

HTML5 & CSS

8th Edition

Chapter 1

Introduction to the Internet and Web Design

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Chapter Objectives

1. Define the Internet and associated key terms
2. Recognize Internet **protocols**
3. Discuss web browsers and identify their main features
4. Describe the types and purposes of websites
5. Plan a website for a target audience
6. Define a **wireframe** and a **site map**
7. Explain how websites use graphics, navigation tools, typography, and color
8. Design for accessibility and **multiplatform display**

Chapter Objectives

9. Define Hypertext Markup Language (HTML) and HTML elements
10. Recognize HTML versions and web
11. Identify web authoring tools
12. Download and use a web authoring tool
13. Create and view a basic HTML webpage

Chapter Topics

1. Introduction
2. Project – Create a Basic Webpage
3. Exploring the Internet
4. Planning a Website
5. Understanding the Basics of HTML
6. Understanding the Role of Other Web Programming Languages
7. Using Web Authoring Tools
8. Creating a Basic Webpage
9. Summary

3. Exploring the Internet

- The **Internet** is a worldwide collection of computers linked together for use by organizations, and individuals using communications devices and media
- A **node** is any device, such as a computer, tablet, or smartphone, connected to a **network**
- A **network** is a collection of two or more computers linked together to share resources and information
- The **Internet of Things (IoT)** describes the ever-growing number of devices connecting to a network, including televisions and appliances

3. Exploring the Internet

- **Data lines** that connect networks allow data to move from one computer to another
- The **Internet backbone** is a collection of high-speed data lines that connect major computer systems located around the world
- An **Internet Service Provider (ISP)** is a company that has a permanent connection to the Internet backbone

3.1 World Wide Web

- 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 web consists of a collection of linked files known as **web pages**
- A **web site** is a related collection of webpages created and maintained by a person, company, educational institution, or other organization

3.1 World Wide Web

- A **home page (?)** is the first document users see when they access a website
- A **hyperlink**, 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

3.1 World Wide Web

The screenshot shows the homepage of the U.S. Department of Education website (<https://www.ed.gov>). The page features a yellow header bar with the URL, a search bar, and links for 'About Us', 'Contact Us', 'FAQs', and 'Language Assistance'. Below the header is the 'U.S. Department of Education' logo and a navigation menu with tabs for 'Student Loans', 'Grants', 'Laws', and 'Data'. A large central banner is titled 'How to Choose the Best Federal Student Loan Repayment Plan' and includes a 'READ MORE' link and a series of numbered steps (1-4). To the right of the banner is a graphic of a road sign pointing to 'STUDENT LOANS' and another section titled 'LET US HELP GUIDE YOU TO THE RIGHT REPAYMENT PLAN.' On the left side of the banner, there is a 'News' section with links for 'All', 'Blog', 'Press Releases', 'Speeches', and 'Media Advisories'. On the right side, there is a 'Features' section with a 'Federal Student Aid' link. A vertical sidebar on the right contains a list of links: 'How Do I Find...?', 'Information About...', and a list of topics including 'Student loans, forgiveness', 'College accreditation', 'No Child Left Behind', 'FERPA', 'FAFSA', and 'More...'. A bracket on the right side groups these links under the heading 'links to content on the website'. A vertical text 'Source: www.ed.gov' is positioned to the right of the sidebar. A callout box on the left indicates that the links in the sidebar serve the purpose of the website.

links indicate purpose of website

home page

links to content on the website

Source: www.ed.gov

3.2 Protocols

- A **protocol** is a set of rules that defines how a client workstation can communicate with a server
- A **server** is the host computer that stores resources and files for websites
- **Hypertext Transfer Protocol (HTTP)** is a set of rules for exchanging text, graphics, audio, video, and other multimedia files on the web
- **File Transfer Protocol (FTP)** is used to exchange files from one computer to another over the Internet
 - This protocol does not provide a way to view a webpage

