HTML5 and CSS3 Illustrated Introductory 2nd edition Vodnik Solutions Manual

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HTML5 and CSS3 – Illustrated, 2nd Edition

Unit B: Structuring Content in a Web document

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 **dark blue** 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, and Classroom Activities and/or Lab Activities. Pay special attention to teaching tips, and activities geared towards quizzing your students, enhancing their critical thinking skills, and encouraging experimentation within the software.

In addition to this Instructor's Manual, our Instructor's Resources CD also contains PowerPoint Presentations, Test Banks, and other supplements to aid in your teaching experience.

For your students:

Our latest online feature, CourseCasts, is a library of weekly podcasts designed to keep your students up to date with the latest in technology news. Direct your students to http://coursecasts.course.com, where they can download the most recent CourseCast onto their mp3 player. Ken Baldauf, host of CourseCasts, is a faculty member of the Florida State University Computer Science Department where he is responsible for teaching technology classes to thousands of FSU students each year. Ken is an expert in the latest technology and sorts through and aggregates the most pertinent news and information for CourseCasts so your students can spend their time enjoying technology, rather than trying to figure it out. Open or close your lecture with a discussion based on the latest CourseCast.

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Unit Objectives

Students will have mastered the material in Unit C when they can:

- Evaluate web accessibility standards
- Incorporate attributes
- Implement the div element
- Add HTML5 semantic elements
- Use special characters
- Specify the viewport
- Debug your HTML code
- Validate your HTML code
- Create an XHTML document

28: Evaluate Web Accessibility Standards

LECTURE NOTES

- Explain to students that a user agent is a program or device that interprets Web documents, such as a browser or vocal page reader.
- Stress that although most users view Web pages using default settings and popular Web browsers, some users, such as users with disabilities, may use custom browser settings or specialized software or hardware to access Web pages.
- Note that although laws generally do not require mandatory accessibility standards for Web sites that are not government owned, it is still recommended that Web pages have a high level of accessibility in order to widen the potential audience.
- Point out that a commonly used reference for accessibility is the Web Content Accessibility Guidelines (WCAG), and show examples of one or two guidelines included in it.
- Discuss accessibility goals and the audiences they may benefit.
- Explain the idea of a Web page being perceivable by all audiences and give examples of adaptations designed to make the Web page perceivable to specific groups, such as visually impaired users.

  TEACHER TIP
  Students may be concerned about the difficulty of making a Web site accessible to all users, since different users may need very different modifications in order to make a Web site accessible to them. For example, using icons makes a Web page more accessible to people who do not speak the language in which the page is written, but less accessible to people who are visually impaired. Explain that it is important to identify the target audience of the Web site and make the Web site accessible to that audience.

- Explain the idea of a Web page being operable by users. Give examples of modifications that can be made to a Web page to make it more readily operable by users, such as limited requirement for use of the mouse and the ability to make changes to automatic scrolling and refreshing rates.
- Note the importance of avoiding certain designs which may trigger unintended physical reactions, such as elements known to cause seizures.
- Point out the importance of clearly indicating the navigation between pages within the Web site and external Web pages.
- Explain that a Web page should be understandable; that is, the language in which the page is written should be clearly indicated, and explanations should be included for specialized vocabulary. Point out that if a user inputs information and makes an error, an explanation should be provided on how the user can fix the error.

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- In order for Web pages to be robust, or accessed by the widest variety of programs and devices, they should be coded according to Web standards.

FIGURE: B-1

BOXES

1. **Clues to Use: Understanding your role in web accessibility**
   In addition to Web developers' work creating a site, other factors significantly influence Web accessibility. The developers of user agents make decisions that affect how their software and devices interact with Web content, which impacts whether users can access content in specific ways. In addition, some Web content is produced using software that automates the Web development process, and the accessibility choices of the makers of these packages affects the accessibility of the content produced using them. Thus, while Web developers have a crucial role to play in building and maintaining a Web that's available to everyone, it can be useful to see your role as part of a larger team and to recognize when you run against a limitation that can't easily be fixed.

CLASSROOM ACTIVITIES

1. **Critical Thinking:** Have students assume that they are designing a Web site for a World War II veterans' organization. What special features will they include in the design of the Web site in order to make it accessible to the veterans?

2. **Group Activity:** Divide the class into small groups. Provide a project plan for a specific Web site, and ask each group to design a Web site that is accessible to individuals with different characteristics: hard of hearing, children, elderly, and visually impaired. What aspects of the design are similar to all the groups, and what aspects are different?

