chapter 6

HTML Coding

"From then on, when anything went wrong with a computer, we said it had bugs in it."

—Grace Murray Hopper, on the removal of a moth from a computer in 1945

In this chapter, you will learn how to:

- Explain the concept of a markup language and define the HTML tags you will use to create your Web page résumé.
- Create a new HTML file and use paragraph, list, and anchor tags to format the text and create the bookmark links on your Web page résumé.
- Capture and convert images into a file format suitable for display on a Web page, and use the HTML image tag to put a graphic on your Web page résumé.
- List the HTML table tags, create a table-driven page layout, and flow text and graphics into the cells of the table onscreen.
- Define the hypermedia design paradigms you can use to link pages into well-structured Webs that enable users to navigate efficiently.

THIS may be the most empowering chapter in the book because it steps you through the process of creating an HTML Web page. After defining the HTML codes and understanding how they mark up the content of a Web page, you use these codes to create a very strategic Web page—your résumé, which will come in handy any time you are looking for a job.

To make your résumé easy to navigate, you will learn how to divide a page into sections and create a table of contents. By linking the items in this table to the various sections of your résumé, you will enable potential employers to navigate your page and learn about your job skills. In the process, your well-constructed résumé will demonstrate your Web creation skills, which employers consider strategic in the twenty-first century information economy.

To illustrate your résumé, you learn how to put graphics onto a Web page. If you do not have these graphics already at hand, the chapter teaches you how to capture graphics and convert them into a format suitable for displaying on a Web page.

Then you use tables to control the positioning of text and graphics onscreen. You learn HTML tags that enable you to create layouts consisting of any conceivable pattern of table cells onscreen. These are the same table tags that all the major sites use to create their screen layouts, such as Amazon, CNN, eBay, Google, Yahoo!, and the Library of Congress.

After learning how to design individual pages, you learn how to form Webs by hyperlinking the pages together. By creating different patterns in your links, you create hypermedia design structures that enable users to navigate your Webs efficiently. By learning how to create different kinds of hypermedia design patterns, you will become very powerful as a Web page designer.

How HTML Works

Hypertext markup language (HTML) is the markup language used to create hypertext documents for the World Wide Web. The key to understanding how HTML works is to know what it means to mark up a text. Once you understand the markup concept, you will be ready to learn the HTML tags.

Understanding Markup

To **mark up** a text means to insert special codes called **tags** into the text. The tags control how the text appears on a Web page. For example, compare Figures 6-1 and 6-2. In Figure 6-1, you see how a text appears on a Web page; notice the different-sized heading, the paragraphs, and the list of bulleted items. In Figure 6-2, you can see the HTML tags that mark up the text. By comparing these two figures, you can begin to understand how HTML controls the appearance of text on the Web. Notice that the HTML tags always appear <inside> brackets.

HTML Tag Formats

There are two HTML tag formats: paired tags and single tags. **Paired tags** come in pairs that consist of a **start tag** and a **stop tag**. Headings are an example of paired tags. For example, to make the words *Internet Technologies At Work* appear in the largest style of heading, you would mark them up as follows:

L 6-1
```
<h1>Internet Technologies At Work</h1>
```

<h1> is the start tag, and **</h1>** is the stop tag. The words between them will appear in heading style h1, which is the largest of the six heading styles. You can tell a start tag from a stop tag because the stop tag always has a slash, as in **</h1>**.

Single tags function on their own with no stop tag. For example, the tag **<hr>** makes a line known as a "horizontal rule" appear on your Web page; there is no stop tag for a horizontal rule.

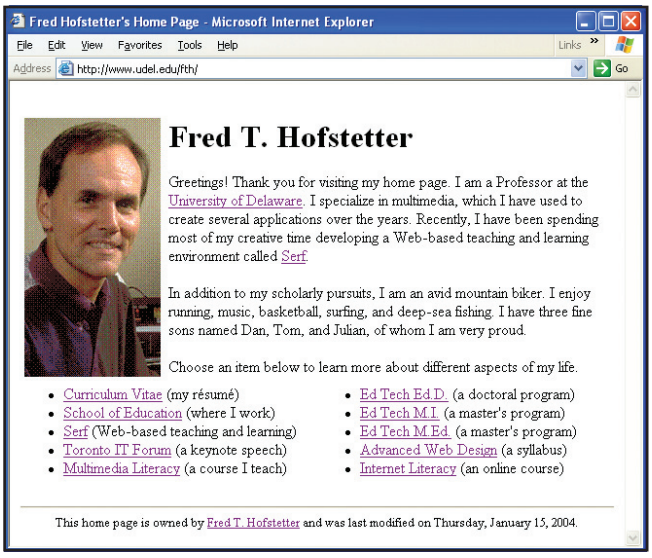

FIGURE 6-1 *This is how my home page appears on the Web. Notice the different-sized heading, the paragraphs, and the list of bulleted items.* ■

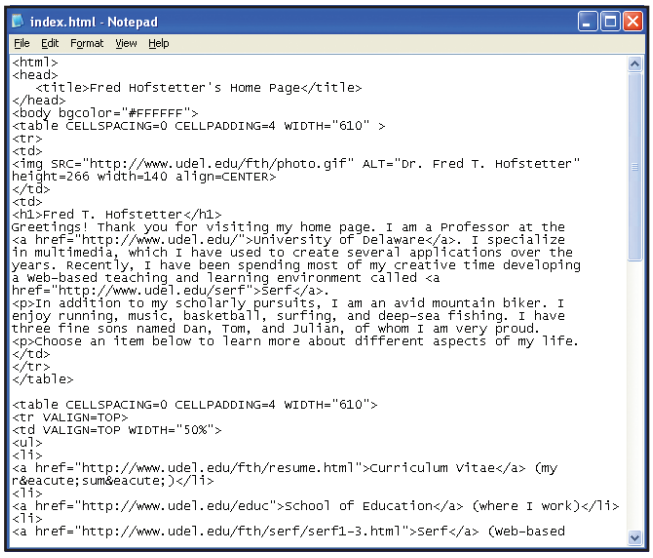

FIGURE 6-2 *This is the HTML source code that creates my home page. The codes in <brackets> are the HTML tags that mark up the text.* ■

Versions of HTML

HTML has progressed through several versions, each of which added new functionality to what you can do on a Web page. When HTML was invented, the Web was a text-only medium used to display simple text documents onscreen. To keep the markup simple enough for beginners to learn, HTML did not require all the structural elements defined by its parent language, which is the **standard generalizable markup language (SGML)**. According to SGML, for example, every begin tag needs some kind of logical ending. In early versions of HTML, however, several elements did not have end tags. The **list item tag** `<li>`, for example, did not have a corresponding end tag `</li>`. Moreover, SGML requires the order of the tags to adhere to the document's defined structure. If a bold italicized phrase begins, for example, with `<strong> <em>`, it must end with `</em> </strong>` and not `</strong> </em>`. Early versions of HTML permitted both kinds of endings, and to this day, the browsers permit them both.

Such loose encoding, however, does not lend itself to the kind of structure needed to transition the Web into an application model in which servers exchange data in a disciplined manner. Enter XML, which stands for eXtensible Markup Language. True to its name, XML enables you to extend a document's structure by defining new tags. This was not possible in HTML. Another difference between XML and HTML is that XML adheres to the structural rules of SGML. Every begin tag must have an ending, and the order in which the tags close must follow the structure of the document's definition.

More than a billion Web pages were created with HTML. The vast majority of these pages contain loose encodings that do not follow the strict rules of SGML. As a result, these pages will not validate in XML tools that require tags to follow the document's definition. To solve this problem, the W3C created a new language called XHTML. True to its name, **XHTML** includes most of the classic HTML codes, but they appear in the context of an XML schema (hence the X) that XML tools can understand.

Pages authored in XHTML will render not only on the Web but also on pagers, PDAs, cell phones, tablet PCs, and other devices that are following the new XML-based wireless protocols. XHTML pages can also be mined by XML tools as data that can be used in server-to-server and business-to-business applications. XHTML further enables you to use the extensible style language (XSL) to transform a document from one format into another, such as from an HTML Web page into a PDF document. Finally, XHTML makes it possible for you to use other XML languages on your Web page, such as the Synchronized Multimedia Integration Language (SMIL), which you will play with in the XML section of Chapter 8.

In this book, the HTML tags you will be learning follow the XHTML specification. To visit the official Web site where the HTML and XHTML specifications are found, go to www.w3.org/MarkUp.

Taxonomy of HTML Tags

There are more than a hundred HTML tags. Learning that many tags may seem like a foreboding task. You can simplify the process, however, if you think of the tags as families devoted to accomplishing similar tasks. The following taxonomy groups the HTML tags into 13 families:

- **Page structure tags** provide a framework for the document as a whole. They identify that the document is encoded in HTML and provide titling, framing, and header information that defines the structure of the file.
- **Block-style tags** control the flow of text into blocks on the screen. The most common block style is the paragraph.
- **Logical font-style tags** include styles for abbreviations, acronyms, citations, and quotations.
- **Physical font-style tags** let you create text that is blinking, bold, italic, subscripted, superscripted, or underlined.
- **Heading tags** let you create headings in six different levels or sizes of importance.
- **Lists and miscellaneous tags** let you create numbered lists, bulleted lists, menus, directories, horizontal dividing lines, and line breaks.
- **Form tags** let you create input fields, buttons, and selection boxes for gathering information from users.
- **Table tags** let you define tables that present data in neat rows and columns.
- **Character entities** provide a wide range of Greek characters and special symbols used in mathematical and scientific notation.
- **Anchor/link tags** let you create bookmarks, hypertext, and hyperpictures and link them to any resource or file on the World Wide Web.
- **Image tags** let you insert figures, center or align pictures with the left or right margin, flow text around images, or place little icons inline in the midst of your text.
- **Object tags** provide a means for defining a way to interact with plug-ins, media handlers, and Java applets, which are little applications that get downloaded to your computer along with a Web page.

Tags Used in the Web Page Creation Tutorial

Table 6-1 defines the HTML tags you will use in this chapter to create your Web page résumé. These tags are all a standard part of HTML and XHTML, and they work with almost any Web browser, including both Netscape Navigator and the Microsoft Internet Explorer.

HTML Tag Syntax	Use on Web Page
<html> and </html>	These tags define the beginning and end of an HTML document. Your Web pages will always begin with the <html> start tag and end with the </html> stop tag.
<head> and </head>	The headers of your HTML file will appear between these tags.
<title> and </title>	The title of your HTML file goes between these tags, which in turn go between the header tags.
<body> and </body>	The body of your HTML file goes between these tags.
and	You will use the h1 heading tags at the beginning of your résumé to make your name appear in the most important heading style.
and	The tag marks the beginning of a new paragraph. The stop tag is optional in HTML but required in strict XHTML. The tag always begins a new paragraph, whether or not a tag marks the end of the paragraph.
and	These unordered list tags will mark the beginning and end of the table of contents in your résumé.
and	The list item tag will mark each item in your table of contents.
<hr>	The horizontal rule tag makes the neat three-dimensional dividing lines on Web pages.
 	A stands for *anchor*. An anchor tag with a name attribute creates names for the bookmarks in your résumé.
 	Href stands for *hypertext reference*. An anchor tag with an href attribute creates hypertext links.
<img src="*filename*">	The image tag places pictures on your Web page.
<body background= "*filename*"> </body>	The background attribute of the body tag tiles an image into the background of your Web page if you want to give your résumé a textured appearance.
<table> and </table>	Table cells go between these tags.
<tr> and </tr>	You use these to create a row in a table; *tr* stands for *table row*.
<td> and </td>	You use these to create a data cell inside a row of a table; *td* stands for *table data*.

TABLE 6-1 *HTML Tags Used in the Web Page Creation Tutorial* ■

Creating Your Web Page Résumé

Now that you know how HTML works, you are ready to apply your new knowledge. The rest of this chapter takes you through all the steps needed to build your own online résumé with text, graphics, and links to other Web pages.