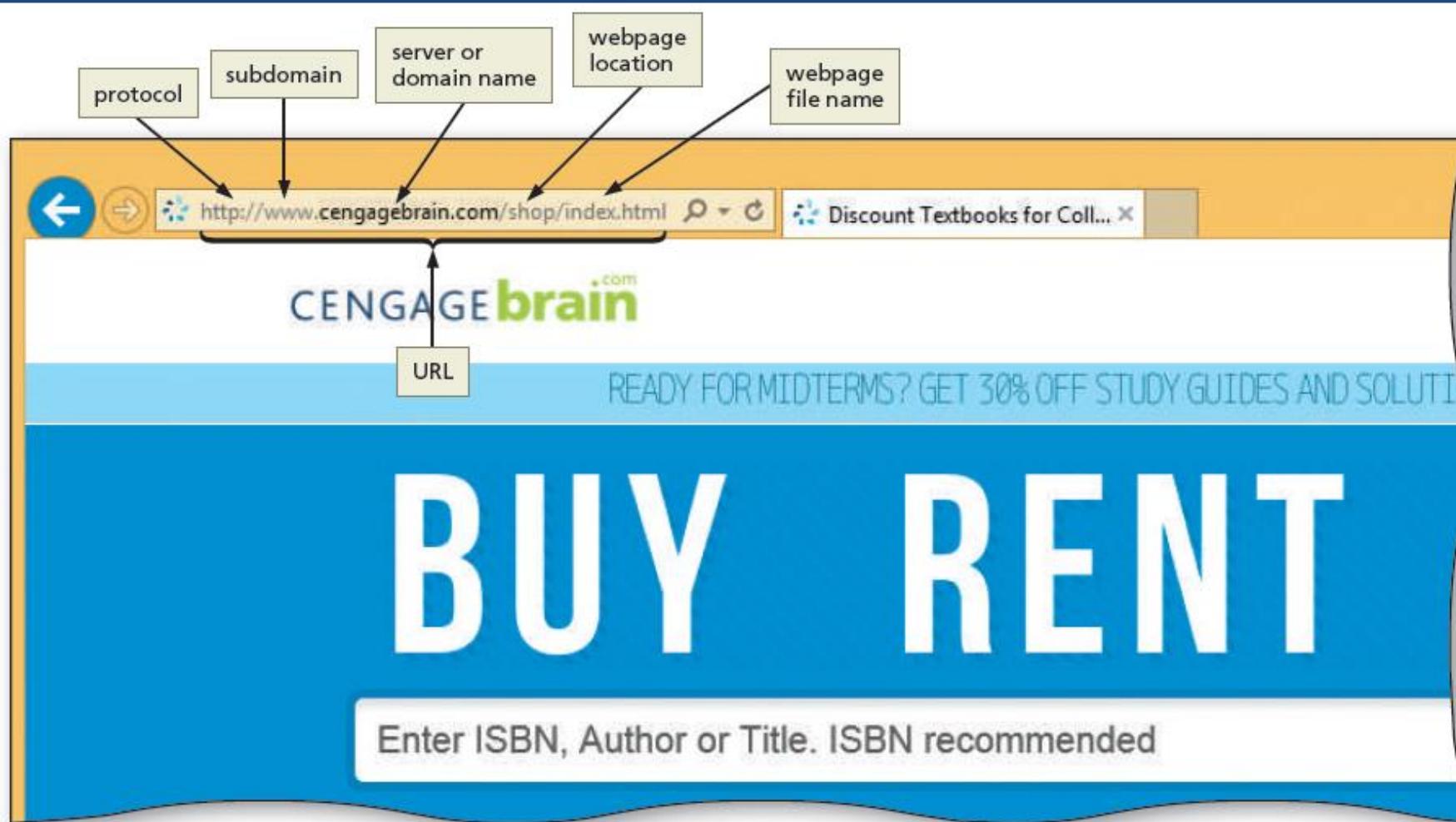
3.2 Protocols

- **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
- **Transmission Control Protocol** oversees the network connection between the data source and destination and micromanages the data.
- **Internet Protocol (IP)** ensures data is sent to the correct location
- **The Domain Name System (DNS)** associates an IP address with a domain name

3.3 Web Browsers

- A **web browser** is a program that interprets and displays Web pages and enables you to view and interact with a Web page
 - Microsoft Internet Explorer, Microsoft Edge, Mozilla Firefox, Google Chrome, Opera, and Apple Safari
- A **Uniform Resource Locator (URL)** is the address of a document or other file accessible on the Internet
 - <http://www.cengagebrain.com/shop/index.html>
- A domain is an area of the Internet a particular organization or person manages.