30: Incorporate Attributes

LECTURE NOTES

- Tell students that an attribute is additional code within an opening element tag that specifies information about the element.
- Explain that many but not all HTML elements allow you to set attributes.
- Point out that to use an attribute you must provide two pieces of information: an attribute name and the value you are assigning to the attribute.
- Use FIGURE B-3 to point out that an attribute is placed within an element's opening tag and to point out the syntax for an attribute: <element tag [space] attribute name [equal sign] "attribute value">
- Mention that the lang attribute specifies the language in which the document was written, and that the value "en" specifies English as the language.
- Point out that the charset attribute specifies the character encoding, which is the system user agents should employ to translate the electronic information representing the page into human-recognizable symbols.

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- Explain that, in general, meta elements and attributes added to the html element do not change how a document is rendered.

TEACHER TIP
Use the figures to point out how the indenting helps make the code more readable. Explain that the indenting is for cosmetic reasons only, that is, to help the developer quickly see the structure of the document, but that the indenting has no impact on how the code appears when the page is rendered in a browser.

FIGURES: B-2, B-3, B-4
TABLE B-1: Basic lang attribute values

BOXES

1. **Quick Tip**: For most editors, you press [Ctrl][Shift][S] (Win) or [command][shift][S] (Mac), type the new filename, then press [Enter].
2. **Trouble**: Be sure to click in the <html> tag and not at the end of the DOCTYPE statement.
3. **Trouble**: Because some code editors indent automatically, you may not need to press [Spacebar] to indent. Use the figures to check for and match indenting.
4. **Quick Tip**: The <meta> tag is a one-sided tag, so it does not require a closing tag.

CLASSROOM ACTIVITIES

1. **Critical Thinking**: Ask students to explain why it is so important to include the attributes added to FIGURE B-3 and FIGURE B-4. Have students explain what they think would happen if those attributes were omitted.

2. **Quick Quiz**:

   a. The charset attribute specifies the _____. (character encoding)

   b. T/F An attribute is additional code added between the opening and closing element tags. (F)

   c. T/F An attribute includes two parts: a name and a value. (T)

32: Implement the div Element

LECTURE NOTES

- Give an example of a situation in a web page when you might want to change the presentation of a section of a Web page that is not itself a single HTML element, e.g., when putting a box around your name, picture and e-mail address in your personal Web page.
- Show how you can use the div element to group multiple elements of different types (such as those shown in your previous example) and how you can use this to assign CSS styles to a section of a Web page.
- Use the figures to show how the div element is used to group an h2 head with its associated paragraph.

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TEACHER TIP
Use the figures to point out how the indenting helps make the code more readable. Explain that the indenting is for cosmetic reasons only, that is, to help the developer quickly see the structure of the document, but that the indenting has no impact on how the code appears when the page is rendered in a browser.

FIGURES: B-5, B-6

BOXES

1. **Quick Tip**: If your code editor indents new elements automatically, you may not need to press [Spacebar] at all. Remember to compare your code to the figures to confirm indents.
2. **Quick Tip:** The h2 element marks a heading that's at the second-highest heading level in the document.
3. **Clues to Use:** Writing for the Web

Many users want a process of finding and consuming web content that is dynamic and fast-paced. When you write content for the web, you should keep this in mind. Web content should generally be brief and scannable. A user should be able to get the gist of what your page contains with a quick glance. This allows users to quickly decide to stay on the page if the page contains the information they're looking for, or to navigate elsewhere and keep looking. You can make content scannable by including a short, descriptive heading at the top, and by breaking the content itself into sections with headings. After writing the actual content, it can be useful to revise it with the goal of removing half the words. This helps focus your writing and reduces the content of your web page to the essentials, which makes it easier for web users to scan and read.

After you publish content online, it's crucial to keep it up to date—out of date information makes your website's content seem unreliable. You can minimize the amount of regular updating you need to do by reducing or eliminating relative references to dates (such as "5 years ago" or "in 18 months") or labeling specific dates as being in the future (such as "The building will be completed in 2013.")

CLASSROOM ACTIVITIES

1. **Critical Thinking**: What are the implications of including multiple div elements in a single Web page? Is there any point in nesting div elements one inside the other in order to give different CSS styles to different groups of elements? Consider these questions with respect to how to structure your web page.

