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Introduction

When the web first came to the attention of the world's non-geeks back in the mid-1990s, the vastness and variety of its treasures were a wonder to behold. However, it didn't take long before a few courageous and intrepid souls dug a little deeper into this phenomenon and discovered something truly phenomenal: *They* could make web pages, too!

Why was that so amazing? Well, think back to those old days and think, in particular, of what it meant to create what we now call *content*. Think about television shows, radio programs, magazines, newspapers, books, and the other media of the time. The one thing they all had in common was that their creation was a decidedly *un*common thing. It required a *team* of professionals, a *massive* distribution system, and a *lot* of money. In short, it wasn't something that your average Okie from Muskogee would have any hope of duplicating.

The web appeared to change all of that because learning HTML was within the grasp of anybody who could feed himself, it had a built-in massive distribution system (the Internet, natch), and it required little or no money. For the first time in history, content was democratized and was no longer defined as the sole province of governments and mega-corporations.

Then reality set in.

People soon realized that merely building a website wasn't enough to attract "eyeballs," as the marketers say. A site had to have interesting, useful, or fun content, or people would stay away in droves. Not only that, but this good content had to be combined with a solid site design, which meant that web designers needed a thorough knowledge of HTML and CSS.

But, alas, eventually even all of that was not enough. To make their websites dynamic and interesting, to make their sites easy to navigate, and to give their sites those extra bells and whistles that surfers had come to expect, something more than content, HTML, and CSS was needed.

That missing link was *code*.

What we've all learned the hard way over the past few years is that you simply can't put together a world-class website unless you have some coding prowess in your site design toolkit. You need to know how to program your way out of the basic problems that afflict most sites; how to use scripting to go beyond the inherent limitations of HTML and CSS; and how to use code to send and receive data from a web server. And it isn't enough just to copy the generic scripts that are available on the web and paste them into your pages. First of all, most of those scripts are very poorly written, and second of all, they invariably need some customization to work properly on your site.

About This Book

My goal in this book is to give you a complete education on web coding and development. You learn how to set up the tools you need, how to use HTML and CSS to design and build your site, how to use JavaScript and jQuery to program your pages, and how to use PHP and MySQL to program your web server. My aim is to show you that these technologies aren't hard to learn, and that even the greenest rookie programmers can learn how to put together web pages that will amaze their family and friends (and themselves).

If you're looking for lots of programming history, computer science theory, and long-winded explanations of concepts, I'm sorry but you won't find it here. My philosophy throughout this book comes from Linus Torvalds, the creator of the Linux operating system: "Talk is cheap. Show me the code." I explain what needs to be explained and then I move on without further ado (or, most of the time, without any ado at all) to examples and scripts that do more to illuminate a concept that any verbose explanations I could muster (and believe me, I can muster verbosity with the best of them).

How you approach this book depends on your current level of web coding expertise (or lack thereof):

- If you're just starting out, begin at the beginning with Book 1 and work at your own pace sequentially through to Books 2 and 3. This will give you all the knowledge you need to pick and choose what you want to learn throughout the rest of the book.
- If you know HTML and CSS, you can probably get away with taking a fast look at Book 2, then settle in with Book 3 and beyond.
- If you've done some JavaScript coding already, I suggest working quickly through the material in Book 3, then dig into Book 4 a little slower if you don't already know jQuery. You'll then be ready to branch out and explore the rest of the book as you see fit.
- If you're a relatively experienced JavaScript programmer, use Books 3 and 4 as a refresher, then tackle Book 5 to learn how to code the back end. I've got a few tricks in there that you might find interesting. After that, feel free to

> consider the rest of the book a kind of coding smorgasbord that you can sample as your web development taste buds dictate.

Foolish Assumptions

This book is not a primer on the Internet or on using the World Wide Web. This is a coding and development book, pure and simple. This means I assume the following:

- You know how to operate a basic text editor, and how to get around the operating system and file system on your computer.
- You have an Internet connection.
- You know how to use your web browser.

Yep, that's it.

"I've never coded before!"

If you've never done a stitch of computer programming before, even if you're not quite sure what programming really is, don't worry about it for a second because I had you in mind when I wrote this book. For too many years programming has been the property of "hackers" and other technowizards. That made some sense because the programming languages they were using — with bizarre names such as C++ and Perl — were exceedingly difficult to learn, and even harder to master.

