JavaScript, Sixth Edition

Chapter 1 Solutions

Short Quiz 1

1. What method of accessing documents did Tim Berners-Lee create? What was noteworthy about his system?

Hypertext linking. It was a way to easily access cross-referenced documents stored on a computer network.

1. What does W3C stand for? What does the organization do?

The World Wide Web Consortium. It oversees the development of web technology standards.

1. What are the codes in an HTML document called? What function do they serve?

An HTML document is a text document that contains codes, called tags, which specify how the data in the document is treated by a web browser.

Short Quiz 2

1. In client/server architecture, what is a client? What is a server?

The server is usually some sort of database from which a client requests information. A server fulfills a request for information by managing the request or serving the requested information to the client—hence the term, client/server. One of the primary roles of the client, or front end, in a two-tier system is the presentation of an interface to the user. The user interface gathers information from the user, submits it to a server, or back end, then receives, formats, and presents the results.

1. What does the middle tier do in a three-tier architecture?

The middle tier handles the interaction between the web browser client and the data storage tier. Essentially, the client tier makes a request of a database on a web server. The processing tier performs any necessary processing or calculations based on the request from the client tier, and then reads information from or writes information to the data storage tier. The processing tier also handles the return of any information to the client tier.

1. What is ECMAScript? Why was is created?

ECMAScript is an international, standardized version of JavaScript. It was created to ensure that all browsers implemented a common scripting language rather than using customized, incompatible variations.

Short Quiz 3

1. JavaScript code in an HTML document goes within which HTML element?

script

1. Why should you end every JavaScript statement with a semicolon?

The semicolon serves to identify the end of each statement, making it easier for a programmer to read his or her own code (and for other programmers to read the code later on). In addition, a JavaScript parser must perform additional work on a script without semicolons to determine where each statement ends, which can slow down a web page and detract from the user experience.

1. How do you create a single-line comment in JavaScript? How do you create a multiline comment in JavaScript?

// a single-line comment starts with two slashes

/\* a multiline comment starts with a slash followed by an asterisk

and ends with an asterisk followed by a slash \*/

Short Quiz 4

1. What is an identifier? What limits does JavaScript place on an identifier?

The name you assign to a variable is called an identifier. You must observe the following rules and conventions when naming a variable in JavaScript:

* Identifiers must begin with an uppercase or lowercase ASCII letter, dollar sign ($), or underscore ( \_ ).
* You can use numbers in an identifier but not as the first character.
* You cannot include spaces in an identifier.
* You cannot use reserved words for identifiers.

1. What is the difference between declaring and initializing a variable?

Using the var keyword to create a variable is called declaring the variable. When you declare a variable, you can also assign a specific value to, or initialize, the variable by adding an equal sign ( = ) after the variable name, followed by the value you’re assigning to the variable.

1. How do you change the value of a variable?

You can change a variable’s value at any point in a script by using a statement that includes the variable’s name, followed by an equal sign, followed by the value you want to assign to the variable.

1. What is an event handler for?

When an event occurs, your script executes any code that responds to that specific event on that specific element. This code is known as the event handler.

Short Quiz 5

1. Why should you place scripts at the end of an HTML document’s body section?

The elements in an HTML document are rendered in the order in which they occur in the document, and each script is processed when the HTML element that contains it is parsed by a browser. When processing a script in the head section or in the middle of HTML content, most browsers do not continue rendering the web page until the script is loaded and executed. If a script is very large or complex, this could cause the page to be displayed with only some of its content and formatting until the script finishes loading. If you instead place your script elements just before the end of the body section, you allow browsers to render all the simple HTML content immediately on the user’s screen, and then load and process any JavaScript that works with that content. This ensures that users can see and interact with the entire web page as quickly as possible.

1. How do you incorporate the contents of a JavaScript source file into an HTML document?

To access JavaScript code that is saved in an external file, you use the src attribute of the script element. You assign to the src attribute the URL of a JavaScript source file.

