2

Setting Up Your First Project

When you visit a website, your browser has a conversation with a server, another computer on the internet.

Browser: "Hey there! Can I please have the contents of the file named `cat-videos.html`?"

Server: "Certainly. Let me take a look around … here it is!"

Browser: "Ah, it's telling me that I need another file named `styles.css`."

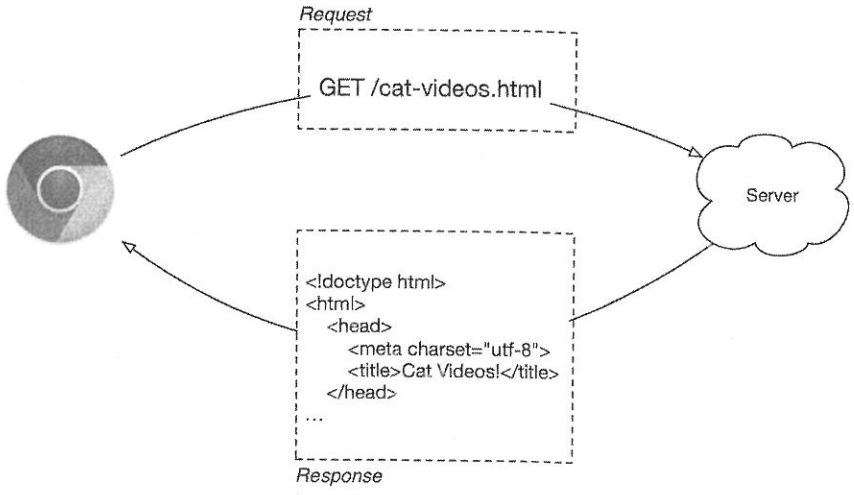
Server: "Sure thing. Let me take a look around … here it is!"

Browser: "OK, that file says that I need another file named `animated-background.gif`."

Server: "No problem. Let me take a look around … here it is!"

That conversation goes on for some time, sometimes lasting thousands of milliseconds (Figure 2.1).

Figure 2.1 The browser sends a request, the server responds



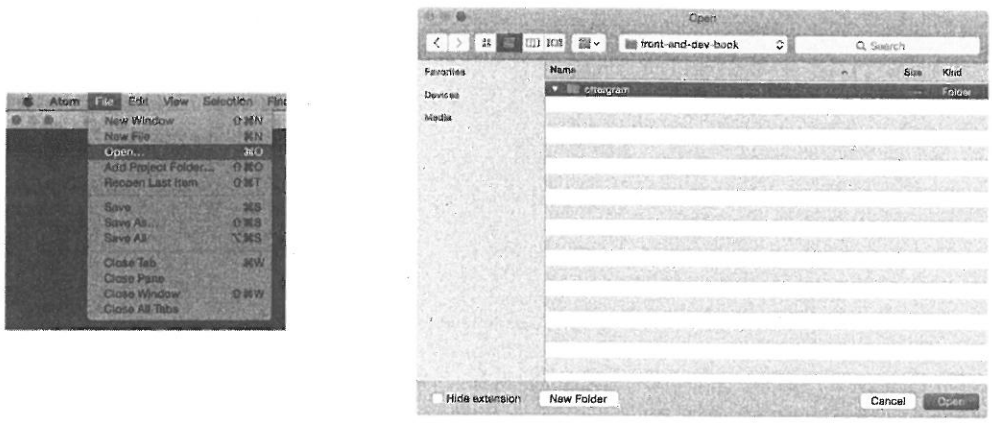
It is the browser's job to send requests to the server; interpret the HTML, CSS, and JavaScript it receives in the response from the server; and present the result to the user. Each of these three technologies plays a part in the user's experience of a website. If your app were a living creature, the HTML would be its skeleton and organs (the mechanics), the CSS would be its skin (the visible layer), and the JavaScript would be its personality (how it behaves).

In this chapter, you are going to set up the basic HTML for your first project, Ottergram. In the next chapter, you will set up your CSS, which you will refine in Chapter 4. In Chapter 6, you will begin adding JavaScript.

Setting Up Ottergram

In Chapter 1, you created a folder for the projects in this book as well as a folder for Ottergram. Start your Atom text editor and open the `ottergram` folder by clicking File → Open (or File → Open Folder... on Windows). In the dialog box, navigate to the `front-end-dev-book` folder and choose the `ottergram` folder. Click Open to tell Atom to use this folder (Figure 2.2).

Figure 2.2 Opening your project folder in Atom



You will see the `ottergram` folder in the lefthand panel of Atom. This panel is for navigating among the files and folders in your project.

You are going to create some files and folders within the `ottergram` project folder using Atom. Control-click (right-click) `ottergram` in the lefthand panel and click New File in the pop-up menu. You will be prompted for a name for the new file. Enter `index.html` and press the Return key (Figure 2.3).