This book's main coding technologies — HTML, CSS, JavaScript, jQuery, PHP, and MySQL — are different. They're nowhere near as hard to learn as those for-nerds-only languages. I honestly believe that *anyone* can become a savvy and successful web coder, and this book is, I hope, the proof of that assertion. Just follow along, examine my code carefully (particularly in the first few chapters), and practice what you learn, and you *will* master web coding and development.

"I have coded before!"

What if you've done some programming in the past? For example, you might have dipped a toe or two in the JavaScript waters already, or you might have dabbled with HTML and CSS. Will this book be too basic for you? No, not at all. My other main goal in this book is to provide you with a ton of truly *useful* examples that you can customize and incorporate into your own site. The book's first few chapters start slowly to avoid scaring off those new to this programming business. But once you get past the basics, I introduce you to lots of great techniques and tricks that will take your web coding skills to a higher level.

Icons Used in This Book

REMEMBER

This icon points out juicy tidbits that are likely to be repeatedly useful to you — so please don't forget them.

TIP

Think of these icons as the fodder of advice columns. They offer (hopefully) wise advice or a bit more information about a topic under discussion.

WARNING

Look out! In this book, you see this icon when I'm trying to help you avoid mistakes that can cost you time, money, or embarrassment.

TECHNICAL STUFF

When you see this icon, you've come across material that isn't critical to understand but will satisfy the curious. Think "inquiring minds want to know" when you see this icon.

Beyond the Book

Some extra content for this book is available on the web. Go online to find the following:

- **The examples used in the book:** You can find these here:

  ```
  mcfedries.com/webcodingfordummies
  ```

  The examples are organized by book and then by chapter within each book. For each example, you can view the code, copy it to your computer's clipboard, and run the code in the browser.

- **The WebDev Workshop:** To edit the book's examples and try your own code and see instant results, fire up the following site:

  ```
  webdev.mcfedries.com
  ```

  You won't break anything, so feel free to use the site run some experiments and play around with HTML, CSS, JavaScript, and jQuery.

1

Getting Ready to Code for the Web

Contents at a Glance

CHAPTER 1: **How Web Coding and Development Work** 7

CHAPTER 2: **Setting Up Your Web Development Home** 21

CHAPTER 3: **Finding and Setting Up a Web Host** 35

IN THIS CHAPTER

- Learning how the web works
- Understanding the front-end technologies of HTML and CSS
- Understanding the back-end technologies of MySQL and PHP
- Figuring out how JavaScript fits into all of this
- Learning about dynamic web pages, web apps, and mobile web apps

Chapter 1

How Web Coding and Development Work

More than mere consumers of technology, we are makers, adapting technology to our needs and integrating it into our lives.

— DALE DOUGHERTY

The 1950s were a hobbyist's paradise with magazines such as *Mechanix Illustrated* and *Popular Science* showing the do-it-yourselfer how to build a go-kart for the kids and how to soup up a lawnmower with an actual motor! Sixty years later, we're now firmly entrenched in the age of do-it-yourself tech, where folks indulge their inner geek to engage in various forms of digital tinkering and hacking. The personification of this high-tech hobbyist renaissance is the *maker,* a modern artisan who lives to create things, rather than merely consume them. Today's makers exhibit a wide range of talents, but the skill most sought-after not only by would-be makers themselves, but by the people who hire them, is web coding and development.

Have you ever visited a website and thought, "Hey, I can do better than that!"? Have you found yourself growing tired of merely reading text and viewing images that someone else has put on the web? Is there something creative in you — stories, images, expertise, opinions — that you want to share with the world? If you answered a resounding "Yes!" to any of these questions, then congratulations: You have everything you need to get started with web coding and development. You have, in short, the makings of a maker.

The Nuts and Bolts of Web Coding and Development

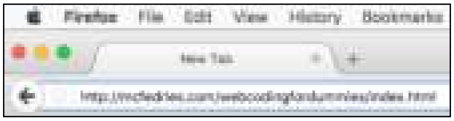
If, as the King said very gravely in Lewis Carroll's *Alice in Wonderland*, it's best to "begin at the beginning," then you've come to the right place. My goal here is to get you off on the right foot by showing you what web coding and web development are.

How the web works

Before you can understand web coding and development, you need to take a step back and understand a bit about how the web itself works. In particular, you need to know what happens behind the scenes when you click a link or type a web page address into your browser. Fortunately, you don't need to be a network engineer to understand this stuff, because I can explain the basics without much in the way of jargon. Here's a high-level blow-by-blow of what happens:

1. **You tell the web browser the web page you want to visit.**

   You do that either by clicking a link to the page or by typing the location — known as the *uniform resource locator* or *URL* (usually pronounced "you-are-ell," but also sometimes "earl") — into the browser's address bar (see Figure 1-1).