2. **Quick Quiz**:

   a. T/F The div element does not imply any semantic meaning to its contents. (T)

   b. T/F A div element changes the appearance of the content it encloses when the code is rendered in a browser. (F)

   c. T/F The content you want marked by the div element should be included in the opening div tag. (F)

   d. T/F The div element is the parent of the elements it encloses. (T)

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34: Add HTML5 Semantic Elements

LECTURE NOTES

- Explain that all HTML elements have semantic value, which means that HTML elements indicate the meaning of their content.
- Point out that most HTML elements describe their contents semantically, e.g., h1 elements are assumed to be headings.
- Tell students that, even though the div element has limited semantic value, HTML5 includes a number of semantic elements that indicate the role of their content
- Be sure students understand that the reason it is important to use semantic elements is because search engines use this information to provide search results, which makes it easier for people using a search engine to find the web site.
- Point out that older versions of IE can't interpret semantic elements, so students must include a script element (which instructs older browsers how to interpret semantic elements) in the head section. Explain that the script element references code in an external file that browsers use to help them interpret the semantic elements.
- Mention that the script name is specified using the src attribute.

> TEACHER TIP
> Remind students that the div element is a generic element and does not imply any semantic meaning. Explain that the div element is used to group content, but the div element does not indicate any information about the content being grouped and so that is why it is considered to have limited semantic value.

FIGURES: B-7, B-8
TABLE B-2: Selected HTML5 semantic elements

BOXES

1. **Quick Tip**: It's often possible to mark up web page contents semantically in more than one way. The choice of which elements to use can vary depending on the developer and the site.
2. **Trouble:** A warning about blocked content might open, depending on your browser settings. If so, allow blocked content.

CLASSROOM ACTIVITIES

1. **Critical Thinking**: Look at any website, such as your school or company website. Point to different content on the page and explain which semantic element you think is used to enclose that content. Explain why. If you know how, view the code for the page and see if you were correct.

2. **Quick Quiz:**

   a. T/F You use semantic elements to indicate the meaning of the content enclosed by those semantic elements. (T)

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b. T/F One of the most meaningful semantic elements you will use is the div element because it is rich with semantic meaning. (F)

36: Use Special Characters

LECTURE NOTES

- Explain to students that although most Web page text is entered into an HTML document, some characters may be misinterpreted by user agents as being computer instructions. These characters include '<' and '>'.
- Introduce the concept of character references, which are specially formatted codes that represent characters in the HTML document character set. Point out the syntax of character references always begin with an ampersand (&) and end with a semicolon (;). The rest of the code consists of either a pound symbol (#) followed by a numeric representation of the associated character or an English language abbreviation for the associated character name.
- Explain that every character, not just those on the keyboard, has a number code, known as a numeric character reference. Further explain that a few commonly used characters also have an abbreviation-based character alternative, which is known as a named character reference.
- Point out that it is only important to use character references for a few specific characters. Use TABLE B-3 as a guide to discussing these characters.

FIGURES: B-9, B-10
TABLE B-3: Important character references

BOXES:

1. **Quick Tip:** If you're using a code editor, the character reference you type may appear as italic. This will not affect the content when the page is rendered by your browser.
2. **Clues to Use**: **Finding codes for other characters**

   UTF-8 is the most commonly used character encoding on the web today. This encoding supports character references for thousands of characters. These symbols may include characters in different writing systems and international currency symbols, as well as icons and pictograms for a variety of themes. You can go to unicode.org/charts or fileformat.info to browse supported characters by subject. Note that not all symbols are displayed in every browser or operating system. This is because browsers and operating systems use different default fonts, and a given font may contain character descriptions for some, but not all, UTF-8 characters. For this reason, it's important to test a page containing a less-common special character in all browsers that you anticipate your audience will use to view the page. This lets you confirm that the character is recognized and displayed when the page is rendered in a browser, or make adjustments if the character is not recognized.

CLASSROOM ACTIVITIES

1. **Quick Quiz**:

   a. T/F All characters on the keyboard have a numeric character reference. (T)

   b. T/F All characters on the keyboard have an abbreviation-based character reference. (F)

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c. T/F It is important to use character references for all non-alphanumeric characters. (F)

2. **Quick Quiz**: The ____ symbol is used at the beginning of a character reference, and the ____ symbol is used at the end of a character reference. (&, ;)

LAB ACTIVITY

1. Give students text that includes multiple occurrences of the characters '<' and '>'. For example, you can use a demo for an if-else clause in a programming language. Ask students to create a Web page in which they enter the text directly, and another Web page in which they use character references for '<' and '>', as well as any other relevant characters. What are the differences between the ways the two Web pages are displayed? Have students discuss how the user agent interpreted the '<' and '>' characters when they are typed directly without use of character references.