Starting the Page

To start a new Web page, follow these steps:

1. Get the Notepad running on your computer by double-clicking its Launch icon. If this icon is not visible, use the Windows Start | Programs | Accessories menu or the Macintosh Finder to locate the Notepad program. If you have decided to use another program instead of the Notepad to edit your HTML files, launch that other program and use it whenever these instructions tell you to use the Notepad.

2. Click to position your cursor in the Notepad window, and type the code illustrated in Figure 6-3. This is the minimal amount of HTML code needed to create a Web page. Notice that this code creates a head section and a body section. The body of your page will go between the <body> and </body> tags. The <head> will contain your page title, which you create in the next section of this chapter.

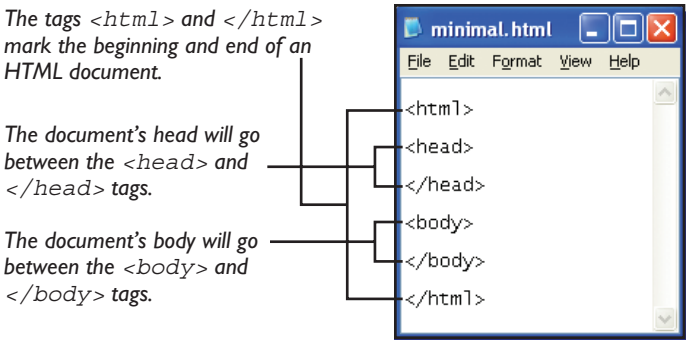

FIGURE 6-3 *This is the minimal amount of HTML code needed to create a Web page. The body of your page will go between the <body> and the </body> tags. The <head> will contain your page title, which you create in the next section of this chapter.* ■

Creating the Page Title

The **page title** is the name that appears in the browser's title bar when people visit your Web page on the Internet. The title is also used by many Web search engines, so you want to make sure the title identifies the primary purpose of your Web page by including keywords you want search engines to find. To create the page title, follow these steps:

1. The page title goes in the **head** of the document, which is the section of the Notepad file that goes between the <head> and </head> tags. Therefore, click to position your cursor between the document's <head> and </head> tags.
2. Type the following code, replacing "Santa" with your own name:

```
<title>Santa's Resume</title>
```

Figure 6-4 shows how your HTML appears after you create the document's title. Notice that the title of the document gets typed between the <title> start tag and the </title> stop tag. At runtime out on the Web, this title will appear in your browser's title bar.

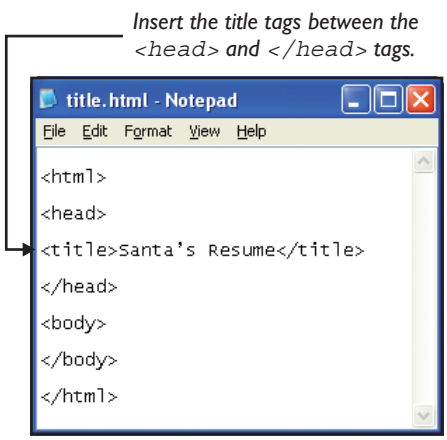

FIGURE 6-4 *You type the document's title tags between the <head> and </head> tags, which demarcate the head section of the Web page. When someone views the page out on the Web, this title will appear in the browser's title bar.* ■

Writing the Heading

Because this Web page is your résumé, you want to start it with a heading that includes your name in big, bold letters at the top of the Web page. The largest heading style is the <h1> style. To create a heading, follow these steps:

1. Click to position your cursor in the **body** of the document, which is the section of the page that comes after the <body> start tag but before the </body> stop tag.
2. Type the following code, replacing "Santa Claus" with your own name:

```
<h1>Santa Claus's Resume</h1>
```

Figure 6-5 shows how your code will appear. In the next part of this tutorial, you save this page and then preview it by opening it with your browser. Read on.

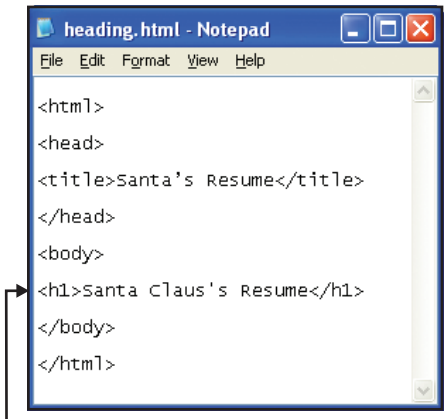

FIGURE 6-5 *You type the <h1> tag into the document's body, which is where you will type all of your résumé's content. The <h1> tag will cause the text between it and the </h1> stop tag to appear in heading style 1, which is a very large font. In the next part of this tutorial, you learn how to save and preview what this page will look like out on the Web.* ■

Saving the Page

Whenever you make a change to a file you want to keep, you should save the file. Do so now by following these steps:

1. Pull down the File menu and choose Save. The first time you save a file, the Save As dialog appears, as illustrated in Figure 6-6.

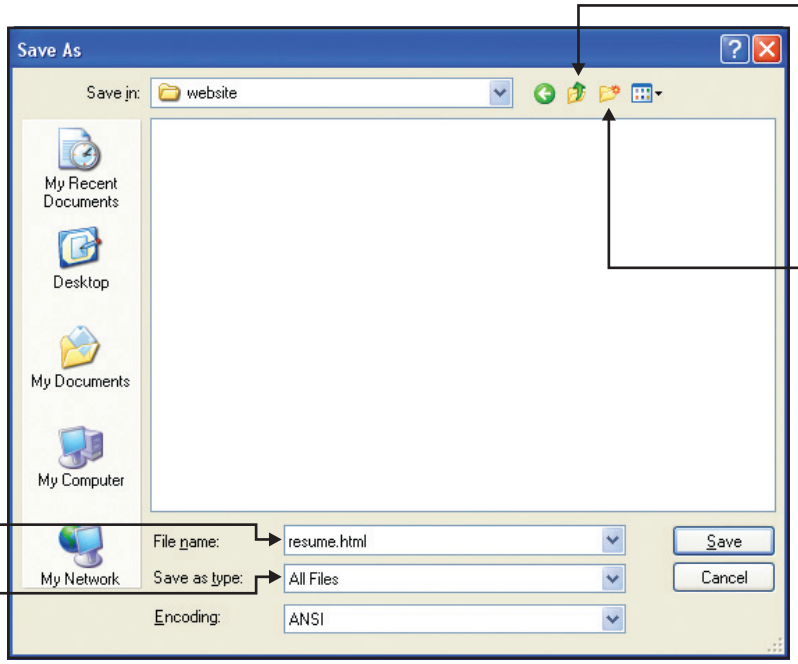

FIGURE 6-6 *The Save As dialog appears the first time you save a newly created file. Use the controls to select or create the file folder into which you want to save your file. In this example, use the Up One Level button to navigate to the root of your drive; then use the Create New Folder button to create a new folder called* website. *Double-click to enter that folder, and save the file under the name* resume.html. ■

2. If the folder in which you want to save the file does not already exist, you can use the Save As dialog's icons to create a file folder. In this example, click the Up One Level icon to move up a level until you get to the root of your drive; then click the Create New Folder icon to create a new folder. Name the new folder *website* and then double-click that folder's icon to enter it.
3. In the File name field, type the name you want the file to have. In this example, type **resume.html**.
4. Pull down the Save as Type menu, and set it to All Files.
5. Click the Save button to save the file. From now on, to save this file after you make changes, all you need to do is pull down the File menu and click Save. If you ever want to save it under a different name, pull down the File menu and click Save As.

Viewing the Page with a Web Browser

While you are creating a new Web page, you will want to have a look at it with a Web browser from time to time so you can see how it is going to appear on the Web. To preview a Web page with a browser, follow these steps:

1. Pull down the browser's File menu and choose Open to make the Open dialog appear.
2. Click the Browse button and use the controls to select the file you want to view. In this example, assuming your hard drive is letter C, select your file named c:*website**resume.html*.
3. Click OK to open the file, which now appears in your browser, as illustrated in Figure 6-7.

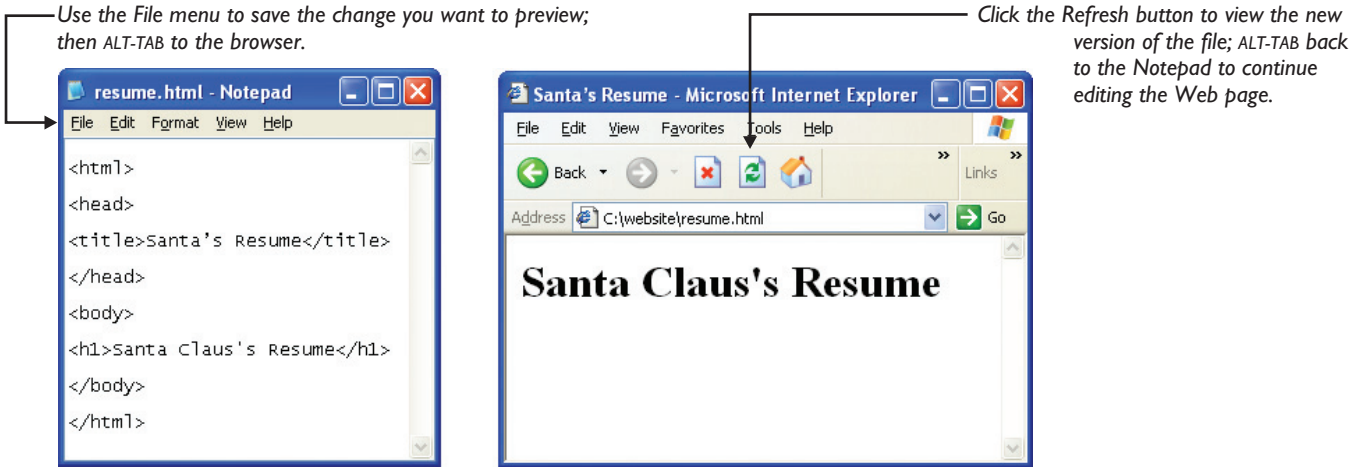

FIGURE 6-7 *You can save valuable time by keeping the Notepad and the browser open simultaneously when you are using them to edit and preview a Web page. Whenever you make a change in the Notepad that you want to view with the browser, save the file in the Notepad, and then ALT-TAB to the browser and click the browser's Refresh button to view the new version of the file. Then you can ALT-TAB back to the Notepad to continue editing the Web page.* ■

4. When you finish viewing the file, you can save time by avoiding the temptation to close the browser window. Instead of closing the browser, hold down the ALT key and click TAB until you get back to your Notepad, where you can continue editing the file. Whenever you want to preview the file, use the Notepad to save it. Then ALT-TAB back to your browser and click the browser's Refresh button to read the new version of the file.

Writing Paragraphs

Now you are ready to type the first paragraph of your résumé. Move your cursor to the spot in the Notepad right after the heading's `</h1>` stop tag, and press ENTER. If you mistakenly press ENTER in the midst of the heading instead of at the end of it, you can pull down the Edit menu and choose Undo to fix the mistake.

To begin the new paragraph, type the tag followed by a few sentences about yourself as an introduction to your résumé. Do not be bashful: a résumé should begin with a strongly stated summary of your professional qualifications and career goals. At the end of each paragraph, you should type the stop tag, although the browsers may let you get away without it. Figure 6-8 shows how I began my résumé.