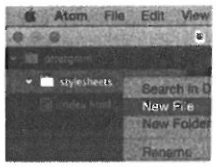
Figure 2.3 Creating a new file in Atom

You can use the same proc
lefthand panel again, but t
prompt that appears (Figu

Figure 2.4 Creating a

Finally, create a file name
`stylesheets` in the leftha
After this, enter `styles.c`

Figure 2.5 Creating



When you are finished, y

Figure 2.6 Initial file

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developers. Your `index.`
`index.html` dates back t

The `stylesheets` folder,
Ottergram. These will be
files names that describe
Ottergram is a simple pr
its global role.

You can use the same process to create folders using Atom. Control-click (right-click) `ottergram` in the lefthand panel again, but this time click New Folder in the pop-up. Enter the name `stylesheets` in the prompt that appears (Figure 2.4).

Figure 2.4 Creating a new folder in Atom

Finally, create a file named `styles.css` in the `stylesheets` folder: Control-click (right-click) `stylesheets` in the lefthand panel and choose New File. The prompt will pre-fill the text "stylesheets/". After this, enter `styles.css` and press the Return key (Figure 2.5).

Figure 2.5 Creating a new CSS file in Atom

When you are finished, your project folder should look like Figure 2.6.

Figure 2.6 Initial files and folders for Ottergram

There are no rules about how to structure your files and folders or what to name them. However, Ottergram (like the other projects in this book) follows conventions used by many front-end developers. Your `index.html` file will hold your HTML code. Naming the main HTML file `index.html` dates back to the early days of the web, and the convention continues today.

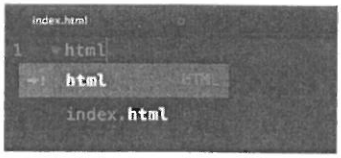
The `stylesheets` folder, as the name suggests, will hold one or more files with styling information for Ottergram. These will be CSS, or "cascading style sheets," files. Sometimes developers give their CSS files names that describe what part of the page or site they pertain to, such as `header.css` or `blog.css`. Ottergram is a simple project and only needs one CSS file, so you have named it `styles.css` to reflect its global role.

Initial HTML

Time to get coding. Open `index.html` in Atom and add some basic HTML to get started.

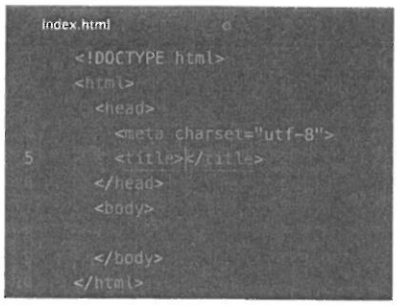
Start by typing `html`. Atom will offer you an autocomplete option, as shown in Figure 2.7. (If it does not, make sure you installed the emmet plug-in as directed in Chapter 1.)

Figure 2.7 Atom's autocomplete menu



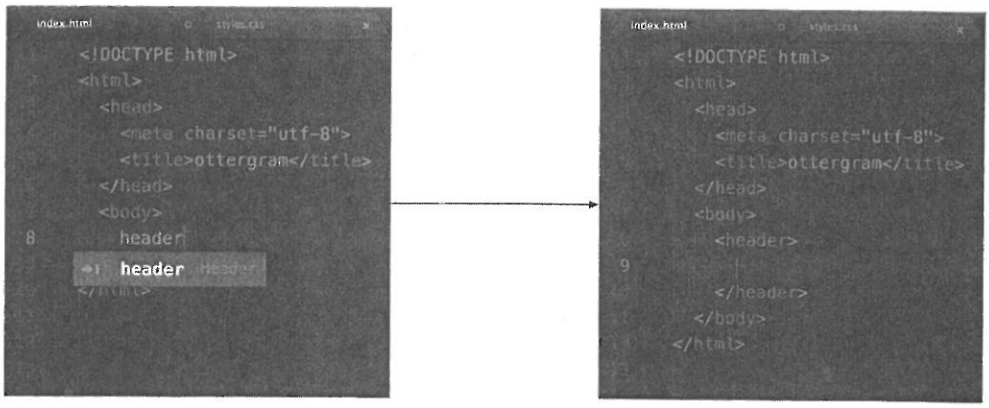
Press the Return key, and Atom will provide bare-bones HTML elements to get you started (Figure 2.8).

Figure 2.8 HTML created using autocomplete



Your cursor is between `<title>` and `</title>` – the opening and closing `title` tags. Type "ottergram" to give the project a name. Now, click to put your cursor in the blank line between the opening and closing `body` tags. There, type "header" and press the Return key. Atom will convert the text "header" into opening and closing `header` tags with a blank line between them (Figure 2.9).

Figure 2.9 Header tag created with autocomplete



Next, type "h1" and press Return. Again, your text is converted into tags, this time without a blank line. Enter the text "ottergram" again. This will be the heading that will appear on your web page.