38: Specify the viewport

LECTURE NOTES:

- Point out to students that when a browser opens a web page on a mobile device, the browser needs to figure out to display the page on the smaller screen.
- Explain that some web pages can scale to fit any browser, which makes the web page useable on any device.
- Tell students that to instruct browsers to display a page at the width of the browser window without zooming in, they change the viewport settings using a viewport meta element.
- Explain that the viewport is like looking through the web page through an imaginary window, set to the size of the display on the device you want the page to appear.
- Be sure students understand the importance of the viewport meta element. Explain that zooming a page can make the page content too small and so unreadable. By setting the viewport, the page is displayed at a size that is appropriate for the device.
- Point out that as part of the viewport meta element, they use the content attribute, whose value specifies one or more of the pairs of properties and values.

TEACHER TIP
Open a web page. Maximize the screen, then resize the screen until it is as small as it can be on the device you are using. Ask students to notice if any of the web page features change as the page gets smaller. Point out to students elements that might change, such as the nav bar (which might be hidden in one icon), images (which might become stacked instead of side by side, and text (which might be hidden from view if it is not essential to the meaning of the page).

FIGURES: B-11, B-12, B-13
TABLE B-4: viewport attribute properties

BOXES:

1. **Trouble**: Consult the documentation for your web server if necessary.

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2. **Quick Tip:** Even though the meta element supports many content value options for viewport, you usually only need to use the value that sets the width to device-width as you did in this step.

CLASSROOM ACTIVITIES

1. **Quick Quiz**:

   a. T/F A browser will automatically resize a web page to fit the display device. (F)

   b. T/F The viewport meta element instructs the browser to assume that the width of the content matches the width of the device. (T)

2. **Quick Quiz**: The viewport meta element uses the _____ attribute. (content)

40: Debug your HTML Code

LECTURE NOTES:

- Explain to students that even the most careful developer writes code from time to time that doesn't work.
- Point out that a bug is a problem that results from code that is written incorrectly.
- Explain that the process of finding and fixing or removing a bug is known as debugging.
- Be sure students understand the importance of debugging their code before publishing their page. Discuss that students should always test their web pages using more than one browser because browsers do not always render the code the same way.

TEACHER TIP
Open the same web page using several different browsers. Have students point out differences they see when they compare the web page in the different browsers. Be sure students understand that because a web page looks awesome in one browser, it may not look the same way in a different browser. Explain that viewing their web pages this way will help them debug the page for cross-browser issues.

FIGURES: B-14, B-15, B-16
TABLE B-5: Common bugs and causes

BOXES:

1. **Trouble**: If your page does not display as expected, be sure your correct code matches FIGURE B-16.

CLASSROOM ACTIVITIES

1. **Quick Quiz:**

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a. T/F Viewing a web page in a browser can sometimes help you narrow down where bugs in your program code might be. (T)

b. T/F A common bug is missing tags around content. (T)

2. **Quick Quiz:**

a. The result of incorrectly written code is called a(n) _____, and the process of fixing such problems is known as _____ . (bug, debugging)

LAB ACTIVITY

1. Give students code for a simple web page with some common errors in the code. Have students open the web page in a browser and note the errors. Then have students return to the code and correct the errors. Tell students to alternate between working with the code and viewing the web page in the browser until all errors have been corrected.

42: Validating Your HTML Code

LECTURE NOTES:

- Explain to students the importance of spotting problems with HTML code and making sure that users can view your Web pages as expected.
- Present the idea of validation, an automated process of comparing HTML code against the HTML5 coding standards, as a way of finding errors in your code. Tell students validation is a helpful step in web page development because it not only shows that there is an error, but may identify the specific source of the problem.
- Illustrate to your students how to validate a Web page by opening http://validator.w3.org/ in a browser, uploading a simple HTML file using the "validate by file upload" tab and have the validator check the HTML file. Show students how the validation results look and where they can be found in the validator Web page.

TEACHER TIP
Validate a web page with known errors and use the results to help students see how the information in the validator can help them find and correct the errors. Try to include an example where the line associated with the error is not the line where the error occurs. Show students that the line does not match where the error occurs and show to use the information in that line of code to find where the error actually is.

FIGURES: B-17, B-18, B-19
TABLE B-6: Common validation errors and warnings

BOXES:

1. **Quick Tip**: Errors listed by the validator always specify the line and character ("column") numbers where it encountered the error. This is sometimes, but not always, the location of the code you need to fix.

