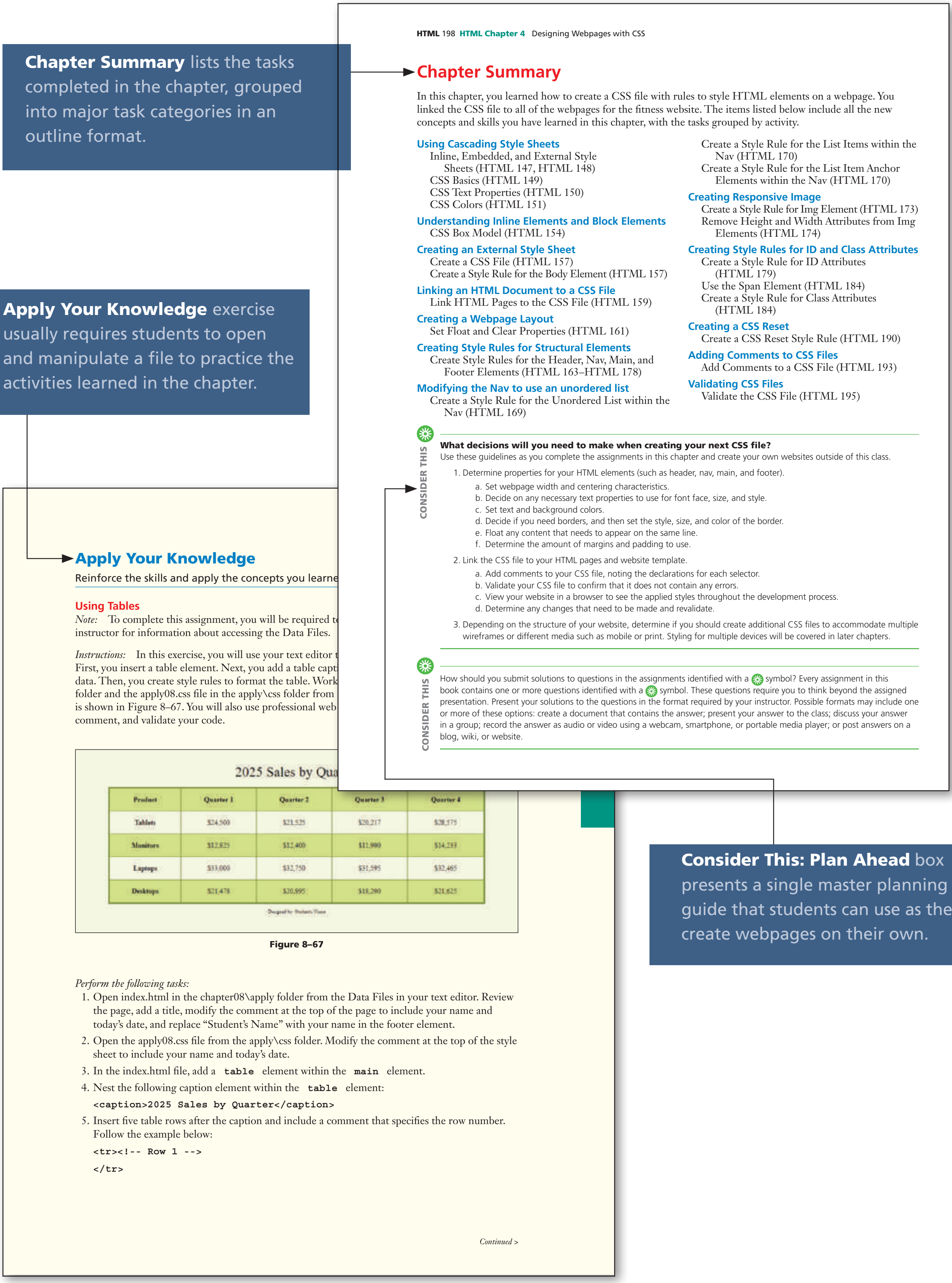
Site Map

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.

Consider This boxes pose thought-provoking questions with answers throughout each chapter, promoting critical thought along with immediate feedback.

Textbook Walk-Through

Chapter Summary lists the tasks completed in the chapter, grouped into major task categories in an outline format.



Chapter Summary

In this chapter, you learned how to create a CSS file with rules to style HTML elements on a webpage. You linked the CSS file to all of the webpages for the fitness website. The items listed below include all the new concepts and skills you have learned in this chapter, with the tasks grouped by activity.

Using Cascading Style Sheets
Inline, Embedded, and External Style Sheets (HTML 147, HTML 148)
CSS Basics (HTML 149)
CSS Text Properties (HTML 150)
CSS Colors (HTML 151)

Understanding Inline Elements and Block Elements
CSS Box Model (HTML 154)

Creating an External Style Sheet
Create a CSS File (HTML 157)
Create a Style Rule for the Body Element (HTML 157)

Linking an HTML Document to a CSS File
Link HTML Pages to the CSS File (HTML 159)

Creating a Webpage Layout
Set Float and Clear Properties (HTML 161)

Creating Style Rules for Structural Elements
Create Style Rules for the Header, Nav, Main, and Footer Elements (HTML 163–HTML 178)

Modifying the Nav to use an unordered list
Create a Style Rule for the Unordered List within the Nav (HTML 169)
Create a Style Rule for the List Items within the Nav (HTML 170)
Create a Style Rule for the List Item Anchor Elements within the Nav (HTML 170)

Creating Responsive Image
Create a Style Rule for Img Element (HTML 173)
Remove Height and Width Attributes from Img Elements (HTML 174)

Creating Style Rules for ID and Class Attributes
Create a Style Rule for ID Attributes (HTML 179)
Use the Span Element (HTML 184)
Create a Style Rule for Class Attributes (HTML 184)

Creating a CSS Reset
Create a CSS Reset Style Rule (HTML 190)

Adding Comments to CSS Files
Add Comments to a CSS File (HTML 193)

Validating CSS Files
Validate the CSS File (HTML 195)

CONSIDER THIS

What decisions will you need to make when creating your next CSS file?
Use these guidelines as you complete the assignments in this chapter and create your own websites outside of this class.

1. Determine properties for your HTML elements (such as header, nav, main, and footer).
   a. Set webpage width and centering characteristics.
   b. Decide on any necessary text properties to use for font face, size, and style.
   c. Set text and background colors.
   d. Decide if you need borders, and then set the style, size, and color of the border.
   e. Float any content that needs to appear on the same line.
   f. Determine the amount of margins and padding to use.
2. Link the CSS file to your HTML pages and website template.
   a. Add comments to your CSS file, noting the declarations for each selector.
   b. Validate your CSS file to confirm that it does not contain any errors.
   c. View your website in a browser to see the applied styles throughout the development process.
   d. Determine any changes that need to be made and revalidate.
3. Depending on the structure of your website, determine if you should create additional CSS files to accommodate multiple wireframes or different media such as mobile or print. Styling for multiple devices will be covered in later chapters.

CONSIDER THIS

How should you submit solutions to questions in the assignments identified with a ✲ symbol? Every assignment in this book contains one or more questions identified with a ✲ symbol. These questions require you to think beyond the assigned presentation. Present your solutions to the questions in the format required by your instructor. Possible formats may include one or more of these options: create a document that contains the answer; present your answer to the class; discuss your answer in a group; record the answer as audio or video using a webcam, smartphone, or portable media player; or post answers on a blog, wiki, or website.

Apply Your Knowledge exercise usually requires students to open and manipulate a file to practice the activities learned in the chapter.

Apply Your Knowledge

Reinforce the skills and apply the concepts you learne

Using Tables

Note: To complete this assignment, you will be required t instructor for information about accessing the Data Files.

Instructions: In this exercise, you will use your text editor t First, you insert a table element. Next, you add a table capt data. Then, you create style rules to format the table. Work folder and the apply08.css file in the apply\css folder from is shown in Figure 8–67. You will also use professional web comment, and validate your code.

2025 Sales by Qua

Product	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Tablets	$24,500	$21,525	$20,217	$28,575
Monitors	$12,825	$12,400	$11,900	$14,233
Laptops	$33,000	$32,750	$31,595	$32,465
Desktops	$21,478	$20,995	$18,200	$21,625

Designed by: Student's Name

Figure 8–67

Perform the following tasks:

1. Open index.html in the chapter08\apply folder from the Data Files in your text editor. Review the page, add a title, modify the comment at the top of the page to include your name and today's date, and replace "Student's Name" with your name in the footer element.
2. Open the apply08.css file from the apply\css folder. Modify the comment at the top of the style sheet to include your name and today's date.
3. In the index.html file, add a `table` element within the `main` element.
4. Nest the following caption element within the `table` element:

```
<caption>2025 Sales by Quarter</caption>
```

5. Insert five table rows after the caption and include a comment that specifies the row number. Follow the example below:

```
<tr><!-- Row 1 -->
</tr>
```

Continued >

Consider This: Plan Ahead box presents a single master planning guide that students can use as they create webpages on their own.

Extend Your Knowledge

Extend the skills you learned in this chapter and experiment with new skills. You may need to use additional resources to complete the assignment.

Working with Positions

Instructions: In this exercise, you will create and modify style rules to learn more about how to place elements on a page using positions. An example of page element positions is shown in Figure 5–66.

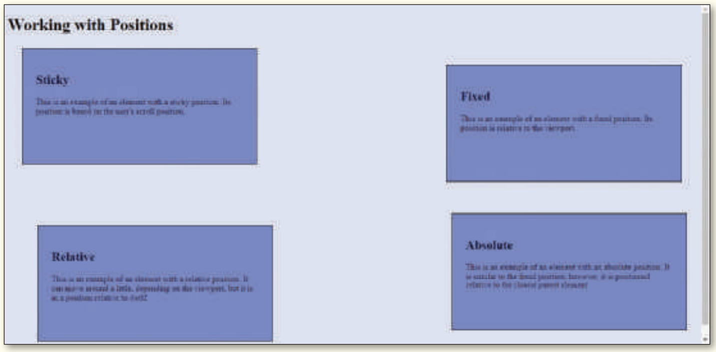


Figure 5–66

Perform the following tasks:

1. Open your text editor and then open the index.html file in the chapter05\extend folder from the Data Files. Update the comment with your name and today
2. Open index.html in your browser to view the file.
3. Open the extend05.css file in your text editor. Locate the “sticky rule for the sticky class selector. Add a declaration for the positi **-webkit-sticky**. Add a declaration for the position property Add a declaration for the top property and specify a zero value. your page, and scroll down to view the changes. In the index.ht element within the sticky div element to briefly explain how to
4. In the extend05.css file, locate the “relative” comment and creat class selector. Add a declaration for the position property with a another declaration for the top property and specify a value of 9 declaration for the left property with a value of 30 pixels. Save y page, and scroll down to view the changes. Return to extend05. left property values to a value of your choice. In the index.html element within the relative div element to identify the values yo properties and how it affected the relative box.

Extend Your Knowledge projects at the end of each chapter allow students to extend and expand on the skills learned within the chapter. Students use critical thinking to experiment with new skills to complete each project.

Analyze, Correct, Improve projects call on students to analyze a file, discover errors in it, fix the errors, and then improve the file using the skills they learned in the chapter.

19. Save your changes and refresh extend06.html in your browser to view the changes.
20. Save your files and submit them in a format specified by your instructor.
21. In this exercise, you explored more about gradients and used percentages to set color stops. You also used rgba to set transparency in step 14. Use your browser to research how to set gradient color stops using percentages. Also research how to use the rgba() function to create transparency. Include a description of your findings.

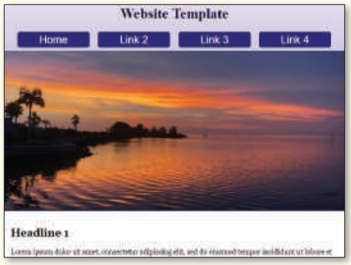
Analyze, Correct, Improve

Analyze a webpage, correct all errors, and improve it.

Modifying Media Queries

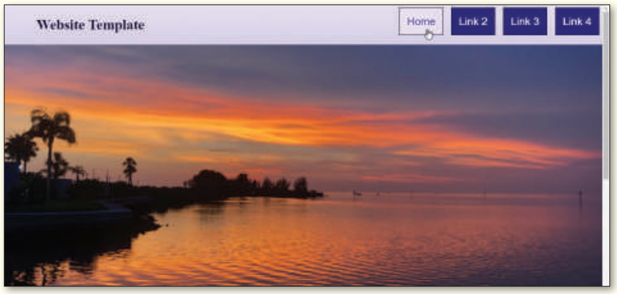
Note: To complete this assignment, you will be required to use the Data Files. Please contact your instructor for information about accessing the Data Files.

Instructions: The analyze06.html webpage is a draft website template, but must be corrected and improved for responsive design before presenting it to a client. Use Figure 6–63, Figure 6–64, and Figure 6–65 as a guide to correct these files.



Courtesy of Jessica Minnick

Figure 6–63



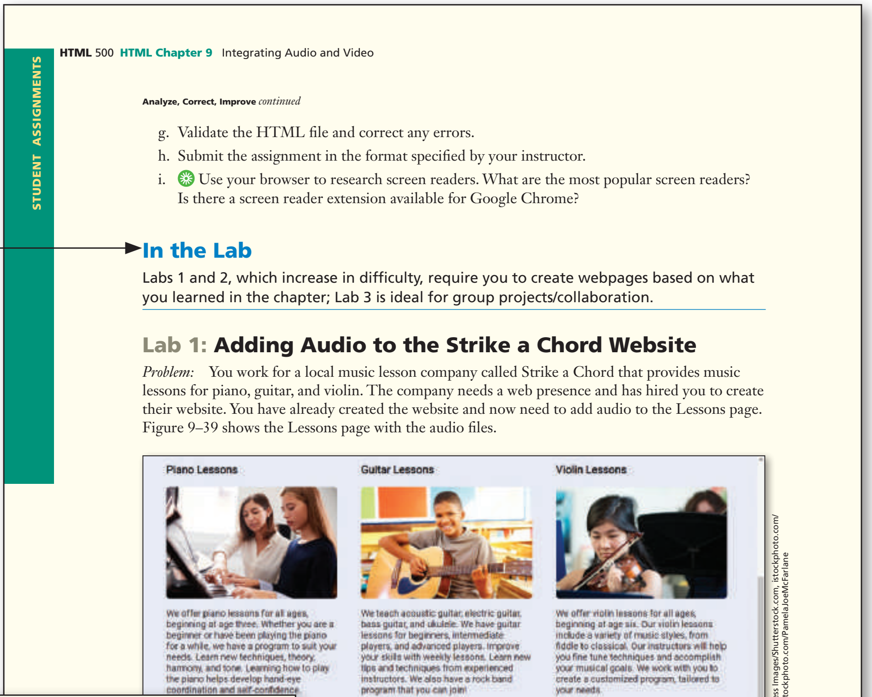
Courtesy of Jessica Minnick

Figure 6–64

Continued >

Textbook Walk-Through

In the Lab Three in-depth assignments in each chapter require students to apply the chapter concepts and techniques to solve problems. One Lab is devoted to independent exploration.



HTML 500 HTML Chapter 9 Integrating Audio and Video

STUDENT ASSIGNMENTS

Analyze, Correct, Improve *continued*

g. Validate the HTML file and correct any errors.

h. Submit the assignment in the format specified by your instructor.

i. Use your browser to research screen readers. What are the most popular screen readers? Is there a screen reader extension available for Google Chrome?

In the Lab

Labs 1 and 2, which increase in difficulty, require you to create webpages based on what you learned in the chapter; Lab 3 is ideal for group projects/collaboration.

Lab 1: Adding Audio to the Strike a Chord Website

Problem: You work for a local music lesson company called Strike a Chord that provides music lessons for piano, guitar, and violin. The company needs a web presence and has hired you to create their website. You have already created the website and now need to add audio to the Lessons page. Figure 9–39 shows the Lessons page with the audio files.

Piano Lessons

We offer piano lessons for all ages, beginning at age three. Whether you are a beginner or have been playing the piano for a while, we have a program to suit your needs. Learn new techniques, theory, harmony, and tone. Learning how to play the piano helps develop hand-eye coordination and self-confidence.

Guitar Lessons

We teach acoustic guitar, electric guitar, bass guitar, and ukulele. We have guitar lessons for beginners, intermediate players, and advanced players. Improve your skills with weekly lessons. Learn new tips and techniques from experienced instructors. We also have a rock band program that you can join!

Guitar Winter Performance

Violin Lessons

We offer violin lessons for all ages, beginning at age six. Our violin lessons include a variety of music styles, from fiddle to classical. Our instructors will help you fine tune techniques and accomplish your musical goals. We work with you to create a customized program, tailored to your needs.

Violin Spring Performance

Monkey Business Images/Shutterstock.com, istockphoto.com/GlobalStock, istockphoto.com/PamelaJoeMcFarlane

Figure 9–39

e following tasks:

der and create a new subfolder named media. Copy the Data Files from ur media folder.

nl file in your text editor and update the comment with today's date.

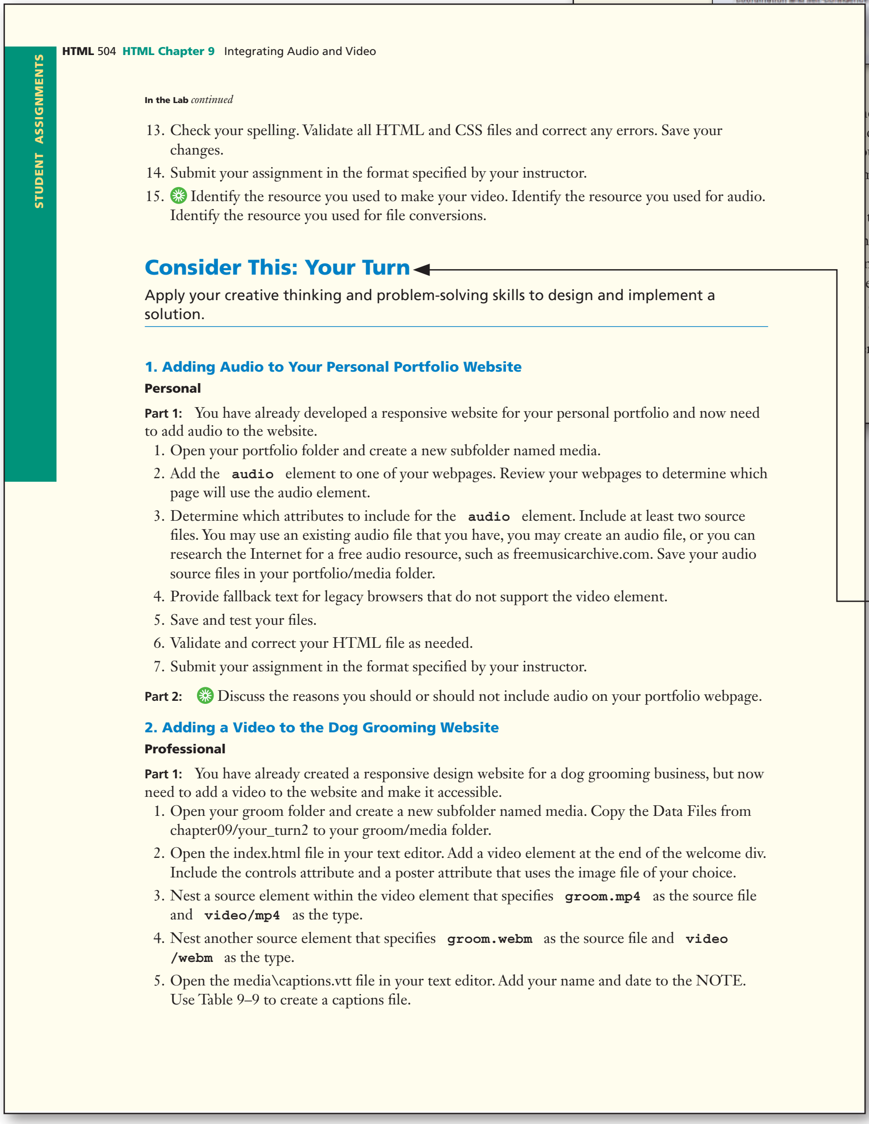
after the paragraph element, insert two new blank lines and then add an text, `Piano Spring Performance`.

t, add an audio element with the `controls` attribute.

t within the audio element that specifies the `piano.mp3` as the source edia folder, and `audio/mp3` as the type.

element that specifies the `piano.ogg` as the source file and `audio`

ment, provide fallback text for legacy browsers that do not support the



HTML 504 HTML Chapter 9 Integrating Audio and Video

STUDENT ASSIGNMENTS

In the Lab *continued*

13. Check your spelling. Validate all HTML and CSS files and correct any errors. Save your changes.
14. Submit your assignment in the format specified by your instructor.
15. Identify the resource you used to make your video. Identify the resource you used for audio. Identify the resource you used for file conversions.