3.3 Web Browsers



3.4 Types of Websites

- An **Internet site** is another term for a website that is generally available to anyone with an Internet connection
- An **intranet** is a private network that uses Internet technologies to share company information among employees
- An **extranet** is a private network that uses Internet technologies to share business information with select corporate partners or key customers

3.4 Types of Websites

- Many company websites also support **electronic commerce (e-commerce)**, which is the buying and selling of goods and services on the Internet
- 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
- Search engines provide access to sites
- Blogs provide an opportunity to become a thought leader

4. Planning a Website

4.1 Purpose of the website — The purpose of a commercial business website is related to the goal of selling products or services

4.2 Target Audience — The people who use the website are known as the target audience

- Knowing their general demographic (more importantly, behavioral) background will help to design a website appropriate for them (Smart)

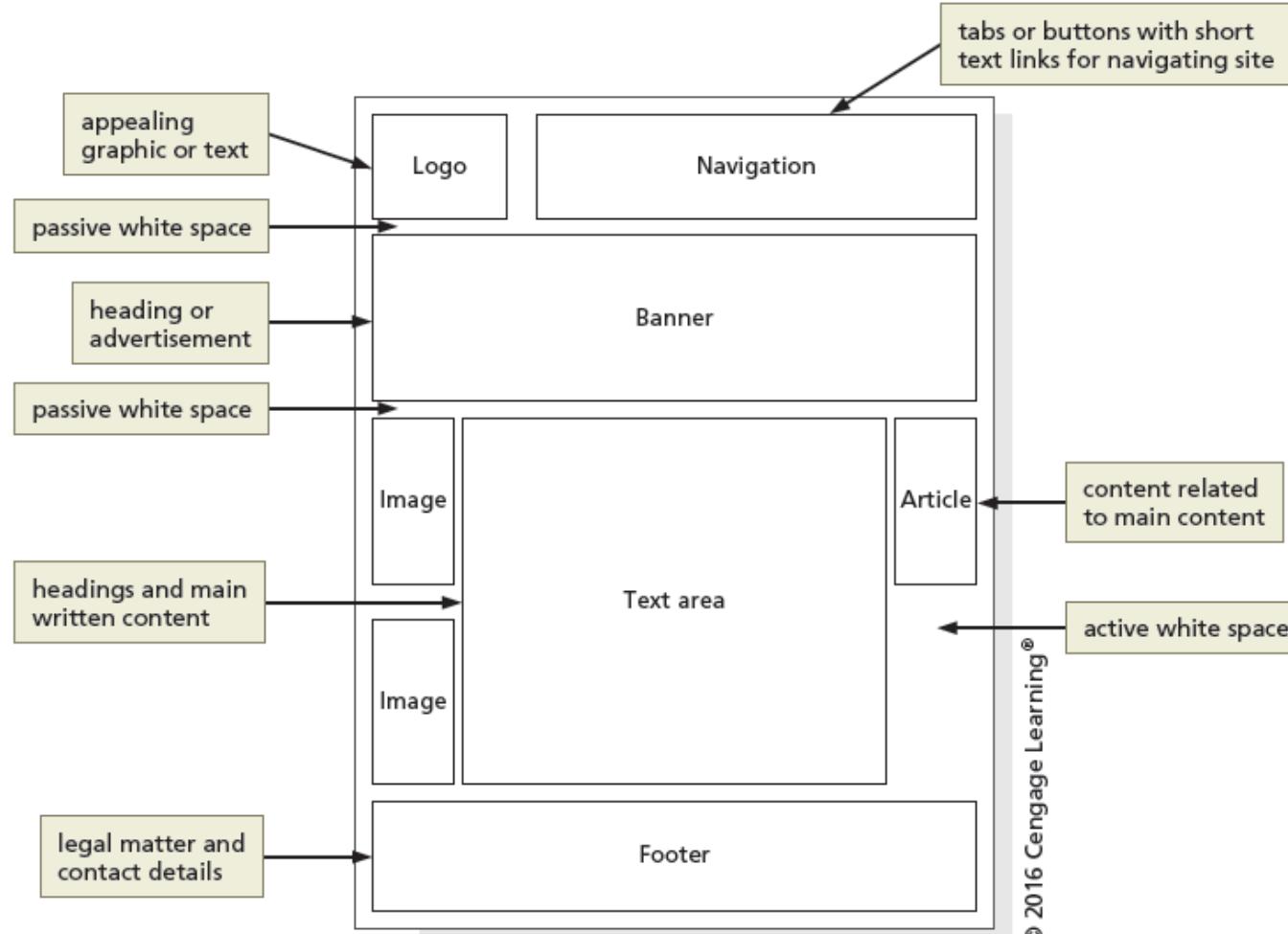
4.3 Multiplatform Display — A **responsive design** of a website must be created that provides an optimal viewing experience across a range of devices

Therefore, must be smart, personalized, responsive!!!

4.4 Wireframe

- A **wireframe** is a simple, visual guide that clearly identifies the location of main webpage elements
- Incorporate white space
- **Active white space** is an area on the page that is intentionally left blank!!
- **Passive white space** is the space between content areas
 - Helps a user focus on one part of the page!!

