Chapter 5

Get off to a fast start with jQuery

Objectives

Applied

1. Use jQuery to develop common DOM scripting applications like the Email List, FAQs, Image Swap, and Image Rollover applications that are presented in this chapter.

Knowledge

1. Describe jQuery.

2. Describe two ways to include the jQuery library in your web pages.

3. In general terms, describe the use of jQuery selectors, methods, and event methods.

4. Describe the syntax for a jQuery selector.

5. Describe the use of these methods: val, next, prev, text, attr, css, addClass, removeClass, toggleClass, hide, show, and each.

6. Describe object chaining.

Objectives (continued)

6. Describe the use of these jQuery event methods: ready, click, mouseover, and hover.

7. Describe the use of the *this* keyword within a function for an event method.

The jQuery website at www.jQuery.com

What jQuery offers

- Dozens of selectors, methods, and event methods that make it easier to add JavaScript features to your web pages

- Cross-browser compatibility

- Selectors that are compliant with CSS3

- A compressed library that loads quickly so it doesn't degrade performance

The FAQs application in a browser

jQuery FAQs

✛ **What is jQuery?**

― **Why is jQuery becoming so popular?**
  Three reasons:
  - It's free.
  - It lets you get more done in less time.
  - All of its functions are cross-browser compatible.

✛ **Which is harder to learn: jQuery or JavaScript?**

The HTML

```
<main id="faqs">
    <h1>jQuery FAQs</h1>
    <h2><a href="#">What is jQuery?</a></h2>
    <div>
        <p>jQuery is a library of the JavaScript
           functions that you're most likely to need as
           you develop websites.</p>
    </div>
    <h2><a href="#">Why is jQuery becoming so
                    popular?</a></h2>
    <div>
        ...
    </div>
    ...
    ...
</main>
```

The critical CSS

```
h2 {
    background: url(images/plus.png) no-repeat left center;
}
h2.minus {
    background: url(images/minus.png) no-repeat left center;
}
div { display: none; }
```

The jQuery for the FAQs application

```javascript
$(document).ready(function() {
    $("#faqs h2").click(function() {
        $(this).toggleClass("minus");
        if ($(this).attr("class") != "minus") {
            $(this).next().hide();
        }
        else {
            $(this).next().show();
        }
    }); // end click
}); // end ready
```

The FAQs application as a jQuery UI accordion

The HTML for a jQuery UI accordion

```
<div id="accordion">
  <h3><a href="#">What is jQuery?</a></h3>
  <div> <!-- panel contents --> </div>
  <h3><a href="#">Why is jQuery becoming so popular?</a>
  </h3>
  <div> <!-- panel contents --> </div>
  <h3><a href="#">Which is harder to learn: jQuery
                  or JavaScript?</a></h3>
  <div> <!-- panel contents --> </div>
</div>
```