Your file should look like this:

```
<!doctype html>
<html>
  <head>
    <meta charset="utf-8">
    <title>ottergram</title>
  </head>
  <body>
    <header>
      <h1>ottergram</h1>
    </header>
  </body>
</html>
```

Atom and emmet have together saved you some typing and helped you build well-formed initial HTML.

Let's examine your code. The first line, `<!doctype html>`, defines the *doctype* – it tells the browser which version of HTML the document is written in. The browser may render, or draw, the page a little differently based the doctype. Here, the doctype specifies HTML5.

Earlier versions of HTML often had long, convoluted, and hard to remember doctypes, such as:

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
```

Often, folks had to look up the doctype each time they created a new document.

With HTML5, the doctype is short and sweet. It is the one that will be used throughout all of the projects in this book, and you should use it for your apps.

After the doctype is some basic HTML markup consisting of a `head` and a `body`.

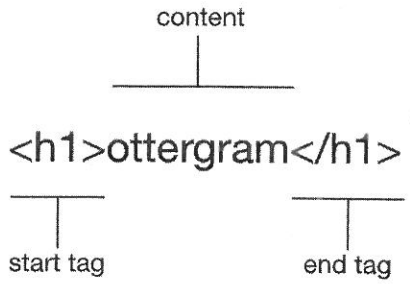
The `head` will hold information about the document and how the browser should handle the document. For example, the title of the document, what CSS or JavaScript files the page uses, and when the document was last modified are all included in the `head`.

Here, the `head` contains a `<meta>` tag. `<meta>` tags provide the browser with information about the document itself, such as the name of the document's author or keywords for search engines. The `<meta>` tag in Ottergram, `<meta charset="utf-8">`, specifies that the document is encoded using the UTF-8 character set, which encompasses all Unicode characters. Use this tag in your documents so that the widest range of browsers can interpret them correctly, especially if you expect international traffic.

The `body` will hold all of the HTML code that represents the content of your page: all the images, links, text, buttons, and videos that will appear on the page.

Most tags enclose some other content. Take a look at the `h1` heading you included; its anatomy is shown in Figure 2.10.

Figure 2.10 Anatomy of a simple HTML tag



HTML stands for "hypertext markup language." Tags are used to "mark up" your content, designating their purpose – such as headings, list items, and links.

The content enclosed by a set of tags can also include other HTML. Notice, for example, that the `<header>` tags enclose the `<h1>` tag shown above (and the `<body>` tags enclose the `<header>`!).

There are a lot of tags to choose from – more than 140. To see a list of them, visit MDN's HTML element reference, located at `developer.mozilla.org/en-US/docs/Web/HTML/Element`. This reference includes a brief description of each element and groups elements by usage (e.g., text content, content sectioning, or multimedia).

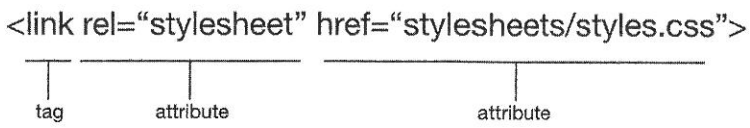
Linking a stylesheet

In Chapter 3, you will write styling rules in your stylesheet, `styles.css`. But remember the conversation between the browser and the server at the beginning of this chapter? The browser only knows to ask for a file from the server if it has been told that the file exists. You have to *link* to your stylesheet so that the browser knows to ask for it. Update the `head` of `index.html` with a link to your `styles.css` file.

```
<!doctype html>
<html>
  <head>
    <meta charset="utf-8">
    <title>ottergram</title>
    <link rel="stylesheet" href="stylesheets/styles.css">
  </head>
  <body>
...
```

The `<link>` tag is how you attach an external stylesheet to an HTML document. It has two *attributes*, which give the browser more information about the tag's purpose (Figure 2.11). (The order of HTML attributes does not matter.)

Figure 2.11 Anatomy of a tag with attributes



You set the `rel` (or "relationship") attribute to `"stylesheet"`, which lets the browser know that the linked document provides styling information. The `href` attribute tells the browser to send a request to the server for the `styles.css` file located in the `stylesheets` folder. Note that this file path is *relative* to the current document.

Save `index.html` before you move on.

Adding content

A web page without content is like a day without coffee. Add a list after your `header` to give your project a reason for living.

You are going to add an *unordered list* (that is, a bulleted list) using the `<ul>` tag. In the list, you will include five list items using `<li>` tags, and in each list item you will include some text surrounded by `<span>` tags.

The updated `index.html` is shown below. Note that throughout this book we show new code that you are adding in bold type. Code that you are to delete is shown struck through. Existing code is shown in plain text to help you position your changes within the file.

We encourage you to make use of Atom's autocompletion and autoformatting features. With your cursor in position, type "ul" and press Return. Next, type "li" and press Return twice, then type "span" and press Return once. Enter the name of an otter, then create four more list items and spans in the same way.