Consider This: Your Turn

Apply your creative thinking and problem-solving skills to design and implement a solution.

1. Adding Audio to Your Personal Portfolio Website

Personal

Part 1: You have already developed a responsive website for your personal portfolio and now need to add audio to the website.

1. Open your portfolio folder and create a new subfolder named media.
2. Add the `audio` element to one of your webpages. Review your webpages to determine which page will use the audio element.
3. Determine which attributes to include for the `audio` element. Include at least two source files. You may use an existing audio file that you have, you may create an audio file, or you can research the Internet for a free audio resource, such as freemusicarchive.com. Save your audio source files in your portfolio/media folder.
4. Provide fallback text for legacy browsers that do not support the video element.
5. Save and test your files.
6. Validate and correct your HTML file as needed.
7. Submit your assignment in the format specified by your instructor.

Part 2: Discuss the reasons you should or should not include audio on your portfolio webpage.

2. Adding a Video to the Dog Grooming Website

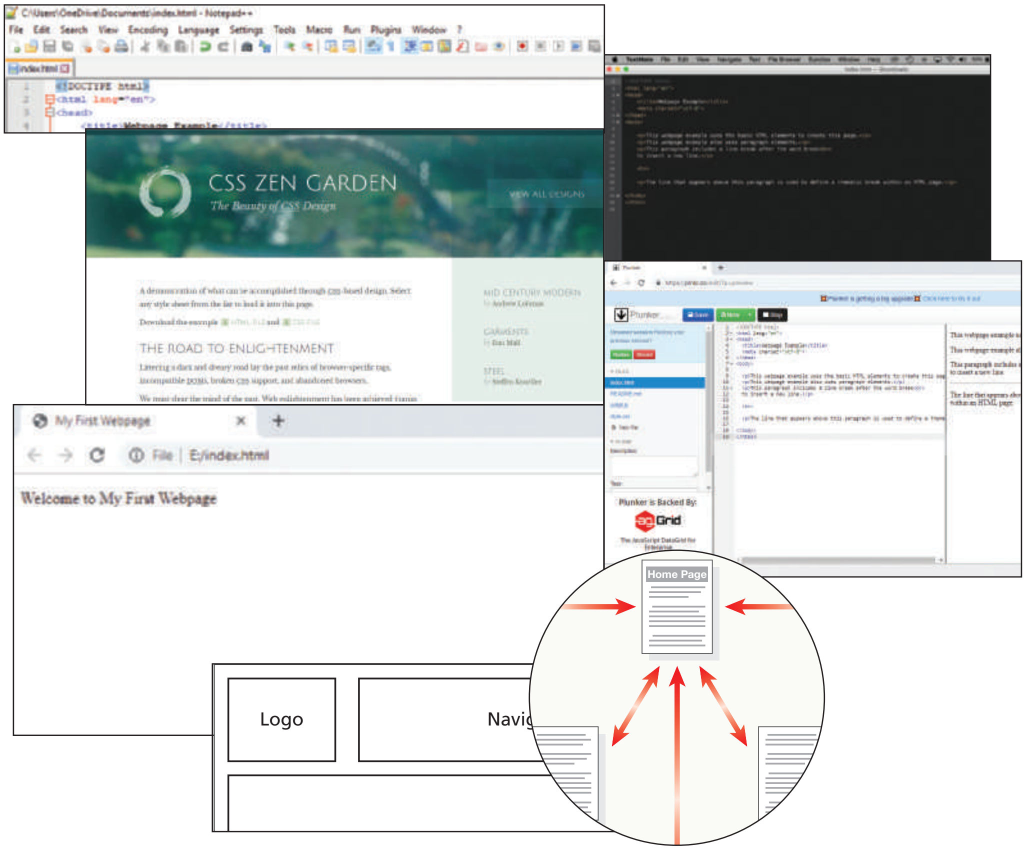
Professional

Part 1: You have already created a responsive design website for a dog grooming business, but now need to add a video to the website and make it accessible.

1. Open your groom folder and create a new subfolder named media. Copy the Data Files from chapter09/your_turn2 to your groom/media folder.
2. Open the index.html file in your text editor. Add a video element at the end of the welcome div. Include the controls attribute and a poster attribute that uses the image file of your choice.
3. Nest a source element within the video element that specifies `groom.mp4` as the source file and `video/mp4` as the type.
4. Nest another source element that specifies `groom.webm` as the source file and `video/webm` as the type.
5. Open the media\captions.vtt file in your text editor. Add your name and date to the NOTE. Use Table 9–9 to create a captions file.

Consider This: Your Turn exercises call on students to apply creative-thinking and problem-solving skills to design and implement a solution.

1 Introduction to the Internet and Web Design


C:\Users\OneDrive\Documents\index.html - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
index.html
<!DOCTYPE html>
<html lang="en">
<head>
<title>Webpage Example</title>
CSS ZEN GARDEN
The Beauty of CSS Design
THE ROAD TO ENLIGHTENMENT
MID CENTURY MODERN
GARMENTS
STEEL
My First Webpage
File | E:/index.html
Welcome to My First Webpage
Plunker
Plunker is Backed By:
Grid
Home Page
Logo
Navig

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

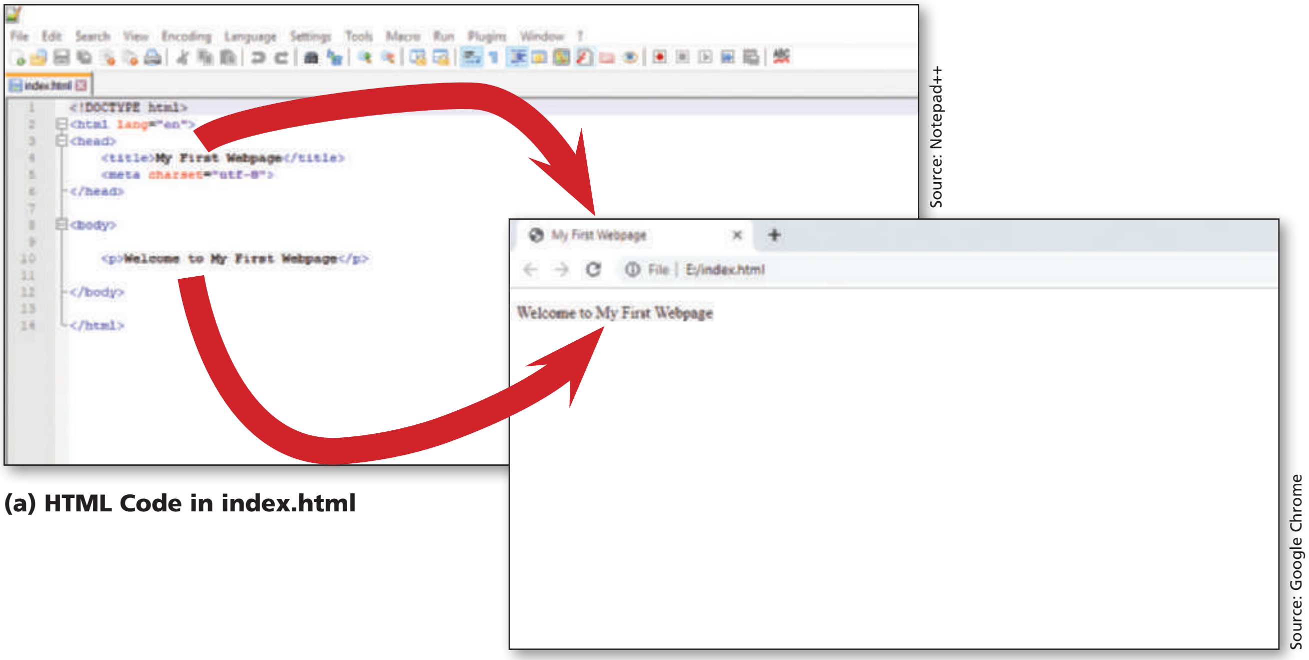
Today, millions of people worldwide have access to the Internet, the world's largest network. Billions of webpages providing information on any subject you can imagine are currently available on the web. People use the Internet to search for information, to communicate with others around the world, and 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.


File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
index.html
My First Webpage
File | E:/index.html

```
<!DOCTYPE html>
<html lang="en">
<head>
	<title>My First Webpage</title>
	<meta charset="utf-8">
</head>

<body>

	<p>Welcome to My First Webpage</p>

</body>

</html>
```

Welcome to My First Webpage

Source: Notepad++

Source: Google Chrome

(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

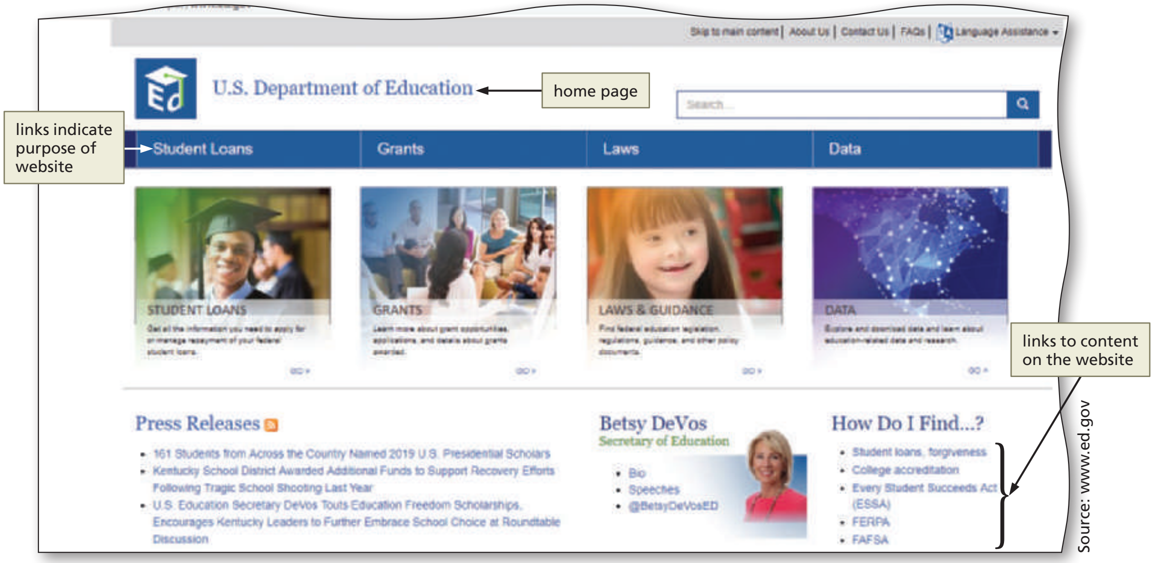
The Internet was developed in the 1960s by the Department of Defense Advanced Research Projects Agency (ARPA). ARPANET (as the Internet was originally called) had only four nodes and sent its first message in 1969. A **node** is any device, such as a computer, tablet, or smartphone, connected to a **network**, 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.


links indicate purpose of website
home page
links to content on the website

Skip to main content | About Us | Contact Us | FAQs | Language Assistance

U.S. Department of Education

Search...

Student Loans Grants Laws Data

STUDENT LOANS
Get all the information you need to apply for or manage repayment of your federal student loans.
GO »

GRANTS
Learn more about grant opportunities, applications, and details about grants awarded.
GO »

LAWS & GUIDANCE
Find federal education legislation, regulations, guidance, and other policy documents.
GO »

DATA
Explore and download data and learn about education-related data and research.
GO »

Press Releases

- 161 Students from Across the Country Named 2019 U.S. Presidential Scholars
- Kentucky School District Awarded Additional Funds to Support Recovery Efforts Following Tragic School Shooting Last Year
- U.S. Education Secretary DeVos Touts Education Freedom Scholarships, Encourages Kentucky Leaders to Further Embrace School Choice at Roundtable Discussion

Betsy DeVos
Secretary of Education

- Bio
- Speeches
- @BetsyDeVosED

How Do I Find...?

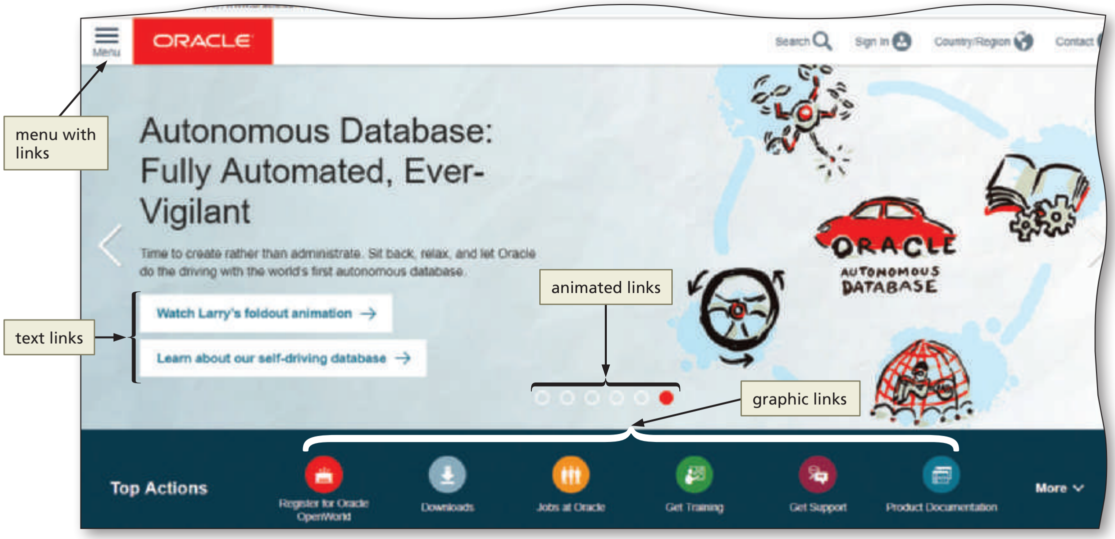
- Student loans, forgiveness
- College accreditation
- Every Student Succeeds Act (ESSA)
- FERPA
- FAFSA

Source: www.ed.gov

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.



Autonomous Database: Fully Automated, Ever-Vigilant

Time to create rather than administrate. Sit back, relax, and let Oracle do the driving with the world's first autonomous database.

Watch Larry's foldout animation →

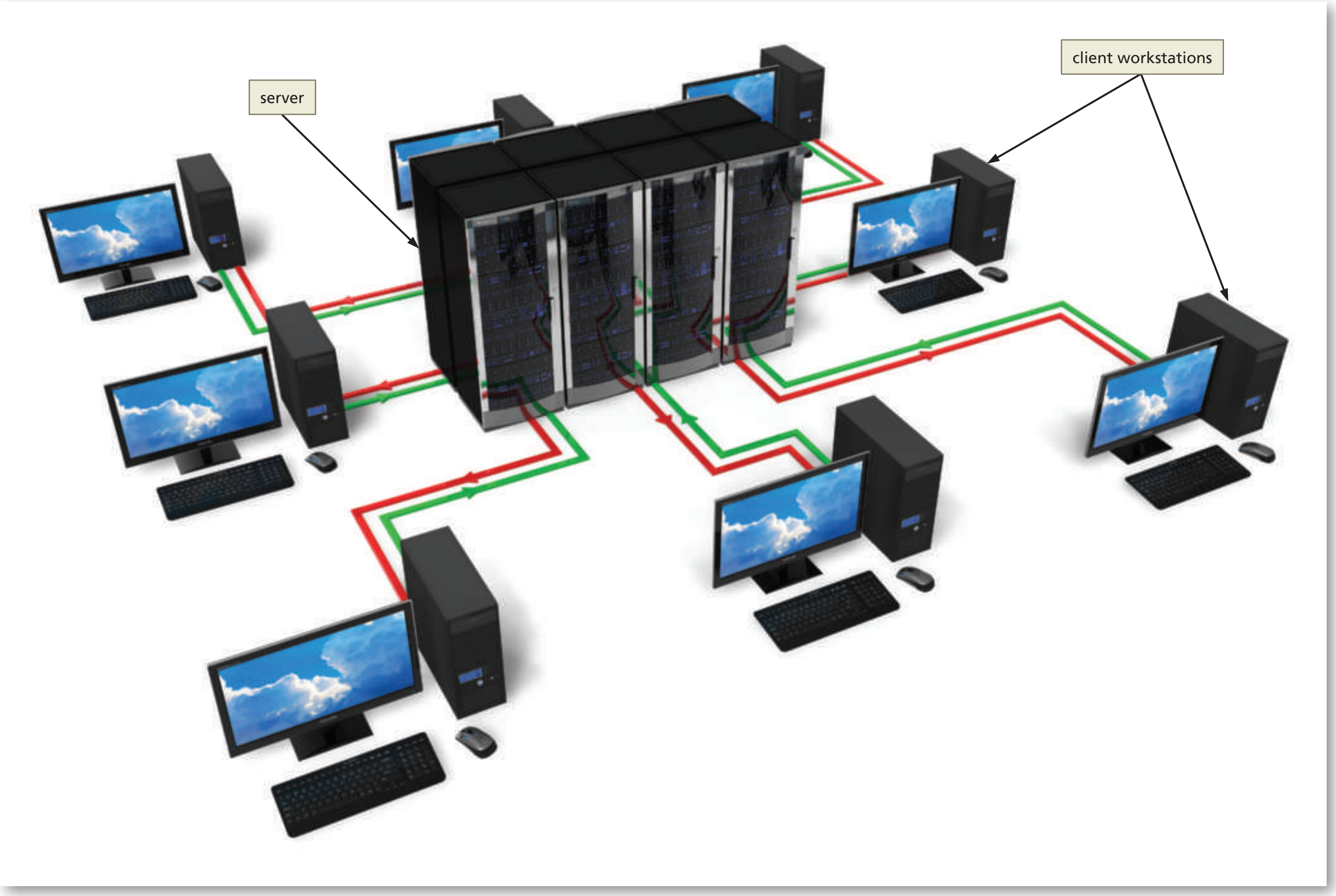
Learn about our self-driving database →

Source: Oracle

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.