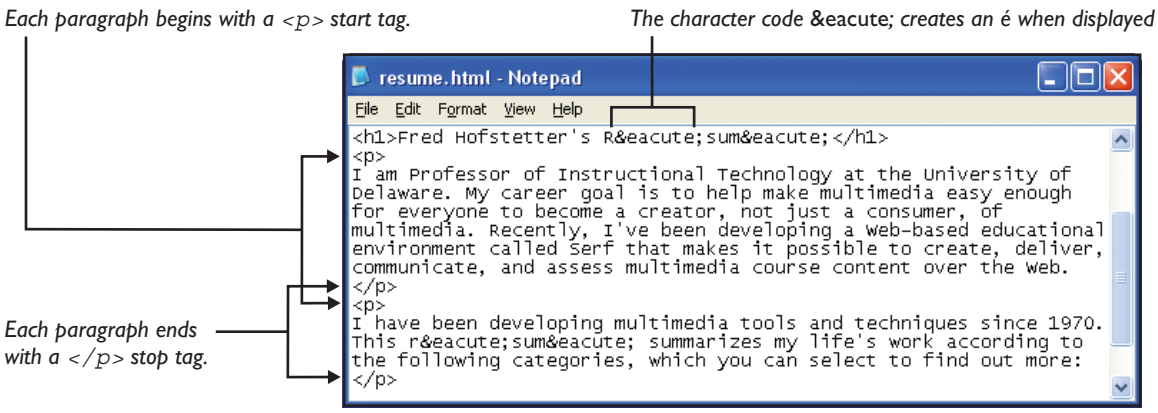

FIGURE 6-8 *How I typed the first two paragraphs of my résumé. Do not be bashful about promoting yourself. A résumé must impress potential employers that you are a desirable job candidate.* ■

After you type your opening paragraphs, use the Notepad's File menu to save the page, and then use your browser to preview it. Remember that you can save time if you keep the Notepad and browser windows open and ALT-TAB between them while editing and previewing your page. Click the browser's Refresh button to view the new version of the page. Notice that the paragraphs you typed appear beneath the heading of your résumé.

Creating a List

You create lists with the **unordered list** start and stop tags for a bulleted list, or the **ordered list** start and stop tags for a numbered list. In between these tags, you type the list items, which must begin and end with the list item <li> start and stop tags.

Now that you have created the two introductory paragraphs of your résumé, it is time to create the bulleted list that will serve as your table of contents. Follow these steps:

1. Position your cursor in the Notepad window just after the stop tag at the end of your second paragraph, and press ENTER to move down to the next line.
2. Type the <ul> tag and press ENTER. The <ul> tag begins an unordered list.
3. Type the tag and press ENTER. The tag ends an unordered list. You may justifiably ask, why type the end-of-list tag before typing the list itself? The reason is to keep from forgetting to do so. Of course, the page will work regardless of whether you type the tag before or after typing the list.

4. Position your cursor between the <ul> and tags, which is where the list items will go.
5. For each item, type the <li> start tag to begin the list item, followed by the item itself, followed by the stop tag to end the item. Figure 6-9 shows how I typed my list items into the Notepad, and Figure 6-10 shows the resulting Web page.

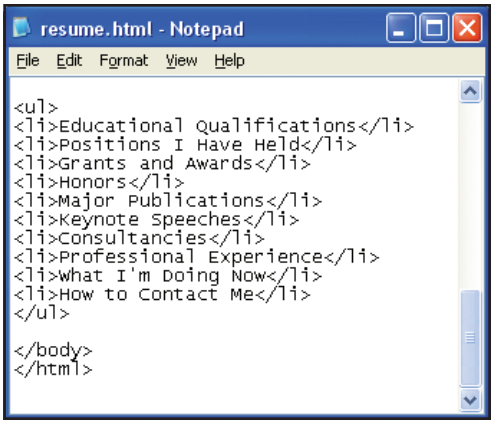

FIGURE 6-9 *My bulleted list consists of ten list items. Notice that the list is bounded by the <ul> start and stop tags. Similarly, each list item is demarcated by the <li> start and stop tags.* ■

FIGURE 6-10 *This is a browser preview of the HTML in Figure 6-9. Notice that the browser displays the unordered list with bullets. If the list were ordered, on the other hand, the browser would have used numbers instead of bullets. Chapter 8 shows you how to use a style sheet to change the default appearance of bullets, numbers, and other elements onscreen.* ■

Horizontal Rules

A **horizontal rule** is a Web page element that creates a neat-looking dividing line between different parts of a Web page. To insert a horizontal rule after the bulleted table of contents in your résumé, follow these steps:

1. In the Notepad window, position your cursor after the stop tag at the end of the list. Press ENTER to move down to a new line.
2. Type the HTML tag for a horizontal rule, which is <hr>.
3. Save the file in the Notepad, and preview the new version of the file in the browser. Remember to click the browser's Refresh button to make sure you are viewing the newly saved version of the file.

Inserting horizontal rules in your documents is easy, and the dividing lines look nice. However, do not give in to the temptation to overuse them! Horizontal rules are best used to separate major sections of your document.

Remember to Save the File

Remember to save your HTML file periodically to prevent accidental data loss due to power failures or other accidents. To save the file, pull down the Notepad's File menu and choose Save. In addition to saving the file on

your primary drive, it is also a good idea to make a copy of the file on another storage device from time to time. Such a spare copy is known as a *backup*. Having a backup will protect you from data loss in case of a power failure or a hard disk crash on your primary working drive. The backup also provides you with a way to retrieve your good work in case you make a mistake and really mess something up on your primary copy.

The importance of backing up your files cannot be overemphasized. Floppy disks, CD-R disks, and zip drives provide you with economical ways to back up your files. Keeping a copy of your backups in more than one physical location can help protect against data loss in case of a fire or some other kind of unforeseen calamity. I hope such a tragedy will never happen to you. According to Murphy's Law, if you faithfully keep a backup, you will never need it. In other words, always make a backup!

Inserting a New Heading

Every main section of your résumé should begin with a large-sized heading that identifies what that section is. It is common for Web pages to have a title displayed in the largest-sized heading, `<h1>`, and then to use the next smaller size, `<h2>`, for subheads. For example, when you enter the educational qualifications section of your résumé, follow these steps to give it a heading:

1. In the Notepad, position your cursor at the start of the education section of your résumé. This location will probably be right after the horizontal line you just inserted.
2. Press ENTER to move down to a new line.
3. Type the heading, which in this example will be **Educational Qualifications**. To make this have the heading 2 style, the tag to type is:

   ```
   <h2>Educational Qualifications</h2>
   ```

4. To begin a new paragraph after the heading, position your cursor at the end of the heading, press ENTER to move down to the next line, type the `<p>` tag to start a new paragraph, and type the content of the next section. Remember to end each paragraph with the `</p>` stop tag.

Creating Named Anchor Bookmarks

As you create the different sections in your résumé, it will grow too long for the browser to display it onscreen all at once. So users can easily find the parts of your résumé, you can insert bookmarks known as **named anchors** into your document. Then you can link each item in your résumé's bulleted list of topics to its corresponding bookmark to make it quick and easy for the user to find that section. To create a named anchor bookmark, follow these steps:

1. Click to position your cursor at the spot in the Notepad window where you want the bookmark to be. In this example, position your cursor at the start of the Education section, right before the `<h2>` tag that demarcates that section's heading.
2. You use the anchor tag to create a name for a bookmark. To make a bookmark named "education," type the following anchor tag:

```
<a name="education"></a>
```

Figure 6-11 shows an example of how I completed this exercise. Now that the bookmark's name has been created, you must next create the link that will take users from the corresponding item in the table of contents to your education section. The next section of this tutorial shows you how to do this. Read on.

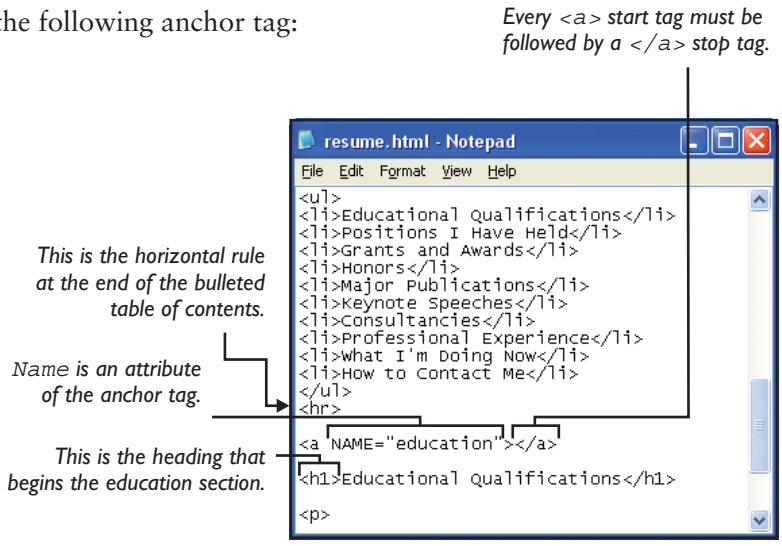

FIGURE 6-11 *To create a name for a bookmark, you use the anchor tag. In this example, an anchor tag named "education" will serve as a bookmark enabling users to jump to the education section of your résumé. Thus, a named anchor is a bookmark to which you can create links that, when clicked, take users to that spot on the page. In the next section of this tutorial, you create the link that the users will click* ■

Creating Hypertext Links to Named Anchor Bookmarks

Think about the items in your bulleted table of contents. You want each item to serve as a hypertext link that, when clicked, will jump the page down to the bookmarked name of its corresponding anchor. The table of contents item "Educational Qualifications," for example, needs to become a link that, when clicked, takes users to the education bookmark in your résumé. To create such a link, follow these steps:

1. In the Notepad, click to position your cursor immediately before the word Educational in the unordered list that serves as your table of contents. Make sure the cursor is after the `<li>` tag and before the word Educational.
2. You create a hypertext link with an anchor tag. To begin such a tag, type the following code:

```
<a href="#education">
```

3. In this tag, `href` is an attribute that stands for **hypertext reference**. The word in quotes is the value of this attribute, which is set to `#education` to make the link point to the bookmark named education. The pound sign character # tells the browser that the target of the link is a named anchor bookmark on the same page.
4. Remember that every anchor tag must have a `</a>` stop tag. Therefore, click to position your cursor after the phrase Educational Qualifications and type the `</a>` tag. Figure 6-12 shows the completed Notepad file.

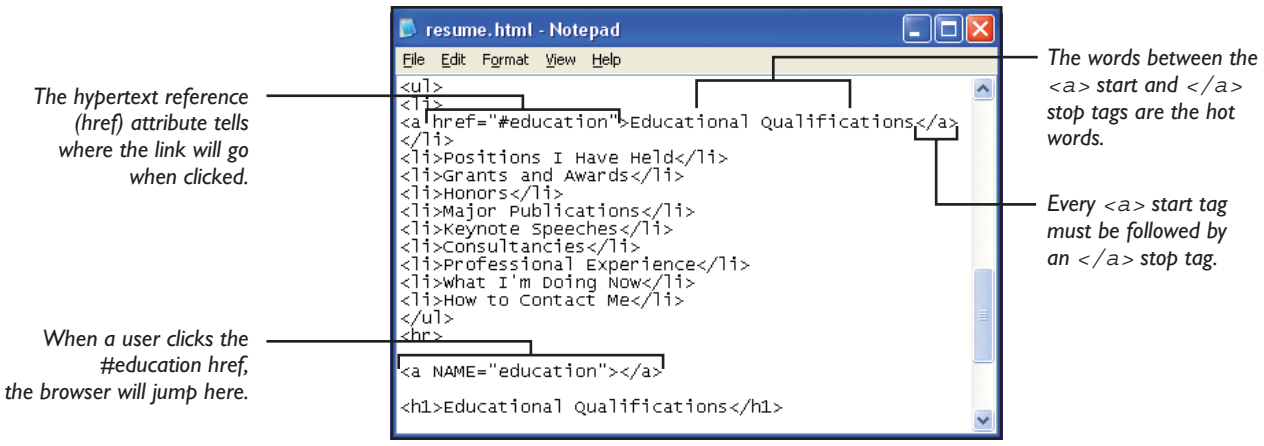

FIGURE 6-12 *You create a hypertext link via the hypertext reference (href) attribute of an anchor tag. In this example, the href is #education, which links the text to the education bookmark further down on the page. After the hot words you are linking, remember that you must type the close tag so the browser will know where the anchor ends.* ■

note *If your browser window is large enough to display the entire page, you may not see the browser jump when you click the link. Resize the window to make it small, and then you will see the browser jump when you click the link.*

5. Save the file and preview it with your Web browser. The words *Educational Qualifications* should appear in color in your résumé's bulleted table of contents. The coloration denotes hypertext; clicking the colored text will trigger the link.
6. Go ahead and click the link to see how it works. If your browser jumps to the Educational Qualifications section of your résumé, congratulate yourself! If not, repeat these steps, compare your HTML to the samples shown here, and keep trying until you get the bookmark link to work.

