

Solutions Manual for Responsive Web Design with HTML 5 and CSS 9th Minnick

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Responsive Web Design with HTML5 and CSS, 9th Edition

Chapter 1: Introduction to the Internet and Web Design

A Guide to this Instructor's Manual:

We have designed this Instructor's Manual to supplement and enhance your teaching experience through classroom activities and a cohesive chapter summary.

This document is organized chronologically, using the same heading in **red** that you see in the textbook. Under each heading, you will find (in order) Lecture Notes that summarize the section; Figures and Boxes found in the section, if any; Teacher Tips; Classroom Activities; and Lab Activities. Pay special attention to teaching tips and activities geared toward quizzing your students, enhancing their critical thinking skills, and encouraging experimentation within the software.

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Chapter Objectives

Students will have mastered the material in Chapter 1 when they 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

HTML 2: Introduction

LECTURE NOTES

- Introduce the Internet as the world's largest network

- Introduce some basics about the Internet and web
- Mention that the Internet and web follow rules that allow computers to communicate
- Review the roadmap activities used to create a webpage

PROJECT: Create a Basic Webpage

The project in this chapter follows general guidelines and uses a text editor to create the webpage shown in Figure 1–1.

Explain that 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.

CLASSROOM ACTIVITIES

1. Group Activity: Explain that the Internet is more than just the World Wide Web; it also includes FTP (File Transfer Protocol), texting, VoIP, and email technologies, among other things. Survey students about their use of the range of Internet technologies.

2. Quick Quiz:

- 1) How many webpages are currently available on the World Wide Web? (Answer: Billions of webpages)

FIGURE: 1-1

HTML 3: Exploring the Internet

LECTURE NOTES

- Define the Internet and use Figure 1-2 to illustrate the connections that support the Internet
- Define node, network, data lines, Internet of Things, Internet service provider (ISP), and Internet backbone
- Define World Wide Web (WWW), webpages, website, and a home page using Figure 1-3
- Define hyperlink and use Figure 1-4 to illustrate various types of links
- Define protocols and give an overview of the types of Internet protocols such as Hypertext Transfer Protocol (HTTP), File Transfer Protocol (FTP), and Transmission Control Protocol/Internet Protocol (TCP/IP)
- Define a server and use Figure 1-5 to illustrate the communication between a server and a client
- Explain the use of the Domain Name System (DNS)
- Explain the purpose of a web browser
- Use Table 1-1 to discuss the features of Google Chrome
- Review the different types of websites, including Internet, intranet, and extranet

FIGURES: 1-2, 1-3, 1-4, 1-5, 1-6, 1-7, 1-8, 1-9

TABLE: 1-1

BOXES:

1. BTW: WhatIsMyIPAddress.com. You can look up the IP address for any domain using WhatIsMyIPAddress.com.
2. 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.
3. 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.
4. 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.
4. 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.

TEACHER TIPS

Explain that 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. The following background information may be of interest to your students: Developed in 1960s by the Department of Defense Advanced Research Projects Agency (ARPA), the Internet was originally called the ARPANET.

Explain how an Internet Service Provider (ISP) is related to the Internet backbone. As you explain this relationship, mention how a home Internet connection is generally provided and how people connect to the Internet.

As you explain the Internet protocols, mention that HTTP is the set of rules for transferring text, sound, video, graphic images, and other multimedia files on the web; the sole purpose of FTP; and how the TCP/IP protocols use a working mechanism similar to that of the postal system.

CLASSROOM ACTIVITIES

1. Class Discussion: Ask students about their experience using networks, perhaps as part of a computer class. Do they have a user account assigned to them on their school network? Explore students' experience with ISPs. Do they have accounts with ISPs? Which ISPs?
2. Assign a Project: Ask students to research three different major ISPs on the web and to compare the services they provide, their pricing, etc.

3. Quick Quiz:

- 1) What is the Internet backbone? (Answer: A collection of high-speed data lines that connect major computer systems located around the world)
- 2) What is a web browser? (Answer: A program that interprets and displays webpages so you can view and interact with them)

HTML 11: Planning a Website

LECTURE NOTES

- Discuss the importance of designing a clear navigation system when planning and building a website
- Identify the purpose of a website using an organization's mission statement
- Explain the significance of knowing the audience for a website and use Figure 1-10 to illustrate how a website must be designed by keeping its audience in mind
- Explain responsive design by using Figure 1-11 to show how the responsive design of a website looks at desktop, tablet, and mobile screen sizes
- Define a wireframe, and use Figure 1-12 to show a wireframe with its elements
- Define a site map
- Define linear, hierarchical, and webbed website structures using Figures 1-13, 1-14, 1-15, and 1-16
- Use Figure 1-17 to discuss the importance of using graphics in a webpage
- Use Figure 1-18 to discuss navigation in a website
- Use Figure 1-19 to discuss the importance of typography in enhancing the visual appeal of a website
- Use Figure 1-20 to show how a color scheme must be used in a website
- Discuss the need to create a website for viewing by a diverse audience
- Define the World Wide Web Consortium (W3C)
- Use Table 1-3 to list the key questions to ask when planning a website

FIGURES: 1-10, 1-11, 1-12, 1-13, 1-14, 1-15, 1-16, 1-17, 1-18, 1-19, 1-20

TABLE: 1-2, 1-3

BOXES

1. 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.