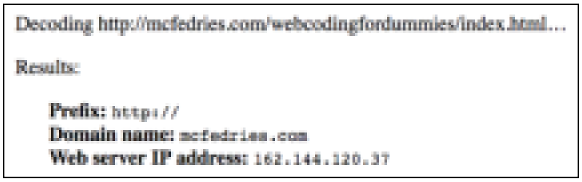
http://mcfedries.com/webcodingfordummies/index.html

FIGURE 1-1: One way to get to a web page is to type the URL in the browser's address bar.

2. **The browser decodes the URL.**

   Decoding the URL means two things: First, it checks the prefix of the URL to see what type of resource you're requesting; this is usually `http://` or `https://`, both of which indicate that the resource is a web page. Second, it gets the

URL's domain name — the `something.com` or `whatever.org` part — and asks the *domain name system* (DNS) to translate this into a unique location — called the IP (Internet Protocol) address — for the web server that hosts the page (see Figure 1-2).



Decoding http://mcfedries.com/webcodingfordummies/index.html…

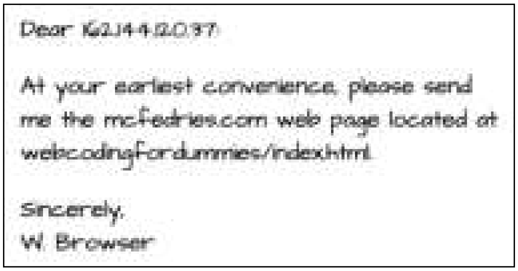
Results:

Prefix: `http://`
Domain name: `mcfedries.com`
Web server IP address: `162.144.120.37`

FIGURE 1-2: The browser extracts the prefix, domain, and the server address from the URL.

3. **The browser contacts the web server and requests the web page.**

   With the web server's unique IP address in hand, the web browser sets up a communications channel with the server and then uses that channel to send along a request for the web page (see Figure 1-3).



Dear 162.144.120.37

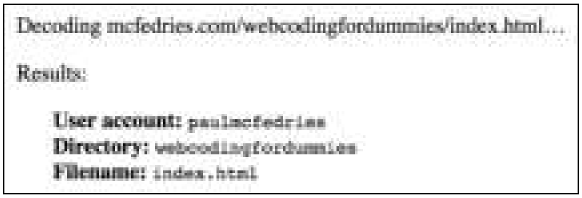
At your earliest convenience, please send me the mcfedries.com web page located at webcodingfordummies/index.html

Sincerely,
W. Browser

FIGURE 1-3: The browser asks the web server for the web page.

4. **The web server decodes the page request.**

   Decoding the page request involves a number of steps. First, if the web server is shared between multiple user accounts, the server begins by locating the user account that owns the requested page. The server then uses the page address to find the directory that holds the page and the file in which the page code is stored (see Figure 1-4).



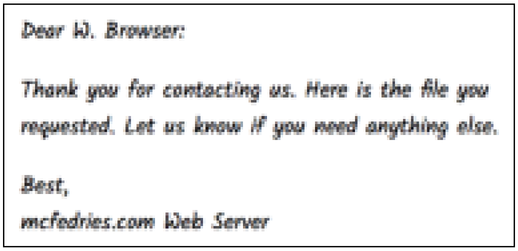
Decoding mcfedries.com/webcodingfordummies/index.html…

Results:

User account: `paulmcfedries`
Directory: `webcodingfordummies`
Filename: `index.html`

FIGURE 1-4: The server uses the page request to get the account, directory, and filename.

5. **The web server sends the web page file to the web browser (see Figure 1-5).**



Dear W. Browser:

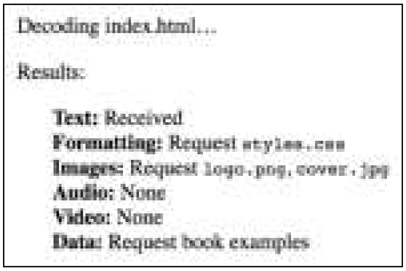
Thank you for contacting us. Here is the file you requested. Let us know if you need anything else.

Best,
mcfedries.com Web Server

FIGURE 1-5: The web server sends the requested web page file to the browser.