Returning to the Table of Contents

Web pages that use named anchor bookmarks should provide a way to return to the table of contents so the user can make another selection. Creating such a return-to-contents link is a two-step process. First, you create a named anchor bookmark at the start of the bulleted list to which you want users to return; then you create a return link to that bookmark at the end of each section in your document.

To create a return-to-contents link in the Education section of your résumé, follow these steps:

1. Click to position your cursor at the spot in the Notepad window where your table of contents begins. In this example, position your cursor in front of the `<ul>` tag that signals the beginning of your bulleted list.
2. Create a named anchor bookmark called *contents*—try to do this on your own, but if you need help, type the following command:

```
<a name="contents"></a>
```

3. Position your cursor at the end of the Educational Qualifications section of your résumé. Insert a new paragraph that contains the

text *Table of Contents*, and link that text to the *contents* bookmark. Try to do this on your own, but if you need help, here is the code to type:

```
<a href="#contents">Return to Contents</a>
```

4. Save the file and preview it with your Web browser. Click your browser's Refresh button to make sure you are viewing the latest version of the page. Scroll down to the bottom of your educational qualifications, and click the link to return to contents. If your browser jumps back up to your résumé's table of contents, congratulate yourself! If not, keep trying until you get the bookmark link to work.

note *If you really get stuck, remember that you can go to my résumé at www.udel.edu/fth/resume.html, pull down the View menu, and choose Source to see how I coded my return-to-contents link.*

Linking to URLs

There are more than a billion documents on the World Wide Web. You can link your résumé to any document for which you know the URL. For example, if the place where you work or go to school has a home page, you might want to provide a way for users to navigate there. Follow these steps:

1. In your Notepad window, position your cursor at the spot where you want the link to appear, and type the text that will trigger the link. For example, type the text:

   ```
   University of Delaware
   ```

2. Surround the text you just typed by the anchor start and stop tags; the example now reads:

   ```
   <a>University of Delaware</a>
   ```

3. Add to the start tag an `href` attribute that tells the browser where to go when users click the link. The completed example is:

   ```
   <a href="http://www.udel.edu">University of Delaware</a>
   ```

4. Save the file and preview it with your Web browser. Click your browser's Refresh button to make sure you are viewing the latest version of the page. Click the link you created in the previous step. If it works, congratulate yourself. If the link does not work, troubleshoot the problem until you get it working. Make sure you are spelling your href correctly, and compare your code to the University of Delaware example in the previous step.

Identifying the Web Page Owner

Netiquette calls for Web pages to end with a few lines of text indicating who owns the page and how to contact the owner. To identify yourself as the owner of your Web page, follow these steps:

1. Click to position the cursor in your Notepad window at the bottom of the document.

2. Type the paragraph `<p>` start and `</p>` stop tags to create a new paragraph.

3. Between the paragraph start and stop tags, type the following words, replacing Santa's information with your own:

```
<p>
This Web page is owned by Santa Claus. My e-mail address is santa@northpole.com.
</p>
```

Mailto Links

A **mailto** is a link that, when clicked, opens a new message window addressed to the person identified in the link. It is customary for Web page owners to include a mailto link to their e-mail address to make it easy for users to contact them. Consider the Web page owner statement, for example, that you put at the bottom of your home page. Your e-mail address appears there. To provide a mailto link to your e-mail address, you would modify the last sentence to read as follows:

warning *Beware that spammers can harvest e-mail addresses from Web pages that contain mailto links. You need to consider this risk in deciding whether to put a mailto link on your page.*

L 6-2

```
My e-mail address is <a href="mailto:santa@northpole.com">santa@northpole.com</a>.
```

Creating White Space on Web Pages

By now you have probably noticed that white space does not work the same way in the browser as it does in the Notepad. If you press ENTER a few times to create some white space in your Notepad, for example, and then save the file and view it with your browser, you will notice that the browser ignores those line feeds. Similarly, if you type several spaces in a row to create a blank space in the Notepad, and then save the file and view it with your browser, you will observe that the browser prints only one of the spaces and ignores the others.

The browser ignores line feeds and multiple spaces because of the structural rules of HTML. When you want to create white space onscreen, you need to use the appropriate HTML code to do so. You have already mastered the most commonly used white space codes, which are the paragraph `<p>` start and `</p>` stop tags. Another handy white-space code is the **`<br>`** break tag, which makes the browser go down to the next line of the screen. There is also a code for a single white space character called a **nonbreaking space**. The code for this character is **` `** (including the semicolon, which signals the end of the special code). When the browser encounters the code ` ` it prints a single white space onscreen. You could therefore type **`     `** into the Notepad file to make the browser display five consecutive white spaces onscreen.

Character Attributes on Web Pages vs. Word Processors

Because word processors are habit-forming, no chapter on Web page creation would be complete without mentioning some caveats regarding things you commonly do with a word processor but should not do when you are editing a Web page.

Underlining

In a word-processed document, it is common to underline things for emphasis. On the Web, underlining normally means that the underlined text is linked as hypertext. If you want to emphasize something on the Web, therefore, use bolding or italics instead of underlining. To bold something you are editing with your Notepad, surround it by the **** start and **** stop tags. To italicize something, enclose it within the emphasis **** start and **** stop tags. You can further stylize the text with style sheets, which you study in Chapter 8.

note *Previous versions of HTML used and tags to bold text, and and tags to italicize. The latest version of HTML deprecated these tags, replacing them by   for bolding, and   for italics. In strict XHTML, you create these kinds of effects with style sheets, which you study in Chapter 8.*

Avoiding the Pagination Temptation

In a word processor, you can press ENTER repeatedly to add white space to arrange the text to fit the size of the printed page. A common mistake beginners make is to try to do the same thing on a Web page. It does not work, because there is no guarantee that the viewer's screen size or window size will fit the one for which you developed your page.

Resist the temptation to press the ENTER key repeatedly to add white space in an attempt to create pagination on a Web page. If you want a new page, create a new Web page and link to it from a hypertext link or a navigational icon. You learn how to link pages later, in the hypermedia design section of this chapter. If you want to control spacing on the screen, the best way to do that is with a table. You learn how to make tables in the layout section of this chapter.

HTML Graphics and Animated GIFs

It has often been said that a picture is worth a thousand words. The ease with which you can insert pictures into Web pages means you can illustrate documents and use images as design elements in the layout of a Web page. Before you can insert a picture into a Web page, however, you must get the picture into the proper format for display on a Web page. This chapter provides you with a utility that makes it easy to get images into the proper format. Then it shows you not only how to insert pictures into Web pages but also how to create special effects with techniques known as *tiling* and *watermarking*.

Obtaining Images to Use on a Web Page

Assume you have an image you want to insert into your Web page. Because you have created a Web page résumé, it would be natural to include your picture in the upper-left corner of the résumé so prospective employers can see what you look like. Many photo shops, such as Kodak, and mass-market retail stores, such as Eckerd Drugs, give you the option of having a floppy disk or a CD returned along with your prints when you have a roll of film developed. Eckerd Drugs, for example, charges $6 extra to get a Kodak Picture CD containing a JPEG digital image of each picture on the film. In partnership with Kodak, Eckerd also provides an online service called

Kodak PhotoNet Online. When your film is developed, you can view your photos on the Web and order high-resolution copies of the images you want. For professional-quality imaging, you can order a Kodak Photo CD when you send in your film to be developed. The Photo CD contains five or six versions of each picture, sampled at resolutions ranging from a wallet-sized thumbnail to a poster version much larger than the size of your computer screen. For more information, follow this book's Web site links to Eckerd Drugs and Kodak Photo CD.

If you own a digital camera, you do not need to have your pictures developed: Digital cameras take pictures as bitmaps, which can be downloaded from the camera to your PC. Epson, Canon, Kodak, and Olympus are just a few of the companies that make digital cameras. To find out what digital cameras are available and how their features compare, follow this book's Web site links to Digital Cameras.

Scanners have dropped in price so much that they have become mass-market consumer items. Sometimes you get a scanner for free when you purchase a new multimedia PC. Scanners come with software that can digitize printed photographs you can put on Web pages.

On the other hand, if you prefer not to include your picture on your résumé, you may want to enhance the résumé's appearance by including some other graphics. There is a Web page full of general-purpose graphics at this book's Web site. You can download any image on this page by right-clicking the image to pop out the quick menu; then choose Save As to save the image file on your hard drive. To inspect these images, follow the links to general-purpose graphics at this book's Web site.

Preparing Images for a Web Page

Before you can insert an image into a Web page, you need to ask yourself the following questions:

- Is the image in the correct format for inserting onto a Web page? Images must be in either the GIF or JPEG file format. If the image is not in the correct format, you must convert it into the proper file format:
  - Use the GIF format if the image has 256 colors or fewer, or if you can live with reducing the color depth of a more fully colored image to 256 colors.
  - Use the JPEG file format if your image has more than 256 colors and you need true color.
  - Use the GIF format if you need one of the colors in the image to be transparent. On Web pages, for example, you will sometimes want the background of the image to be transparent so it can overlay or float on the page.
- Is the image the proper size for your Web page layout? Images that are too large need to be reduced in size with a graphics editor. Many people think they can skip this step and just resize the image with their Web editing software. This does not change the size of the file, however, and the quality will not be as good as when you

resize an image with a graphics editor. That is because the browser is told to show the still-large file at a smaller size, but the browser is not as good at resizing images as the graphics editor. If you need to resize an image, therefore, you should do it with a graphics editor. As an added bonus, the smaller file size will save on bandwidth and make the page appear sooner.

- What is the color format of the image? If the image is in 24-bit format (16 million colors), you may want to reduce it to an 8-bit color format (256 colors), which will greatly reduce its file size. Remember that the larger the file size of the image, the longer it will take to download from the Internet.

Happily, there are graphics programs that enable you to do all of these things. In the next section of this chapter, you learn how to use Paint Shop Pro for Windows to prepare images to put on your Web pages.

Configuring Paint Shop Pro

Paint Shop Pro is a Windows program for image capture, creation, viewing, and manipulation. Features include painting, photo retouching, image enhancement and editing, color enhancement, graphics format conversion, and color scanner support. More than 30 image file formats are supported, including GIF, JPEG, TIFF, Kodak Photo CD, BMP, and PNG. You can even browse images on your computer; Figure 6-13 shows how the images appear as thumbnails, which you can double-click to view full-screen.