2. 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.

3. 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.

TEACHER TIPS

Explain that the purpose of a commercial business website is related to the goal of selling products or services. Discuss the two approaches a business can take to use a website: it can use a website to sell products and services through e-commerce or it can use a website to generate leads and raise the public profile of the business.

Discuss how to identify who will use a website and design it appropriately. 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 of your audience.

Explain that a responsive design allows one to create a website that provides an optimal viewing experience across a range of devices. As users can access a website with computing devices ranging from desktop computers to laptops, tablets, and smartphones, a website designed using responsive design responds and adapts to the size of the screen on the visitor's device by itself.

Discuss the types of structures a website can use. A linear website structure connects webpages in a straight line and is appropriate if visitors should view the webpages in a specific order. In a variation of a linear website structure, each page can include a link to the home page of the website. A hierarchical website connects webpages in a treelike structure and it works well on a site with a main index or table of contents page that links to all other webpages. A webbed website structure has no set organization and 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.

Mention that graphics add visual appeal to a webpage and enhance the visitor's perception of a website's products and services. The graphic communicates to the user the look and feel of a product. The smaller graphics below the primary graphic 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.

Mention that 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. Also, instruct that incorporating a search box near the navigation area provides another avenue for customers to find the item they want.

Indicate that 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.

Mention that a limited number of coordinated colors that help promote the purpose and brand of a website must be selected. Instruct students to 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.

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. 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. Also, mention that web standards, language specifications, and accessibility recommendations are developed and maintained by World Wide Web Consortium (W3C).

CLASSROOM ACTIVITIES

1. Assign a Project: Ask students to compare the graphics and color schemes used in any three of their favorite sites. Alternately, assign three sites to students for this comparative analysis.
2. Assign a Project: Ask students to find three websites that use linear, hierarchical, and webbed structures.
3. Assign a Project: Ask students to compare the features and content of any three e-commerce sites. Alternately, assign three sites to students for this comparative analysis.
4. Group Activity: If possible, show students examples of a few websites on a computer, a tablet, and a smartphone and ask them to identify which websites use a responsive design.

HTML 21: Understanding the Basics of HTML

LECTURE NOTES

- Define Hypertext Markup Language (HTML)
- Define HTML tags
- Discuss the three components—the start tag, the content, and the end tag—of the most used HTML elements and use Figure 1-21 to show the anatomy of HTML elements in Notepad++
- Define attributes
- Discuss empty, or void, tags
- Discuss the technologies related to HTML such as Extensible Markup Language (XML) and Extensible Hypertext Markup Language (XHTML)
- Discuss the elements available in HTML 5 and the benefits of HTML 5 over HTML

FIGURES: 1-21, 1-22, 1-23

BOXES

1. BTW: Lowercase HTML Tags. Encourage students to use lowercase HTML tags as the convention for HTML 5 is to use all lowercase tags and it also conforms to the current W3C standard.
2. 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.

TEACHER TIPS

Define HTML as an authoring language used to create documents for the web.

Define tags as a set of special instructions 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.

Explain that XML was introduced by W3C in 1998 to exchange and transport data. It works along with HTML by transporting web data obtained through an HTML webpage. Explain that XHTML is a rewritten version of HTML using XML and mention its primary benefit: it is more widely accepted on mobile device platforms.

Introduce HTML 5 as the most recent version of HTML. Discuss the new elements in HTML 5 such as header, nav, main, and footer, also called structural elements as they define the structure of a webpage, which serve to better define the areas of a webpage. These new elements also are considered semantic HTML elements because they provide meaning about the content of the tags. Also, it is possible to 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.

CLASSROOM ACTIVITIES

1. Group Activity: If possible, display the HTML code for a simple webpage and explain to the students its various HTML elements.
2. Group Activity: If possible, show how audio and video are added in HTML 5 using the <audio> and <video> tags.
3. Assign a Project: Ask students to research the different HTML versions on the web and read about new features that have been introduced with each subsequent version.
4. Assign a Project: Ask students to change the width and height of images in a webpage using HTML attributes.
5. Quick Quiz:
 - 1) The _____ tag in HTML is used to insert a horizontal line in a webpage. (Answer: <hr>, or horizontal rule)
 - 2) Which is a markup language that does not replace HTML but works with HTML by transporting web data obtained through an HTML webpage? a) CSS b) XML c) DHTML d) XHTML (Answer: b)

LAB ACTIVITIES

1. Ask students to create HTML code to insert two images vertically and resize their height and width

to 250px using HTML attributes. Also, a horizontal rule must appear between the two images.