4.4 Wireframe

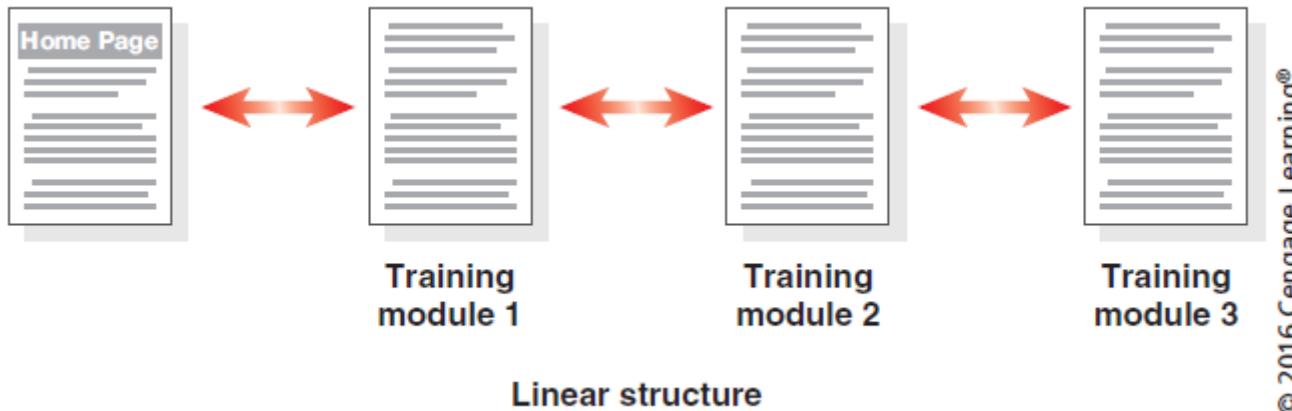


4.5 Site Map

- 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
 - It shows the structure of a website
- Several website structures:
 - Linear
 - Hierarchical
 - Webbed

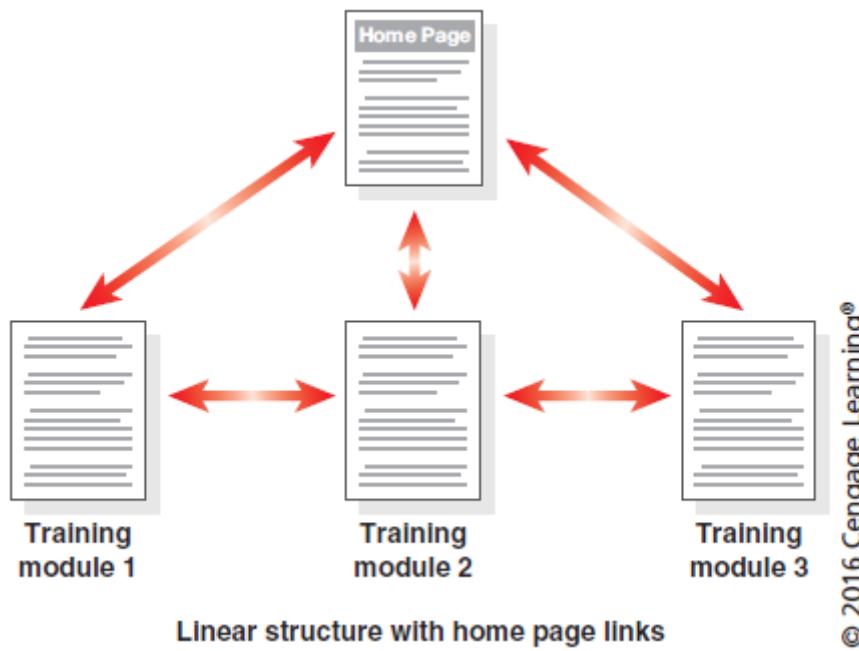
4.5 Site Map

- A **linear** website structure connects webpages in a straight line – appropriate for viewing in a specific order (i.e. Training)