The JavaScript code for the jQuery UI accordion
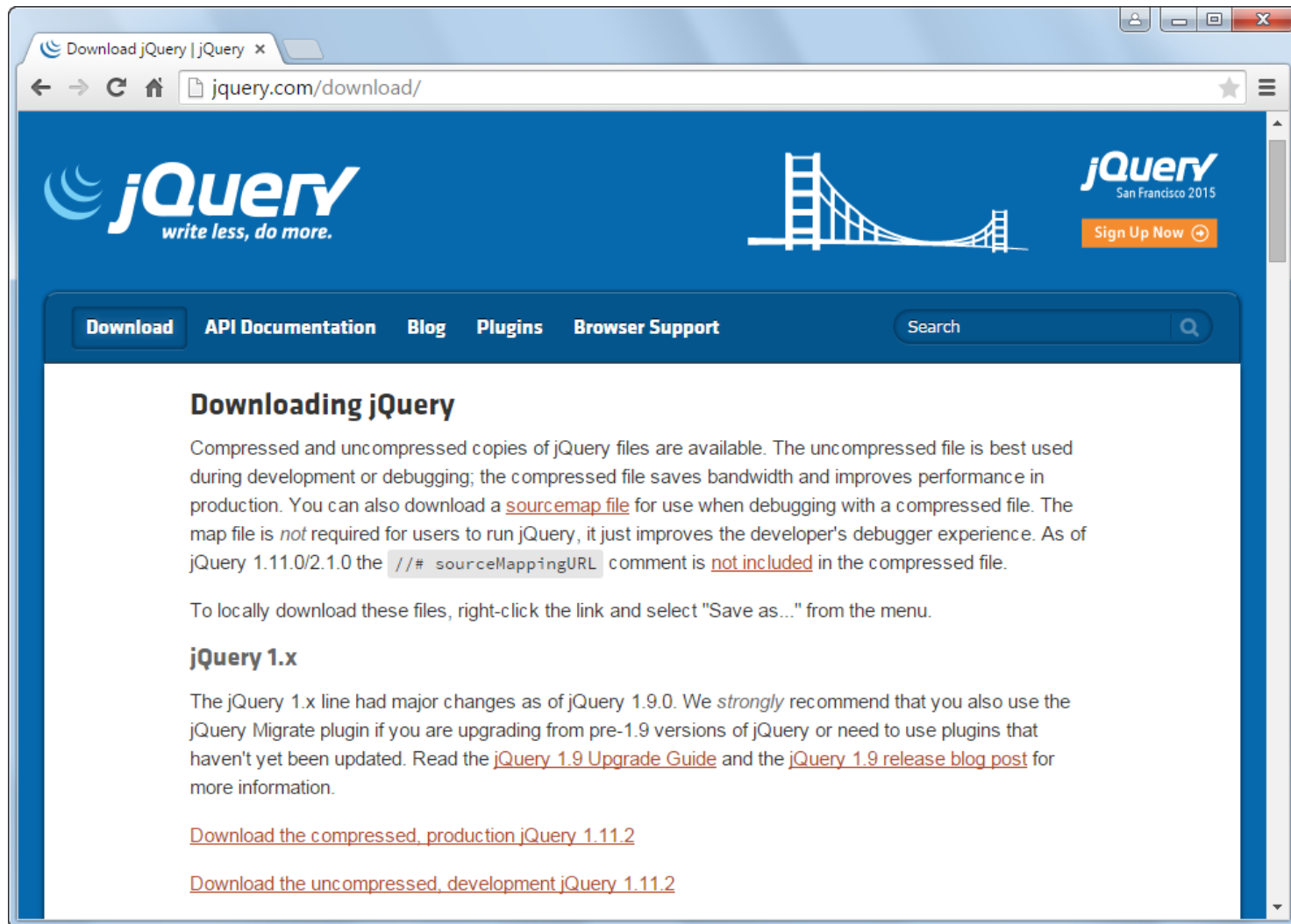
```
<script>
    $(document).ready(function() {
        $("#accordion").accordion();
    });
</script>
```

Some typical plugin functions

- Data validation

- Slide shows

- Carousels

Terms

- jQuery

- jQuery UI

- plugin

The page for downloading jQuery

The current versions of jQuery

- jQuery 2.1.4 is the newest version of jQuery, but it no longer supports IE6, IE7, and IE8.

- jQuery 1.11.2 provides support for older browsers, but it doesn't support the features that were dropped in jQuery 1.9. To provide for those, you must include the migrate plugin.

How to include jQuery 2.1.4 after you've downloaded it to your computer

```
<script src="jquery-2.1.4.min.js"></script>
```

How to include jQuery 2.1.4 from a Content Delivery Network (CDN)

```
<script
    src="http://code.jquery.com/jquery-2.1.4.min.js">
</script>
```

How to include jQuery 1.11.2 and the migrate plugin from a CDN

```
<script
    src="http://code.jquery.com/jquery-1.11.2.min.js">
</script>
<script
    src="http://code.jquery.com/jquery-migrate-1.2.1.min.js">
</script>
```

The syntax for a jQuery selector

```
$("selector")
```

The HTML for the selected elements

```html
<main id="faqs">
    <h1>jQuery FAQs</h1>
    <h2 class="minus"><a href="#">What is jQuery?</a></h2>
    <div>
        <p>jQuery is a library of the JavaScript functions that
            you're most likely to need as you develop websites.
        </p>
    </div>
    <h2><a href="#">Why is jQuery becoming so popular?</a></h2>
    <div>
        <p>Three reasons:</p>
        <ul>
            <li>It's free.</li>
            <li>It lets you get more done in less time.</li>
            <li>All of its functions are cross-browser
                compatible.</li>
        </ul>
    </div>
</main>
```