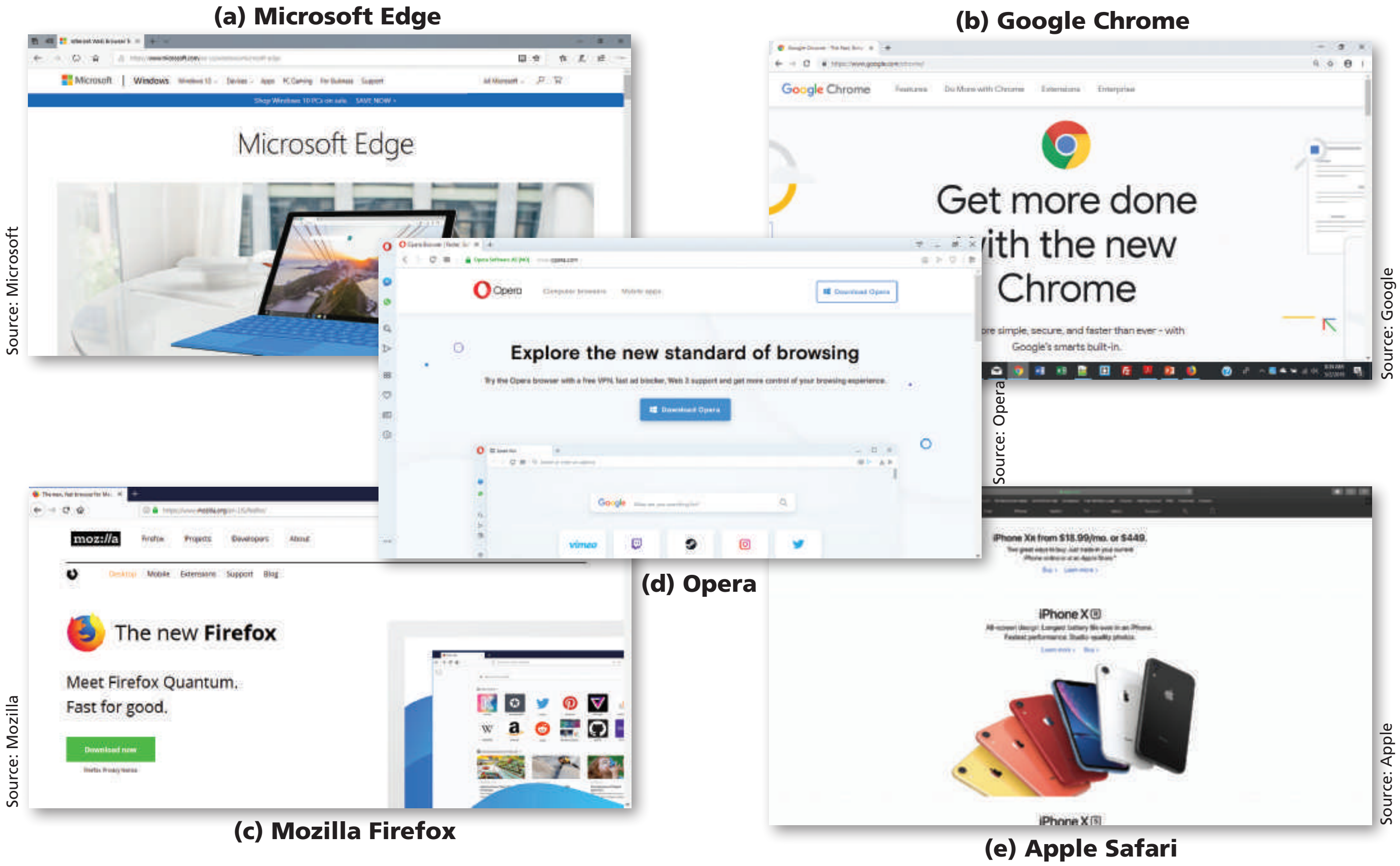
Transmission Control Protocol/Internet Protocol (TCP/IP) is a pair of protocols used to transfer data efficiently over the Internet by properly routing it to its destination. TCP oversees the network connection between the data source and destination and micromanages the data. When data is sent over 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.


Microsoft Edge
Google Chrome
Get more done with the new Chrome
Opera
Explore the new standard of browsing
Download Opera
mozilla
The new Firefox
Meet Firefox Quantum. Fast for good.
Download now
iPhone XR from $18.99/mo. or $449.
iPhone XS
iPhone XR

(a) Microsoft Edge

Source: Microsoft

(b) Google Chrome

Source: Google

(c) Mozilla Firefox

Source: Mozilla

(d) Opera

Source: Opera

(e) Apple Safari

Source: Apple

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.

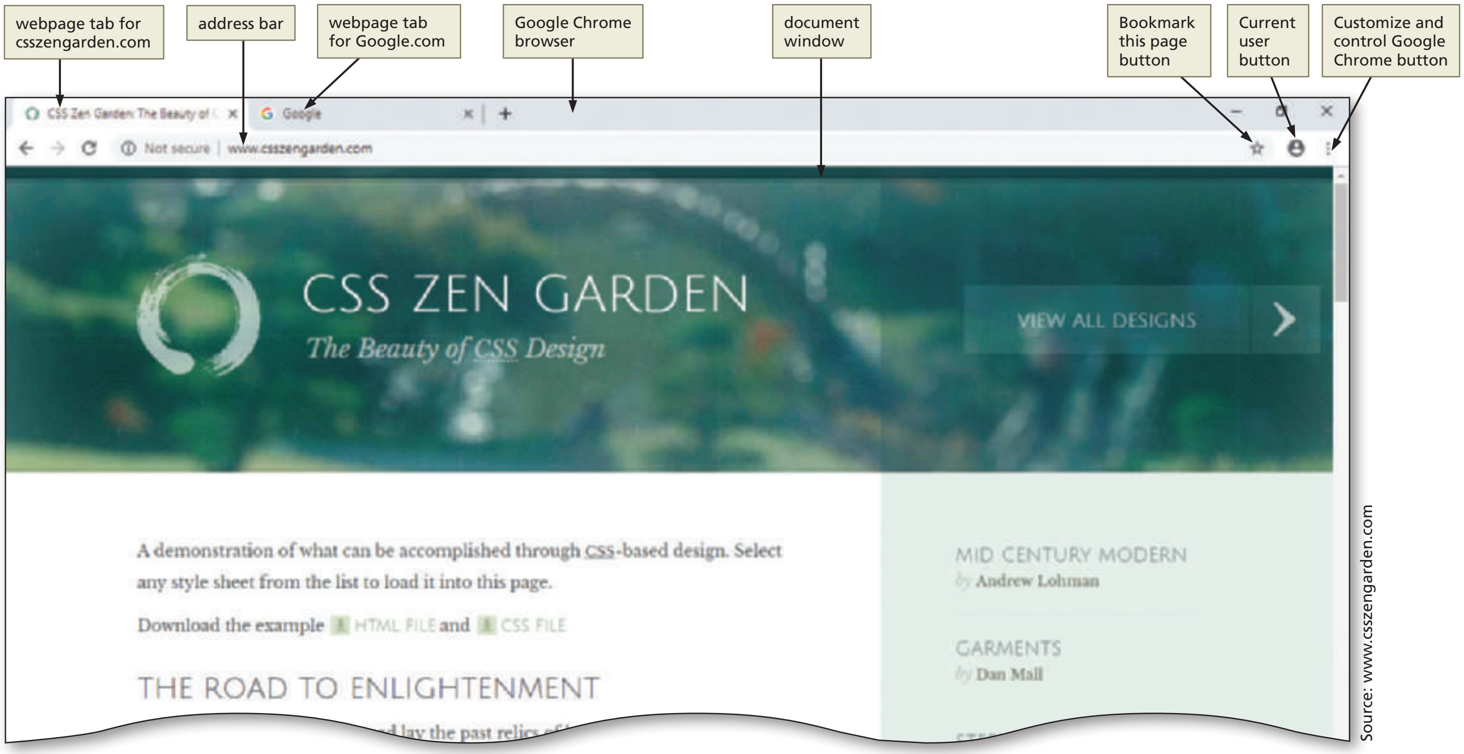
BTW

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.


webpage tab for csszengarden.com
address bar
webpage tab for Google.com
Google Chrome browser
document window
Bookmark this page button
Current user button
Customize and control Google Chrome button
CSS Zen Garden: The Beauty of
Google
Not secure
www.csszengarden.com
CSS ZEN GARDEN
The Beauty of CSS Design
VIEW ALL DESIGNS
A demonstration of what can be accomplished through CSS-based design. Select any style sheet from the list to load it into this page.
Download the example HTML FILE and CSS FILE
THE ROAD TO ENLIGHTENMENT
MID CENTURY MODERN
by Andrew Lohman
GARMENTS
by Dan Mall

Source: www.csszengarden.com

Figure 1–7

Table 1–1 Features of Google Chrome

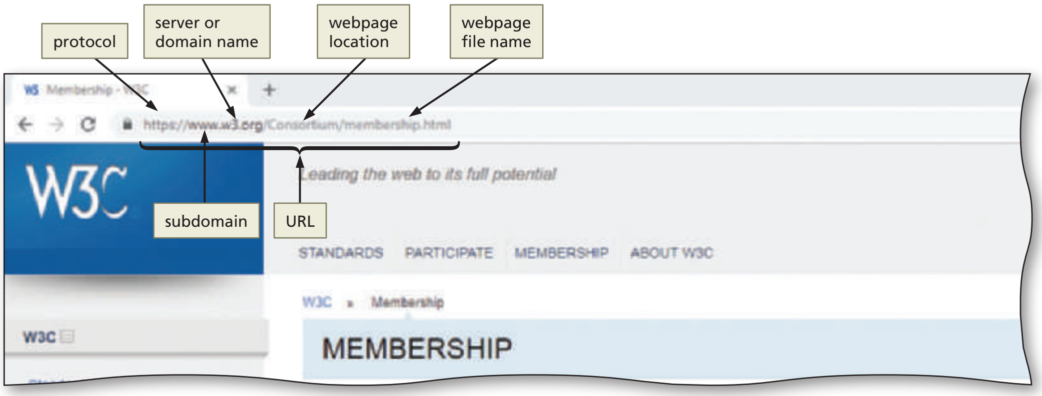
Feature	Description
Address bar	Displays the website address of the webpage you are viewing
Webpage tab	Displays the title of the webpage; you can open multiple tabs to view multiple webpages
Current user button	Allows you to sign in to Google and manage your passwords, payments, and addresses
Bookmark 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).



Source: www.w3.org

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?

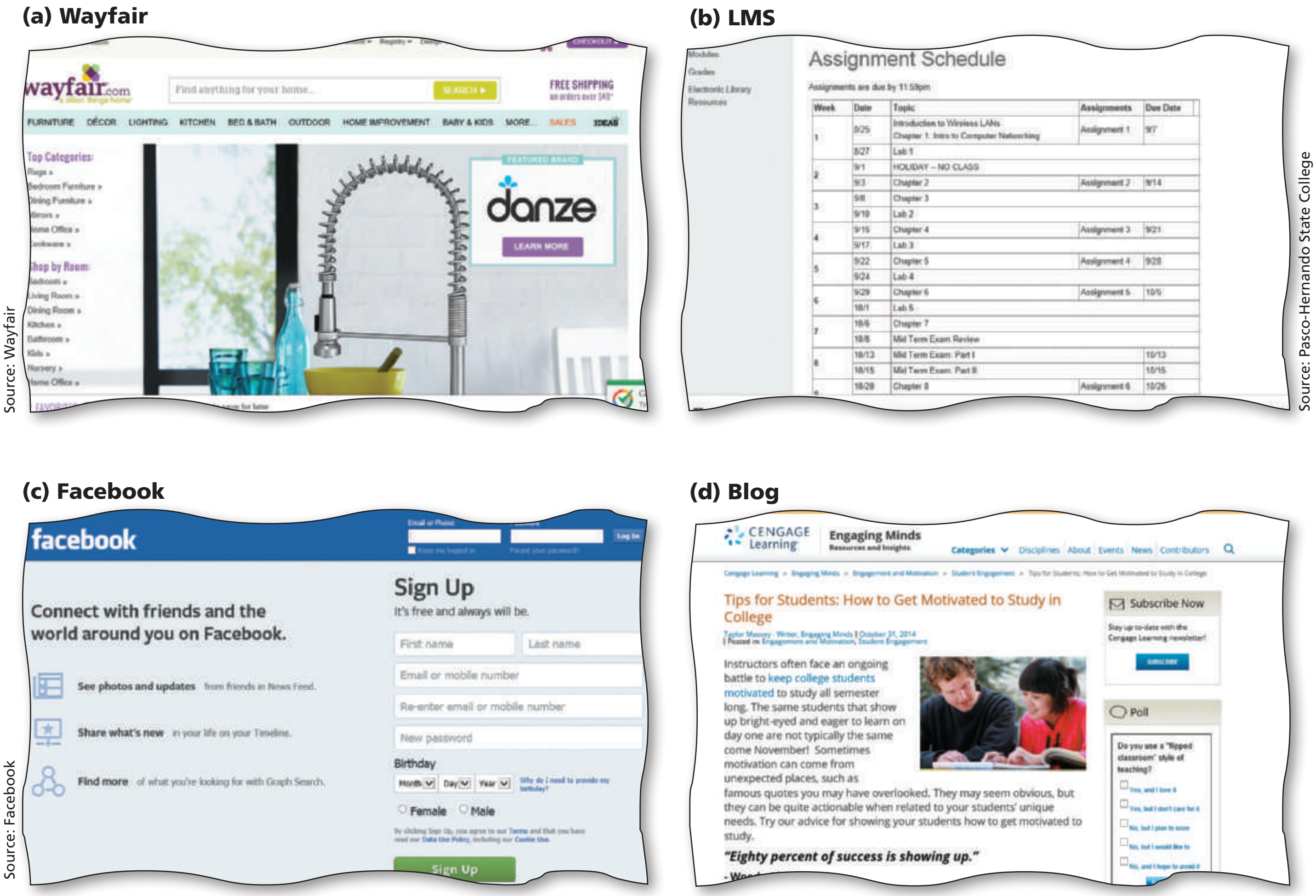
A subdomain further identifies an area of content. For example, the URL support.microsoft.com indicates that support is a subdomain name used in the microsoft.com domain or server. This subdomain contains helpful information to support Microsoft products.

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

Assignment Schedule

Assignments are due by 11:59pm

Week	Date	Topic	Assignments	Due Date
1	8/25	Introduction to Wireless LANs Chapter 1: Intro to Computer Networking	Assignment 1	9/7
	8/27	Lab 1		
2	9/1	HOLIDAY – NO CLASS		
	9/3	Chapter 2	Assignment 2	9/14
3	9/8	Chapter 3		
	9/10	Lab 2		
4	9/15	Chapter 4	Assignment 3	9/21
	9/17	Lab 3		
5	9/22	Chapter 5	Assignment 4	9/28
	9/24	Lab 4		
6	9/29	Chapter 6	Assignment 5	10/5
	10/1	Lab 5		
7	10/6	Chapter 7		
	10/8	Mid Term Exam Review		
8	10/13	Mid Term Exam: Part I		10/13
	10/15	Mid Term Exam: Part II		10/15
9	10/20	Chapter 8	Assignment 6	10/26

Source: Pasco-Hernando State College

(c) Facebook

Connect with friends and the world around you on Facebook.

See photos and updates from friends in News Feed.

Share what's new in your life on your Timeline.

Find more of what you're looking for with Graph Search.

Sign Up

It's free and always will be.

By clicking Sign Up, you agree to our Terms and that you have read our Data Use Policy, including our Cookie Use.

Source: Facebook

(d) Blog

CENGAGE Learning
Engaging Minds
Resources and Insights
Categories
Disciplines
About
Events
News
Contributors
Cengage Learning › Engaging Minds › Engagement and Motivation › Student Engagement › Tips for Students: How to Get Motivated to Study in College

Tips for Students: How to Get Motivated to Study in College

Taylor Massey - Writer, Engaging Minds | October 31, 2014
| Posted in: Engagement and Motivation, Student Engagement

Instructors often face an ongoing battle to keep college students motivated to study all semester long. The same students that show up bright-eyed and eager to learn on day one are not typically the same come November! Sometimes motivation can come from unexpected places, such as famous quotes you may have overlooked. They may seem obvious, but they can be quite actionable when related to your students' unique needs. Try our advice for showing your students how to get motivated to study.

"Eighty percent of success is showing up."

Do you use a "flipped classroom" style of teaching?

□ Yes, and I love it
□ Yes, but I don't care for it
□ No, but I plan to soon
□ No, but I would like to
□ No, and I hope to avoid it

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.

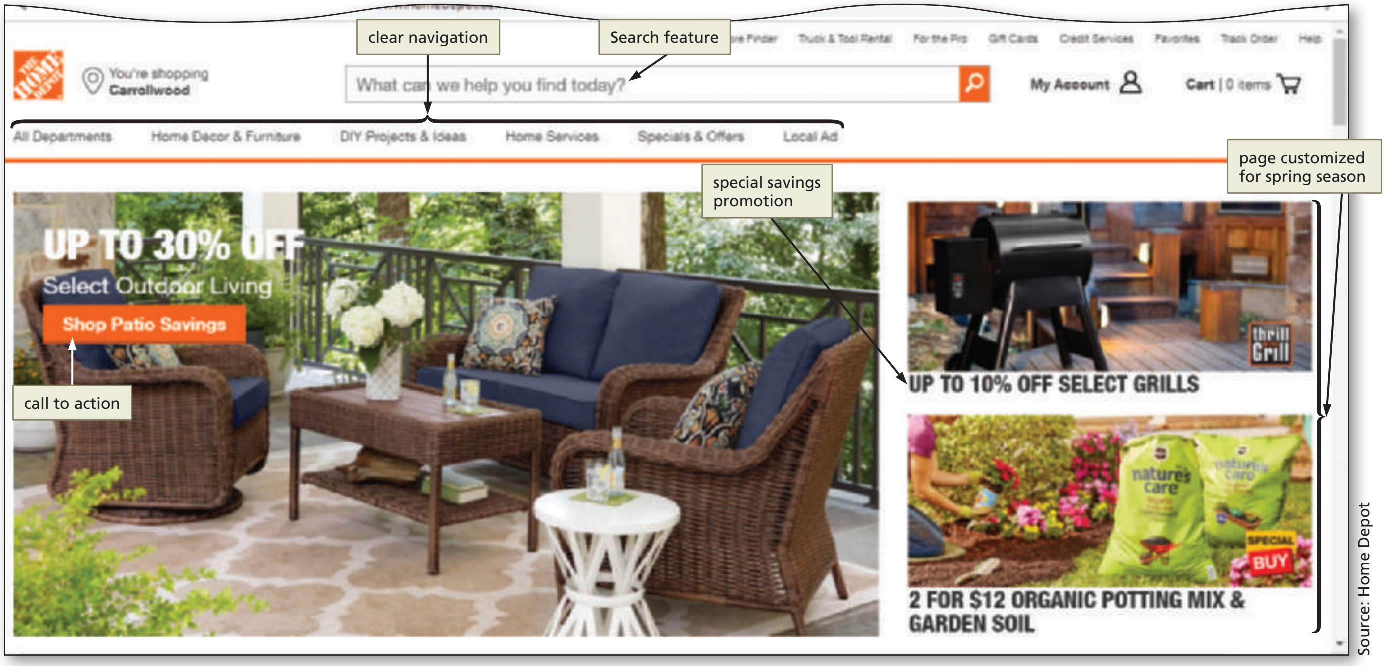
Purpose of the Website

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.