6. **The web browser decodes the web page file.**

   Decoding the page file means looking for text to display, instructions on how to display that text, and other resources required by the page, such as images and fonts (see Figure 1-6).



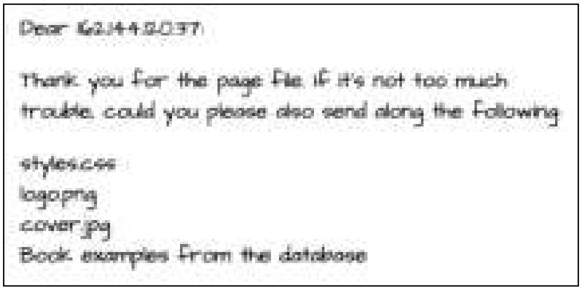
Decoding index.html…

Results:

Text: Received
Formatting: Request `styles.css`
Images: Request `logo.png`, `cover.jpg`
Audio: None
Video: None
Data: Request book examples

FIGURE 1-6: The web browser scours the page file to see if it needs anything else from the server.

7. **If the web page requires more resources, the web browser asks the server to pass along those resources (see Figure 1-7).**



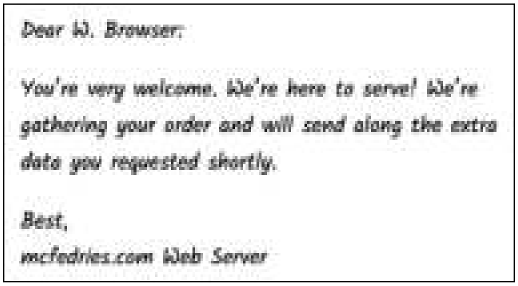
Dear 62.144.0.037:

Thank you for the page file. If it's not too much trouble, could you please also send along the following:

styles.css
logo.png
cover.jpg
Book examples from the database

FIGURE 1-7: The web browser goes back to the server to ask for the other data needed to display the web page.

8. **For each of the requested resources, the web server locates the associated file and sends it to the browser (see Figure 1-8).**



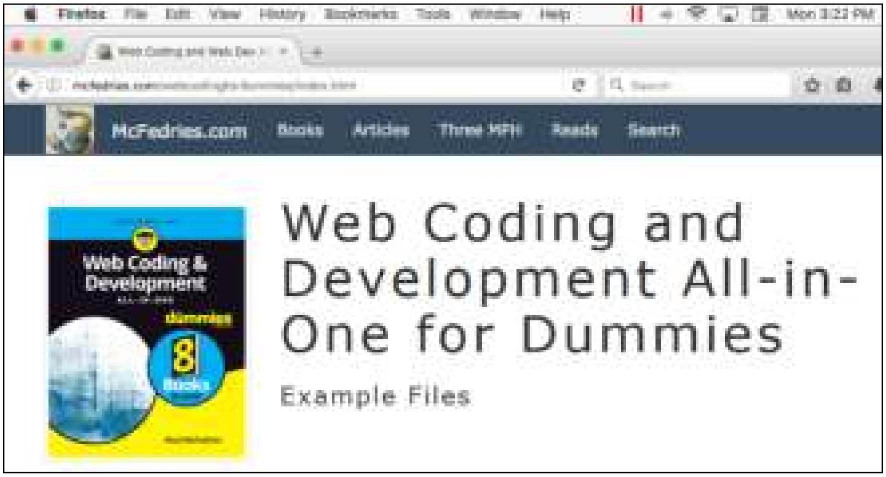
Dear W. Browser:

You're very welcome. We're here to serve! We're gathering your order and will send along the extra data you requested shortly.

Best,
mcfedries.com Web Server

FIGURE 1-8: The web server sends the browser the rest of the requested files.

9. **The web browser gathers up all the text, images, and other resources and displays the page in all its digital splendor in the browser's content window (see Figure 1-9).**



Web Coding and Development All-in-One for Dummies

Example Files

FIGURE 1-9: At long last, the web browser displays the web page.

How the web works, take two

Another way to look at this process is to think of the web as a giant mall or shopping center, where each website is a storefront in that mall. When you request a web page from a particular site, the browser takes you into that site's store and asks the clerk for the web page. The clerk goes into the back of the store, locates the page, and hands it to the browser. The browser checks the page and asks for any other needed files, which the clerk retrieves from the back. This process is repeated until the browser has everything it needs, and it then puts all the page pieces together for you, right there in the front of the store.