HTML 24: Understanding the Role of Other Web Programming Languages

LECTURE NOTES

- Discuss the need for programming languages other than HTML
- Discuss JavaScript along with its common uses
- Define jQuery and its mission
- Discuss PHP (Hypertext Preprocessor)
- Discuss ASP (Active Server Pages)

TEACHER TIPS

Describe JavaScript as a popular client-side scripting language that is used to create interactivity within a web browser. Mention the common uses of JavaScript including creating popup windows and alert messages, displaying the current date, and validating form data. Webpages that contain JavaScript are named with an .htm or .html extension, just like a webpage without JavaScript.

Explain that jQuery is a library of JavaScript programs designed for easy integration onto a webpage, and it makes it easy for web developers to add JavaScript to a webpage. Mention that the mission of the jQuery Foundation is to improve the open web, making it accessible for everyone, through the development and support of open-source software, and collaboration with the development community.

Mention that PHP is an open-source server-side scripting language often used for common tasks such as writing to or querying a database located on a central server. Also, make the students aware that the result of the PHP script is often an HTML webpage that is sent back to the client and the pages that contain PHP scripts must have file names that end with the file extension .php.

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

CLASSROOM ACTIVITIES

1. Quick Quiz:

- 1) What are the common uses for JavaScript? (Answer: Common uses for JavaScript include creating popup windows and alert messages, displaying the current date, and validating form data.)

HTML 25: Using Web Authoring Tools

LECTURE NOTES

- Define a text editor and give a few examples using Figures 1-24, 1-25, 1-26, and 1-27
- Define HTML editor
- Define platform independence
- Explain how to download and install a text editor

- Define WYSIWYG editors and give an example using Figure 1-28
- Describe popular online code editors using Figures 1-29 and 1-30

FIGURES: 1-24, 1-25, 1-26, 1-27, 1-28, 1-29, 1-30

TEACHER TIP

Define a text editor as a program that allows one to enter, change, save, and print text, which includes HTML tags. Text editors do not typically have many advanced features, but they do allow you to develop HTML documents easily.

Define an HTML editor as 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. Also, mention that HTML is platform independent, meaning an HTML file can be created, or coded, in Windows or Mac and then be viewed on any browser.

Mention that Notepad++ is a free, open-source text editor that runs on Windows computers, and it is used to create files in several markup, scripting, and programming languages, including HTML, CSS, JavaScript, PHP, Java, C#, and Visual Basic. Programmer's Notepad, similar to Notepad++, is another free, open-source text editor that can be used to create webpages.

Instruct the students on how to download and install a text editor. Begin with accessing the website of a text editor, navigate the website to locate the download link, and download it. Open the downloaded file to begin the installation, follow the instructions given in the setup wizard, and run the text editor when finished.

Define WYSIWYG (What You See Is What You Get) editors as the editors that provide a graphical user interface to design a webpage, as opposed to the blank page provided in a text editor used to write code. Also, mention that the WYSIWYG editors allow one to drag HTML elements onto the page while the editor writes the code. Give examples of WYSIWYG editors such as Adobe Dreamweaver and Microsoft Expression Web 4.

Discuss Adobe Dreamweaver, mentioning that several types of web file formats can be developed with Dreamweaver, including HTML, CSS, JavaScript, and PHP, and it can be installed on a computer running Windows or macOS.

CLASSROOM ACTIVITIES

1. Quick Quiz:

- 1) What is a text editor? (Answer: A program that allows a user to enter, change, save, and print text, which includes HTML tags)
- 2) What is an HTML editor? (Answer: 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)

- 3) What is a WYSIWYG editor? (Answer: A program that provides a graphical user interface to design a webpage, as opposed to the blank page provided in a text editor used to write code)

LAB ACTIVITIES

1. Ask students to use a search engine to identify a free WYSIWYG HTML editor and, if possible, to download and install it and experiment with its use.

HTML 30: Creating a Basic Webpage

LECTURE NOTES

- Introduce DOCTYPE
- Discuss the basic tags used in HTML using Figure 1-31
- Define meta tag
- Define Unicode Transformation Format (UTF)
- Review the steps provided to create a webpage; the text uses Notepad++ to create an HTML document
- Using Figures 1-41, 1-42, and 1-43, explain how the results may appear using different text editors

FIGURES: 1-31, 1-32, 1-33, 1-34, 1-35, 1-36, 1-37, 1-38, 1-39, 1-40, 1-41, 1-42, 1-43

BOXES

1. 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.
2. 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.
3. 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.