4.5 Site Map

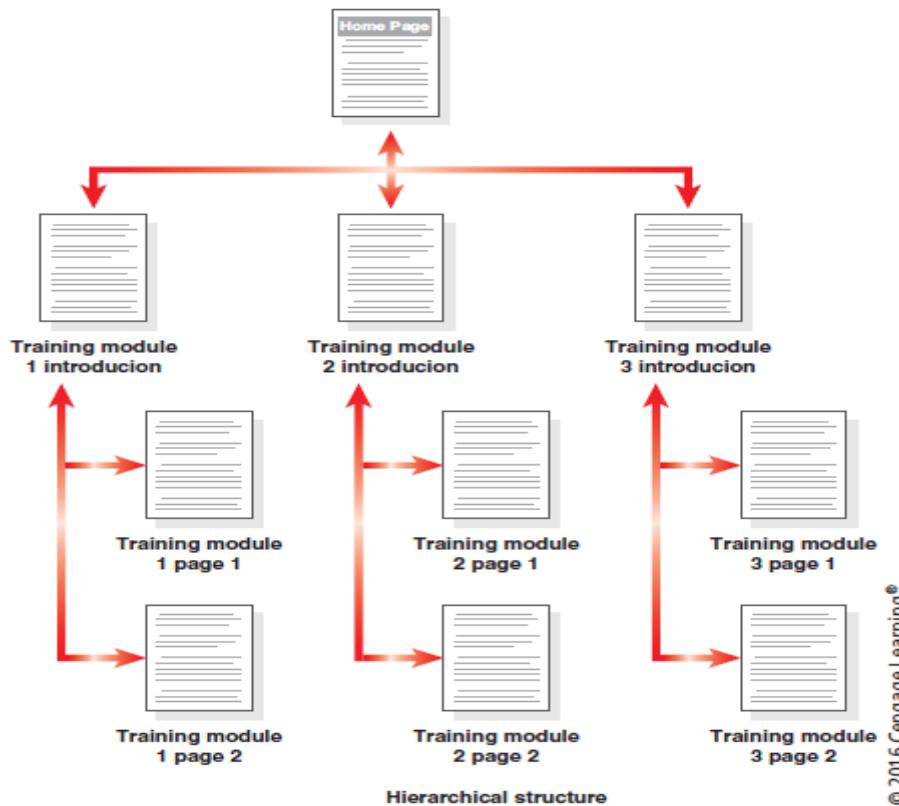
- In a variation of a linear website structure, each page can include a link to the home page of the website



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4.5 Site Map

- A **hierarchical** website connects webpages in a treelike structure



4.5 Site Map

- A **webbed** website structure has no set organization



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4.6 Graphics

- Graphics add visual appeal to a webpage and enhance the visitor's perception of the products and services



4.7 Navigation

- The navigation of a website should be clear and concise
- Each webpage should have a designated navigation area with links to other pages in the site
- The navigation area should be prominent and easy to use

4.8 Typography

- The use of effective typography, or fonts and font styles, enhances the visual appeal of a website
- Typography also should promote the purpose and goal of the website

4.9 Color

- The combination of colors contributes to the appeal and legibility of the website
- Aim to strike a balance among the background color, text color, and the color that represents a brand
- Colors convey meanings

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

4.10 Accessibility

- A web designer should create pages for viewing by a diverse audience, including people with physical impairments and global users
 - Consider users with visual, auditory, motor, and cognitive disabilities
 - www.section508.gov
- The **World Wide Web Consortium (W3C)** develops and maintains web standards, language specifications, and accessibility recommendations.

4.11 Planning Checklist

- Navigation, typography, color, and accessibility are the basic web page design criteria to consider when developing a website
- A sophisticated website requires additional design considerations and research of the business, its competition, and a complete business analysis

4.11 Planning Checklist

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	Will you design for display on multiple platforms or focus only on a desktop or mobile design?
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?