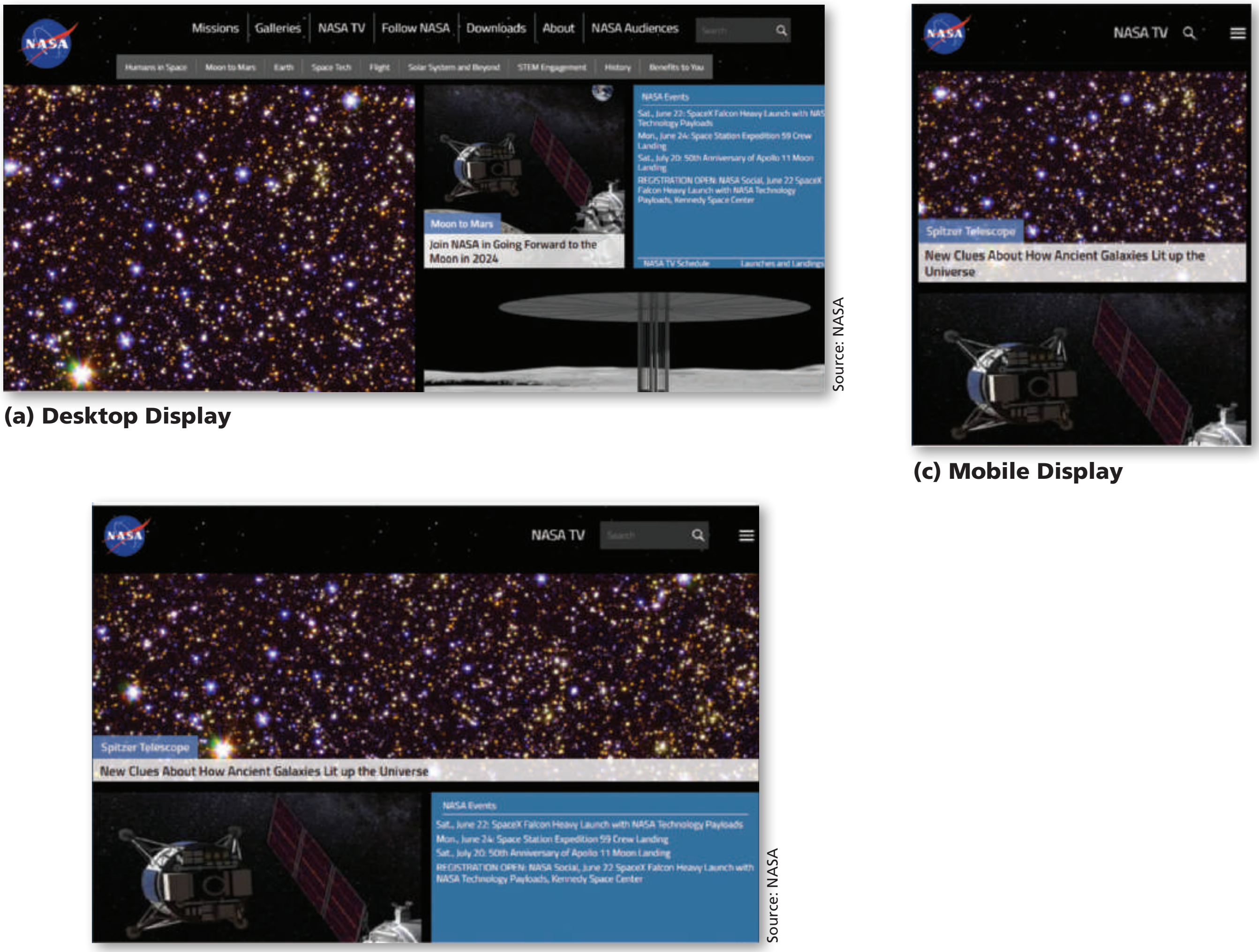


Source: Home Depot

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.



Join NASA in Going Forward to the Moon in 2024

Sat., June 22: SpaceX Falcon Heavy Launch with NASA Technology Payloads
Mon., June 24: Space Station Expedition 59 Crew Landing
Sat., July 20: 50th Anniversary of Apollo 11 Moon Landing
REGISTRATION OPEN: NASA Social, June 22 SpaceX Falcon Heavy Launch with NASA Technology Payloads, Kennedy Space Center

New Clues About How Ancient Galaxies Lit up the Universe

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.

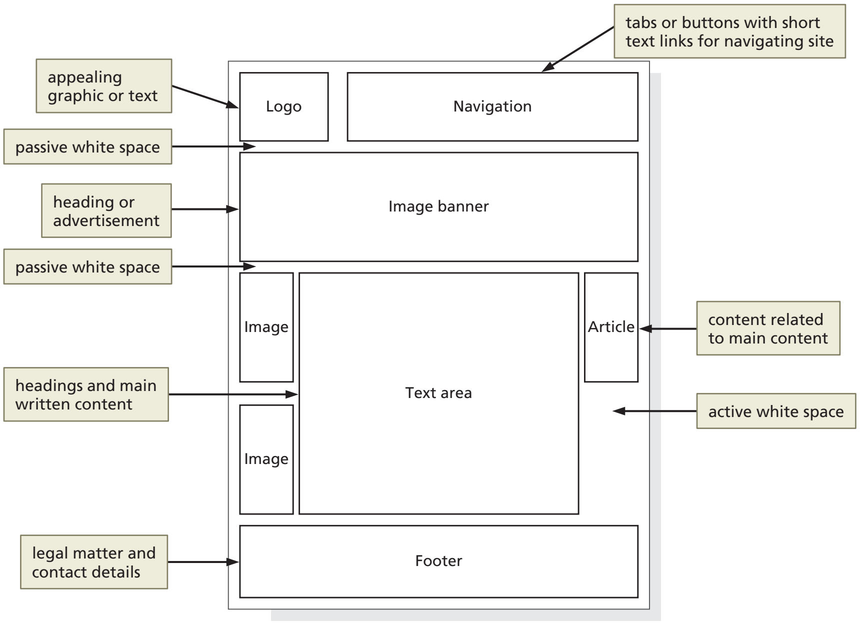

tabs or buttons with short text links for navigating site
appealing graphic or text
Logo
Navigation
passive white space
heading or advertisement
Image banner
passive white space
Image
Article
content related to main content
headings and main written content
Text area
active white space
Image
legal matter and contact details
Footer

Figure 1–12

CONSIDER THIS

What tools can I use to create a wireframe?

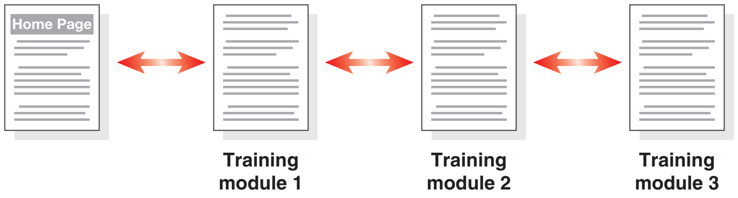
You can use one of several free tools to create a wireframe, including Pencil Project, Mockplus, and Wireframe CC. You can also use drawing tools in Microsoft Word or PowerPoint or a pen and paper.

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.

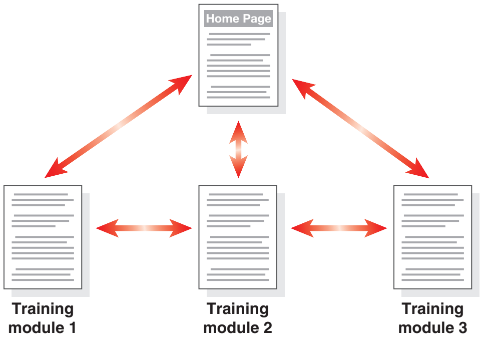
A **linear** website structure connects webpages in a straight line, as shown in Figure 1–13. Each page includes a link to the next webpage and another link to the previous webpage. A linear website structure is appropriate if visitors should view the webpages in a specific order, as in the case of training 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.

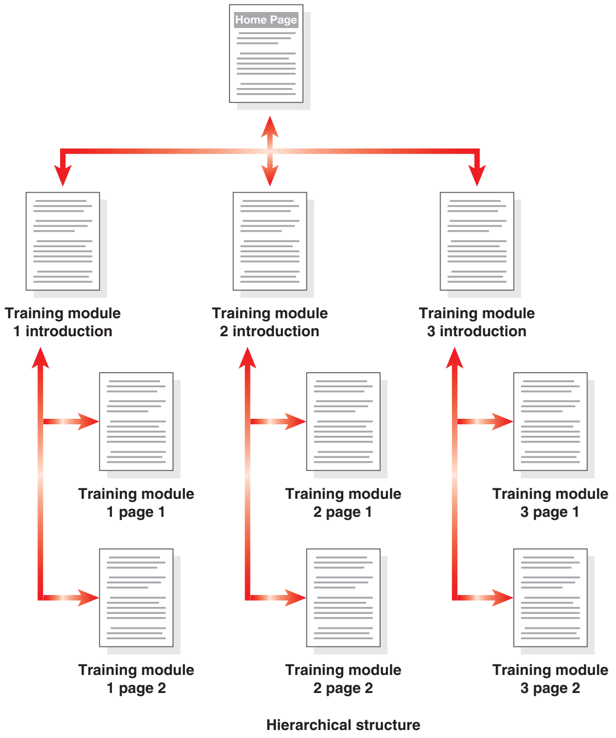


Figure 1–15

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.

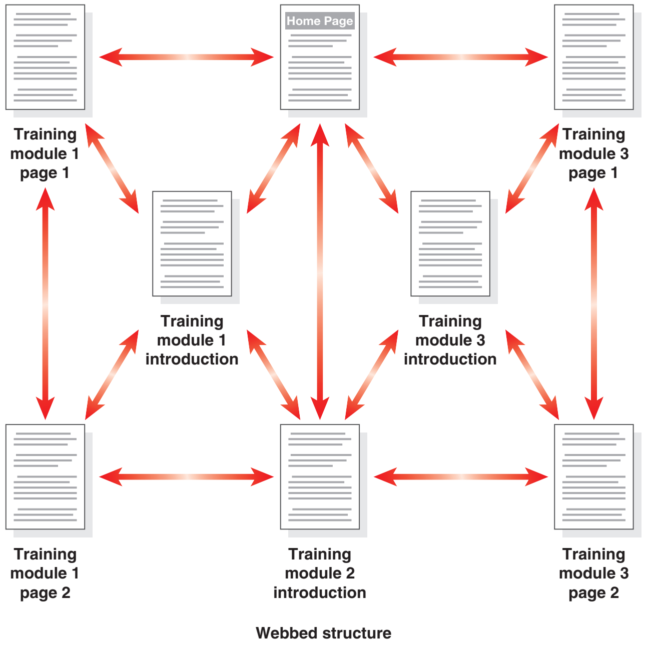


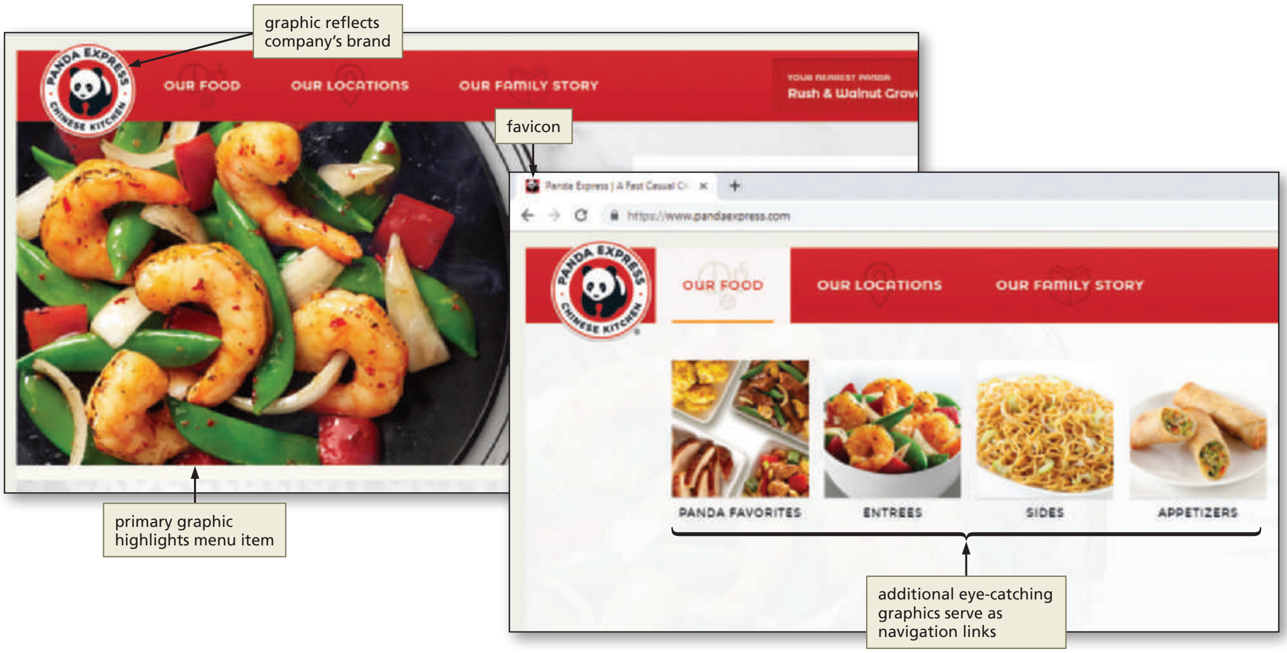
Figure 1–16

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.

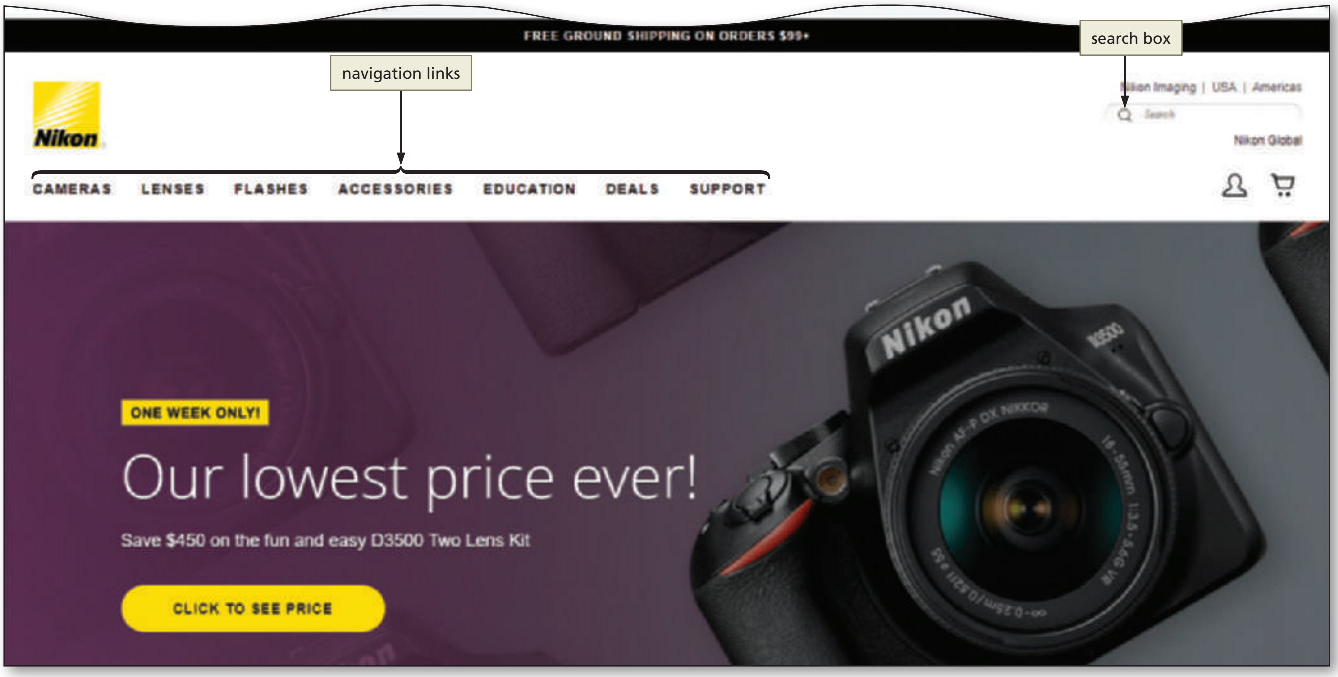

graphic reflects company's brand
OUR FOOD
OUR LOCATIONS
OUR FAMILY STORY
YOUR NEAREST PANDA
Rush & Walnut Grov
favicon
Panda Express | A Fast Casual Ch
https://www.pandaexpress.com
OUR FOOD
OUR LOCATIONS
OUR FAMILY STORY
PANDA FAVORITES
ENTREES
SIDES
APPETIZERS
primary graphic highlights menu item
additional eye-catching graphics serve as navigation links

Source: Panda Express

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.

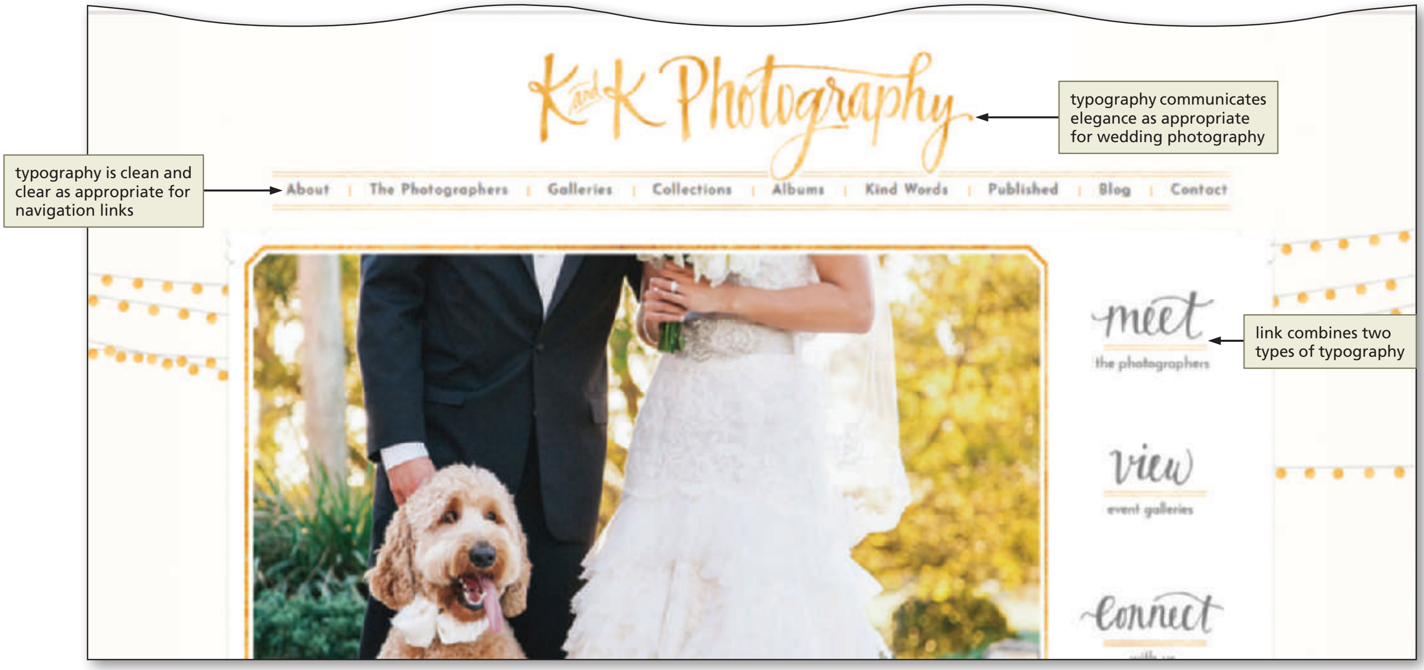


Source: Nikon

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.