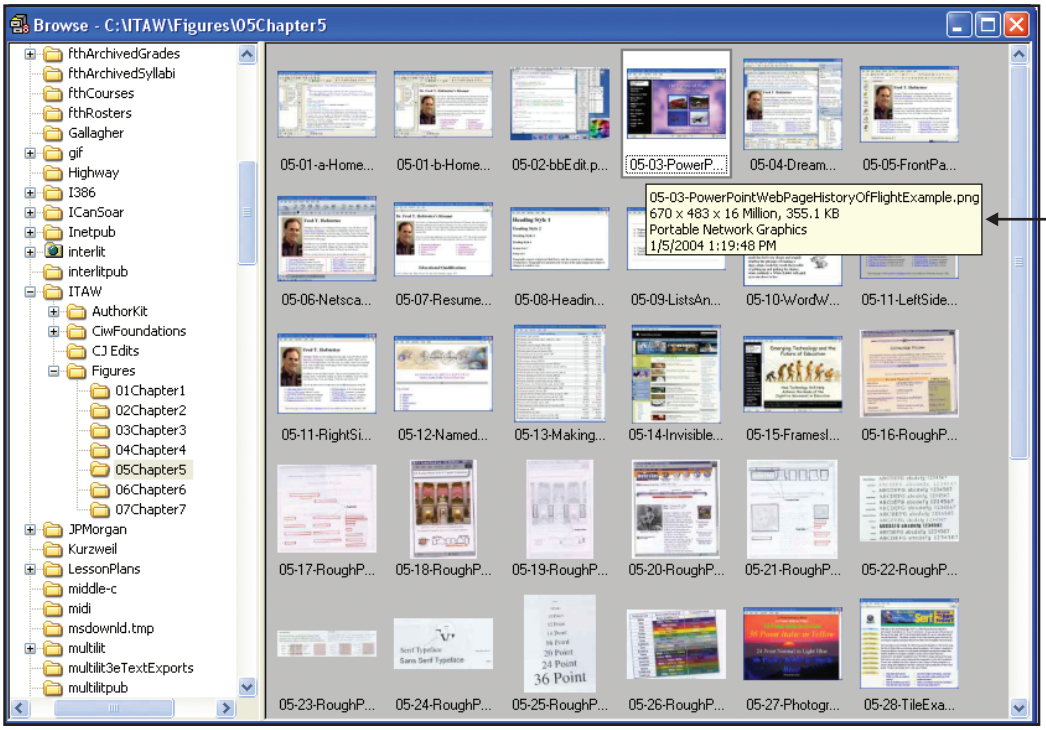

FIGURE 6-13 *Paint Shop Pro contains an image browser and many powerful graphics tools. Shown here is the browser, which comes in handy when you are looking for an image. You can double-click an image to bring it up in the Paint Shop Pro editor, or right-click it for a variety of image management functions.* ■

You can try an evaluation version of Paint Shop Pro before you buy. You can download it from the Web by following this book's Web site links to Paint Shop Pro. If you want to use the software after 60 days, you must pay the license fee, or the evaluation copy will expire.

The first time you run Paint Shop Pro, you must set up the hot key you will use to capture graphics. Follow these steps:

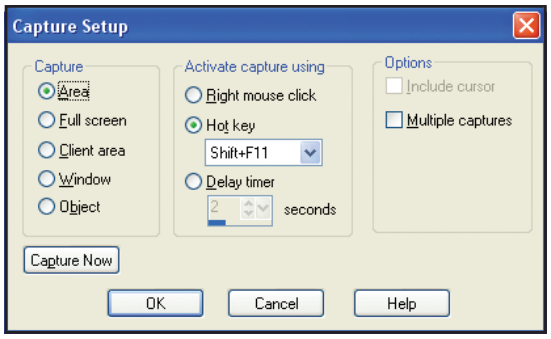

FIGURE 6-14 *The Paint Shop Pro Capture Setup dialog. This book recommends setting up the capture key to be SHIFT-F11 because it is my experience that SHIFT-F11 is most compatible with the mainstream of Windows programs. Other key combinations can conflict with hot keys predefined in these programs.* ■

1. Double-click the Paint Shop Pro icon to get Paint Shop Pro running.
2. Pull down the File menu and choose Import | Screen Capture | Setup. The Capture Setup dialog appears as shown in Figure 6-14.
3. Notice that the Capture group lets you set up to capture an area, the full screen, the client area of the current window, the entire current window, or an object. Set it to capture an area.
4. In the Activate Capture group, click the option to activate via Hot Key, and set the hot key to something you never use in any other application; I recommend you set the hot key to SHIFT-F11, which is the hot key this tutorial uses.
5. Click OK to close the dialog.

Capturing Images

A basic skill important to all Web page developers is the ability to capture an image, or part of an image, and save it on the hard drive. You have already learned that if the graphic is on a Web page, and if you are capturing the entire graphic, you can right-click the graphic and choose Save As to download it onto your hard drive. Sometimes, however, the right-click does not work. You may want to capture only part of the image, for example, or the image might be in an application that does not support the right-click method of copying. When the right-click method does not work or will not do what you want, follow these steps to capture the image:

1. Get the program running from which you want to capture a graphic. For example, suppose you want to capture my smiling face. Get your Web browser running, and go to http://www.udel.edu/fth where my photo appears on my Web page.
2. Get Paint Shop Pro running, if it is not running already.
3. Hold down the ALT key and keep pressing TAB until Paint Shop Pro appears. ALT-TAB is a special Windows key for switching among programs running simultaneously on your computer.
4. Click the Paint Shop Pro Start Capture button, or press SHIFT-C, or pull down Paint Shop Pro's File menu and select Import | Screen Capture | Start. Immediately, Paint Shop Pro disappears.
5. If the image you want to capture is not visible on your screen, hold down ALT and keep pressing TAB until the screen you want to capture appears.

6. Press the capture hot key (SHIFT-F11); the cursor turns into a crosshair.
7. Click the upper-left corner of the area of the screen you want to capture, and then click the lower-right corner to complete the capture. In this example, you first want to click the upper-left corner of my smiling face and then click the lower-right corner.
8. The captured image should now appear in the Paint Shop Pro window. To save the image, pull down the File menu and choose Save As.
9. In the Save as Type box, select the image format in which you want to save the image. In this example, select CompuServe Graphics Interchange (GIF).
10. In the File Name field, type the name you want the image to have. In this example, type **fred**. You do not need to type a filename extension, because Paint Shop Pro will supply one automatically, based on the file type you set in the Save as Type box.
11. Click the Save button to save the file; then pull down the File menu and choose Exit to leave Paint Shop Pro.

note *To capture the full screen or the contents of a window, pull down the File menu, choose Import | Screen Capture | Setup, and set the Capture option accordingly.*

Converting Images

Converting images into the proper format for inserting onto Web pages is easy. As noted earlier, the best formats to use are GIF if the image has 256 colors or fewer or JPG if your image has up to 16 million colors. To convert an image from one file format into another, follow these steps:

1. Pull down the Paint Shop Pro File menu and choose Open; the Open dialog appears.
2. In the List Files of Type field, pull down the choices and select the file format of your original image.
3. Browse to the image and click OK to open it; the image appears onscreen.
4. To convert the image, pull down the File menu and choose Save As; the Save As dialog appears, as shown in Figure 6-15.
5. In the Save as Type field, pull down the choices and select either GIF or JPG.
6. Save the file in the folder of your choice (probably your *website* folder).
7. Make sure the name you give the image has the same filename extension as the file format you selected (GIF or JPG).

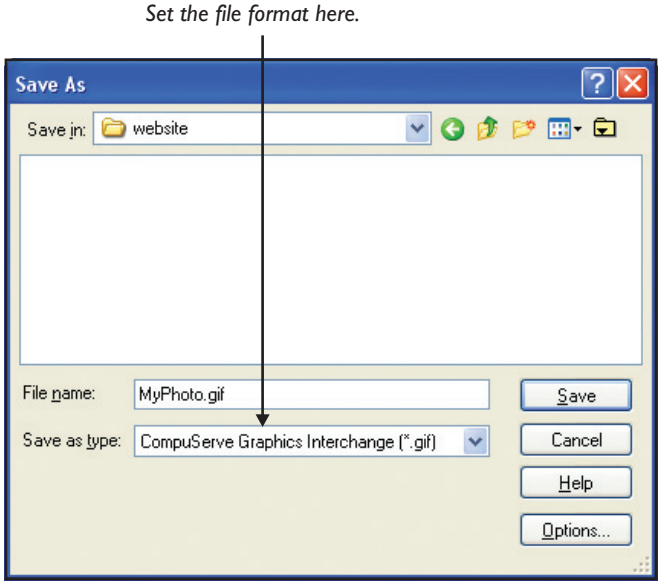

FIGURE 6-15 *The Paint Shop Pro Save As dialog. When you save the image, make sure the name you give it has the same filename extension as the file format you selected (GIF or JPG).* ■

When you save the file, it is important to save it in the same folder as the Web page for which it is intended. In this case, if you are making an image for your Web page résumé, save the converted image in your *website* folder. This will simplify the publication process when you transfer your files to the Web in Chapter 7.

Resizing Images

Images may be the wrong size for placement on your Web page. For example, the photo that appears on my Web page résumé was a 640 x 480 image. This would have covered way too much screen space, spoiling the layout of the résumé. Although you can make the image appear smaller by dragging its handles in a WYSIWYG Web page editor, this does not reduce the file size of the image and therefore consumes more bandwidth than a truly resized image. To truly resize an image, follow these steps:

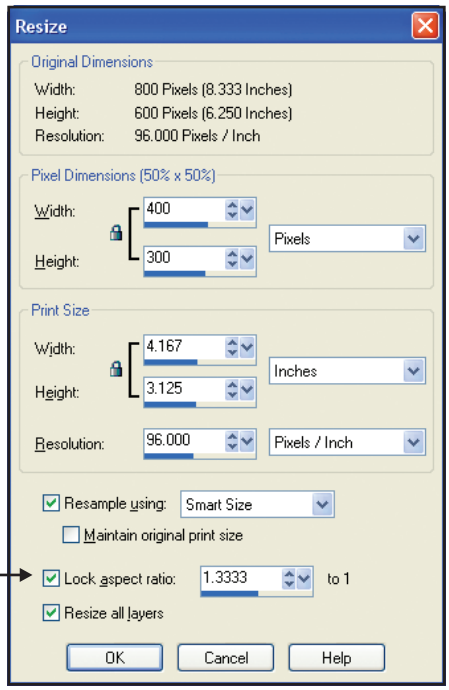

FIGURE 6-16 *The Resize dialog in Paint Shop Pro. When you resize an image, you will normally want to maintain the same aspect ratio as the original to keep from distorting the image as you resize it.* ■

1. Pull down the Paint Shop Pro File menu and choose Open; the Open dialog appears.
2. In the List Files of Type field, pull down the choices and select the file format of your original image.
3. Browse to the image and click OK to open it. The image appears onscreen.
4. To resize the image, pull down the Image menu and choose Resize; the Resize dialog appears, as shown in Figure 6-16.
5. Click a size option, such as Percentage of Original, and then make the numbers larger or smaller, depending on whether you want the image to be larger or smaller. Check the Maintain Aspect Ratio box if you want the resized image to have the same proportions as the original.
6. Click OK; the resized image appears.
7. Pull down the File menu, and either choose Save to save this file under the same name as the original (this will replace the original file) or choose Save As to save it under another name.

Make sure you save the resized file in the GIF or JPEG file format in the same folder as the Web page on which it will appear. If you are resizing an image for your Web page résumé, save the image in your *website* folder.

Color Adjustments

Unless you have a special reason for keeping your images encoded in 16 million colors (24-bit format), you should convert the images to 256 colors (8-bit format), which will make them appear three times faster on your Web page due to the smaller file size. To convert a 24-bit image into an 8-bit image, follow these steps:

1. Pull down the Paint Shop Pro File menu, choose Open, and open the image, which appears onscreen.
2. Pull down the Colors menu, choose Decrease Color Depth, and see if the 256-colors option is active. If it is not active, your image does not need to be reduced in color depth, so close the image and skip the rest of these instructions.
3. If the 256-colors option is active, select it; the Decrease Color Depth dialog appears, as shown in Figure 6-17.
4. If you choose one of the Optimized palette settings, click the option to Include Windows' Colors. If you are planning to publish this image to the Web, choose Standard/Web-safe.
5. Whether to choose Nearest Color or Error Diffusion is up to you. Click OK to close the dialog.
6. Pull down the File menu, and either choose Save to save this file under the same name as the original (this will replace the original file) or choose Save As to save it under another name.

Make sure you save the color-converted file in the GIF or JPEG file format in the same folder as the Web page on which it will appear. If you are converting an image for your Web page résumé, save the image in your *website* folder.