```
<!doctype html>
<html>
  <head>
    <meta charset="utf-8">
    <title>ottergram</title>
    <link rel="stylesheet" href="stylesheets/styles.css">
  </head>
  <body>
    <header>
      <h1>ottergram</h1>
    </header>
    <ul>
      <li>
        <span>Barry</span>
      </li>
      <li>
        <span>Robin</span>
      </li>
      <li>
        <span>Maurice</span>
      </li>
      <li>
        <span>Lesley</span>
      </li>
      <li>
        <span>Barbara</span>
      </li>
    </ul>
  </body>
</html>
```

The tags nested inside each <li> tag do not have any special meaning. They are generic containers for other content. You will be using them in Ottergram for styling purposes, and you will see other examples of container elements as you continue through this book.

Next, you will add images of otters to go with the names you have entered.

Adding images

The resource files for all the projects in this book are at www.bignerdranch.com/downloads/front-end-dev-resources.zip. They include five Creative Commons-licensed otter images taken by Michael L. Baird, Joe Robertson, and Agunther that were found on commons.wikimedia.org.

Download and unzip the resources. Inside the ottergram-resources folder, locate the img folder. Copy the img folder to your ottergram/ project directory. (The .zip contains other resources, but for now you will only need the img folder.)

You want your list to include clickable thumbnail images in addition to the titles. You will achieve this by adding anchor and image tags to each item in your ul. We will explain these changes in more detail after you enter them. (If you use autocompletion, note that you will need to move the tags so that they follow the spans.)


```
...
    <ul>
      <li>
        <a href="
          <img sr
          <span>B
        </a>
      </li>
      <li>
        <a href="
          <img sr
          <span>R
        </a>
      </li>
      <li>
        <a href="
          <img sr
          <span>M
        </a>
      </li>
      <li>
        <a href="
          <img sr
          <span>L
        </a>
      </li>
      <li>
        <a href="
          <img sr
          <span>E
        </a>
      </li>
    </ul>
...
```

If your lines are not
installed. Click Pacl
you.

Let's look at what y

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<link> tag you usec

Anchor tags have ar
is a web address. Sc
so you assigned the
top of the page whe
an image when the

Inside the anchor ta
img directory you a
attributes contain te
use to describe an i

```
...
    <ul>
      <li>
        <a href="#">
          <img src="img/otter1.jpg" alt="Barry the Otter">
          <span>Barry</span>
        </a>
      </li>
      <li>
        <a href="#">
          <img src="img/otter2.jpg" alt="Robin the Otter">
          <span>Robin</span>
        </a>
      </li>
      <li>
        <a href="#">
          <img src="img/otter3.jpg" alt="Maurice the Otter">
          <span>Maurice</span>
        </a>
      </li>
      <li>
        <a href="#">
          <img src="img/otter4.jpg" alt="Lesley the Otter">
          <span>Lesley</span>
        </a>
      </li>
      <li>
        <a href="#">
          <img src="img/otter5.jpg" alt="Barbara the Otter">
          <span>Barbara</span>
        </a>
      </li>
    </ul>
...
```

If your lines are not nicely indented, you can take advantage of the atom-beautify plug-in that you installed. Click Packages → Atom Beautify → Beautify and your code will be aligned and indented for you.

Let's look at what you have added.

The <a> tag is the *anchor* tag. Anchor tags make elements on the page clickable, so that they take the user to another page. They are commonly referred to as "links," but beware: They are not like the <link> tag you used earlier.

Anchor tags have an `href` attribute, which indicates the resource the anchor points to. Usually the value is a web address. Sometimes, though, you do not want a link to go anywhere. That is the case for now, so you assigned the "dummy" value # to the `href` attributes. This will make the browser scroll to the top of the page when the image is clicked. Later you will use the anchor tags to open a larger copy of an image when the thumbnail is clicked.

Inside the anchor tags you added <img>, or *image*, tags with `src` attributes indicating filenames in the `img` directory you added earlier. You also added a descriptive `alt` attribute to your image tags. `alt` attributes contain text that replaces the image if it is unable to load. `alt` text is also what screen readers use to describe an image to a user with a visual impairment.

Image tags are different from most other elements in that they do not wrap other elements, but instead refer to a resource. When the browser encounters an `<img>` tag, it draws the image to the page. This is known as a *replaced element*. Other replaced elements include embedded documents and applets.

Because they do not wrap content or other elements, `<img>` tags do not have a corresponding closing tag. This makes them *self-closing* tags (also known as *void* tags). You will sometimes see self-closing tags written with a slash before the right angle-bracket, like `<img src="otter.jpg"/>`. Whether to include the slash is a matter of preference and does not make a difference to the browser. In this book, self-closing tags are written without the slash.

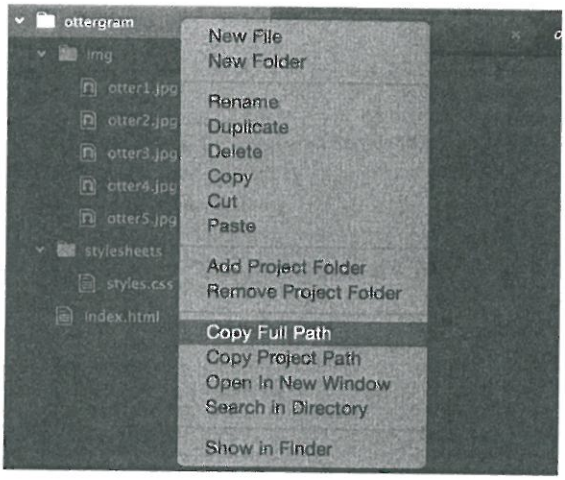
Save `index.html`. In a moment, you will see the results of your coding.

Viewing the Web Page in the Browser

To view your web page, you need to be running the `browser-sync` tool that you installed in Chapter 1.

Open the terminal and change directory to your `ottergram` folder. Recall from Chapter 1 that you change directory using the `cd` command followed by the path of the folder you are moving into. One easy way to get the `ottergram` path is to Control-click (right-click) the `ottergram` folder in Atom's lefthand panel and choose Copy Full Path (Figure 2.12). Then, at the command line, type `cd`, paste the path, and press Return.

Figure 2.12 Copying the `ottergram` folder path from Atom



The path you enter might look something like this:

```
cd /Users/chrisaquino/Projects/front-end-dev-book/ottergram
```


Once you are in the c
(We have broken the
single line.)

```
browser-sync star
```

If Chrome is your de
command:

```
browser-sync star
```

This command starts
sends a request to ge

The command you e
or CSS files are char
browser-sync, you l

Figure 2.13 shows th

Figure 2.13 Star

```
$ ls
ottergram
$ cd ottergram/
$ ls
index.html  styl
$ browser-sync s
[BS] Access URLs
 ------------------
       Local: ht
    External: ht
 ------------------
          UI: ht
 UI External: ht
 ------------------
[BS] Serving fi
[BS] Watching f:
```

Once you are in the `ottergram` directory, run the following command to open Ottergram in Chrome. (We have broken the command across two lines so that it fits on the page. You should enter it on a single line.)

```
browser-sync start --server --browser "Google Chrome"
                   --files "stylesheets/*.css, *.html"
```

If Chrome is your default browser, you can leave out the `--browser "Google Chrome"` portion of the command:

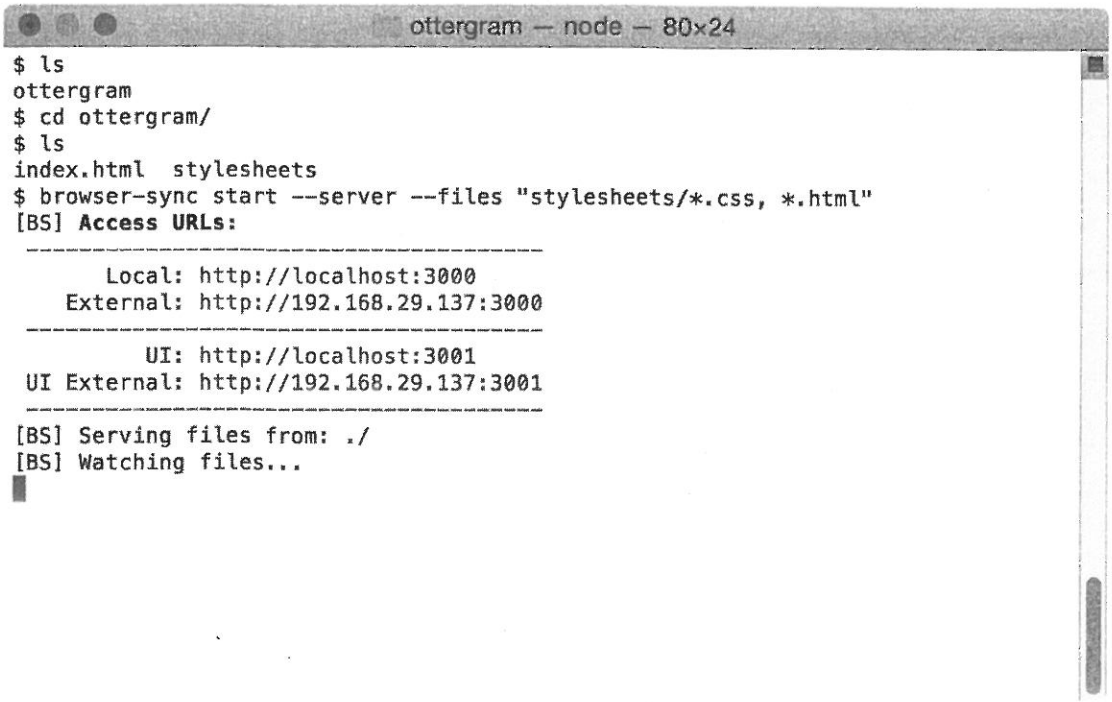
```
browser-sync start --server --files "stylesheets/*.css, *.html"
```

This command starts `browser-sync` in server mode, allowing it to send responses when a browser sends a request to get a file, such as the `index.html` file you created.

The command you entered also tells `browser-sync` to automatically reload the browser if any HTML or CSS files are changed. This makes the development experience much nicer. Before tools like `browser-sync`, you had to manually reload the page after every change.

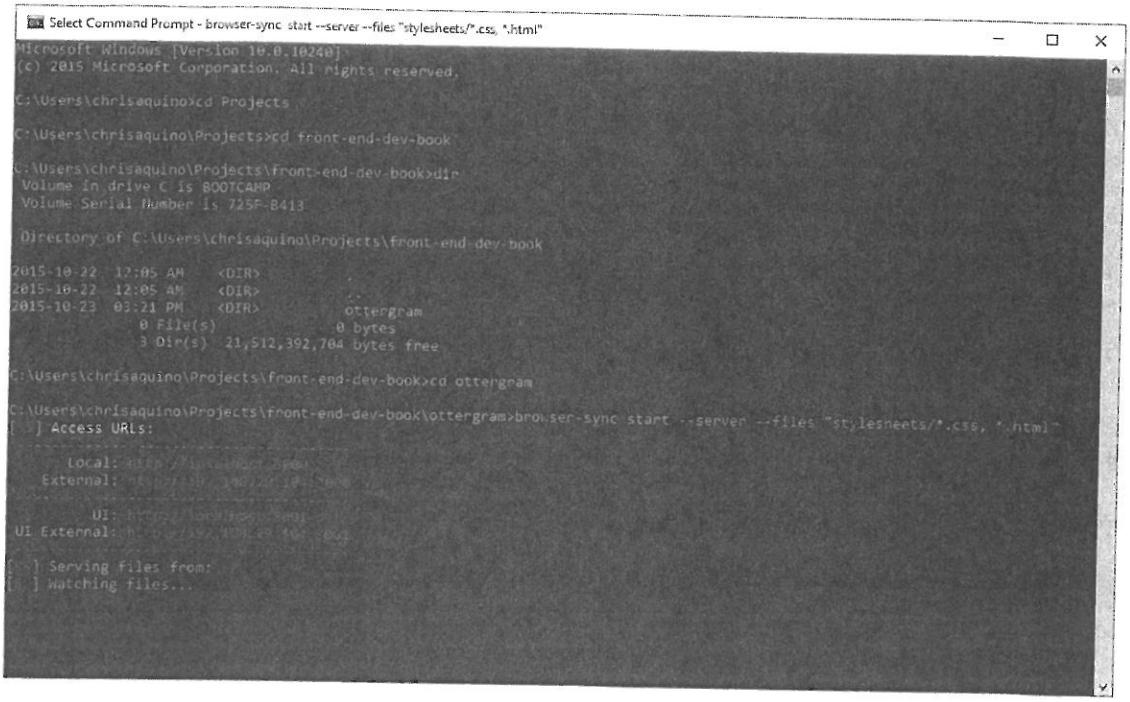
Figure 2.13 shows the result of entering this command on a Mac.

Figure 2.13 Starting browser-sync in the OS X Terminal