Break

Break

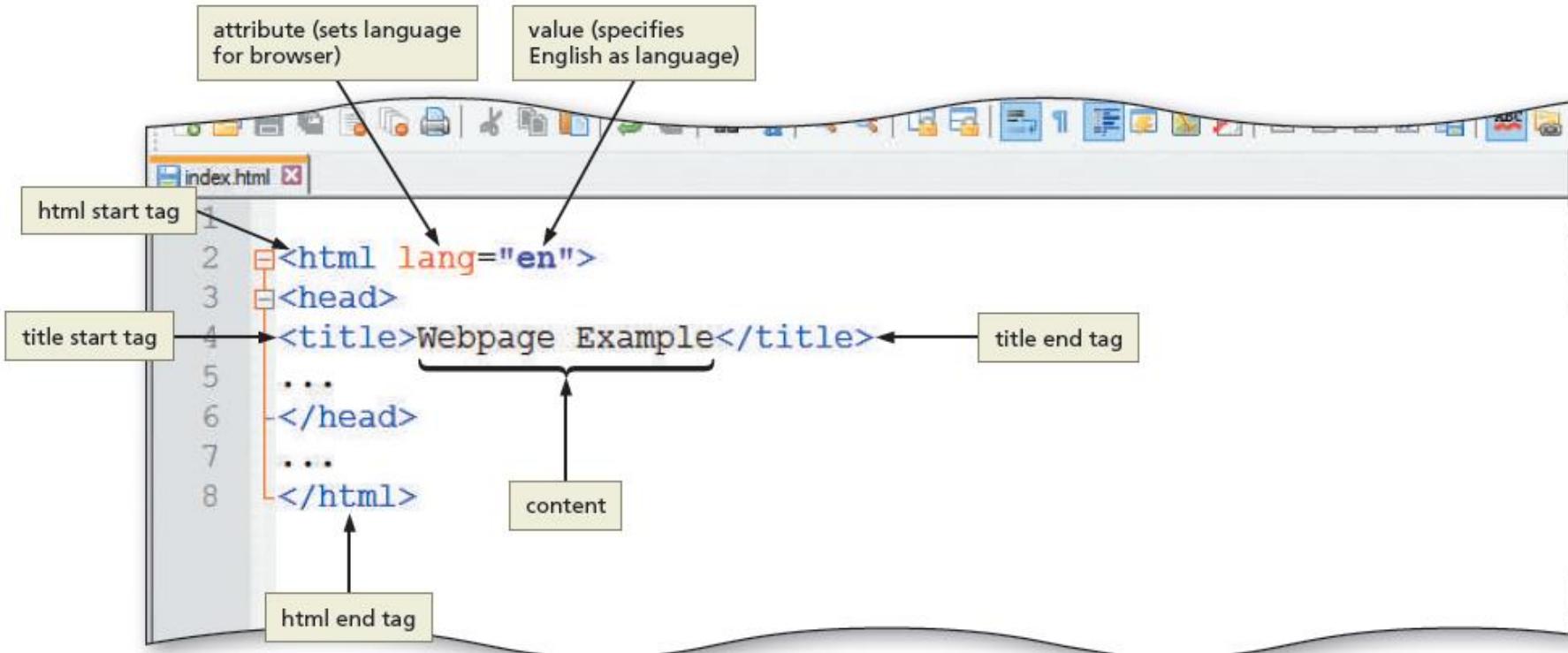
5. Understanding the Basics of HTML

- 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
- The HTML tags define or “mark up” the content on the webpage, due to which it is considered a **markup language** rather than a traditional programming language

5.1 HTML Elements and Attributes

- A webpage is a text file that contains both content and HTML tags and is saved as an HTML document
- An **HTML element** consists of everything from the start tag to the end tag
 - <html></html>
 - <p></p>
- HTML elements can be enhanced by using **attributes**, which define additional characteristics, or properties, of an element
 -
- Notepad++
 - Tags in blue; attributes in red; values in purple; content in black;

5.1 HTML Elements and Attributes



Source: Notepad++

5.1 HTML Elements and Attributes

- 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
- HTML elements have a start tag and an end tag and follow the same rules, or **syntax**

5.1 HTML Elements and Attributes

- 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

5.1 HTML Elements and Attributes

- Some HTML elements are void of content. They are called **empty**, or **void**, tags
- Examples of empty tags are `
` for a line break and `<hr>` for a horizontal line, or rule
- The syntax for empty tags is `<tag>`
 - *But not always*

5.1 HTML Elements and Attributes

The screenshot shows an HTML file named "index.html" in Notepad++. The code is as follows:

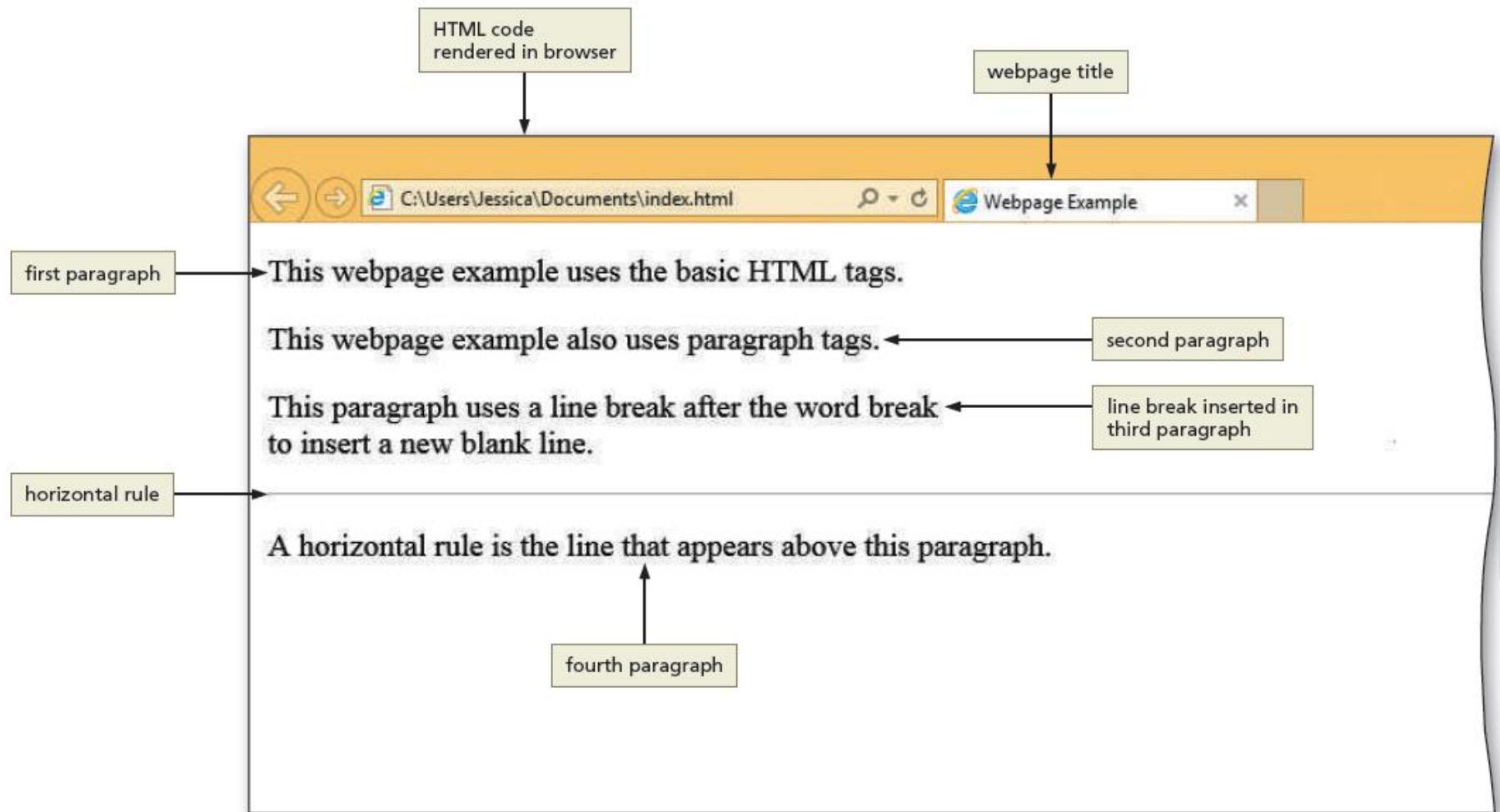
```
1 <!DOCTYPE html>
2 <html lang="en">
3 <head>
4   <title>Webpage Example</title>
5   <meta charset="utf-8">
6 </head>
7 <body>
8   <p>This webpage example uses the basic HTML tags.</p>
9   <p>This webpage example also uses paragraph tags.</p>
10  <p>This paragraph uses a line break after the word break<br>to insert a new blank line.</p>
11
12  <hr>
13  <p>A horizontal rule is the line that appears above this paragraph.</p>
14
15 </body>
</html>
```

Annotations with arrows pointing to specific code elements:

- start paragraph tag: points to the opening tag of the first paragraph (line 8)
- content of first paragraph: points to the text within the first paragraph (line 8)
- end paragraph tag: points to the closing tag of the first paragraph (line 9)
- second paragraph: points to the second paragraph (line 9)
- horizontal rule tag: points to the horizontal rule tag (line 12)
- line break tag in third paragraph: points to the line break tag within the third paragraph (line 10)
- fourth paragraph: points to the fourth paragraph (line 13)

Source: Notepad++

5.1 HTML Elements and Attributes



Courtesy of Notepad++

5.2 Technologies Related to HTML

- **XML** — The W3C introduced **XML (Extensible Markup Language)** in 1998 to exchange and transport data
- **XHTML** — **(Extensible Hypertext Markup language)** is a rewritten version of HTML using XML and was developed in 2000 and is accepted on mobile device platforms
- **DHTML** — **DHTML (Dynamic Hypertext Markup Language)** is a term that refers to a combination of web technologies
 - HTML, CSS, Javascript

5.3 HTML5

- It is the most recent version of HTML
- It introduces several new elements such as header, nav, main, and footer to better define the areas of a webpage
- They are known as *semantic* HTML elements because they provide meaning about the content of the tags
- It provides a more flexible approach to web development

6. Understanding the Role of Other Web Programming Languages

6.1 JavaScript — It is a popular **client-side scripting language** used to create interactivity within a web browser

- The web pages that contain JavaScript are named with an .htm or .html extension
- Not to be confused with a file with just JavaScript code with a .js extension
- Not to be confused with Java – a full function programming language