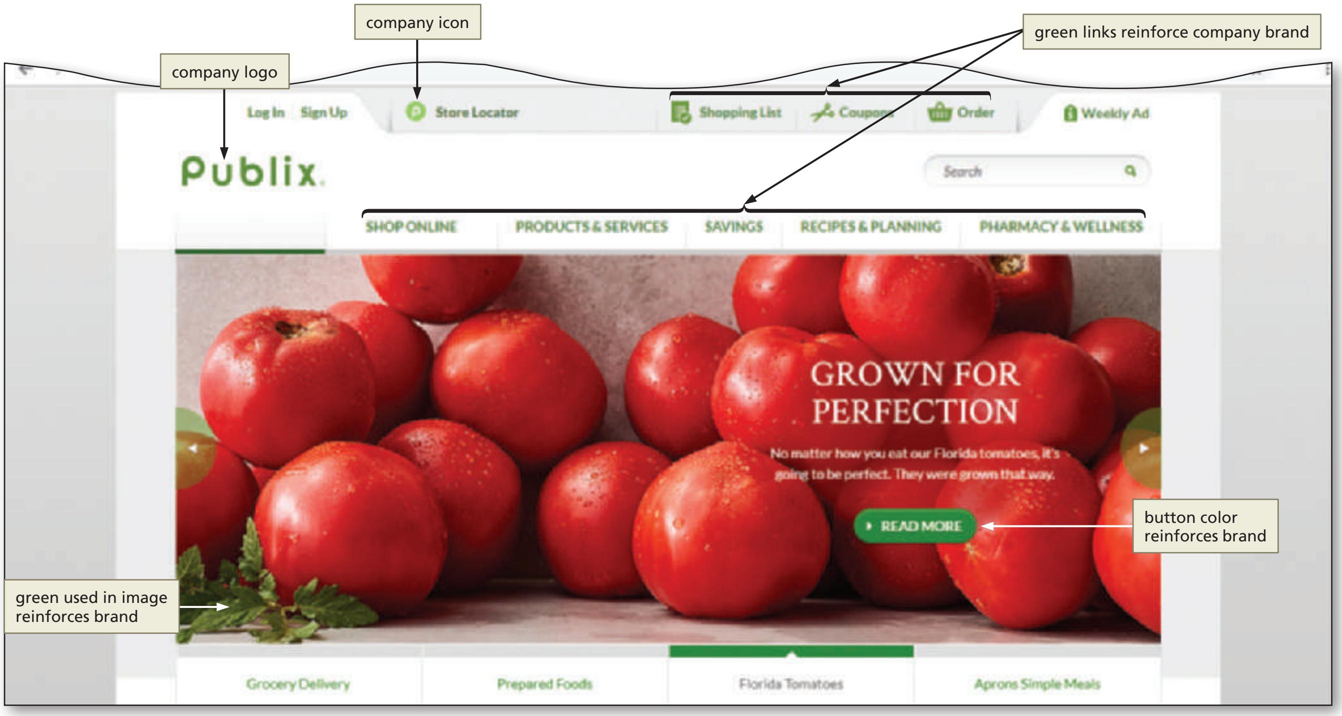

K and K Photography
typography communicates elegance as appropriate for wedding photography
typography is clean and clear as appropriate for navigation links
About
The Photographers
Galleries
Collections
Albums
Kind Words
Published
Blog
Contact
meet
the photographers
link combines two types of typography
view
event galleries
connect

Source: K & K Photography

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.



company icon

company logo

green links reinforce company brand

button color reinforces brand

green used in image reinforces brand

Source: Publix

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 content on a screen. Because the HTML tags define or "mark up" the content on the webpage, HTML is considered a **markup language** rather than a traditional programming language. HTML has evolved through several versions from the initial public release of HTML 1.0 in 1989 to the current version, HTML 5. Each version has expanded the capabilities of the language.

HTML Elements and Attributes

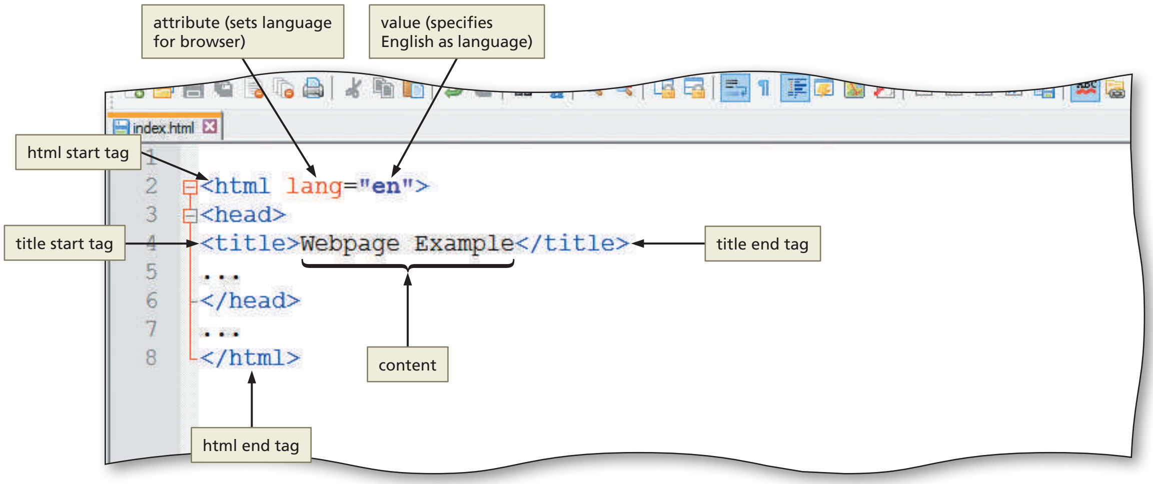
A webpage is a file that contains both content and HTML tags and is saved as an HTML document. HTML tags mark the text to define how it should appear when viewed in a browser. HTML includes dozens of tags that describe the structure of webpages and create links to other content. For instance, the HTML tags <nav> and </nav> mark the start and end of a navigation area, while <html> and </html> indicate the start and end of a webpage. An **HTML element** consists of everything from the start tag to the end tag, including content, and represents a distinct part of a webpage such as a paragraph or heading. For example, <title> Webpage Example </title> is an HTML element that sets the title of a webpage. In common usage, when web designers say "Use a p element to define a paragraph," or something similar, they mean to use a starting <p> tag to mark the beginning of the paragraph and an ending </p> tag to mark the end of the paragraph.

BTW

Lowercase HTML Tags

Although most browsers interpret a tag such as <nav> the same way it interprets <NAV>, the convention for HTML 5 is to use all lowercase tags. Using lowercase tags means your HTML documents conform to the current W3C standard.

You can enhance HTML elements by using **attributes**, which define additional characteristics, or properties, of the element such as the width and height of an image. An attribute includes a name, such as width, and can also include a value, such as 300, which sets the width of an element. Attributes are included within the element's start tag. Figure 1–21 shows the anatomy of HTML elements in Notepad++, which uses color coding to distinguish parts of the code. For example, Notepad++ displays tags in blue, attribute names in red, attribute values in purple, and content in black.


attribute (sets language for browser)
value (specifies English as language)
index.html
html start tag
title start tag
title end tag
content
html end tag

```
<html lang="en">
<head>
<title>Webpage Example</title>
...
</head>
...
</html>
```

Source: Notepad++

Figure 1–21

HTML combines tags and descriptive attributes that define how a document should appear in a web browser. HTML elements include headings, paragraphs, hyperlinks, lists, and images. Most HTML elements have a start tag and an end tag and follow the same rules, or **syntax**, which determine how the elements should be written so they are interpreted correctly by the browser. These HTML elements are called **paired** tags and use the syntax <*start tag*> *content* </*end tag*>, which has the following meaning:

- HTML elements begin with a start tag, or opening tag, such as <title>.
- HTML elements finish with an end tag, or closing tag, such as </title>.
- Content is inserted between the start and end tags. In Figure 1–21, the content for the title tags is Webpage Example.

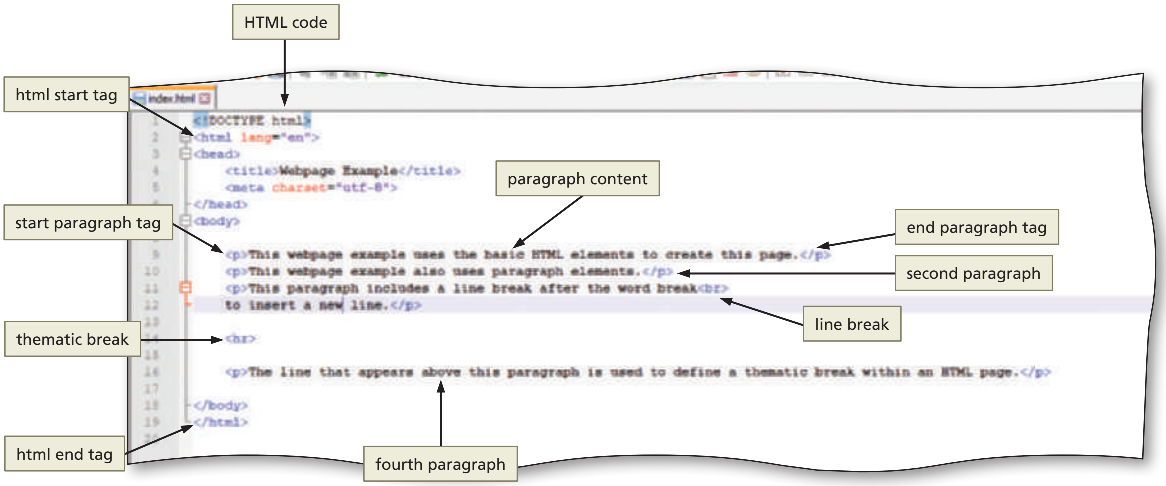
Some HTML elements are void of content. They are called **empty**, or **void**, tags. Examples of empty tags are <br> for a line break and <hr> for a thematic break. The syntax for empty tags is <*tag*>.

Figure 1–22 shows the HTML code and content needed to create the webpage shown in Figure 1–23.

CONSIDER THIS

What does the hr in <hr> mean?

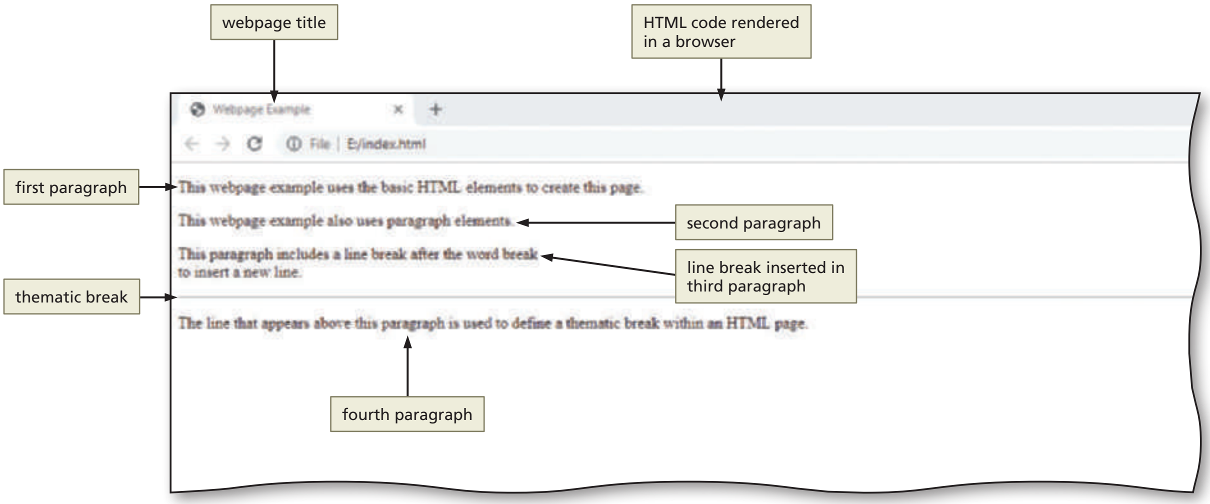
Prior to HTML 5, the hr meant horizontal rule or reference. It is now called a thematic break and is used to distinguish between various topics on a single webpage.



```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>Webpage Example</title>
    <meta charset="utf-8">
</head>
<body>

    <p>This webpage example uses the basic HTML elements to create this page.</p>
    <p>This webpage example also uses paragraph elements.</p>
    <p>This paragraph includes a line break after the word break<br>
    to insert a new line.</p>

    <hr>

    <p>The line that appears above this paragraph is used to define a thematic break within an HTML page.</p>

</body>
</html>
```

Source: Notepad++

Figure 1–22



This webpage example uses the basic HTML elements to create this page.

This webpage example also uses paragraph elements.

This paragraph includes a line break after the word break
to insert a new line.

The line that appears above this paragraph is used to define a thematic break within an HTML page.

Courtesy of Google Chrome

Figure 1–23

Technologies Related to HTML

Several technologies, listed as follows, have been developed since the introduction of HTML to extend its capabilities. These technologies also use tags to mark up content in a text document.

- **XML** — The W3C introduced **XML (Extensible Markup Language)** in 1998 to exchange and transport data. It does not replace HTML, but rather, can work with HTML by transporting web data obtained through an HTML webpage.
- **XHTML — XHTML (Extensible Hypertext Markup Language)** is a rewritten version of HTML using XML and was developed in 2000. Its syntax rules are more strict than HTML. It was created to work with XML-based user agents.

HTML 5

With its debut in 2008, HTML 5 is the most recent version of HTML. HTML 5.2 was introduced in 2017. HTML 5 introduces several new elements such as header, nav, main, and footer to better define the areas of a webpage. They are classified as structural elements because they define the structure of a webpage. These new elements also are considered semantic HTML elements because they provide meaning about the content of the tags. (The term *semantic* refers to the meaning of words or ideas.) For example, <header> is a semantic tag because it defines content that appears at the top of a webpage. The name and purpose of the <header> tag reflect its meaning. On the other hand, <b>, for bold, is not a semantic tag because it defines only how content should look, not what it means.

HTML 5 also provides a more flexible approach to web development. For instance, with HTML 5, you can incorporate audio and video with the use of <audio> and <video> tags. These new features reduce the need for browser plugins, which are small programs that let webpages play sounds or videos, for example. This book shows HTML 5 tags and attributes that are currently supported by modern browsers.

In December 2017, W3C introduced HTML 5.2. This update introduced new features, such as the dialog element. The W3C states that it intends to release annual revisions. At the time of this writing, HTML 5.3 is currently in draft form.

Understanding the Role of Other Web Programming Languages

In addition to HTML, web developers use other web programming languages such as JavaScript and PHP to add interactivity and functionality. Although you can create websites without these languages, they are useful when you need to include features beyond the scope of HTML. You should be aware of these languages as you begin learning about web development.

JavaScript

JavaScript is a popular scripting language used to create interactivity within a web browser. Common uses for JavaScript include creating popup windows and alert messages, displaying the current date, and validating form data. JavaScript is a **client-side scripting language**, which means that the browser processes it on the client computer. JavaScript files are typically named script with an .js file extension.

JavaScript files are referenced within an HTML file through the use of a script element, as in <script src="script.js"></script>. Reference to this file is typically placed above the closing body tag. You will learn more about JavaScript in Chapter 10.

jQuery

jQuery is a library of JavaScript programs designed for easy integration onto a webpage. jQuery makes it easy for web developers to add JavaScript to a webpage. The JS Foundation, formerly known as the jQuery Foundation, (https://js.foundation) is a community of web developers that work together to create JavaScript ecosystem projects. Their mission is to "drive broad adoption and ongoing development of key JavaScript solutions and related technologies." You will learn more about jQuery in Chapter 10.

PHP

PHP (Hypertext Preprocessor) is an open-source scripting language often used for common tasks such as writing to or querying a database located on a central server. PHP is a **server-side scripting language**, which means that the PHP script is processed at the server. The result of the PHP script is often an HTML webpage that is sent back to the client. Pages that contain PHP scripts must have file names that end with the file extension .php.

ASP

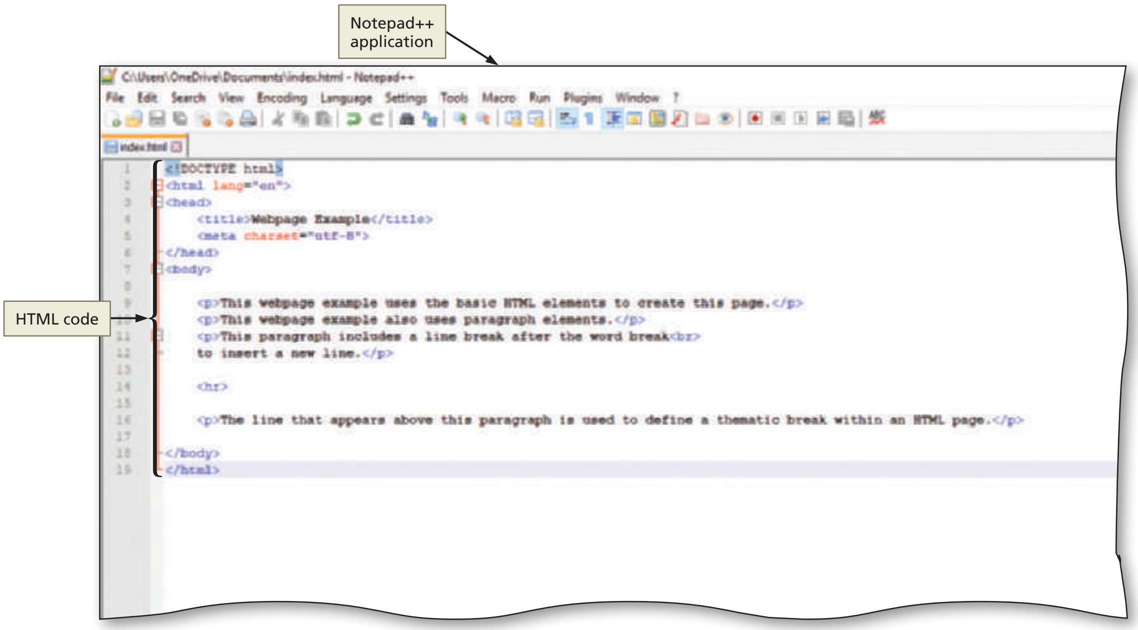
ASP (Active Server Pages) is a server-side scripting technology from Microsoft used to accomplish many of the same server-side processing tasks as PHP. Pages that contain ASP scripts must have file names that end with the file extension .asp.

Using Web Authoring Tools

You can create webpages using HTML with a simple text editor, such as Notepad++, Brackets, Atom, Sublime, Visual Studio Code, or TextMate. A **text editor** is a program that allows you to enter, change, save, and print text, which includes HTML tags. Many free text editors are available for download on the web. Text editors such as Atom, Brackets, and Visual Studio Code are cross-platform compatible, meaning they are available for Windows, macOS, and Linux. Notepad++ is only available for Windows. TextMate is only available for macOS. Today's text editors include several built-in tools to help you create HTML, CSS, and JavaScript files. An HTML editor or code editor is a program that provides basic text-editing functions, as well as more advanced features such as color-coding for various HTML tags, menus to insert HTML tags, and a spelling checker. HTML is **platform independent**, meaning you can create, or code, an HTML file in Windows, macOS, or Linux and then view it on any browser.