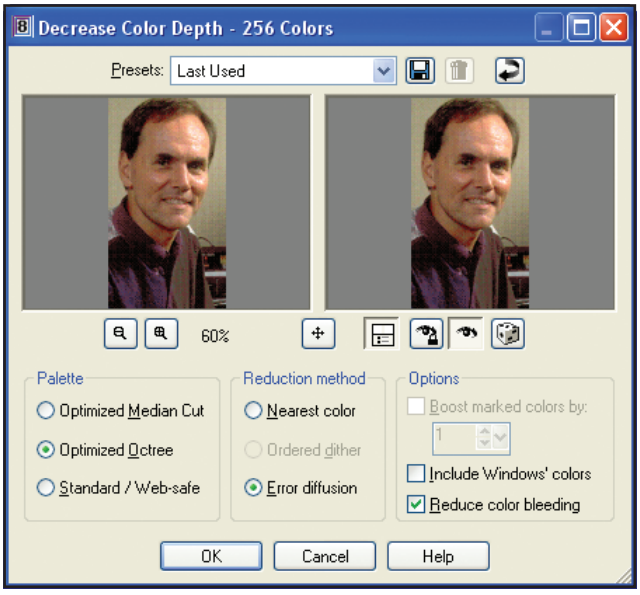

FIGURE 6-17 *The Decrease Color Depth dialog in Paint Shop Pro. Decreasing the color depth can reduce the size of the file by a factor of two or three, thereby decreasing download times and improving bandwidth.* ■

Inserting an Image into Your Web Page Résumé

You will be happy to discover that inserting an image into a Web page is a lot easier than preparing the picture to fit the Web page's layout. To insert an image into a Web page, follow these steps:

1. Open the page with the Notepad, and click to position your cursor at the spot where you want the image to appear. In this example, position your cursor after the `</h1>` tag that concludes the heading of your résumé.
2. Type the following image tag, replacing the name of the image, *fred.gif*, with the name of your own image:

```
<img src="fred.gif">
```

3. Save the file and preview it with your Web browser. Click your browser's Refresh button to make sure you are viewing the latest version of the page.
4. To make the text wrap around the image, you can use the *align* attribute. To position the image on the left side of the text, use the

align="left" setting; to position the image on the right side of the text, use the align="right" setting, as in:

```
<img src="fred.gif" align="right">
```

If you have trouble getting the image to position itself exactly where you want it on your Web page, do not worry. In the next part of this chapter, you learn how to use tables to control more precisely the layout and positioning of text and graphics on your Web pages.

Tiling an Image into the Background of a Web Page

As a final touch, you can consider adding some pizzazz to your résumé by setting a background image that the browser uses as a tile in creating the background. To **tile** an image means to draw it repeatedly across and down the screen until the entire window has been covered. If the image is designed in such a way as to hide the edges when tiled, you get a seamless appearance in the background.

If you plan to display printed text on the tiled background, be sure to choose a tile that will not interfere with the readability of your text. This book's Web site has a page that contains a few images designed for tiling on Web pages. These tiles have slight coloration and faint textures upon which you can place text that will be readable. The tiles at the Web site appear as follows:

brick.gif linoleum.gif wooden.gif woven.gif

To download one of these tiles to your computer, right-click its image (Macintosh users use CONTROL-click), and choose Save As to download the tile. Make sure you save the tile in your *website* folder. Then follow these steps to make one of the tiles fill the background of your résumé:

1. Use your Notepad editor to open the page on which you want to tile the background, and locate the `<body>` tag that begins the body of the document.
2. Modify the `<body>` tag as follows, but replace *filename* by the name of the tile you want to use:

   ```
   <body background="filename.gif">
   ```

3. Save the file and preview it with your Web browser. Click your browser's Refresh button to make sure you are viewing the latest version of the page.

note *If you did this correctly, you now see the tiled background behind the text of your Web page. As you can see, the* `background` *attribute of the body tag causes the image to tile across and down the screen. If you do not see the tiled background, however, repeat these steps more carefully until you get it working.*

Creating Transparent Images

Transparency is a special effect in which one of the colors in a bitmap becomes translucent. Instead of seeing that color, you see through it into the background color or image on the screen. Consider the example in

Figure 6-18, which shows two images overlaid on a background. In the first image, there is no transparency, and the image looks rectangular. In the second image, the red pixels are transparent, so you can see through them into the background.

To create a transparent GIF image, follow these steps:

- Use Paint Shop Pro to open the image.
- Use the eyedropper tool to set the background color.
- Pull down the Colors menu and choose Set Palette Transparency. Paint Shop may prompt you to reduce the color depth if the image has more than 256 colors; click Yes to do so.
- When the Set Palette Transparency dialog appears, choose the option to set the transparency value to the current background color.
- Pull down the File menu and choose Save As to make the Save As dialog appear. In the Save as Type field, pull down the choices and select GIF. Save the file in the folder of your choice (probably your *website* folder).
- To insert the image into your Web page, insert into your Notepad file an image tag in the form of `<img src= "filename.gif">`. When you save the file and open it with your browser, you will notice that the transparent color in the GIF image becomes invisible.

note *You right-click with the eyedropper to set the background color. A left-click, on the other hand, sets the foreground color.*

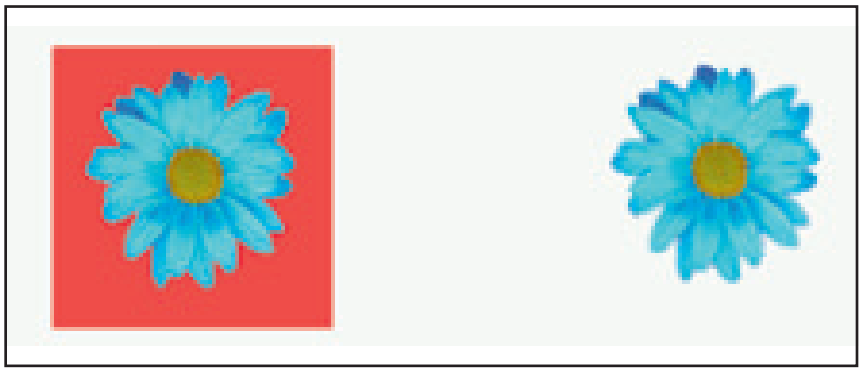

FIGURE 6-18 *Two images overlaid on a background: one with transparency, the other without. When the solid red color is defined as the transparent color, you see through it into the background onscreen.* ■

Creating Animated Images

A special feature of the GIF graphics format is its capability to contain animated images. An **animated GIF** is a graphic that contains multiple images intended to be shown in a sequence at specific times and locations on the screen. A looping option causes your Web browser to keep showing the frames in the GIF file continually, and, as a result, you see an animation onscreen.

GIF Construction Set

There is a shareware application that Windows users can utilize to create animated GIFs. The name of the package is *GIF Construction Set*. To download it and take a tutorial on creating animated GIFs, follow this book's Web site link to the GIF Construction Set.

Animation Shop

You can also create animated GIFs with Animation Shop, which is part of the Paint Shop Pro software. To run Animation Shop, pull down the Paint Shop Pro File menu and choose Jasc Software Products | Launch Animation Shop.

Clip Art for Web Pages

Clip art is pre-drawn artwork organized into a catalog or library that you can browse in search of appropriate icons, buttons, banners, backgrounds, tiles, or animated GIFs for use on Web pages. Microsoft keeps an extensive clip art gallery, for example, that you can search by genre, topic, and keyword. Follow this book's Web site links to the Microsoft Clip Gallery and several other clip art libraries. Most of these libraries let you freely download and use the graphics on your personal Web pages. Make sure you check the clip art site's license or copyright policy, however, especially if you are planning to use the clip art in a product you will be offering for sale. Clip art vendors often require you to pay a special fee for a license that lets you use their clip art in a commercial product.

To download an item of clip art for use on a Web page, you can often simply right-click (Macintosh users use CONTROL-click) the object, and when the quick menu pops out, choose the option to save the graphic on your hard drive. Some clip art sites have special download buttons alongside the images, in which case you click the download button and follow the onscreen instructions. After you download the clip art, you can insert the graphic on your Web page by inserting into its Notepad file an image tag in the form of `<img src="filename.gif">` or `<img src="filename.jpg">`, depending on the filename extension.

HTML Tables and Web Page Layout

Compare the design of the Web pages illustrated in Figures 6-19 and 6-20. How are they alike? Both contain pictures, and both contain text. How do they differ? Figure 6-19 treats the screen as one large column of information, whereas Figure 6-20 divides the screen into rectangular regions that position the text and graphics in different sections of the Web page. Although both screens convey the same information, you probably will agree that the sectional layout of Figure 6-20 creates a more interesting Web page. This chapter shows how to use tables to arrange information into rows and columns on the screen. Then you will use tables to create a unique design for your home page on the Web.

note *Tables became part of the HTML standard when version 3.2 was released in 1996. Web pages produced before then were limited to a single column of information.*

What Is a Table?

A **table** is a design element that divides the screen into a grid consisting of rectangular regions called *cells*. Into each cell you can enter text or graphics that align with the boundaries of the cell's rectangle. The grid that

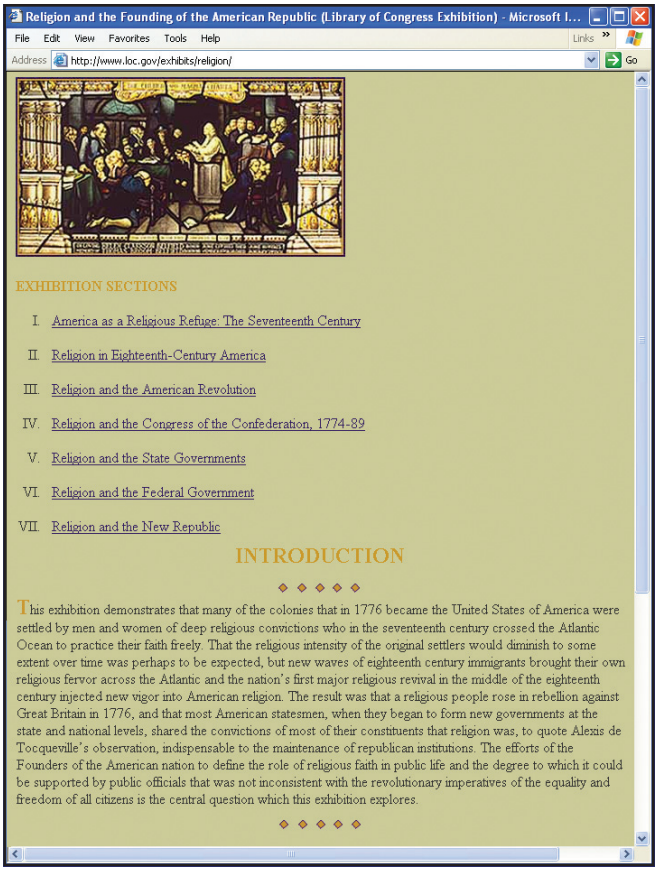

FIGURE 6-19 *How a Web page appears without the use of tables to create rectangular layout regions on the screen.* ■

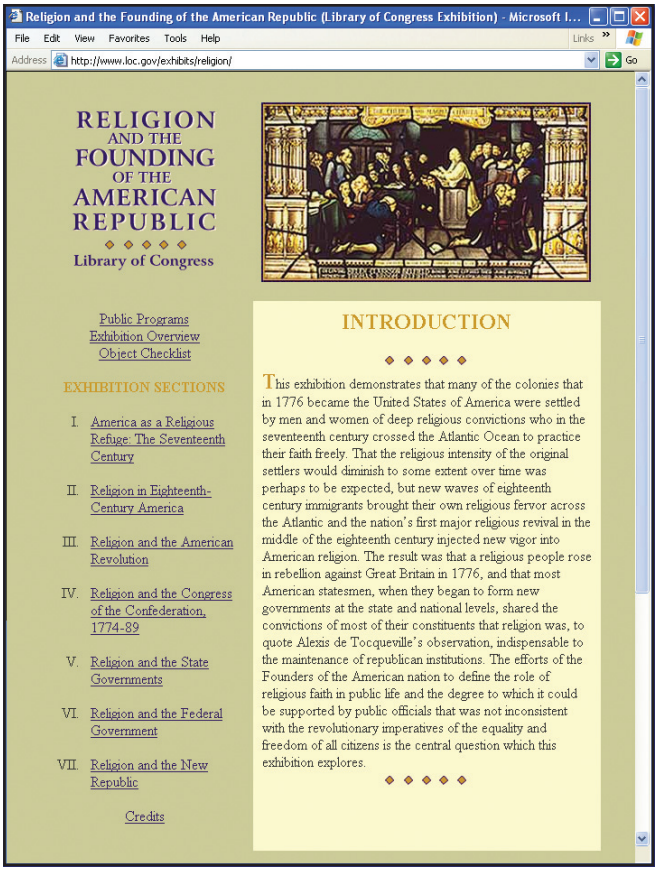

FIGURE 6-20 *Tables create rectangular regions used as design elements in advanced Web-page layout.* ■

forms the boundaries of the cells can be either visible or invisible. You normally make the grid visible when presenting a table full of technical information that would be hard to read without horizontal and vertical lines to help users follow the data across the table. HTML provides control over border thickness, and you can use thin or thick grid lines, depending on the situation.