TEACHER TIPS

Introduce DOCTYPE as the first line of HTML code for all HTML webpages. All HTML5 webpages must begin with the HTML element `<!DOCTYPE html>`.

Discuss all the basic HTML tags and instruct the placement of the tags in a webpage. The basic opening tag that appears just below `<!DOCTYPE html>` 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). The opening head tag is `<head>` and the closing tag is `</head>`, which appears after the `<html>` tag. The text contained between `<title>` and `</title>` tags is displayed within the web browser tab; this tag appears after the

`<head>` tag. All text, images, links, and other content displayed on the webpage are included within the `<body>` and `</body>` tags, which should be placed after the `</head>` tag and closed before the `</html>` tag. Define a meta tag as a tag that contains information about the data on the webpage.

Define UTF as a compressed format that allows computers to display and manipulate text. 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 a webpage.

Discuss with the students how to create and view a webpage in a browser. Start by opening an editor such as Notepad++ and add a complete set of basic HTML tags with a title, say “My First Webpage,” and some text in the body, say “Welcome.” Save the document as index.html; the file name “index” is the standard name of a home page. Finally, open this document using any browser and the created webpage will appear on the browser.

LAB ACTIVITIES

1. Give the students some content and ask them to display that content in a web browser by creating an HTML document for it.

End of Chapter Material

- **Chapter Summary** provides a general survey of the material in the chapter. Students can use these pages to reinforce their achievement of the chapter objectives.
- The **Apply Your Knowledge** section includes short exercises and review questions that reinforce concepts and provide opportunities to practice skills.
- **Extend Your Knowledge** exercises allow students to expand their knowledge by solving practical problems and experimenting with new skills, using Help.
- In the **Analyze, Correct, Improve** exercises, students take the necessary steps to correct all the errors in a document and/or improve its design.
- The **In the Lab** activities solidify the concepts presented in the chapter with practical application.
- Thought-provoking **Consider This: Your Turn** exercises in each chapter exercise students' minds and challenge them to construct creative solutions. These exercises are constructed to allow students to work independently and collaboratively.

Glossary of Key Terms

- Active Server Pages (ASP) (HTML 25)
- active white space (HTML 14)
- Adobe Dreamweaver (HTML 28)
- Atom (HTML 26)
- attributes (HTML 21)
- Brackets (HTML 27)
- browser (HTML 7)
- client-side scripting language (HTML 24)
- code (HTML 2)
- data lines (HTML 4)
- domain (HTML 9)
- Domain Name System (DNS) (HTML 7)
- electronic commerce (e-commerce) (HTML 10)
- empty (HTML 23)
- Extensible Hypertext Markup Language (XHTML) (HTML 24)
- Extensible Markup Language (XML) (HTML 24)
- extranet (HTML 10)
- File Transfer Protocol (FTP) (HTML 6)
- hierarchical (HTML 15)
- home page (HTML 5)
- HTML element (HTML 21)
- hyperlink (HTML 5)
- Hypertext Markup Language (HTML) (HTML 21)
- Hypertext Preprocessor (PHP) (HTML 25)
- Hypertext Transfer Protocol (HTTP) (HTML 6)
- Internet (HTML 3)
- Internet backbone (HTML 4)
- Internet of Things (HTML 4)
- Internet Protocol (IP) (HTML 7)
- Internet service provider (ISP) (HTML 4)
- Internet site (HTML 9)
- intranet (HTML 9)
- JavaScript (HTML 24)
- jQuery (HTML 25)
- Learning Management System (LMS) (HTML 10)
- linear (HTML 15)
- link (HTML 5)
- markup language (HTML 21)
- meta (HTML 31)
- network (HTML 4)
- node (HTML 4)
- Notepad++ (HTML 25)
- operable (HTML 20)

- paired (HTML 23)
- passive white space (HTML 14)
- perceivable (HTML 20)
- platform independent (HTML 25)
- protocol (HTML 6)
- responsive design (HTML 13)
- robust (HTML 21)
- server (HTML 6)
- server-side scripting language (HTML 25)
- site map (HTML 14)
- syntax (HTML 23)
- tags (HTML 21)
- text editor (HTML 25)
- TextMate (HTML 27)
- Transmission Control Protocol/Internet Protocol (TCP/IP) (HTML 6)
- understandable (HTML 20)
- Unicode Transformation Format (UTF) (HTML 31)
- Uniform Resource Locator (URL) (HTML 9)
- void (HTML 23)
- web browser (HTML 7)
- web content (HTML 20)
- webpages (HTML 4)
- website (HTML 5)
- webbed (HTML 16)
- wireframe (HTML 14)
- World Wide Web (web) (HTML 4)
- World Wide Web Consortium (W3C) (HTML 20)
- WYSIWYG (HTML 28)

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