Text Editors

Notepad++ is a free, open-source text editor. You can use it to create files in several markup, scripting, and programming languages, including HTML, CSS, JavaScript, PHP, Java, C#, and Visual Basic. Notepad++ is only available for the Windows operating system. Visit http://notepad-plus-plus.org to download the program. Figure 1–24 displays the Notepad++ user interface.

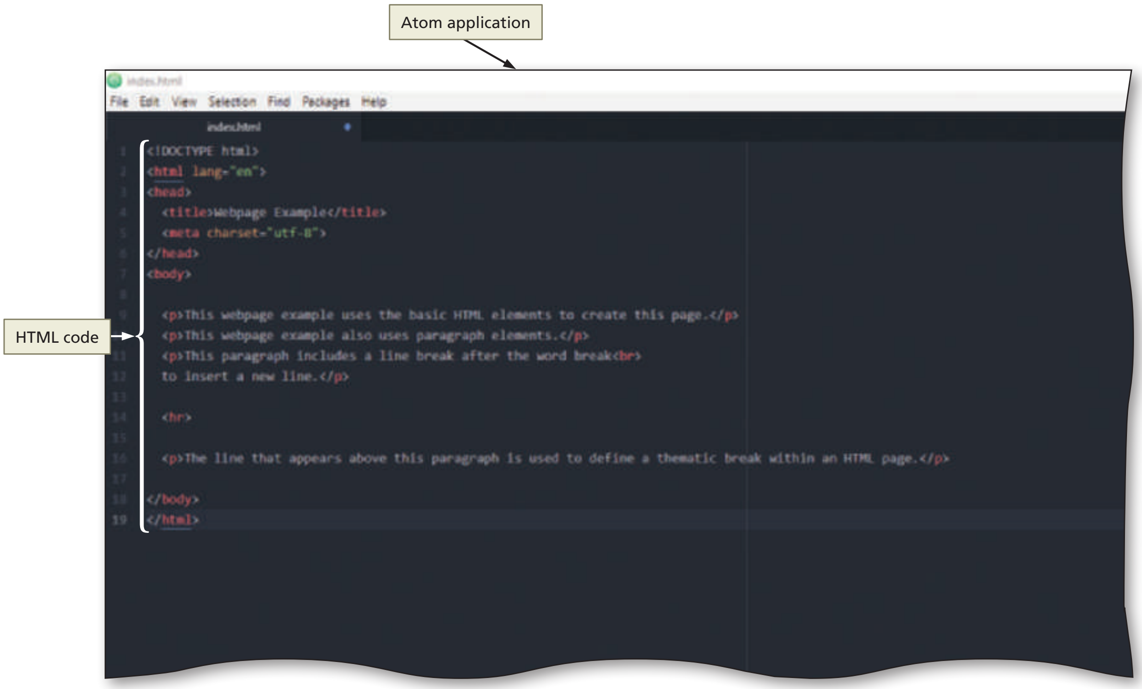

Notepad++ application
HTML code
C:\Users\OneDrive\Documents\index.html - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
index.html

```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>Webpage Example</title>
    <meta charset="utf-8">
</head>
<body>

    <p>This webpage example uses the basic HTML elements to create this page.</p>
    <p>This webpage example also uses paragraph elements.</p>
    <p>This paragraph includes a line break after the word break<br>
    to insert a new line.</p>

    <hr>

    <p>The line that appears above this paragraph is used to define a thematic break within an HTML page.</p>

</body>
</html>
```

Courtesy of Notepad++

Figure 1–24

Atom is another free, open-source text editor you can use to create webpages. Like Notepad++, you can use Atom to create files in several markup, scripting, and programming languages as well. Atom is available for Windows, macOS, or Linux. Visit atom.io to download the program. Figure 1–25 displays the Atom user interface.

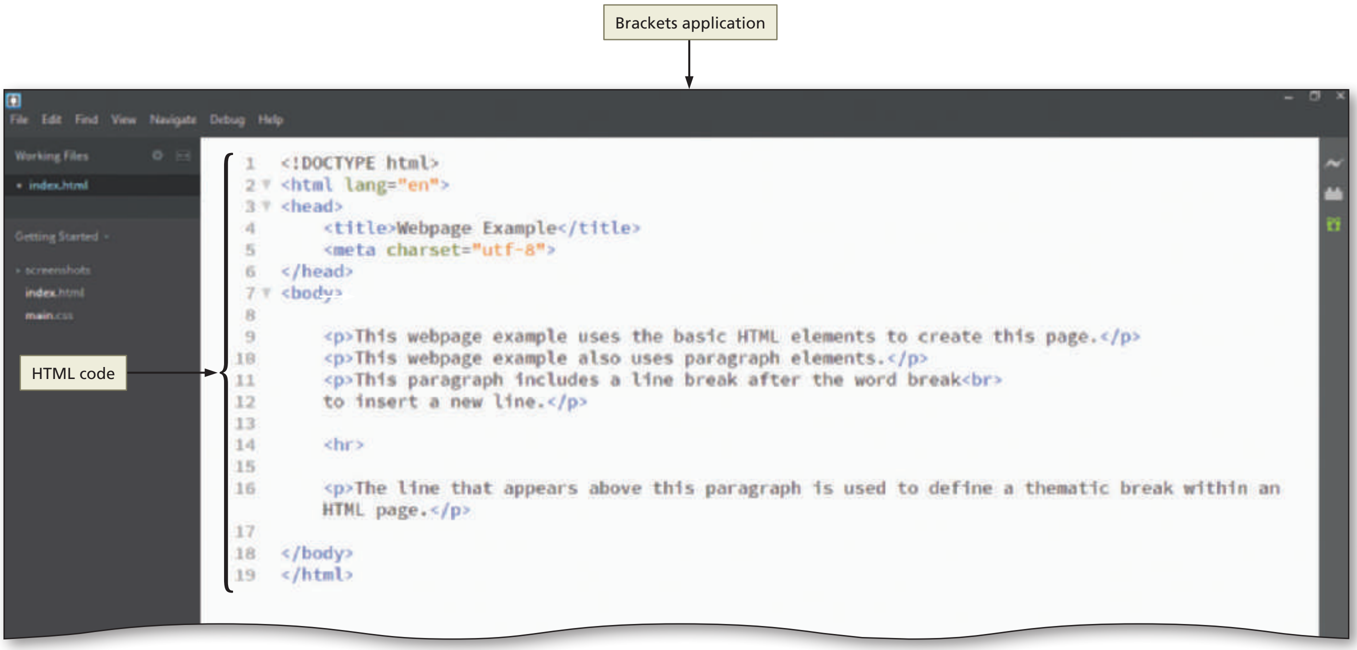


```
<!DOCTYPE html>
<html lang="en">
<head>
  <title>Webpage Example</title>
  <meta charset="utf-8">
</head>
<body>

  <p>This webpage example uses the basic HTML elements to create this page.</p>
  <p>This webpage example also uses paragraph elements.</p>
  <p>This paragraph includes a line break after the word break<br>
  to insert a new line.</p>

  <hr>

  <p>The line that appears above this paragraph is used to define a thematic break within an HTML page.</p>

</body>
</html>
```

Source: Atom

Figure 1–25

Brackets is another cross-platform text editor you can use on the Windows, macOS, or Linux operating system. With Brackets, you can create files in several formats, including HTML and CSS. Visit brackets.io to download the software. Figure 1–26 displays the Brackets user interface.

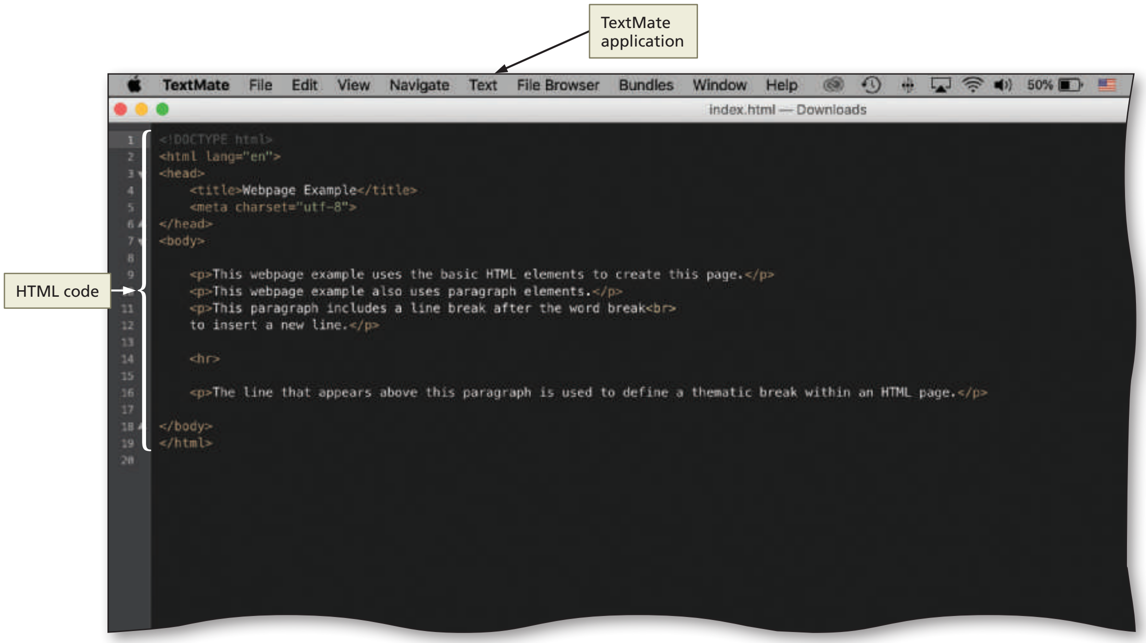


```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>Webpage Example</title>
    <meta charset="utf-8">
</head>
<body>

    <p>This webpage example uses the basic HTML elements to create this page.</p>
    <p>This webpage example also uses paragraph elements.</p>
    <p>This paragraph includes a line break after the word break<br>
    to insert a new line.</p>

    <hr>

    <p>The line that appears above this paragraph is used to define a thematic break within an
    HTML page.</p>

</body>
</html>
```

Source: Brackets

Figure 1–26

TextMate is a free, open-source text editor available for macOS 10.9 or a later version. You can use it to create files in many formats, including HTML and CSS. Visit macromates.com to download TextMate. Figure 1–27 displays the TextMate user interface.


TextMate application
HTML code
TextMate File Edit View Navigate Text File Browser Bundles Window Help
50%
index.html — Downloads

```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>Webpage Example</title>
    <meta charset="utf-8">
</head>
<body>

    <p>This webpage example uses the basic HTML elements to create this page.</p>
    <p>This webpage example also uses paragraph elements.</p>
    <p>This paragraph includes a line break after the word break<br>
    to insert a new line.</p>

    <hr>

    <p>The line that appears above this paragraph is used to define a thematic break within an HTML page.</p>

</body>
</html>
```

Courtesy of TextMate

Figure 1–27

To Download and Install a Text Editor

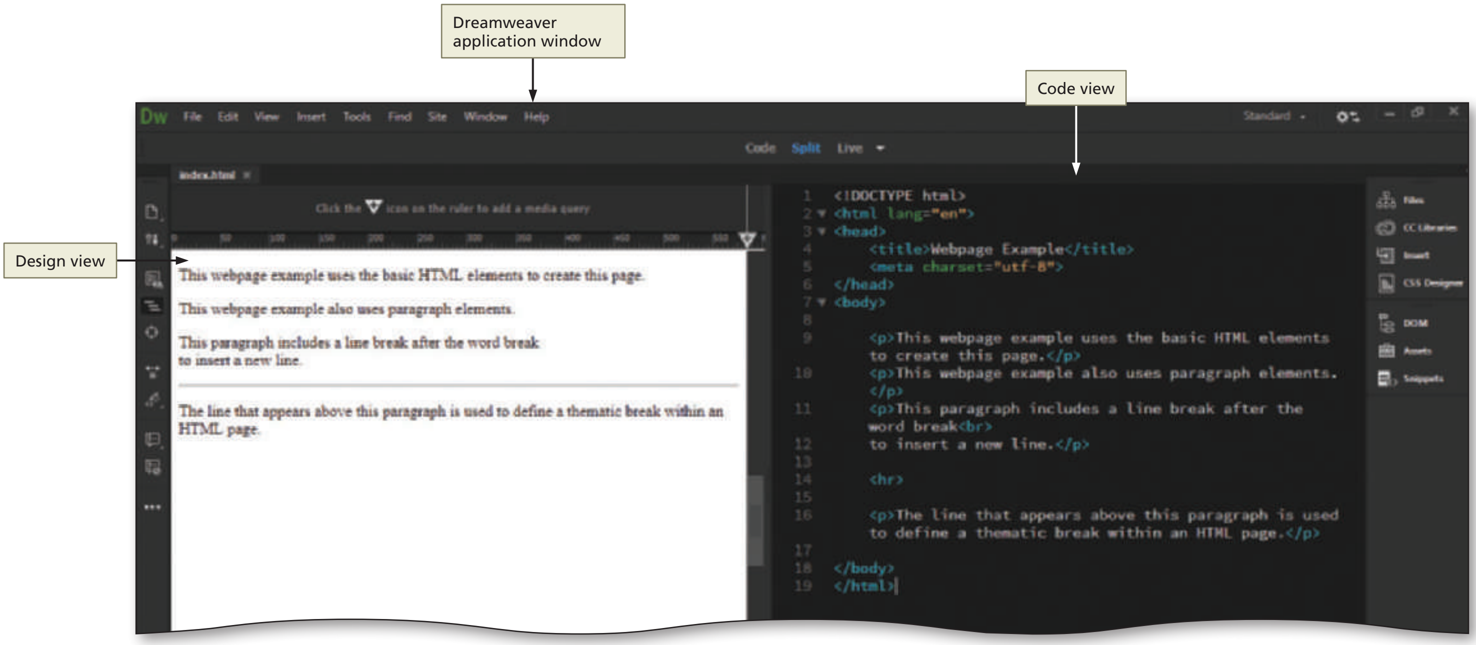
Before you can create your first webpage, you must select a text editor that you will use to create your webpages. Begin by asking whether your instructor has a preferred text editor to use in the course. If not, use a text editor provided by your operating system (such as Notepad or TextEdit) or download one of the HTML text editors previously discussed. If you want to download and install an HTML text editor, you would perform the following steps.

1. Use your browser to access the website for Notepad++, Atom, Brackets, or TextMate.
    - Notepad++ (Windows only): http://notepad-plus-plus.org
    - Atom: https://atom.io/
    - Brackets: http://brackets.io/
    - TextMate (macOS only): https://macromates.com/
2. Navigate the text editor's website to locate the download link.
3. Tap or click the link to download the software.
4. When the download is complete, open the downloaded file to begin the installation.
5. Follow the instructions in the setup wizard to complete the installation.
6. Run the text editor when finished.

WYSIWYG Editors

Many popular software applications also provide features that enable you to develop webpages easily. Microsoft Word and Excel, for example, have a Save As Web Page option that converts a document into an HTML file by automatically adding HTML tags to the document. While these programs provide the capability to save as a webpage, they do not substitute the use of a text editor or a WYSIWYG editor. **WYSIWYG** stands for What You See Is What You Get. WYSIWYG editors provide a graphical user interface to design a webpage, as opposed to the blank page provided in a text editor used to write code. The WYSIWYG editor allows you to drag HTML elements onto the page while the editor writes the code for you. While these editors can be useful in developing webpages, understanding the code means you have the control and flexibility to create webpages that meet your needs.

Adobe Dreamweaver is a popular WYSIWYG editor used by many people and businesses around the world for web development. Several types of web file formats can be developed with Dreamweaver, including HTML, CSS, JavaScript, and PHP. Dreamweaver can be installed on a computer running Windows or macOS. Dreamweaver provides several views for working with a webpage file, including Design view, Code view, Split view, and Live view. Design view shows the design of the webpage, while Code view is similar to a text editor. Split view provides a side-by-side view of the webpage design and code. Live view mimics a browser display. Figure 1–28 shows an example of Dreamweaver in Split view. Dreamweaver is part of Adobe Creative Cloud and is available for purchase as a monthly or annual subscription. Visit www.adobe.com for more information about Adobe Dreamweaver Creative Cloud.


Dreamweaver application window
Code view
Design view
Dw File Edit View Insert Tools Find Site Window Help
Standard
Code Split Live
index.html
Click the icon on the ruler to add a media query
Files
CC Libraries
Insert
CSS Designer
DOM
Assets
Snippets

This webpage example uses the basic HTML elements to create this page.

This webpage example also uses paragraph elements.

This paragraph includes a line break after the word break
to insert a new line.

The line that appears above this paragraph is used to define a thematic break within an HTML page.

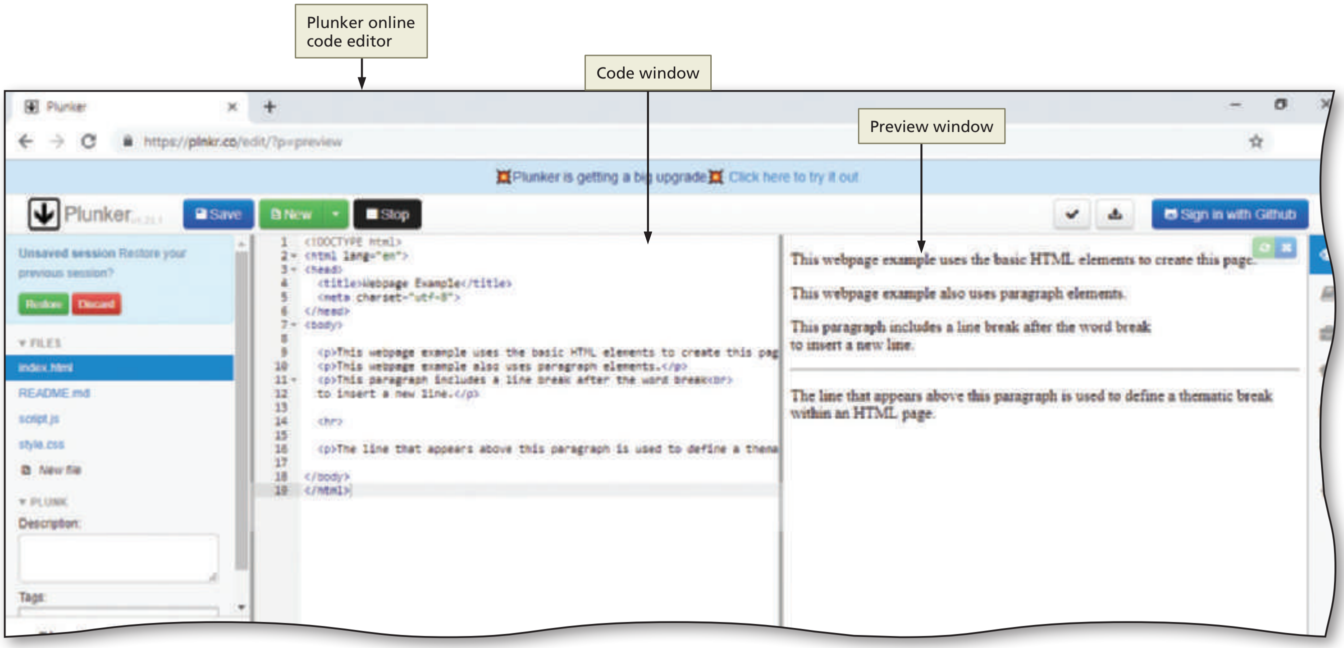
```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>Webpage Example</title>
    <meta charset="utf-8">
</head>
<body>

    <p>This webpage example uses the basic HTML elements
    to create this page.</p>
    <p>This webpage example also uses paragraph elements.
    </p>
    <p>This paragraph includes a line break after the
    word break<br>
    to insert a new line.</p>

    <hr>

    <p>The line that appears above this paragraph is used
    to define a thematic break within an HTML page.</p>

</body>
</html>
```

Adobe Dreamweaver

Figure 1–28

Online Code Editors

You can also use one of several free online code editors. No software installation is required. You visit the online code editor's website to type your code and save a file. Plunker is one example of an online code editor. To use Plunker, visit plnkr.co, shown in Figure 1–29. CodePen is another online code editor, available at codepen.io, and is shown in Figure 1–30.


