JavaScript, Sixth Edition

Chapter 5 Solutions

Short Quiz 1

* 1. What is the Window object?

The top-level object in the browser object model is the Window object, which represents a web browser window. The Window object is called the global object because all other objects in the browser object model are contained within it.

* 1. What is the DOM?

The Document object branch of the browser object model is represented by its own object model called the Document Object Model, or DOM. Unlike the BOM, which is a loose standard, the DOM is a formal specification of the World Wide Web Consortium (W3C), like HTML and CSS.

* 1. What is the difference between the Window object and the Document object? What is the relationship between the two?

JavaScript specifies the objects, properties, and methods of the browser and the relationship between them through a specification called the browser object model (BOM). One part of the BOM, the Document object, represents the contents of a document within the browser. Because the Document object is where many of the changes happen in a dynamic web page, this object has its own object model, known as the document object model (DOM).

SHORT QUIZ]Short Quiz 2

1. What statement would you use to create a variable named logo and assign as its value a reference to the element with the id value logoImage?

var logo = getElementById("logo");

1. What statement would you use to create a variable named firstPriority and assign as its value a reference to the first li element in the document?

var firstPriority = getElementsByTagName("li")[0];

1. What statement would you use to create a variable named language and assign as its value the value of the lang attribute of the html element?

var language = document.getElementsByTagName("html")[0].lang;

1. What statement would you use to change the value of the lang attribute of the html element to the value of the language variable?

document.getElementsByTagName("html")[0].lang = language;

Short Quiz 3

1. What statement creates a new footer element?

document.createElement("footer");

1. Name two methods you can use to add a node to the DOM tree, and explain the difference between them.

appendChild()

insertBefore()

A node added with appendChild() is always appended after any existing child nodes. The insertBefore() method allows you to specify the order of the inserted node among its sibling nodes.

1. How would the results of the following two statements differ?

drive.cloneNode(true);

drive.cloneNode(false);

The true argument indicates that the cloned node should include any child nodes of the specified node, while the false argument indicates that only the specified parent node should be cloned.

Short Quiz 4

* 1. What statement do you use to create a new, blank window?

window.open();

* 1. What happens if your apps include JavaScript code that opens a new window or tab without a request from the user?

The pop-up blocker feature built into the current versions of all major browsers will prevent the window or tab from opening.

* 1. What extra step do you need to take in code to create a new window if you want to be able to control the new window from the window that created it?

If you want to control the new window by using JavaScript code located within the web browser in which it was *created*, then you must assign the new Window object created with the window.open() method to a variable.

Short Quiz 5

* 1. Provide two statements that display the previous page in the browser history.

history.back();

history.go(-1);

* 1. What is the effect of the statement location.reload(true);?

This statement forces the current web page to reload from the server where it is located, even if no changes have been made to it.

* 1. What types of information can you access using the Screen object?

The Screen object is used to obtain information about the display screen’s size, resolution, and color depth.

# Review Questions

* + - 1. Which of the following objects is also referred to as the global object?
         1. Browser object
         2. Screen object
         3. Document object
         4. Window object
      2. In the browser object model, the History object is a \_\_\_\_\_\_\_ object to the Location object.
         1. parent
         2. grandparent
         3. sibling
         4. child
      3. Each item in the DOM tree is known as a \_\_\_\_\_\_\_.
         1. node
         2. document
         3. object
         4. element
      4. Which of the following is the correct syntax for accessing an element with the id value headline?
         1. document.getElementsByID("headline")
         2. document.getElementById("headline")
         3. document.getElementByID("headline")
         4. document.getElementById(headline)
      5. Which of the following is the correct syntax for using the getElementsByTagName() method to return all of a document’s p elements?
         1. document.getElementsByTagName("<p>")
         2. document.getElementsByTagName("p")
         3. document.getElementsByTagName(<p>)
         4. document.getElementsByTagName() = "<p>"
      6. Which of the following is the correct syntax for accessing the value of the href attribute for the third a element in a document?
         1. document.getElementsByTagName("a")[2].href
         2. document.getElementsByTagName("a")[3].href
         3. document.getElementById("a").href
         4. document.getElementsByTagName("href")[3]
      7. A set of connected nodes that are not part of a document is known as a(n) \_\_\_\_\_\_\_\_\_\_.
         1. history list
         2. node list
         3. HTML collection
         4. document fragment
      8. Which method allows you to insert a node at a position among its sibling nodes that you specify?
         1. createElement()
         2. appendChild()
         3. cloneNode()
         4. insertBefore()
      9. How do you increase the likelihood that a new window you create with the window.open() method will open as a new window rather than a new tab?
         1. Specify the window=true option.
         2. Specify a height and/or a width value.
         3. Ensure the method is initiated by a user action.
         4. Close all open tabs in the user’s browser.
      10. How do you control a new window that you have created with JavaScript code?
          1. You cannot control a new window with JavaScript code.
          2. Assign the new Window object created with the window.open() method to a variable.
          3. Use the name argument of the window.open() method.
          4. Use the name argument of the document.open() method.
      11. To make a window the active window, you use the \_\_\_\_\_\_\_ method of the Window object.
          1. focus()
          2. open()
          3. close()
          4. active()
      12. Which method do you use to execute code only once after a specific amount of time has elapsed?
          1. setTimeout()
          2. setInterval()
          3. clearTimeout()
          4. clearInterval()
      13. Which method do you use to execute code repeatedly, with a specific amount of time between each execution?
          1. setTimeout()
          2. setInterval()
          3. clearTimeout()
          4. clearInterval()
      14. The properties of which object describe a user’s browser?
          1. History
          2. Location
          3. Navigator
          4. Screen
      15. Which object allows you to change to a new, unvisited web page from within JavaScript code?
          1. History
          2. Location
          3. Navigator
          4. Screen
      16. List the six main objects that make up the browser object model. Describe the relationships between these objects using the terms parent, child, and sibling.