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CLASSROOM ACTIVITIES

1. **Quick Quiz:**

   a. T/F It is important to correct errors in HTML code because it can ensure that a Web page will continue to work with future versions of HTML standards. (T)

   b. T/F If the HTML code of a specific Web page is not validated you will not be able to open the Web page in a Web browser. (F)

2. **Critical Thinking:** Is it possible to ignore some notes and warnings in a validation report and still have a valid HTML document that will display as expected in a browser? Why or why not?

LAB ACTIVITY

1. Select a Web page of your choice, and validate it using the "validate by URI" tab of http://validator.w3.org/. If the validation tool shows no comments as to the validity of the Web page, copy the source code of the Web page into a new text document and save it. Make a few changes to the tags included in the copied source code, and then validate the edited Web page. How did your changes affect the validity of the Web page?

44: Create an XHTML Document

LECTURE NOTES:

- Note that XHTML is a markup language intended to make HTML comply with the rules of XML.
- Point out that the way HTML and XHTML are written is very similar, however XHTML requires additional code in a number or situations.
- Explain to students that converting an HTML document to an XHTML document requires editing the code to meet all the requirements of an XHTML document, including replacing the HTML doctype with the XHTML doctype.
- Stress that another common change that must be made between HTML and XHTML is closing all empty elements by placing a space and slash (/) before the closing >.
- Tell students that XHTML does not include definitions for HTML5 semantic elements so those semantic elements must be replaced with generic div elements when converting and HTML document to an XHTML document.

TEACHER TIP
The definition of XHTML as complying with the rules of XML means that all Web pages written in XHTML are valid according to the requirements of HTML, but not all pages written in HTML are valid according to the rules of XHTML.

- Explain that HTML is a flexible language, and stress the importance of this flexibility. For example, if a Web-page author made a minor mistake in writing code, user agents would still be able to display the Web page correctly.

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- Stress that XML does not tolerate errors, and therefore XHTML, which adheres to XML rules, does not tolerate errors. Specify that this means that if a user agent encounters a coding error in XHTML code, it must display an error message.

FIGURES: B-20, B-21
TABLE B-7: Difference between HTML and XHTML

BOXES:

1. **Quick Tip:** Because an XHTML DOCTYPE is so complex, developers generally either copy it from an online resource and paste it into their code, or rely on a code editor to generate the DOCTYPE for it.
2. **Trouble:** Refer to the steps in the previous lesson "Validate your HTML code" as needed to complete Step 9.

CLASSROOM ACTIVITIES

1. **Quick Quiz**:
   a. T/F Every HTML document is a valid XHTML document. (F)
   b. T/F XHTML replaced HTML as the only language for writing Web pages. (F)
   c. T/F XHTML is a version of HTML that conforms to the rules of XML. (T)

2. **Classroom Discussion:** Look at TABLE B-7, and discuss possible considerations for using XHTML over HTML. Try to think of specific types of projects that would benefit from being written in XHTML rather than HTML. Repeat the exercise for HTML.

LAB ACTIVITY

TABLE B-2 lists specific differences between HTML and XHTML. Ask students to look at the source code of an HTML Web page of their choice, and to use the information in TABLE B-2 to determine whether or not the Web page complies with XHTML rules.

End of Unit Material

- **Concepts Review** – Includes screen identification, multiple choice, and matching questions.
- **Skills Review** – Provides additional hands-on exercises that mirror the progressive style of the lesson material.
- **Independent Challenges 1, 2 and 3** – Case projects that require critical thinking and application of the unit skills. The Independent Challenges increase in difficulty, with the first being the easiest (with the most step-by-step detailed instructions). Independent Challenges 2 and 3 become increasingly more open-ended.

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- **Independent Challenge 4: Explore:** – Using a real world focus to apply the unit skills, students perform tasks or create documents that will benefit their everyday lives.

- **Visual Workshop** – a practical, self-graded capstone project that requires independent problem solving.

Glossary of Key Terms

attribute (30)
bug (40)
character encoding (30)
character reference (36)
debugging (40)
Extensible Hypertext Markup Language (XHTML) (44)
Extensible Markup Language (XML) (44)
HTML5 (34)
named character reference (36)
numeric character reference (36)
screen reader (28)
semantic (34)
semantic element (34)
user agents (28)
validation (42)
viewport (38)
viewport meta element (38)
Web Content Accessibility Guidelines (WCAG) (28)

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HTML5 & CSS3 2e, Unit B Answer Key

Concepts Review

FIGURE A-22

1. D
2. C
3. F
4. A
5. E
6. B

Matching

7. G
8. F
9. D
10. E
11. A
12. C
13. B

Completion

14. b. operable
15. b. in an element's opening tab
16. c. semantic
17. d. semicolon (;)
18. a. bugs

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