How to select elements by element, id, and class

By element type: All <p> elements in the entire document

`$("p")`

By id: The element with "faqs" as its id

`$("#faqs")`

By class: All elements with "minus" as a class

`$(".minus")`

How to select elements by relationship

Descendants: All <p> elements that are descendants of the main element

`$("#faqs p");`

Adjacent siblings: All div elements that are adjacent siblings of h2 elements

`$("h2 + div")`

General siblings: All <p> elements that are siblings of ul elements

`$("ul ~ p")`

Children: All ul elements that are children of div elements

`$("div > ul")`

How to code multiple selectors

```
$("#faqs li, div p")
$("p + ul, div ~ p")
```

The syntax for calling a jQuery method

```
$("selector").methodName(parameters)
```

Some common jQuery methods

```
val()

val(value)

text()

text(value)

next([type])

submit()

focus()
```

Examples that call jQuery methods

How to get the value from a text box

```
var gallons = $("#gallons").val();
```

How to set the value for an input element

```
$("#gallons").val("");
```

How to set the text in an element

```
$("#email_address_error").text(
    "Email address is required");
```

How to set the text for the next sibling
with object chaining

```
$("#last_name").next().text("Last name is required");
```

How to submit a form

```
$("#join_list").submit();
```

How to move the focus to a form control or link

```
$("#email_address").focus();
```

The syntax for a jQuery event method

```
$(selector).eventMethodName(function() {
    // the statements of the event handler
});
```

Two common jQuery event methods

Event method	Description
ready(handler)	The event handler runs when the DOM is ready.
click(handler)	The event handler runs when the selected element is clicked.

How to code an event handler for the ready event

The long way

```
$(document).ready(function() {
    alert("The DOM is ready");
});
```

The short way

```
$(function(){                    // (document).ready is assumed
    alert("The DOM is ready");
});
```

An event handler for the click event of all h2 elements

```
$("h2").click(function() {
    alert("This heading has been clicked");
});
```

The click event handler within the ready event handler

```
$(document).ready(function() {
    $("h2").click(function() {
        alert("This heading has been clicked");
    }); // end of click event handler
}); // end of ready event handler
```

Terms

- Content Delivery Network (CDN)
- selector
- method
- object chaining
- event method

The user interface for the Email List application

Please join our email list

Email Address:	zak@yahoo.com	
Re-enter Email Address:	zak@yahoo	This entry must equal first entry.
First Name:		This field is required.
	Join our List	

The HTML for the Email List application

```
<!DOCTYPE html>
<html>
<head>
    <meta charset="UTF-8">
    <title>Join Email List</title>
    <link rel="stylesheet" href="email_list.css">
    <script src="http://code.jquery.com/jquery-2.1.4.min.js">
    </script>
    <script src="email_list.js"></script>
</head>
<body>
    <main>
        <h1>Please join our email list</h1>
        <form id="email_form" name="email_form"
            action="join.html" method="get">
            <label for="email_address1">Email Address:</label>
            <input type="text" id="email_address1">
            <span>*</span><br>
```

The HTML (continued)

```html
            <label for="email_address2">Re-enter Email
             Address:</label>
            <input type="text" id="email_address2">
            <span>*</span><br>

            <label for="first_name">First Name:</label>
            <input type="text" id="first_name">
            <span>*</span><br>

            <label> </label>
            <input type="button" id="join_list"
                    value="Join our List">
        </form>
     </main>
  </body>
</html>
```

The jQuery for the Email List application

```
$(document).ready(function() {
    $("#join_list").click(function() {
        var emailAddress1 = $("#email_address1").val();
        var emailAddress2 = $("#email_address2").val();
        var isValid = true;

        // validate the first email address
        if (emailAddress1 == "") {
            $("#email_address1").next().text(
                "This field is required.");
            isValid = false;
        } else {
            $("#email_address1").next().text("");
        }

        // validate the second email address
        if (emailAddress2 == "") {
            $("#email_address2").next().text(
                "This field is required.");
            isValid = false;
        } else if (emailAddress1 != emailAddress2) {
            $("#email_address2").next().text(
                "This entry must equal first entry.");
            isValid = false;
```