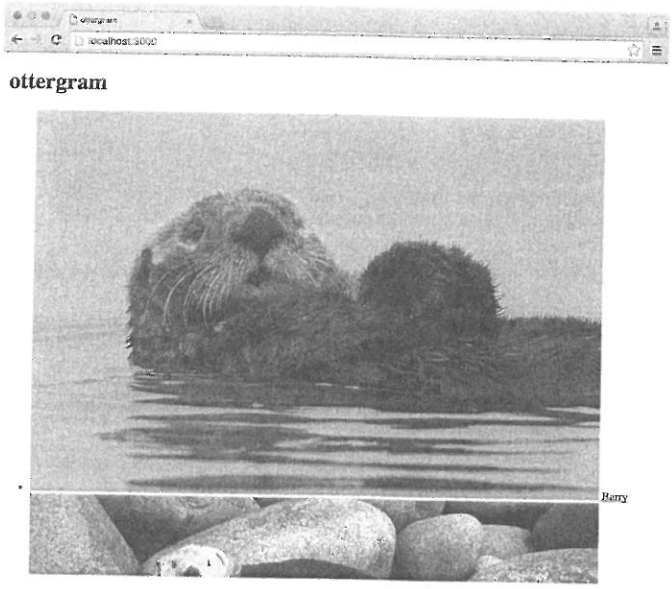
You should see the same output on Windows (Figure 2.14).

Figure 2.14 Starting browser-sync in the Windows Command Prompt



Once the Ottergram page has loaded in Chrome, you should see your page with the "ottergram" heading, "ottergram" as the tab label, and a series of otter photos and names (Figure 2.15).

Figure 2.15 Viewing Ottergram in the browser



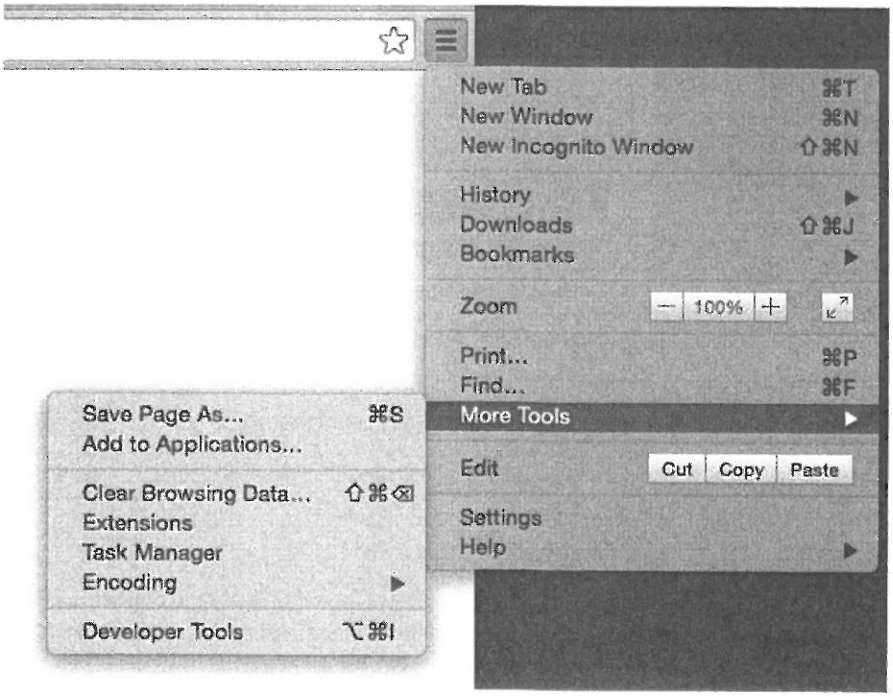
The Chrome Developer Tools

Chrome has built-in Developer Tools (commonly known as "DevTools") that are among the best available for testing styles, layouts, and more on the fly. Using the DevTools is much more efficient than trying things out in code. The DevTools are very powerful and will be your constant companion as you do front-end development.

You will start using the DevTools in the next chapter. For now, open the window and familiarize yourself with its major areas.

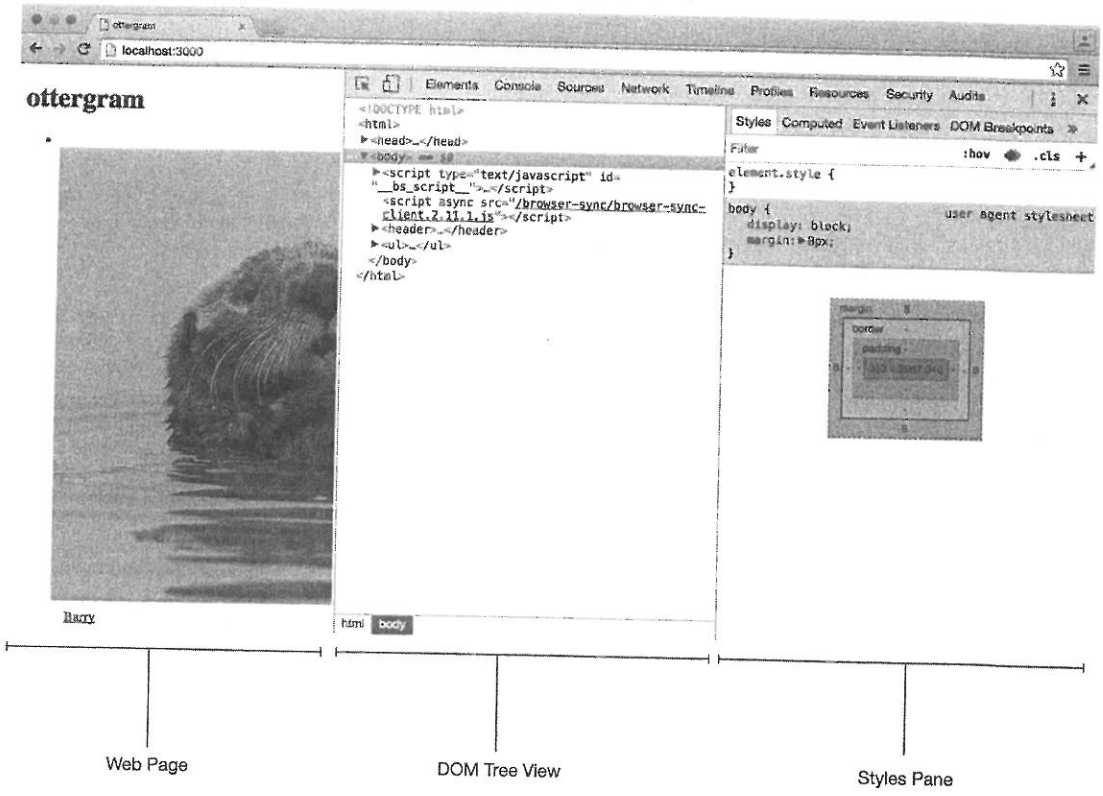
To open the DevTools, click the ≡ icon to the right of the address bar in Chrome. Next, click More Tools → Developer Tools (Figure 2.16).

Figure 2.16 Opening the Developer Tools



Chrome displays the DevTools to the right by default. Your screen will look something like Figure 2.17.

Figure 2.17 The DevTools showing the elements panel



The DevTools show the relationship between the code and the resulting page elements. They let you inspect individual elements' attributes and styles and see immediately how the browser is interpreting your code. Seeing this relationship is critical for both development and debugging.