6.2 jQuery — It is a library of JavaScript programs designed for easy integration onto a webpage

- It makes it easy for web developers to add JavaScript to a webpage

6. Understanding the Role of Other Web Programming Languages

6.3 PHP (Hypertext Preprocessor) — It is an open-source **server-side scripting language** used for common tasks such as writing to or querying a database located on a central server

- Pages that contain PHP scripts must have file names that end with the file extension .php

6.4 ASP (Active Server Pages) — is a server-side scripting technology

- Pages that contain ASP scripts must have file names that end with the file extension .aspx

7. Using Web Authoring Tools

- Webpages can be created using HTML with a simple text editor, such as Notepad, Notepad++, Sublime, Programmer's Notepad,TextEdit, and TextWrangler
- A **text editor** is a program that allows one to enter, change, save, and print text, which includes HTML tags
- An **HTML editor** is a program that provides basic text-editing functions, and advanced features such as color-coding for various HTML tags, menus to insert HTML tags, and a spelling checker
- HTML is **platform independent**

7.1 Text Editors

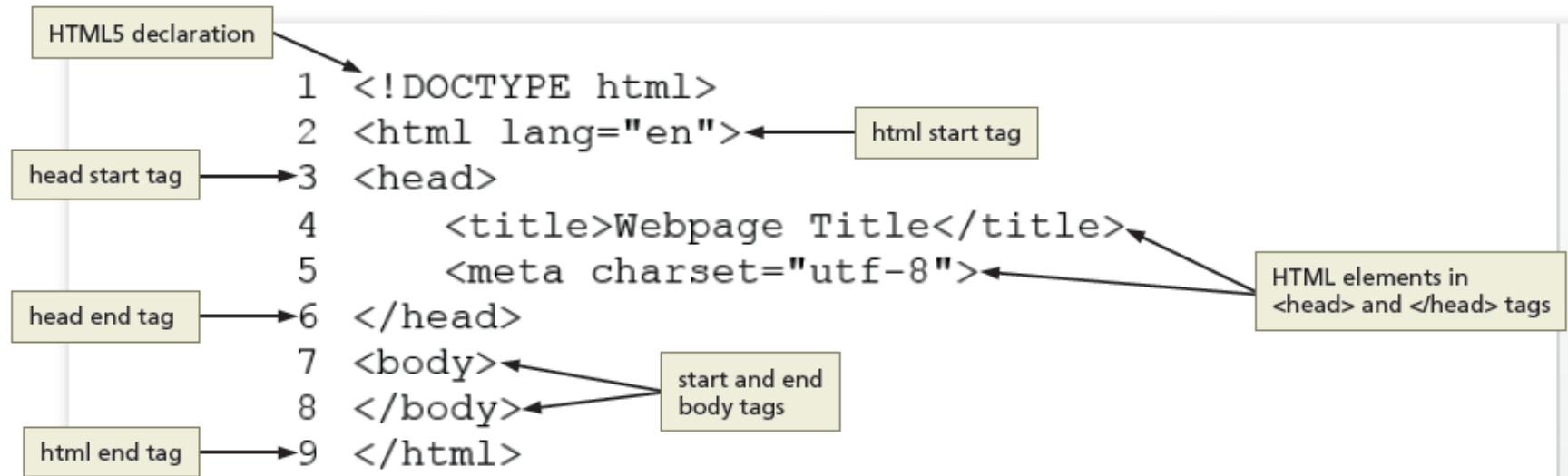
- **Notepad++** is a free, open-source text editor. It is used to create files in several markup, scripting, and programming languages, including HTML, CSS, JavaScript, PHP, Java, C#, and Visual Basic
 - <http://notepad-plus-plus.org>
- **Programmer's Notepad** is a free, open-source text editor used to create webpages, and files in several markup, scripting, and programming languages as well
- **Sublime** is a cross-platform text editor
- **TextWrangler** is a free, open-source text editor. It is used to create files in many formats, including HTML and CSS

7.1 Text Editors

- **WYSIWYG Editors** – Stands for What You See Is What You Get
 - These editors provide a graphical user interface to design a webpage
 - It allows to drag HTML elements onto the page while the editor writes the code
- **Adobe Dreamweaver** is a popular WYSIWYG editor
- **Microsoft Expression Web 4** is a WYSIWYG webpage editor from Microsoft (no longer supported or marketed)
- **Microsoft Visual Studio**
- **HubSpot COS** – Content Optimization System

8. Creating a Basic Webpage

- Every HTML webpage includes the basic HTML tags



HTML

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Introduction to the Internet and Web Design

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