The jQuery (continued)

```
        } else {
            $("#email_address2").next().text("");
        }

        // validate the first name entry
        if ($("#first_name").val() == "") {
            $("#first_name").next().text(
                "This field is required.");
            isValid = false;
        }
        else {
            $("#first_name").next().text("");
        }

        // submit the form if all entries are valid
        if (isValid) {
            $("#email_form").submit();
        }
    }); // end click
    $("#email_address1").focus();
}); // end ready
```

Some of the most useful jQuery selectors

```
[attribute]

[attribute=value]

:contains(text)

:empty

:eq(n)

:even

:first

:first-child

:gt(n)

:has(selector)

:header
```

```
:hidden

:last

:last-child

:lt(n)

:not(selector)

:nth-child

:odd

:only-child

:parent

:text

:visible
```

Examples that use jQuery selectors

Select the li elements that are the first child of their parent element

```
$("li:first-child")
```

Select the even tr elements of a table

```
$("table > tr:even")      // numbering starts at 0,
                          // so first tag is even
```

Select the third descendant <p> element of an element

```
$("#faqs p:eq(2)")        // numbering starts at 0
```

Select all input elements with "text" as the type attribute

```
$(":text")
```

Some of the most useful jQuery methods

```
next([selector])

prev([selector])

attr(attributeName)

attr(attributeName, value)

css(propertyName)

css(propertyName, value)

addClass(className)

removeClass([className])

toggleClass(className)

hide([duration])

show([duration])

each(function)
```

Examples that use jQuery methods

Get the value of the src attribute of an image

```
$("#image").attr("src");
```

**Set the value of the src attribute of an image
to the value of a variable**

```
$("#image").attr("src", imageSource);
```

Set the value of the color property of the h2 elements

```
$("h2").css("color", "blue");
```

Add a class to the h2 descendants of the "faqs" element

```
$("#faqs h2").addClass("minus");
```

**Run a function for each <a> element
within an "image_list" element**

```
$("#image_list a").each(function() {
    // the statements of the function
});
```

Some of the most useful jQuery event methods

`ready(handler)`

`unload(handler)`

`error(handler)`

`click(handler)`

`dblclick(handler)`

`mouseenter(handler)`

`mouseover(handler)`

`mouseout(handler)`

`hover(handlerIn, handlerOut)`

`event.preventDefault()`

Examples that use jQuery event methods

A handler for the double-click event of all text boxes that clears the clicked box

```
$(":text").dblclick(function () {
    $(this).val("");
});
```

A handler for the hover event of each img element within a list

```
$("#image_list img").hover(
    function() {
        alert("The mouse pointer has moved into an img element");
    },
    function() {
        alert("The mouse pointer has moved out of an img
                element);
    }
);  // end hover
```

A preventDefault method
that stops the default action of an event

```
$("#faqs a").click(function(evt)  // evt is the event object
{
    // run the method on the event object
    evt.preventDefault();
}); // end click
```

Other event methods that you should be aware of

Event method	Description
`on(events, handler)`	Attach an event handler to one or more events.
`off(events, [handler])`	Remove an event handler from one or more events.
`one(event, handler)`	Attach an event handler and remove it after it runs one time.
`trigger(event)`	Trigger the event for the selected element.
`bind(event, handler)`	Attach an event handler to an event.
`unbind(event, [handler])`	Remove an event handler from an event.

How to attach an event handler to an event

With the on method

```
$("#clear").on("click", function() {...});
```

With the shortcut method

```
$("#clear").click(function() {...});
```

How to attach an event handler to two different events

Of the same element

```
$("image_list img").on("click mouseover", function()
{...});
```

Of two different elements

```
var clearClick = function() {...}
$("#clear").click(clearClick);
$(":text").dblclick(clearClick);
```

How to remove an event handler from an event

```
$("#clear").off("click");
```

How to attach and remove an event handler so it runs only once

```
$("#clear").one("click", function() {...});
```

How to trigger an event

With the trigger method

```
$("#clear").trigger("click");
```

With the shortcut method

```
$("#clear").click();
```

How to use the shortcut method
to trigger an event from an event handler

```
$(":text").dblclick(function() {
    $("#clear").click();      // triggers the click event
                              // of the clear button
}
```

The FAQs application in a browser

jQuery FAQs

✛ **What is jQuery?**

━ **Why is jQuery becoming so popular?**
Three reasons:
- It's free.
- It lets you get more done in less time.
- All of its functions are cross-browser compatible.