# [RQ HEAD]Review Questions

[RQ QUESTIONS]

* + - 1. A URL is a type of \_\_\_\_\_\_\_\_\_.  
         [RQ MULT CHOICE]
         1. web page
         2. URI
         3. link
         4. network
      2. What organization oversees the development of web technology standards?
         1. U.S Department of Defense
         2. World Wide Web Consortium
         3. Stanford University
         4. United Nations
      3. The markup language originally developed to create web pages and still in use today is called \_\_\_\_\_\_\_\_\_\_.
         1. HTML
         2. SGML
         3. XML
         4. CSS
      4. \_\_\_\_\_\_\_\_\_\_ is a separate, complementary language to HTML that was developed for specifying the appearance of web page elements.
         1. XHTML
         2. SGML
         3. XML
         4. CSS
      5. Elements that do not require a closing tag are called \_\_\_\_\_\_\_\_\_\_ elements.
         1. independent
         2. empty
         3. permanent
         4. constant
      6. What is the root element of an HTML document?
         1. head
         2. body
         3. html
         4. script
      7. A system consisting of a client and a server is known as a \_\_\_\_\_\_\_\_\_\_.
         1. mainframe topology
         2. double-system architecture
         3. two-tier system
         4. wide area network
      8. What is usually the primary role of a client?
         1. locating records that match a request
         2. heavy processing, such as calculations
         3. data storage
         4. the presentation of an interface to the user
      9. Which of the following functions does the processing tier *not* handle in a three-tier client/server system?
         1. Processing and calculations
         2. Reading and writing of information to the data storage tier
         3. The return of any information to the client tier
         4. Data storage
      10. Which of the following uses the correct case?
          1. Document.write()
          2. document.write()
          3. document.Write()
          4. Document.Write()
      11. Which of the following is *not* a valid identifier?
          1. $InterestRate
          2. 2QInterest Rate
          3. interestRate
          4. \_interestRate
      12. When you assign a specific value to a variable on its creation, you \_\_\_\_\_\_\_\_\_\_ it.
          1. declare
          2. call
          3. assign
          4. initialize
      13. Code that tells a browser what to do in response to a specific event on a specific element is called a(n) \_\_\_\_\_\_\_\_\_\_.
          1. method
          2. event handler
          3. response
          4. procedure
      14. Which method displays a dialog box with an OK button?
          1. document.write()
          2. document.writeln()
          3. window.alert()
          4. window.popup()
      15. A section of a document that is not interpreted as markup is referred to as \_\_\_\_\_\_\_\_\_\_.
          1. PDATA
          2. CDATA
          3. PCDATA
          4. CPDATA
      16. What is the difference between web page design, web page authoring, and web development?

Web page design, or web design, refers to the visual design and creation of the documents that appear on the World Wide Web. Most businesses today—both prominent and small—have websites. High-quality web design plays an important role in attracting first-time and repeat visitors. However, the visual aspect of a website is only one part of the story. Equally important is the content of the website and how that content is structured.

Web design is an extremely important topic. However, this book is not about web design, even though you will certainly learn many web design concepts and techniques as you work through the chapters ahead. Instead, this book touches on both web page authoring and web development. Web page authoring (or web authoring) refers to the creation and assembly of the tags, attributes, and data that make up a web page. There is a subtle, but important, distinction between web design and web page authoring: web design refers to the visual and graphical design aspects of creating web pages, whereas web page authoring refers to the physical task of assembling the web page tags and attributes. Web development, or web programming, refers to the design of software applications for a website. Generally, a web developer works behind the scenes to develop software applications that access databases and file systems, communicate with other applications, and perform other advanced tasks. The programs created by a web developer will not necessarily be seen by a visitor to a website, although the visitor will certainly use a web developer’s programs, particularly if the website writes and reads data to and from a database. Although JavaScript lives more in the realm of web page authoring, there is certainly some overlap between web authoring and web development, especially when it comes to sending and receiving data to and from a web server.

