8.11.2 Review Questions

1. What is JavaScript? What are its relative advantages and disadvantages?
2. How is a browser plug-in different from a browser extension?
3. How do AJAX requests differ from normal requests in the HTTP request–response loop?
4. What are some reasons a user might have JavaScript disabled?
5. What kind of variable typing is used in JavaScript? What benefits and dangers arise from this?
6. What do the terms truthy and falsy refer to in JavaScript? What does `undefined` mean in JavaScript?
7. Create an array that contains the titles of four sample books. Write a loop that iterates through that array and outputs each title in the array to the console.
8. Define an object that represents a sample book, with two properties (`title` and `author`) using object literal notation. The `author` property should also be an object consisting of two properties (`firstName` and `lastName`).
9. How are function declarations different from function expressions? Why are function expressions often the preferred programming approach in JavaScript?
10. What is a callback function?
11. What is an anonymous function? What is a nested function? What are some of the reasons for using these two types of function?
12. Identify and define the two types of scope within JavaScript. Provide a short example that demonstrates these two types of scope.
13. Define an object that represents a car, with two properties (`name` and `model`) using a function constructor. Add a function to the object named `drive()` that displays its name and model to the console. Instantiate two car objects and call the `drive()` function for each one.
14. Define and use an immediately-invoked function expression that uses a loop to output to the console all the numbers between 1 and 20.
15. Why are prototypes more efficient than other techniques for creating objects with methods in JavaScript?

8.11.3 Hands-On Practice

PROJECT1: Art Store

DIFFICULTY LEVEL: Beginner

HANDS-ON EXERCISES
Project 8.1

Overview

Demonstrate your proficiency with loops, conditionals, arrays, and functions in JavaScript. The final project will look similar to that shown in Figure 8.26.

Instructions

1. You have been provided with the HTML file (chapter08-project01.html) that includes the markup for the finished version. Preview the file in a browser.

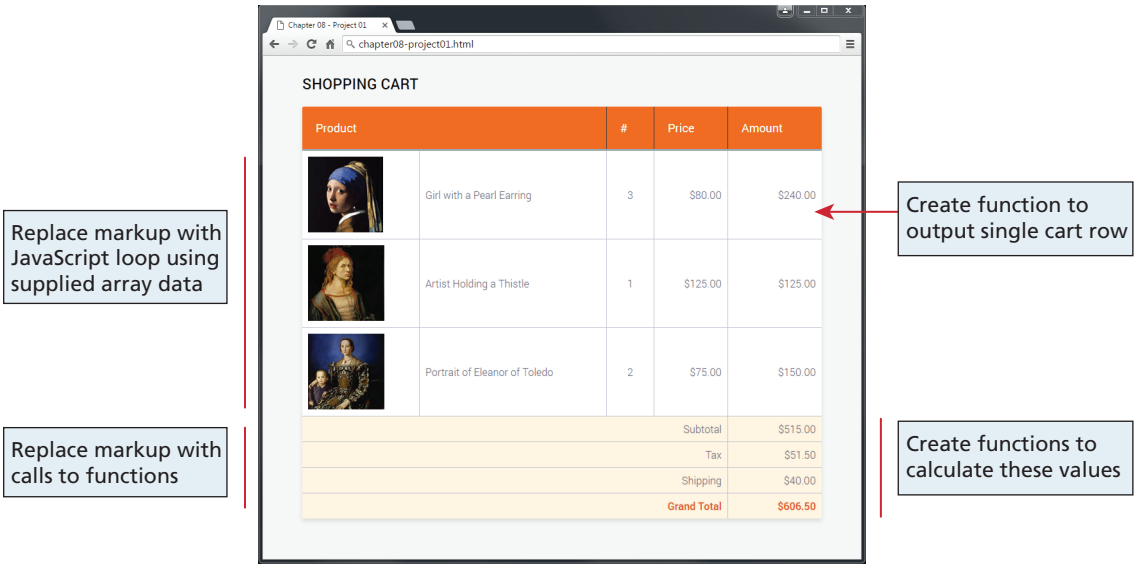

FIGURE 8.26 Completed Project 1

2. Examine the data file **data.js**. It contains four arrays that we are going to use to programmatically generate the data rows (and replace the hard-coded markup supplied in the HTML file).
3. Open the JavaScript file **functions.js** and create a function called `calculateTotal()` that is passed a quantity and price and returns their product (i.e., multiply the two parameter values and return the result).
4. Within **functions.js**, create a function called `outputCartRow()` that has the following signature:

```
function outputCartRow(file, title, quantity, price, total) {}
```

5. Implement the body of this function. It should use `document.write()` calls to display a row of the table using the passed data. Use the `toFixed()` method of the number variables to display two decimal places.
6. Replace the three cart table rows in the original markup with a JavaScript loop that repeatedly calls this `outputCartRow()` function. Put this loop within the **chapter08-project01.js** file. Add the appropriate `<script>` tag to reference this **chapter08-project01.js** file within the `<tbody>` element.
7. Calculate the subtotal, tax, shipping, and grand total using JavaScript. Replace the hard-coded values in the markup with your JavaScript calculations. Use 10% as the tax amount. The shipping amount should be $40 unless the subtotal is above $1000, in which case it will be $0.

Test

1. Test the page in the browser. Verify that the calculations work appropriately by changing the values in the **data.js** file.

PROJECT 2: Photo Sharing Site

DIFFICULTY LEVEL: Intermediate

Overview

Demonstrate your ability to create JavaScript objects and arrays as well as work with inner functions. The final project will look similar to that shown in Figure 8.27.

HANDS-ON EXERCISES
Project 8.2

Instructions

1. You have been provided with the HTML file (**chapter08-project02.html**) that includes the markup (as well as images and stylesheet) for the finished version. Preview the file in a browser. You will be replacing the markup for the four country boxes with a JavaScript loop.
2. In the file `data.js`, create an array named `countries` that contains four object literals. Each object literal should contain four properties: `name`, `continent`, `cities`, and `photos`. The `cities` and `photos` properties should be arrays containing the city names and image filenames respectively.
3. In the file `functions.js`, create a function named `outputCountryBox()` that has the signature shown below. This function is going to generate the markup (using `document.write`) for a single country box.

```
function outputCountryBox(name,continent,cities,photos)
```

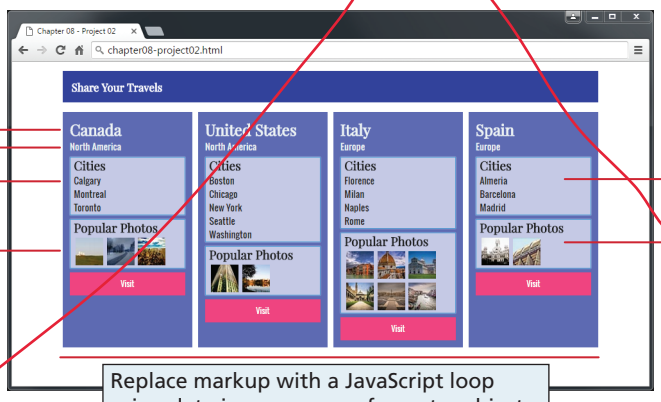

FIGURE 8.27 Completed Project 2