Plunker online code editor
Code window
Preview window
Plunker
https://plnkr.co/edit/?p=preview
Plunker is getting a big upgrade Click here to try it out
Plunker
Save
New
Stop
Sign in with Github
Unsaved session Restore your previous session?
Restore
Discard
FILES
index.html
README.md
script.js
style.css
New file
PLUNK
Description:
Tags:

```
<!DOCTYPE html>
<html lang="en">
<head>
  <title>Webpage Example</title>
  <meta charset="utf-8">
</head>
<body>

  <p>This webpage example uses the basic HTML elements to create this pag
  <p>This webpage example also uses paragraph elements.</p>
  <p>This paragraph includes a line break after the word break<br>
  to insert a new line.</p>

  <hr>

  <p>The line that appears above this paragraph is used to define a thema

</body>
</html>
```

This webpage example uses the basic HTML elements to create this page.

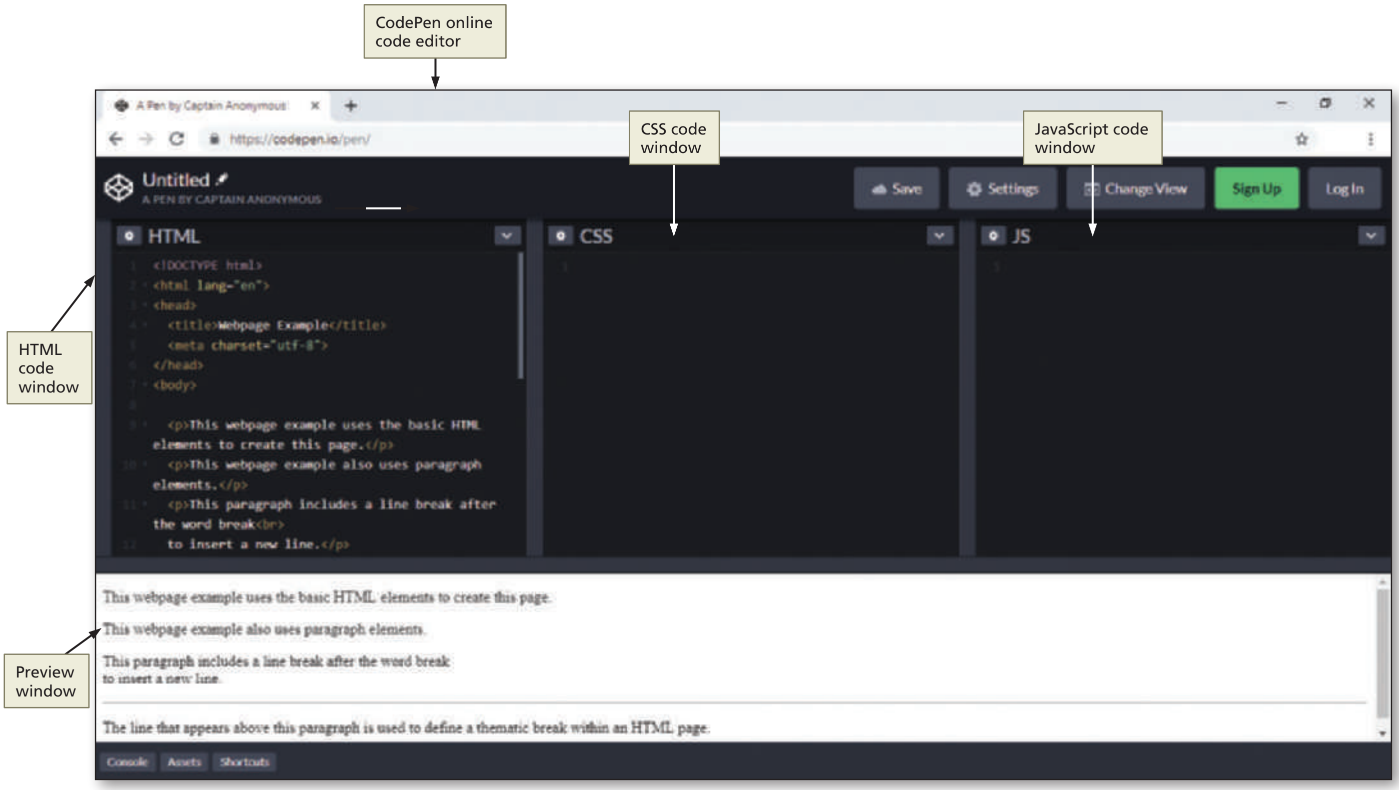
This webpage example also uses paragraph elements.

This paragraph includes a line break after the word break
to insert a new line.

The line that appears above this paragraph is used to define a thematic break within an HTML page.

Plunker

Figure 1–29



```
<!DOCTYPE html>
<html lang="en">
<head>
  <title>Webpage Example</title>
  <meta charset="utf-8">
</head>
<body>

  <p>This webpage example uses the basic HTML
elements to create this page.</p>
  <p>This webpage example also uses paragraph
elements.</p>
  <p>This paragraph includes a line break after
the word break<br>
  to insert a new line.</p>
```

This webpage example uses the basic HTML elements to create this page.

This webpage example also uses paragraph elements.

This paragraph includes a line break after the word break
to insert a new line.

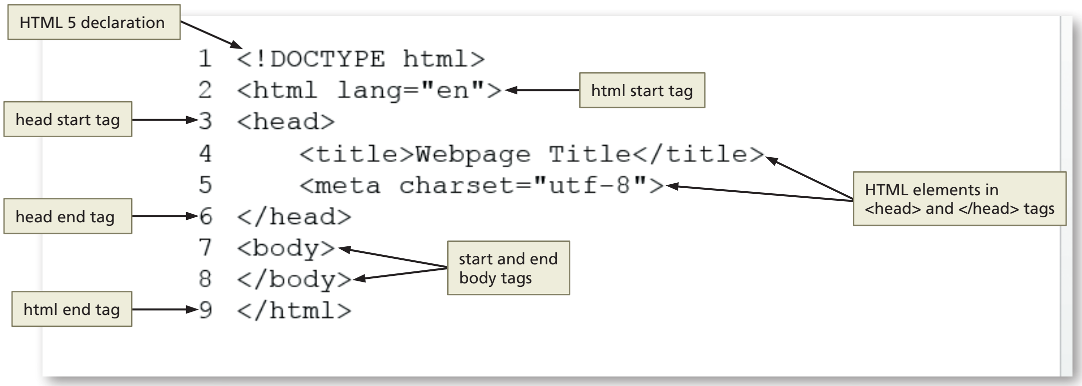
The line that appears above this paragraph is used to define a thematic break within an HTML page.

CodePen

Figure 1–30

Creating a Basic Webpage

Every HTML webpage includes the basic HTML tags shown in Figure 1–31.



```
1  <!DOCTYPE html>
2  <html lang="en">
3  <head>
4      <title>Webpage Title</title>
5      <meta charset="utf-8">
6  </head>
7  <body>
8  </body>
9  </html>
```

Figure 1–31

The numbers on the left represent line numbers for each line of HTML code. Line 1 shows the tag for declaring an HTML 5 webpage. All HTML 5 webpages must begin with the HTML element **<!DOCTYPE html>**. This is the first line of HTML code for all of your HTML webpages.

Line 2 shows the HTML tag needed to begin an HTML document. The basic opening tag is **<html>** and the closing tag is **</html>**, which always appears on the last line of the webpage. The lang="en" contained within the opening html tag is an attribute that defines the type of language used (English).

Line 3 shows the head tag, which contains the webpage title and other information about the webpage. The opening head tag is **<head>** and the closing tag is **</head>**.

Line 4 shows the webpage title tags, **<title>** and **</title>**. The text contained between these tags is displayed within the web browser tab. The title element belongs within the opening and closing head tags. To make the head section easier to read, web developers customarily indent the tags in the head section, such as the title and meta tags.

Line 5 shows the meta tag. A **meta** tag contains information about the data on the webpage. In this instance, the meta tag designates the type of character set the browser should use, charset="utf-8". The charset is an attribute within the meta tag that specifies the character encoding to be used for the webpage. The **Unicode Transformation Format (UTF)** is a compressed format that allows computers to display and manipulate text. When the browser encounters this meta tag, it displays the webpage properly. UTF-8 is standard for HTML 5 pages and is the preferred encoding standard for email and other applications. The encoding chosen is also important when validating the webpage, which you will do in Chapter 2. Note that the meta tag is a single tag element without opening and closing tags making it an empty element. The meta tag belongs within the opening and closing head tags.

Lines 7 and 8 show the **<body>** and **</body>** tags. All text, images, links, and other content displayed on the webpage are included within the <body> and </body> element.

BTW

<!DOCTYPE> Statement

Because the web includes billions of documents, a browser refers to the HTML version and type in the <!DOCTYPE> statement to display a webpage correctly. Previous versions of HTML had complicated <!DOCTYPE> statements.

CONSIDER THIS

Do I have to indent certain lines of HTML code?

Indenting lines of code is not required, but it helps improve the readability of the webpage. In Figure 1–31, Lines 4 and 5 are indented to clearly show the elements contained in the <head> and </head> tags. If the code included elements between the <body> and </body> tags, those lines could also be indented to make them easier to read. Using indents is a good web design practice.

Now that you have learned the basic HTML elements, it is time to create your first webpage. The following steps use Notepad++ to create an HTML document. You may complete these steps using a text editor other than Notepad++, but your screens will not match those in the book and your line numbers may vary slightly.

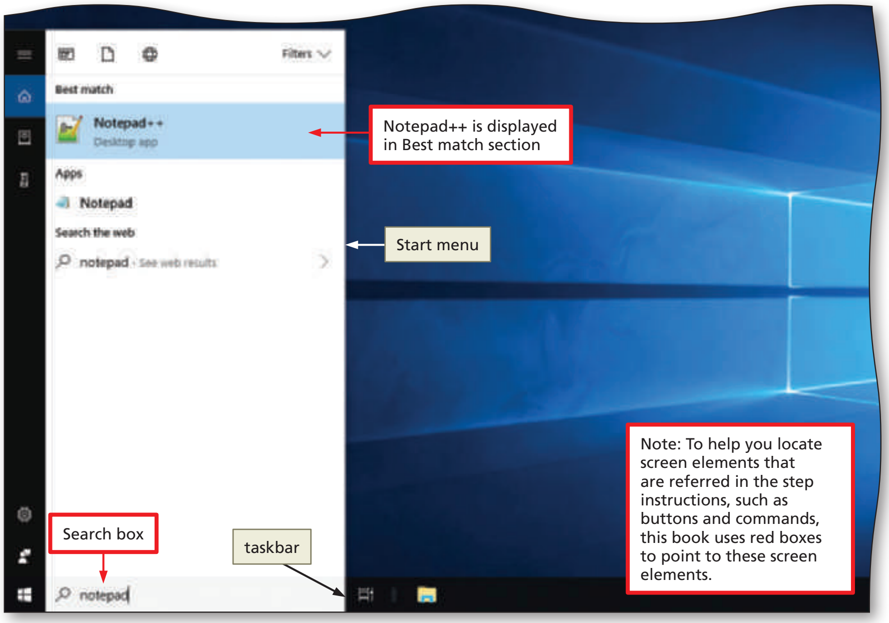
To Start Notepad++ and Create a Blank Document

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

The following steps start Notepad++ based on a typical installation in Windows 10. ***Why?*** *Before you can create a webpage, you must open a text editor.* You may need to ask your instructor how to download, install, and start Notepad++ for your computer.

1

- Tap or click in the Search box on the Windows taskbar.
- Start to type `Notepad++` in the Search box and watch the search results appear in the Best match list (Figure 1–32).



Notepad++ is displayed in Best match section

Start menu

Search box

taskbar

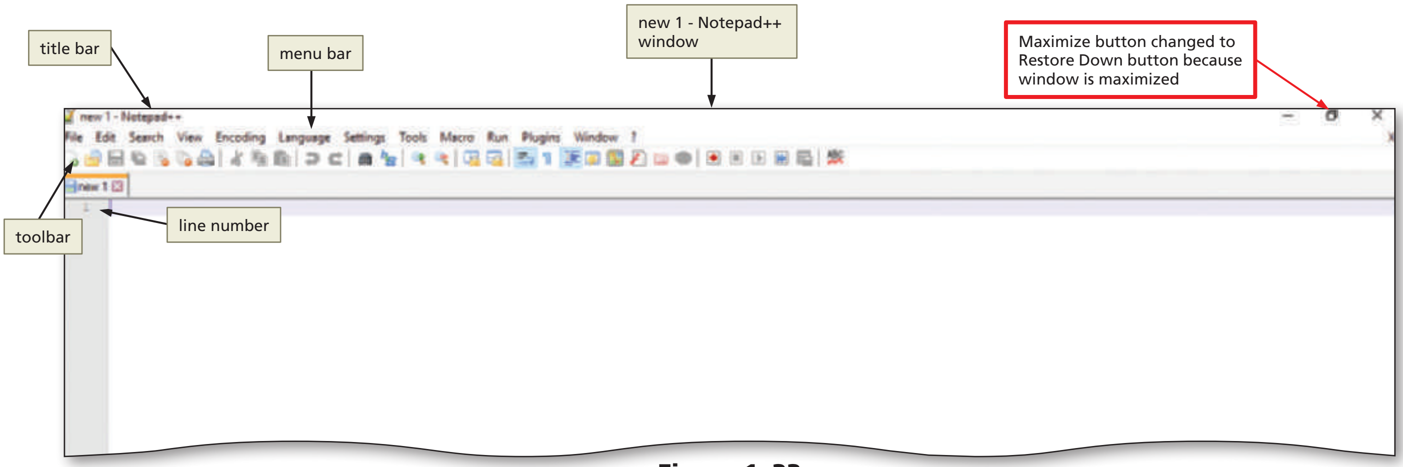
Note: To help you locate screen elements that are referred in the step instructions, such as buttons and commands, this book uses red boxes to point to these screen elements.

Source: Microsoft

Figure 1–32

2

- Tap or click Notepad++ in the Best match list to start Notepad++ and display a new blank page.
- If the Notepad++ window is not maximized, tap or click the Maximize button next to the Close button on the title bar to maximize the window (Figure 1–33).


title bar
menu bar
new 1 - Notepad++ window
Maximize button changed to Restore Down button because window is maximized
toolbar
line number
new 1 - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
new 1

Source: Notepad++

Figure 1–33

Other Ways

1. Double-tap or double-click Notepad++ icon on desktop

CONSIDER THIS

How do I use the touch keyboard with a touch screen?
To display the on-screen touch keyboard, tap the Touch Keyboard button on the Windows taskbar. When finished using the touch keyboard, tap the X button on the touch keyboard to close the keyboard.

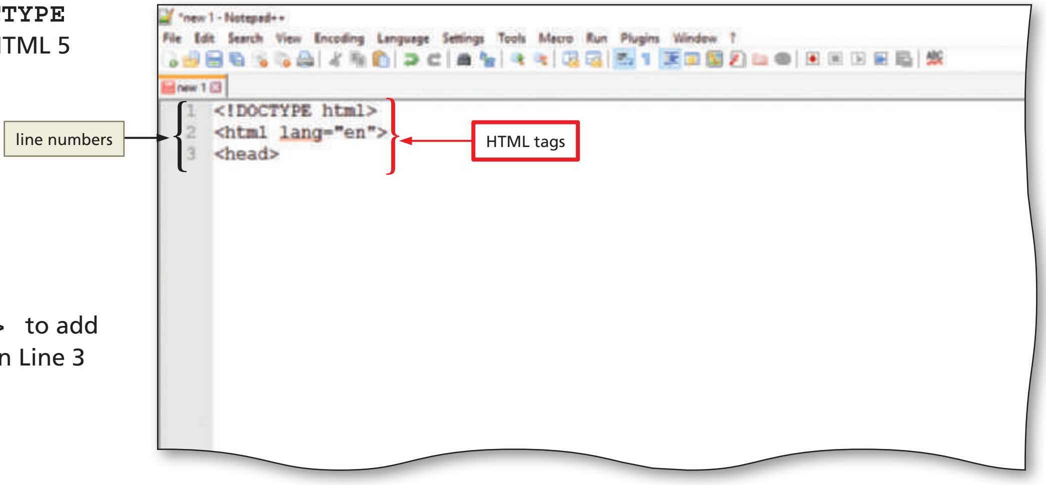
To Add Basic HTML Tags to a Document

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

Create your first webpage beginning with the required minimum HTML tags. ***Why?*** *An HTML webpage requires several basic HTML tags so it can be displayed properly on a web browser.* The following steps add the required HTML tags to a document.

1

- On Line 1, type `<!DOCTYPE html>` to declare an HTML 5 document.
- Press the ENTER key and then type `<html lang="en">` to add the opening html tag on Line 2.
- Press the ENTER key and then type `<head>` to add the opening head tag on Line 3 (Figure 1–34).


*new 1 - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
new 1
line numbers
HTML tags

```
1 <!DOCTYPE html>
2 <html lang="en">
3 <head>
```

Source: Notepad++

Figure 1–34

Q&A

Why is the text "lang" underlined with a wavy red line?

The wavy red line indicates a possible spelling error. Because "lang" is the correct spelling for the language attribute, you can ignore this error.

2

- Press the ENTER key and enter the lines of code as listed in Table 1–4 to add the remaining basic HTML tags (Figure 1–35).

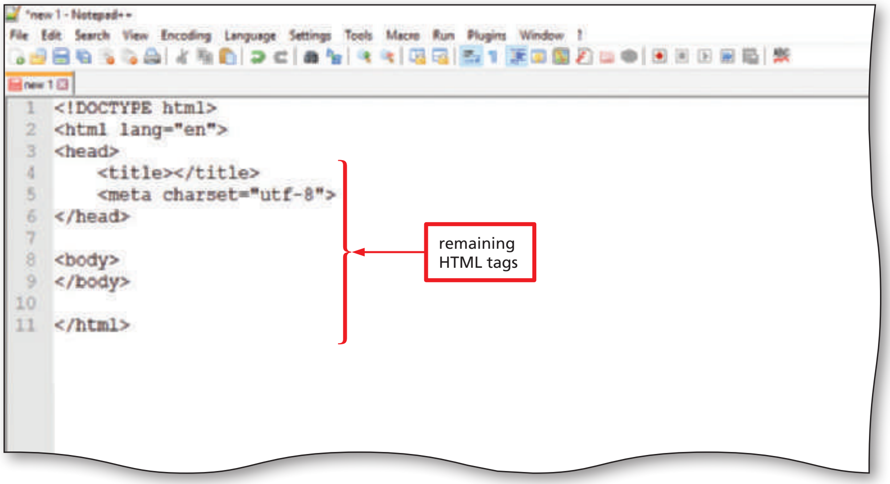
Q&A

How should I move from one line to another in the document?

Press the ENTER key after each line to continue to the next line.

Should I indent any lines of code?