Why Use Tables on Web Pages?

There are two reasons for using tables on Web pages. The first reason is rather obvious—to present data neatly in rows and columns that help users perceive the order or the relationships in the information. This book uses tables extensively to present complex information in an understandable manner. For example, consider the presentation of HTML tags that appeared earlier in this chapter in Table 6-1. Displaying the tags in column 1 followed by their description in column 2 provides an orderly presentation that enables readers to find a tag in column 1 and then read across to its definition in column 2. The grid is visible to help you read across the table to find the definitions of the different tags.

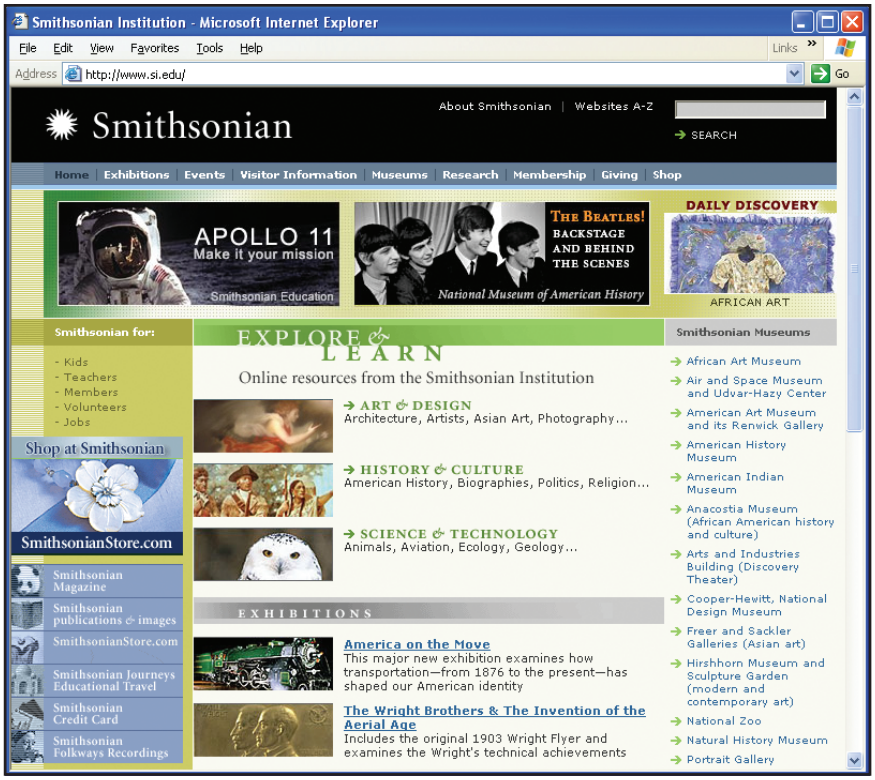

FIGURE 6-21 *An advanced Web page design employing multiple tables with varying cell heights and widths.* ■

FIGURE 6-22 *Layout analysis of the tables used to create the Web page in Figure 6-21. Notice how tables are nested inside of other tables.* ■

The second reason for using tables on a Web page is to create advanced layouts consisting of rectangular sections into which you can flow blocks of text or insert graphics. Tables consist of one or more rows of one or more cells. You can adjust the width and height of the cells to create a wide variety of Web page layouts. You can even have more than one table on the page at once, enabling you to create many interesting designs. For example, consider the layout of the Web page shown in Figure 6-21. The layout analysis in Figure 6-22 shows that this page consists of several tables with varying numbers of rows and columns and different cell heights and widths. Notice how the use of multiple tables adds interest to the design of this page. You can also vary the background colors or images in the table cells to create visible regions on the screen.

Creating a Table

You use three basic HTML tags to create tables. First, the **<table>** start and **</table>** stop tags begin and end the table. Inside the table, you use the **<tr>** start and **</tr>** stop tags to begin and end each row of the table. The code <tr> stands for *table row*. Inside each table row, you use the **<td>** start and **</td>** stop tags to begin and end each data cell. The code <td> stands for *table data*. Inside the table data cells, you put the textual and/or graphical content you want in that cell of the table. Because you can use a table to create any conceivable layout of cells onscreen, tables enable you to take control of the page and position your content exactly where you want it. On your

Web page résumé, for example, imagine you want your opening paragraph and your bulleted table of contents to appear alongside your photo. You can accomplish this by inserting a table after the heading that identifies your name at the top of your résumé. This table should have one row that contains two data cells. In the first data cell, you put your picture. In the second data cell, you put the paragraph and the bulleted table of contents you want alongside the picture. At runtime, because the picture appears in the table row's first cell, the picture appears on the left of the text you put in the second cell. If this sounds complicated, do not worry, because this is quite easily accomplished. To create this table in your résumé, follow these steps:

1. Use the Notepad to open your Web page résumé, and position your cursor after the `</h1>` tag that ends the heading that identifies your name at the top of the page.
2. Type the following HTML code, which creates the table, its first row, and its first data cell. For now, this code sets the table width to 100%, causing the table to stretch all the way across the page. Later in this tutorial, you learn how to change the `width` attribute to create other layout possibilities onscreen.

```
<table width="100%">
<tr align="left" valign="top">
<td>
```

3. Position your cursor at the spot where you want the first data cell to stop. In this example, click to position your cursor after the `<img>` tag that puts your picture onscreen. Then type the following code, which ends the first data cell and begins the second one:

```
</td>
<td>
```

4. Position your cursor at the spot where you want the table to stop. In this example, click to position your cursor after the `</li>` tag that ends your résumé's table of contents. Then type the following code, which ends the data cell, the table row, and the table:

```
</td>
</tr>
</table>
```

5. Save the file, and then open it with your browser to view how it will appear on the Web. Your picture should appear on the left, with your résumé's opening paragraph and table of contents alongside your image.
6. If you would like to see the table's edges onscreen, you can give the table a border. To do so, use the Notepad to modify the `<table>` tag as follows:

```
<table width="100%" border="1">
```

7. Save the file, and then view it with your browser to see the table's edges. Remember to click the browser's Refresh button to make sure you are viewing the current version of the file.
8. After you finish looking at the border, you will probably want to go back into the Notepad and remove the `border="1"` attribute, or set its value to zero to remove the table's border. Normally you turn on a table's borders only when you need the lines to show to help viewers follow straight across a row of data onscreen. When a table is used for layout purposes, on the other hand, you keep the borders turned off.

Adjusting the Attributes of a Table

The table you put in your Web page résumé has one row containing two cells. This is just one of the design patterns you can create with tables, which enable you to create any conceivable page layout onscreen. Consider the following table structure, which has three rows:

L 6-3

```
<table>
     <tr>
          <td> row one, cell one </td>
          <td> row one, cell two </td>
     </tr>
     <tr>
          <td> row two, cell one </td>
          <td> row two, cell two </td>
     </tr>
     <tr>
          <td> row three, cell one </td>
          <td> row three, cell two </td>
     </tr>
</table>
```

Tables with more cells in a row than this example have more `<td></td>` tags. Tables with more rows have more `<tr></tr>` tags. There is no limit to the number of design patterns you can create. In addition to creating different design patterns, you can use `formatting` and `alignment` attributes to change the appearance of the table's rows and cells onscreen.

Formatting Attributes

Attributes added to the table tag modify the table's formatting. You have already experienced how the *`border`* attribute causes the table to have a border; for example, if a table has a border thickness of 2, the tag is `<table border="2">`.

Alignment Attributes

The `align` attribute can modify the `<table>`, `<tr>`, and `<td>` tags to control horizontal alignment. Values of the `align` attribute can be *left*,

center, *right*, or *justify,* which means to double-justify the text. For example, a table cell in which the data is right-justified has the tag `<td align="right">`. The default value is left.

The `valign` attribute controls vertical alignment. Its values can be *top*, *middle*, or *bottom*. For example, a table cell in which the data aligns with the bottom of the cell has the tag `<td valign="bottom">`. The default value is middle.

To control both horizontal and vertical alignment, you can specify both `align` and `valign` attributes. For example, a table cell in which the data is right-justified at the bottom of the cell has the tag `<td align="right" valign="bottom">`.

Cell Spacing and Padding

By default, the table cells fit fairly close against the data they contain. If you are displaying textual data, you will usually want to create a little more cell spacing or padding. **Cell spacing** is the amount of space the browser puts between the borders of the cells. **Cell padding** is the amount of white space the browser puts inside the borders of the cells. You set cell spacing and padding via the following attributes, which can be either integer values or percentages of the table's width:

Sets the amount of spacing you want between the cells.

L 6-4 `<table cellspacing="5" cellpadding="10%">`

Specifies the amount of padding you want inside the cells.

Coloring Tables and Cells

Sometimes you may want a table, a row, or a cell to have a background color. You can create colored table backgrounds with the `bgcolor` attribute. For example, if you want the background to be silver, you can make the table tag say `<table bgcolor="silver">`. This is just one of 16 defined color names, which are listed in Table 6-2. You can also specify colors by hex codes, with which you can mix 16 million different hues. The format is #RRGGBB where RR is the red value, GG is the green value, and BB is the blue value. For example, `<table bgcolor="#000080">` creates a navy blue background because it has such a lot of blue (80) but no red or green in it. The highest color value is white, which is #FFFFFF. Note that in the hexadecimal notation used for these color values, there are 16 numbers that range from 0 through 9 followed by the letters A (which is 10) through F (which is 15). These letters are not case-sensitive in HTML. Hex values for the commonly used hues are linked to this book's Web site. You can also find out the hex value of any color by using Paint Shop Pro. Simply double-click the foreground or background color swatch to open the color picker dialog. Then click to select any color on the color wheel, and the hex value will be shown in the HTML field in the lower-right corner of the color picker.

Color	Name	RGB	Color	Name	RGB
	Black	#000000		Green	#008000
	Silver	#C0C0C0		Lime	#00FF00
	Gray	#808080		Olive	#808000
	White	#FFFFFF		Yellow	#FFFF00
	Maroon	#800000		Navy	#000080
	Red	#FF0000		Blue	#0000FF
	Purple	#800080		Teal	#008080
	Fuchsia	#FF00FF		Aqua	#00FFFF

TABLE 6-2 *Color Names of the Sixteen Predefined HTML Colors* ■

To color an individual table cell, you can edit the `<td>` tag that begins that cell. To color a cell, you once again use the `bgcolor` attribute. To make a cell's background color bright red, for example, you would type `<td bgcolor="#FF0000">` to turn on maximum red (FF) followed by no red or green (0000).