Window, History, Location, Navigator, Screen, Document

The Window object is the parent object of all the other objects, such as History and Location. History is a sibling object to the Location, Screen, Navigator, and Document objects, which are all child objects of the Window object.

* + - 1. Suppose you’re working with a document that includes one img element, which has the id value logoImage. Provide the code for two ways of referencing this element.

document.getElementById("logoImage")

document.getElementsByTagName("img")[0]

* + - 1. Write code that displays a document named modelHDescription.htm in a new browser window that is 400px wide and 300px high, and then brings that window to the front of any other browser windows.

var descWindow = window.open("modelHDescription.htm", "descWin", "width=400,height=300");

window.focus(descWindow);

NOTE: The variable name and the window name can be any legal name values; descWindow and descWin are used here for illustration purposes only.

* + - 1. Explain the difference between the setTimeout() and setInterval() methods. Provide an example of when you’d use each one.

You use the Window object’s timeout and interval methods to create code that executes automatically. The setTimeout() method is used in JavaScript to execute code after a specific amount of time has elapsed. Code executed with the setTimeout() method executes only once. The setInterval() method is similar to the setTimeout() method, except that it repeatedly executes the same code after being called only once.

You might use the setInterval() method, as in the chapter steps, to create a slideshow in which the image displayed changes automatically every few seconds.

You might use the setTimeout() method to briefly display a message for a user before displaying a web page showing additional options.

* + - 1. Explain how to center a window on the screen when it is created with the window.open() method.

For windows generated with the window.open() method, you can center a window when it is first displayed by assigning values to the left and top options of the options argument. To center a window horizontally, subtract the width of the window from the screen width, divide the remainder by two, and assign the result to the left option. Similarly, to center a window vertically, subtract the height of the window from the screen height, divide the remainder by two, and assign the result to the top option.

# Case Projects

## Individual Case Project

Add a page to your individual website that educates visitors about web security. Report the values of at least six properties from Tables 5-10 and 5-11 to illustrate the breadth of information about a user’s computer that a web app can access. Perform a web search on practices for using the web safely, and include links to at least three sources, along with a one-sentence summary of each.

Grading rubric: Students should incorporate a page into their individual websites that displays the values of six properties from Tables 5-10 and 5-11, such as the following:

* navigator.appName
* navigator.appVerion
* navigator.platform
* navigator.userAgent
* screen.height
* screen.width
* screen.pixelDepth
* screen.colorDepth

The page should also include links to at least three resources on using the web safely, along with a one-sentence summary of each resource.

## Team Case Project

In this project, your team will draw the DOM tree for an HTML document.

To start, break into pairs, with each pair responsible for a different HTML document in your team website. With your partner, sketch the DOM tree for the selected document. Your tree should show the hierarchy of the site, including elements, attributes, and text content, similar to Figure 5-4.

When all the pairs are finished creating their DOM trees, assemble as a full group and compare your trees. Identify and discuss any differences between trees. Make any changes necessary to your own tree based on feedback from the rest of the team.

Grading rubric: Students should submit DOM trees for pages in their team website. The structure of the trees should match the format shown in Figure 5-4. You may wish to ask students to submit the code for the page on which they based the tree as well, for comparison.