Yes. Indent Lines 4 and 5 by pressing the TAB key. Press the SHIFT+TAB keys to return the insertion point to the left margin.



```
1  <!DOCTYPE html>
2  <html lang="en">
3  <head>
4      <title></title>
5      <meta charset="utf-8">
6  </head>
7
8  <body>
9  </body>
10
11 </html>
```

remaining HTML tags

Source: Notepad++

Figure 1–35

Q&A

What is the purpose of indenting Lines 4 and 5?

The elements on Lines 4 and 5 are nested elements. When coding a webpage, it is a best practice to indent nested elements, as this helps improve readability for a web developer.

Table 1–4 HTML Tags

Line Number	HTML Tag
4	<title></title>
5	<meta charset="utf-8">
6	</head>
7	
8	<body>
9	</body>
10	
11	</html>

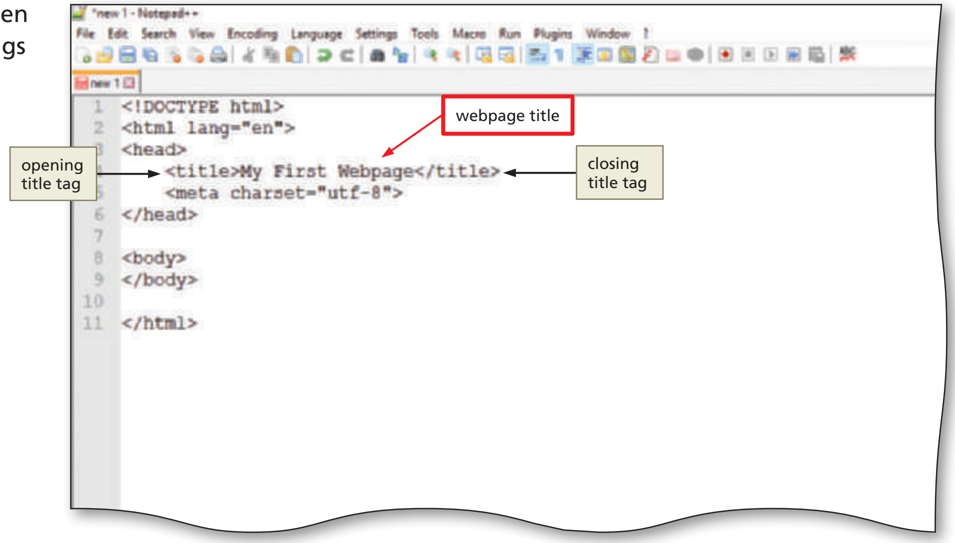
To Add a Title and Text to a Webpage

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

Now that you have added required HTML elements, you are ready to designate a title and add content to the page. ***Why?*** *A webpage title appears on the browser tab and usually displays the name of the webpage. After titling a webpage, you add content to the body section.* The following steps add a title and content to the webpage.

1

- Place the insertion point between the opening and closing title tags to prepare to enter a webpage title.
- Type `My First Webpage` to add a webpage title (Figure 1–36).


*new 1 - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
new 1
webpage title
opening title tag
closing title tag

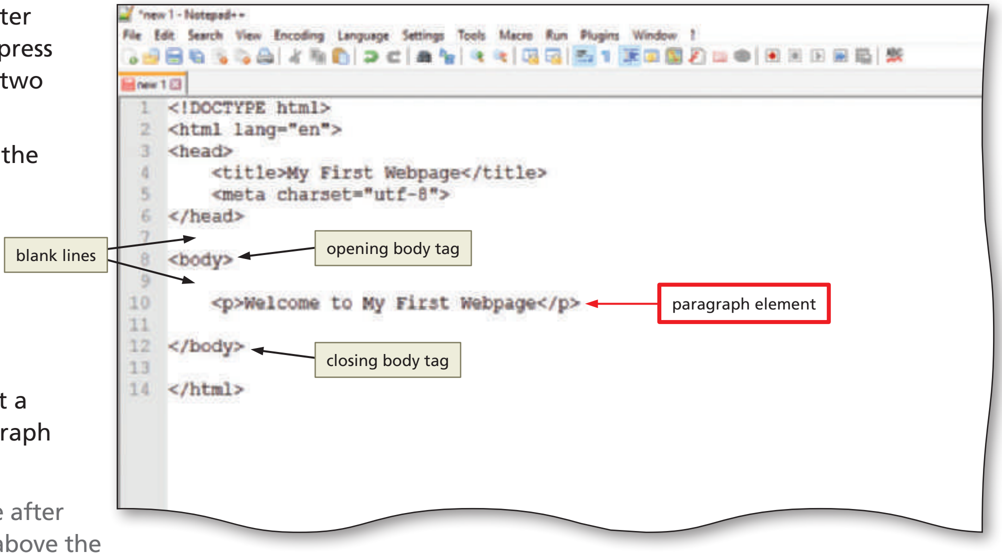
```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>My First Webpage</title>
    <meta charset="utf-8">
</head>

<body>
</body>

</html>
```

Source: Notepad++

Figure 1–36

2

- Place the insertion point after the opening body tag and press the ENTER key twice to add two new lines.
- Press the TAB key to indent the line.
- Type `<p>Welcome to My First Webpage</p>` to add a paragraph element to the webpage.
- Press the ENTER key to insert a blank line below the paragraph element (Figure 1–37).



```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>My First Webpage</title>
    <meta charset="utf-8">
</head>

<body>

    <p>Welcome to My First Webpage</p>

</body>

</html>
```

Source: Notepad++

Figure 1–37

Q&A Why did I insert a blank line after the opening body tag and above the closing body tag?

Adding blank lines between elements is a best practice because it helps improve code readability for the developer.

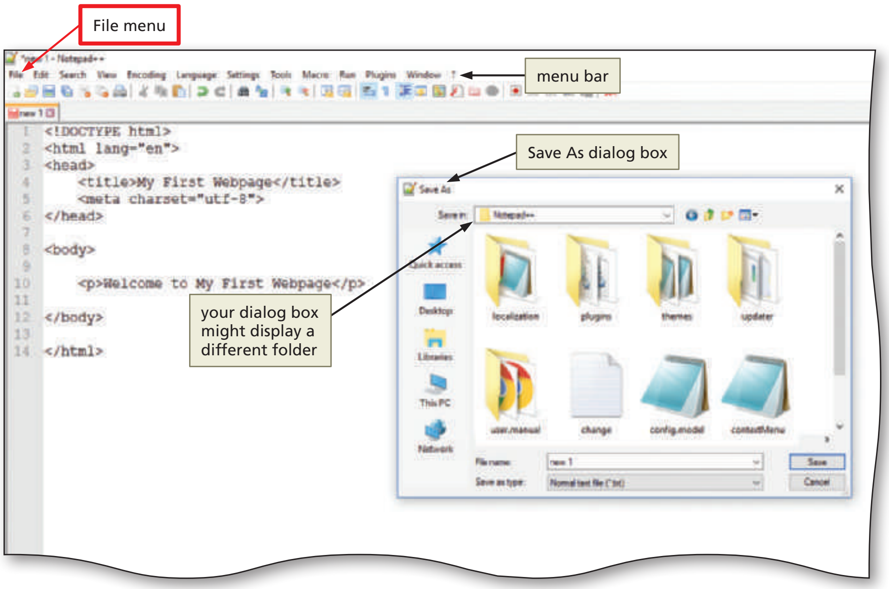
To Save a Webpage

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

After creating a webpage, you must save it as an HTML file. ***Why?*** *A text editor can be used to create many types of files; therefore, you must specify that this is an HTML file so a browser can display it as a webpage.* The following steps save the document as an HTML file.

1

- Tap or click File on the menu bar to display the File menu options.
- Tap or click Save As on the File menu to display the Save As dialog box (Figure 1–38).



```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>My First Webpage</title>
    <meta charset="utf-8">
</head>

<body>

    <p>Welcome to My First Webpage</p>

</body>

</html>
```

Source: Notepad++

Figure 1–38

2

- Tap or click the Save in list box and then navigate to your Documents folder.

Q&A Can I save the file in another location on my hard drive or on my flash drive?

Yes. If your instructor specified a different location, use that instead of the Documents folder. You learn about managing website files in Chapter 2.

- In the File name text box, delete the existing text and then type **`index`** to name the file.

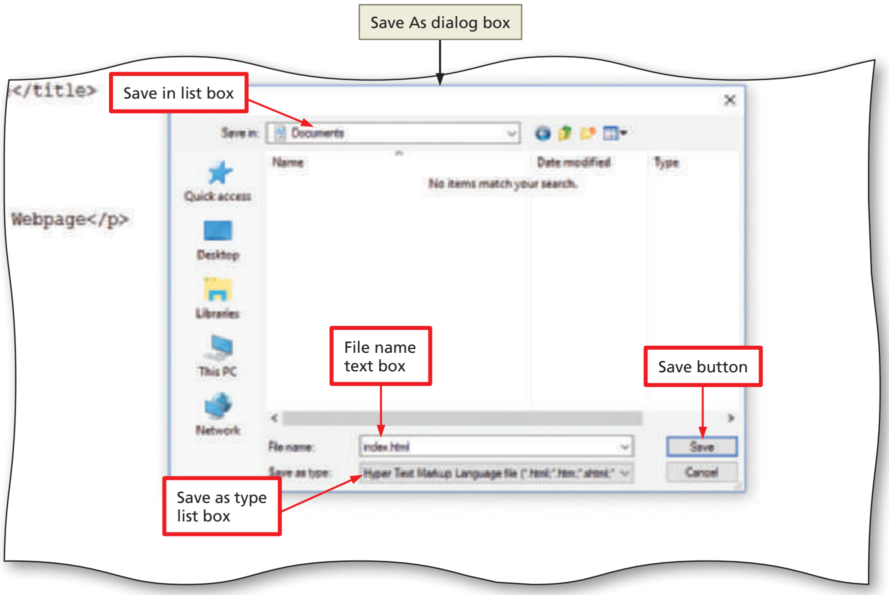
Q&A Why am I using index as the file name?

The file name *index* is the standard name of a home page.

Why am I using all lowercase letters for the file name?

The current convention in web development is to use all lowercase letters for folder and file names.

- Tap or click the Save as type list box and then tap or click Hyper Text Markup Language file to select the HTML file type (Figure 1–39).



Save in: Documents

File name: index.html

Save as type: Hyper Text Markup Language file (*.html;*.htm;*.shtml;*

Source: Notepad++

Figure 1–39

Q&A I am using another text editor and do not have HTML as the Save as type option. What do I do?

If your text editor does not provide a list of Save as type options, then specify the file name as index.html.

3

- Tap or click the Save button to save the HTML document.

Other Ways

1. Press CTRL+S

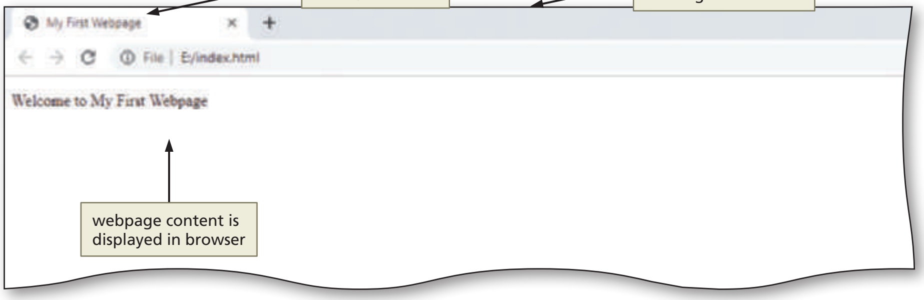
To View a Webpage in a Browser

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

After saving an HTML document, you can view it as a webpage in a web browser. ***Why?*** *A web browser reads the HTML code and displays the webpage content.* The following steps display a webpage in a browser.

1

- Tap or click Run on the menu bar to display the Run menu options.
- Tap or click Launch in Chrome to run the Chrome browser and display the webpage (Figure 1–40).



Welcome to My First Webpage

webpage title is displayed on tab

webpage is displayed in Google Chrome

webpage content is displayed in browser

Figure 1–40

Source: Google Chrome

Q&A

What should I do if I need to use a different browser?
Tap or click Launch in Firefox or Launch in IE to open the webpage in a different browser.

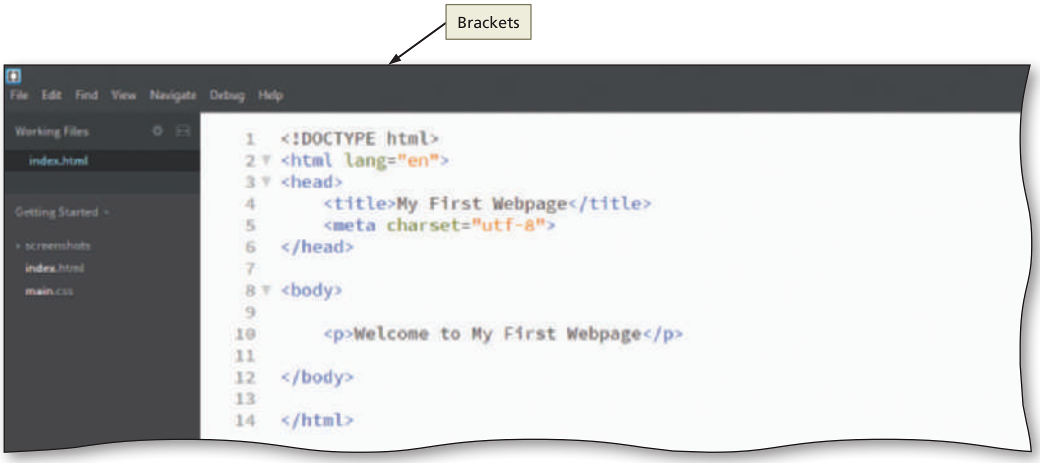
Why are the HTML tags not displayed in the browser?
The browser interprets the HTML code and displays only the content that appears within the tags, not the tags themselves.

Why is the content not indented in the browser when I indented it in the text editor?
The browser ignores indents, spaces, and extra blank lines inserted in the HTML file to improve readability.

Using a Different Text Editor

If you completed the previous steps with a text editor other than Notepad++, your screen will look similar to Figure 1–41 for Brackets, to Figure 1–42 for Atom, and to Figure 1–43 for TextMate.

Brackets

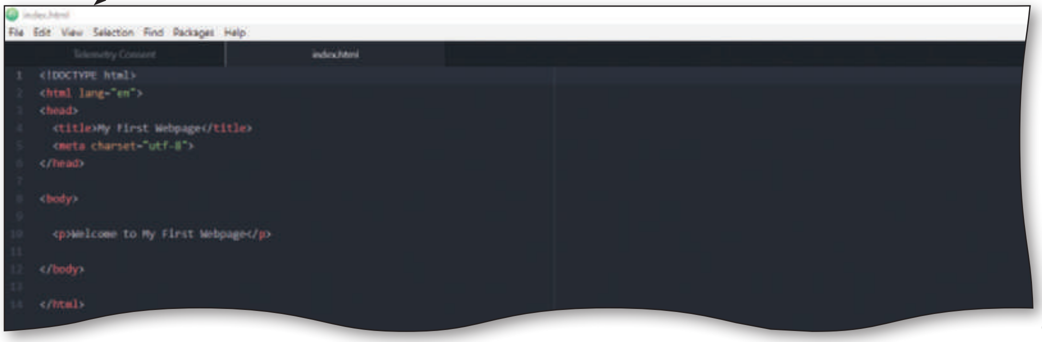


```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>My First Webpage</title>
    <meta charset="utf-8">
</head>

<body>

    <p>Welcome to My First Webpage</p>

</body>

</html>
```

Figure 1–41

Source: Brackets

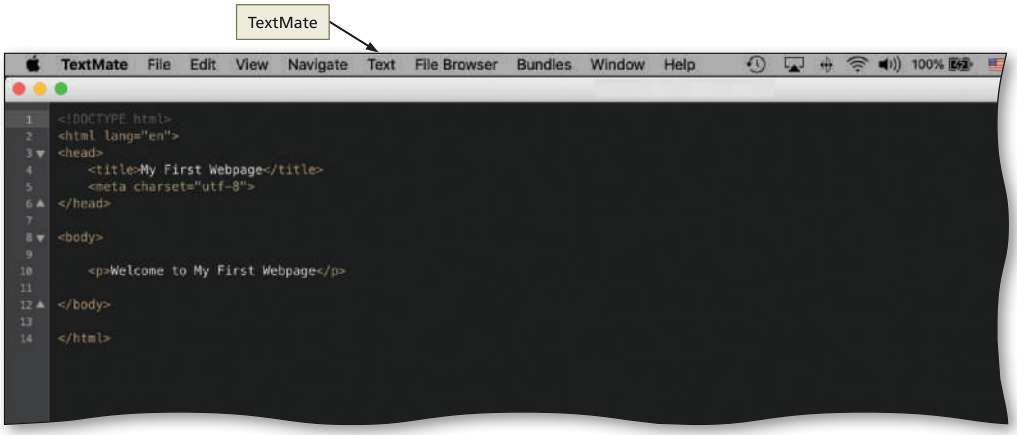
Atom



```
<!DOCTYPE html>
<html lang="en">
<head>
  <title>My First Webpage</title>
  <meta charset="utf-8">
</head>

<body>

  <p>Welcome to My First Webpage</p>

</body>

</html>
```

Figure 1–42

Source: Atom


TextMate
TextMate File Edit View Navigate Text File Browser Bundles Window Help
100%

```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>My First Webpage</title>
    <meta charset="utf-8">
</head>

<body>

    <p>Welcome to My First Webpage</p>

</body>

</html>
```

Source: TextMate

Figure 1–43

Chapter Summary

In this chapter, you learned about the Internet, the web, and associated technologies, including web servers and web browsers. You learned the essential role of HTML in creating webpages and reviewed tools used to create HTML documents. You also learned how to create a basic HTML webpage. The items listed below include all the new concepts and skills you have learned in this chapter, with the tasks grouped by activity.

Creating a Basic Webpage

Start Notepad++ and Create a Blank Document (HTML 31)
Add Basic HTML Tags to a Document (HTML 32)
Add a Title and Text to a Webpage (HTML 33)
Save a Webpage (HTML 34)
View a Webpage in a Browser (HTML 36)

Exploring the Internet

Describe the Internet (HTML 3)
Describe the World Wide Web (HTML 4)
Define Protocols (HTML 6)
Discuss Web Browsers (HTML 7)
Identify Types of Websites (HTML 9)

Planning a Website

Identify the Purpose and Audience of the Website (HTML 11–12)
Design for Multiplatform Display (HTML 13)
Describe a Wireframe and a Site Map (HTML 14)
Consider Graphics, Navigation, Typography, and Color (HTML 17–19)
Design for Accessibility (HTML 20)

Understanding the Basics of HTML

Define Hypertext Markup Language (HTML 21)
Describe HTML Elements (HTML 22)
List Useful HTML Practices (HTML 23)
Identify Technologies Related to HTML (HTML 24)
Explain the Role of Other Web Programming Languages (HTML 24)

Using Web Authoring Tools

Identify Text Editors (HTML 25)
Download and Install a Text Editor (HTML 28)
Describe WYSIWYG and Online Code Editors (HTML 28-30)

CONSIDER THIS

What decisions will you need to make when creating your next webpage?

Use these guidelines as you complete the assignments in this chapter and create your own webpages outside of this class.

1. Plan the website.
    a. Identify the purpose of the website.
    b. Identify the users of the website.
    c. Recognize the computing environments of the users.
    d. Design a wireframe and a site map.
2. Choose the design components.
    a. Identify possible graphics for the website.
    b. Determine the types of navigation tools and typography to use.
    c. Select a color scheme.
    d. Consider accessibility.

Continued >