In Figure 2.17, you can see the DevTools next to the web page, displaying the elements panel. The elements panel is divided into two sections. On the left is the *DOM tree view*. This is a representation of the HTML, interpreted as DOM elements. (You will learn much more about DOM, which stands for "document object model," in upcoming chapters.) On the righthand side of the elements panel is the styles pane. This shows any visual styles applied to individual elements.

Having the DevTools docked on the right side of the screen while you are working is usually convenient. If you want to change the location of the DevTools, you can click the ⋮ button near the upper-right corner. This will show you a menu of options, including buttons for the Dock side, which will change the anchor location of the DevTools (Figure 2.18).

Figure 2.18 Char

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version number.

Table 2.1 CSS ve

Version Number
1
2
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"3"

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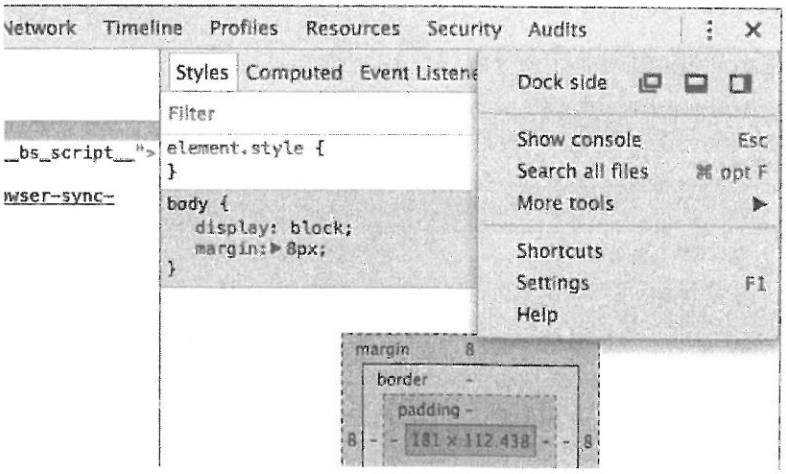
Figure 2.19 The

Figure 2.18 Changing the dock side of the DevTools



With your otters and markup in place and the DevTools open, you are ready to begin styling your project in the next chapter.

For the More Curious: CSS Versions

The version history of CSS includes standard versions 1, 2, and 2.1. After 2.1, it was decided that the standard needed to be broken up because it was getting too big.

There is no version 3. Instead, CSS3 is a blanket term for a number of modules, each with its own version number.

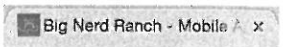
Table 2.1 CSS versions, real and imagined

Version Number	Release Year	Notable Features
1	1996	Basic font properties (`font-family`, `font-style`), foreground and background colors, text alignment, margin, border, and padding.
2	1998	Absolute, relative, and fixed positioning; new font properties.