✛ **Which is harder to learn: jQuery or JavaScript?**

The HTML for the FAQs application

```html
<main id="faqs">
    <h1>jQuery FAQs</h1>
    <h2><a href="#">What is jQuery?</a></h2>
    <div>
        <p>jQuery is a library of the JavaScript functions that
            you're most likely to need as you develop websites.
        </p>
    </div>
    <h2><a href="#">Why is jQuery becoming so popular?</a></h2>
    <div>
        <p>Three reasons:</p>
        <ul>
            <li>It's free.</li>
            <li>It lets you get more done in less time.</li>
            <li>All of its functions are cross-browser
                compatible.</li>
        </ul>
    </div>
    ...
    ...
</main>
```

The critical CSS for the FAQs application

```
h2 {
    background: url(images/plus.png) no-repeat left center;
}
h2.minus {
    background: url(images/minus.png) no-repeat left center;
}
div { display: none; }
```

The jQuery for the FAQs application

```
$(document).ready(function() {
    $("#faqs h2").click(function() {
        $(this).toggleClass("minus");
        if ($(this).attr("class") != "minus") {
            $(this).next().hide();
        }
        else {
            $(this).next().show();
        }
    }); // end click
}); // end ready
```

The user interface for the Image Swap application

The HTML for the image swap application

```
<main>
    <h1>Ram Tap Combined Test</h1>
    <ul id="image_list">
        <li><a href="images/h1.jpg" title="James Allison: 1-1">
            <img src="thumbnails/t1.jpg" alt=""></a></li>
        <li><a href="images/h2.jpg" title="James Allison: 1-2">
            <img src="thumbnails/t2.jpg" alt=""></a></li>
        <li><a href="images/h3.jpg" title="James Allison: 1-3">
            <img src="thumbnails/t3.jpg" alt=""></a></li>
        <li><a href="images/h4.jpg" title="James Allison: 1-4">
            <img src="thumbnails/t4.jpg" alt=""></a></li>
        <li><a href="images/h5.jpg" title="James Allison: 1-5">
            <img src="thumbnails/t5.jpg" alt=""></a></li>
        <li><a href="images/h6.jpg" title="James Allison: 1-6">
            <img src="thumbnails/t6.jpg" alt=""></a></li>
    </ul>
    <h2 id="caption">James Allison 1-1</h2>
    <p><img src="images/h1.jpg" alt="" id="image"></p>
</main>
```

The CSS for the li elements

```
li {
    padding-right: 10px;
    display: inline;
}
```

The JavaScript for the Image Swap application

```javascript
$(document).ready(function() {
    // preload images
    $("#image_list a").each(function() {
        var swappedImage = new Image();
        swappedImage.src = $(this).attr("href");
    });

    // set up event handlers for links
    $("#image_list a").click(function(evt) {
        // swap image
        var imageURL = $(this).attr("href");
        $("#image").attr("src", imageURL);

        //swap caption
        var caption = $(this).attr("title");
        $("#caption").text(caption);

        // cancel the default action of the link
        evt.preventDefault();   // jQuery cross-browser method
    }); // end click

    // move focus to first thumbnail
    $("li:first-child a").focus();
}); // end ready
```

Three images with the middle image rolled over

The HTML for the Image Rollover application

```html
<main>
    <h1>Ram Tap Combined Test</h1>
    <ul id="image_rollovers">
        <li><img src="images/h1.jpg" alt=""
                id="images/h4.jpg"></li>
        <li><img src="images/h2.jpg" alt=""
                id="images/h5.jpg"></li>
        <li><img src="images/h3.jpg" alt=""
                id="images/h6.jpg"></li>
    </ul>
</main>
```

The JavaScript for the Image Rollover application

```javascript
$(document).ready(function() {
    $("#image_rollovers img").each(function() {
        var oldURL = $(this).attr("src");
        var newURL = $(this).attr("id");

        // preload rollover image
        var rolloverImage = new Image();
        rolloverImage.src = newURL;

        // set up event handlers
        $(this).hover(
            function() {
                $(this).attr("src", newURL);
            },
            function() {
                $(this).attr("src", oldURL);
            }
        );  // end hover
    }); // end each
}); // end ready
```

Exercise 5-3 Develop a Book List application

A challenging application that's similar to the FAQs application