This metaphor might seem a bit silly, but it serves to introduce yet another metaphor, which itself illustrates one of the most important concepts in web development. In the same way that our website store has a front and a back, so, too, is web development separated into a front end and a back end:

- **Front end:** That part of the web page that the web browser displays in the browser window. That is, it's the page stuff you see and interact with.
- **Back end:** That part of the web page that resides on the web server. That is, it's the page stuff that the server gathers based on the requests it receives from the browser.

As a consumer of web pages, you only ever deal with the front end, and even then you only passively engage with the page by reading its content, looking at its images, or clicking its links or buttons.

However, as a maker of web pages — that is, as a web developer — your job entails dealing with both the front end and the back end. Moreover, that job includes coding what others see on the front end, coding how the server gathers its data on the back end, and coding the intermediate tasks that tie the two together.

Understanding the Front End: HTML and CSS

As I mention in the previous section, the *front end* of the web development process involves what users see and interact with in the web browser window. It's the job of the web developer to take a page design — which you might come up with yourself, but is more often something cooked up by a creative type who specializes in web design — and make it web-ready. Getting a design ready for the web means translating the design into the code required for the browser to display the page somewhat faithfully. (I added the hedge word "somewhat" there because it's not always easy to take a design that looks great in Photoshop or Illustrator and make it look just as good on the web. However, with the techniques you learn in this book, you'll almost always be able to come pretty close.)

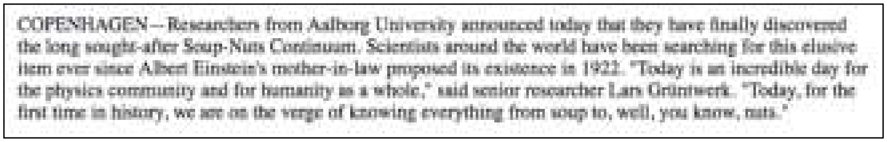
You need code to create the front end of a web page because without it your page will be quite dull. For example, consider the following text:

```
COPENHAGEN—Researchers from Aalborg University announced today
  that they have finally discovered the long sought-after
  Soup-Nuts Continuum. Scientists around the world have been
```

```
   searching for this elusive item ever since Albert Einstein's
   mother-in-law proposed its existence in 1922.

"Today is an incredible day for the physics community and for
   humanity as a whole," said senior researcher Lars Grüntwerk.
   "Today, for the first time in history, we are on the verge of
   knowing everything from soup to, well, you know, nuts."
```

If you plop that text onto the web, you get the result shown in Figure 1-10. As you can see, the text is very plain, and the browser didn't even bother to include the paragraph break.



COPENHAGEN—Researchers from Aalborg University announced today that they have finally discovered the long sought-after Soup-Nuts Continuum. Scientists around the world have been searching for this elusive item ever since Albert Einstein's mother-in-law proposed its existence in 1922. "Today is an incredible day for the physics community and for humanity as a whole," said senior researcher Lars Grüntwerk. "Today, for the first time in history, we are on the verge of knowing everything from soup to, well, you know, nuts."

FIGURE 1-10: Text-only web pages are dishwater-dull.

So, if you can't just throw naked text onto the web, what's a would-be web developer to do? Ah, that's where you start earning your web scout merit badges by adding code that tells the browser how you want the text displayed. That code comes in two flavors: structure and formatting.

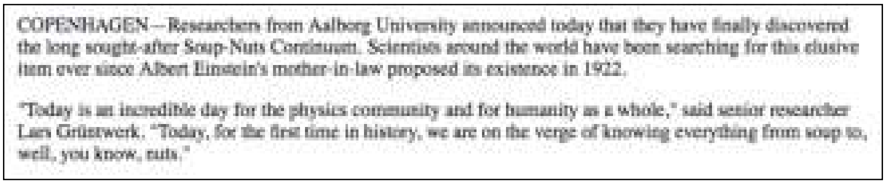
Adding structure: HTML

The first thing you usually do to code a web page is give it some structure. This means breaking up the text into paragraphs, adding special sections such as a header and footer, organizing text into bulleted or numbered lists, dividing the page into columns, and much more. The web coding technology that governs these and other web page structures is called (deep breath) *Hypertext Markup Language,* or *HTML,* for short.

HTML consists of a few dozen special symbols called *tags* that you sprinkle strategically throughout the page. For example, if you want to tell the web browser that a particular chunk of text is a separate paragraph, you place the `<p>` tag (the `p` here is short for paragraph) before the text and the `</p>` tag after the text.