2.1	2011	Removed features that were poorly supported by browsers.
"3"	Various	A collection of different specifications, such as media queries, new selectors, semi-transparent colors, `@font-face`.

For the More Curious: The favicon.ico

Have you ever noticed the little icon that appears at the left end of your browser's address bar when you visit most websites? Sometimes they also appear in your browser tab, as in Figure 2.19.

Figure 2.19 The `bignerdranch.com` `favicon.ico`



That is the `favicon.ico` image file. Many sites have one, and browsers request one by default. Because Ottergram does not have one, you may see an error like the one in Figure 2.20 in the DevTools.

Figure 2.20 Error about missing `favicon.ico`

Do not worry about this error if it appears. It will not affect your project. However, you can easily add a `favicon.ico` image – and that is your first challenge.

Silver Challenge: Adding a favicon.ico

You have decided that you like otters more than you like seeing the `favicon.ico` error message. You are going to create a `favicon.ico` file using one of the otter images.

Do a web search for "favicon generator" and you should see a list of websites that will do a file conversion for you. Most will let you upload an image and then provide you with a `favicon.ico` version.

Choose one and upload any one of the otter images.

Save the resulting `favicon.ico` file in the same folder as your `index.html` file. Finally, reload your browser. Your browser tab will look something like Figure 2.21.

Figure 2.21 Ottergram with a `favicon.ico`

In this chapter, you
Ottergram interactiv

When you reach the

Figure 3.1 Otter

This chapter introd
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