* + - 1. What is the difference between character data and parsed character data? What does this have to do with JavaScript?

If you’re working with XHTML instead of HTML, JavaScript can present a challenge to creating valid documents. This is because some JavaScript statements contain symbols such as the less-than symbol (<) symbol, the greater-than symbol (>), and the ampersand (&). This is not a problem with HTML documents, because the statements in a script element are interpreted as character data instead of as markup. A section of a document that is not interpreted as markup is referred to as character data, or CDATA. If you were to validate an HTML document containing a script section, the document would validate successfully because the validator would ignore the script section and not attempt to interpret the text and symbols in the JavaScript statements as HTML elements or attributes. By contrast, in XHTML documents, the statements in script elements are treated as parsed character data, or PCDATA, which identifies a section of a document that is interpreted as markup. Because JavaScript code in an XHTML document is treated as PCDATA, if you attempt to validate an XHTML document that contains a script section, it will fail the validation. To avoid this problem, you can do one of two things. One option is to move your code into a source file, which prevents the validator from attempting to parse the JavaScript statements. Alternatively, if you prefer to keep the JavaScript code within the document, you can enclose the code within a script element within a CDATA section, which marks sections of a document as CDATA.

* + - 1. Write the JavaScript to add the text “Copyright 2017” as a line comment. Write the JavaScript to add the same text as a block comment.

// Copyright 2017

/\* Copyright 2017 \*/

* + - 1. Write a statement that creates a variable with the identifier title and the value “Dr.”

title = "Dr.";

* + - 1. What is a library?

In addition to storing scripts for multiple pages in the same website, sometimes JavaScript source files store especially useful generic scripts used on many different websites. These files, known as libraries, are often developed by a single programmer or a team of programmers and distributed online. Many libraries are developed to solve a problem on one website and turn out to be useful for other sites as well. Programmers often make libraries available for free reuse.

# [EOC A HEAD]Case Projects

Before you begin working on the Case Projects, be certain to extract the data files for this book, which you can download from Cengage’s website at *http://www.cengage.com*, as explained in the preface to this book. Save any files you create for the Case Projects in the correct folder in your data files.

## [EOC B HEAD]Individual Case Project

The Individual Case Project for each chapter in this book will build on a website that you create on a subject of your choice. To begin, choose a topic for your website. This can be a topic related to your major, or a personal interest or activity. Plan a website containing at least four pages with a common layout and navigation system. Note that you’ll add pages to your site in later chapters, so ensure that your navigation system can support additional content. Add a script element that links to the modernizr.custom.05819.js file in each HTML document in your website. Ensure that all of your web pages pass validation.

Grading rubric:

* Website containing at least four HTML documents, all incorporating a common navigation system
* The following script element at the end of the head section of each HTML document:

<script src="modernizr.custom.05819.js"></script>

* All pages must pass validation.

## [EOC B HEAD]Team Case Project

Throughout the Team Case Projects in this book you will continue to work on a website on a subject chosen by your team. Working in a team of 4–8 people, discuss and agree on a topic for your website. This may be a topic related to your major, another area of study, your college or university, or a shared interest. Work together to plan a website containing, at a minimum, a number of pages equal to the number of group members, and to create a common layout and navigation system. Note that you’ll add pages to your site in later chapters, so ensure that your navigation system can support additional content. Decide as a group who will create which page, and create the pages individually. Add a script element that links to the modernizr.custom.05819.js file in each HTML document you create. When you’ve finished creating the individual pages, ensure they pass validation, and then work together to assemble the resulting website, identifying and fixing any issues as a group.

Grading rubric:

* Website containing at least as many HTML documents as there are group members, all incorporating a common navigation system
* The following script element at the end of the head section of each HTML document:

<script src="modernizr.custom.05819.js"></script>

* All pages must pass validation.