In the code that follows, I've added these paragraph tags to the plain text that I show earlier. As you can see in Figure 1-11, the web browser displays the text as two separate paragraphs, no questions asked.

```
<p>
COPENHAGEN—Researchers from Aalborg University announced today
   that they have finally discovered the long sought-after
   Soup-Nuts Continuum. Scientists around the world have been
   searching for this elusive item ever since Albert Einstein's
   mother-in-law proposed its existence in 1922.
</p>
<p>
"Today is an incredible day for the physics community and for
   humanity as a whole," said senior researcher Lars Grüntwerk.
   "Today, for the first time in history, we are on the verge of
   knowing everything from soup to, well, you know, nuts."
</p>
```



COPENHAGEN—Researchers from Aalborg University announced today that they have finally discovered the long sought-after Soup-Nuts Continuum. Scientists around the world have been searching for this elusive item ever since Albert Einstein's mother-in-law proposed its existence in 1922.

"Today is an incredible day for the physics community and for humanity as a whole," said senior researcher Lars Grüntwerk. "Today, for the first time in history, we are on the verge of knowing everything from soup to, well, you know, nuts."

FIGURE 1-11: Adding paragraph tags to the text separates the text into two paragraphs.

REMEMBER

HTML is one of the fundamental topics of web development, and you learn all about it in Book 2, Chapter 1.

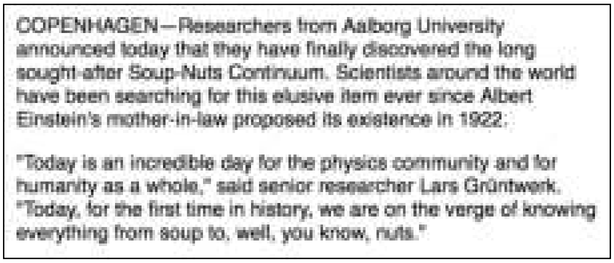
Adding style: CSS

HTML takes care of the structure of the page, but if you want to change the formatting of the page, then you need to turn to a second front-end technology: *cascading style sheets,* known almost universally as just *CSS*. With CSS in hand, you can play around with the page colors and fonts, you can add margins and borders around things, and you can mess with the position and dimensions of page elements.

CSS consists of a large number of *properties* that enable you to customize many aspects of the page to make it look the way you want. For example, the `width` property lets you specify how wide a page element should be; the `font-family` property enables you to specify a typeface for an element; and the `font-size` property lets you dictate the type size of an element. Here's some CSS code that applies all three of these properties to every `p` element (that is, every `<p>` tag) that appears in a page (note that `px` is short for pixels):

```
p {
    width: 700px;
    font-family: sans-serif;
    font-size: 24px;
}
```

When used with the sample text from the previous two sections, you get the much nicer-looking text shown in Figure 1-12.



COPENHAGEN—Researchers from Aalborg University announced today that they have finally discovered the long sought-after Soup-Nuts Continuum. Scientists around the world have been searching for this elusive item ever since Albert Einstein's mother-in-law proposed its existence in 1922.

"Today is an incredible day for the physics community and for humanity as a whole," said senior researcher Lars Grüntwerk. "Today, for the first time in history, we are on the verge of knowing everything from soup to, well, you know, nuts."

FIGURE 1-12: With the judicious use of a few CSS properties, you can greatly improve the look of a page.

REMEMBER

CSS is a cornerstone of web development. You learn much more about it in Book 2, Chapters 2, 3, and 4.

Understanding the Back End: PHP and MySQL

Many web pages are all about the front end. That is, they consist of nothing but text that has been structured by HTML tags and styled by CSS properties, plus a few extra files such as images and fonts. Sure, all these files are transferred from the web server to the browser, but that's the extent of the back end's involvement.

These simple pages are ideal when you have content that doesn't change very often, if ever. With these so-called *static* pages, you plop in your text, add some HTML and CSS, perhaps point to an image or two, and you're done.

But there's another class of page that has content that changes frequently. It could be posts added once or twice a day, or sports or weather updates added once or twice an hour. With these so-called *dynamic* pages, you might have some text, HTML, CSS, and other content that's static, but you almost certainly don't want to be updating the changing content by hand.

Rather than making constant manual changes to such pages, you can convince the back end to do it for you. You do that by taking advantage of two popular back-end technologies: MySQL and PHP.