Remember that whenever you create a colored background for text, you must choose a color that does not detract from the readability of the text. Pastel colors such as pastel yellow (#FFFFCC) and pastel blue (#CCFFFF) work well behind dark text. The modern trend, however, is to make most of your text black on a white background, for maximum readability. Save the colors for special effects. Remember that a table can contain multiple colors. In cells that contain text, you can make the background "white" while using other colors in the `<table>` tag or in other nontext table cells.

note *In the latest version of HTML, color attributes are deprecated. Instead, developers are encouraged to use style sheets. Chapter 8 shows you how to do this. Billions of Web pages continue to use HTML color attributes, however.*

Try This!

Make a Table of the World's Highest Mountains

An excellent way to reinforce your knowledge of HTML table commands is to create an actual table onscreen. After you code the table, you can experiment with different values to see how the table data looks centered, left-justified, or aligned to the right of the cells. By trying different vales for the border thickness and cell spacing, you learn how to adjust these attributes to achieve different table effects onscreen. This exercise steps you through the creation of a table that displays the world's six highest mountains. As illustrated in Figure 6-23, this table has four columns. The first column identifies the name of the mountain, the second column tells what country the mountain is in, and the third and fourth columns tell how high the mountain is in feet and meters, respectively. To create the HTML code for this table, follow these steps:

1. Pull down the Notepad's File menu and choose New to begin a new file. Type the following HTML to get the table started:

```
<html>
<head>
 <title>World's Highest Mountains</title>
</head>
<body>
<h1>Six Highest Mountains</h1>
```

Try This!
continued

```
<table border="1" cellpadding="5" cellspacing="1">
<tr align="center" valign="middle">
 <td><strong>Mountain</strong></td>
 <td><strong>Country</strong></td>
 <td><strong>Feet</strong></td>
 <td><strong>Meters</strong></td>
</tr>
</table>
</body>
</html>
```

2. Pull down the File menu, choose Save As, and save the file as *mountains.html* in your *website* folder. Then open the file with your browser and see if the first row of the table appears onscreen as illustrated in Figure 6-23, except for the color, which you add in step 6. If you do not see the first row of the table, go back to the previous step, proofread your code carefully, and troubleshoot any problems until you get the first row working.
3. Click to position your cursor in the Notepad file after the table row you typed in the previous step but prior to the `</table>` stop tag. Type the following code to create the second row of the table; then save the file and view it with your browser. Click the browser's Refresh button to make sure you are viewing the current version of the file.

```
<td>
<strong>Meters</strong>
</td>
</tr>

<tr align="center" valign="middle">
 <td>Everest</td>
 <td>Nepal/China</td>
 <td>29028</td>
 <td>8848</td>
</tr>

</table>
</body>
</html>
```

4. There are five more mountains to add to the table. For each of these mountains, repeat the process you followed in the previous step, substituting the specific mountain's data as provided in Figure 6-23. When you complete all the mountains, your table will appear as illustrated in Figure 6-23.
5. Experiment with different cellpadding and cellspacing values to get a feeling for what they do to the table. Set cellpadding="50" for example, and observe what effect that has on the table. Then set cellpadding back to 5, and set cellspacing="50" to compare how it works. Remember that each time you make a change, you must save the Notepad file and then click the browser's Refresh button to view the latest version of the file.
6. Use the `bgcolor` attribute to put different colors into the background of the table. Remember that you can apply the `bgcolor` attribute to the `<table>`, the `<tr>`, or the `<td>` tags, depending on

Try This! continued

whether you want the color to apply to the entire table, the row, or a single data cell. You can pick color values from Table 6-2, but remember that if you want the text to be readable, lighter colors such as pastel yellow (bgcolor="#FFFFCC") and pastel blue (bgcolor="#CCFFFF") work better than the darker colors. Figure 6-23 shows how I striped the table with alternating rows of white and pastel yellow.

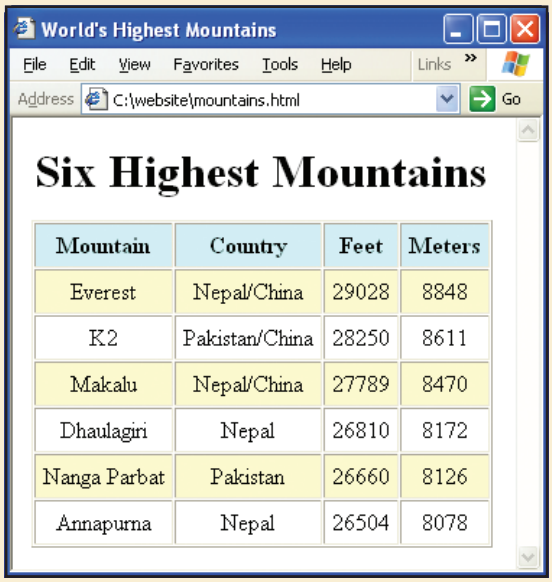

FIGURE 6-23 *The World's Highest Mountains. After you complete the Try This! exercise to get this table onscreen, experiment by making the borders thicker or thinner. Give some of the table rows pastel background colors, and experiment with centering, left-justifying, and right-aligning the table data onscreen. You will discover the power of tables for creating all kinds of layout possibilities onscreen.* ■

Indenting to Document the Structure of a Table

When you use tables to control the layout of a Web page, you should form the habit of indenting your table tags to show the document's structure. The browser ignores these indentations at runtime, so they will not affect your page's appearance. When you later need to edit or update something on your page, however, you can use the indentations to find more quickly the place in the document where you want to make your change. Consider how the indentations in the following example make this code easier to maintain than if you typed everything in a constant stream:

L 6-5

```
<table>
     <tr>
          <td>
This is the content of the first cell of the table. The indentations of the tags
make it easier to find the location of this cell than if the document were typed
in a continuous stream of characters.
          </td>
          <td>
This is the content of the second cell of the table. Because the browser ignores
the tabs and spacing between the tags, you can thus indent your HTML without
affecting the appearance of your page on the Web.
          </td>
     </tr>
     <tr>
          <td>
```

```
Notice how the indentations make the start of a new row especially easy to find.
          </td>
          <td>
I highly recommend this method of indenting your HTML table code. It takes hardly
any time at all to press the indent key, but it can save you a lot of time later
when you need to update your page or delete something.

          </td>
     </tr>
</table>
```

Subdividing Table Cells

You can subdivide any table cell by creating a table inside a cell. Putting a table inside a cell provides another layer of structure on the Web page. There is no limit to the number of cells you can subdivide. Because subdividing cells enables you to create any conceivable pattern of rectangular regions on the screen, it provides an unlimited array of possibilities for laying out Web pages. Figures 6-24 to 6-27 show layout analyses of Web pages that use subdivided table cells as design elements. To subdivide such a table cell, you simply create a new table inside it. Here is an example:

L 6-6

```
<table>
     <tr>
          <td>
Outer table, row one, cell one.
          </td>
          <td>
               <table>
                    <tr>
                         <td>
Inner table, row one, cell one.
                         </td>
                         <td>
Inner table, row one, cell two.
                         </td>
                    </tr>
               </table>
          </td>
     </tr>
</table>
```

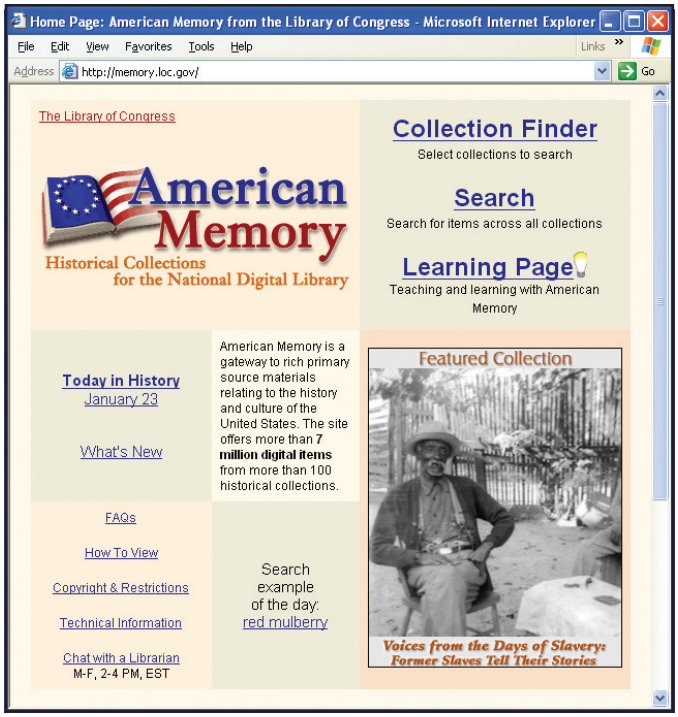

FIGURE 6-24 *This Web page has a table inside a table. This kind of design lets you create a design structure for one cell that functions independent of the cells in the outer table.* ■

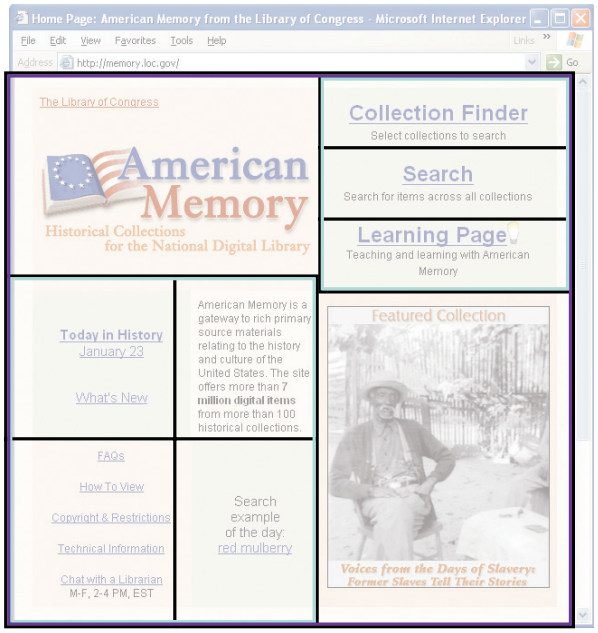

FIGURE 6-25 *Layout analysis of Figure 6-24. Study this analysis to visualize how the tables provide the structure for the page content in Figure 6-24.* ■

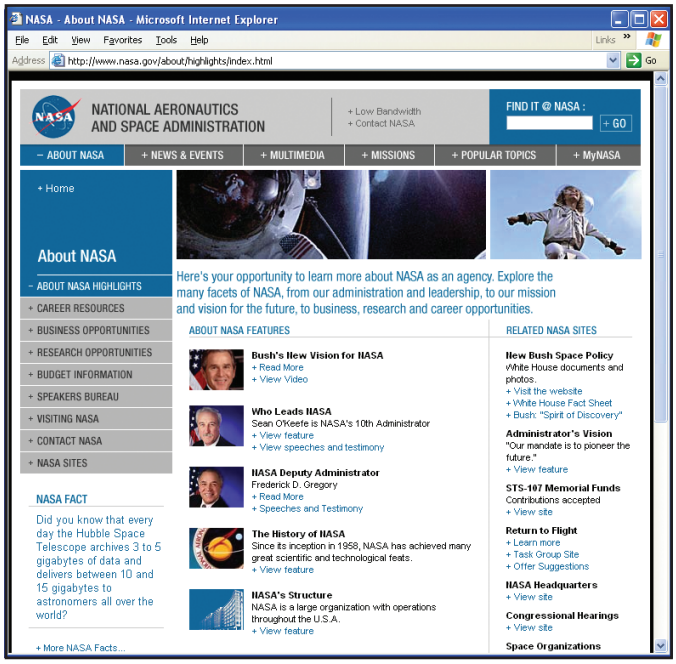

FIGURE 6-26 *This Web page is built by using one large outer table, a smaller table nested inside that one, and still smaller subtables inside that. Nesting tables in this manner enables you to create any conceivable page layout of content onscreen.* ■

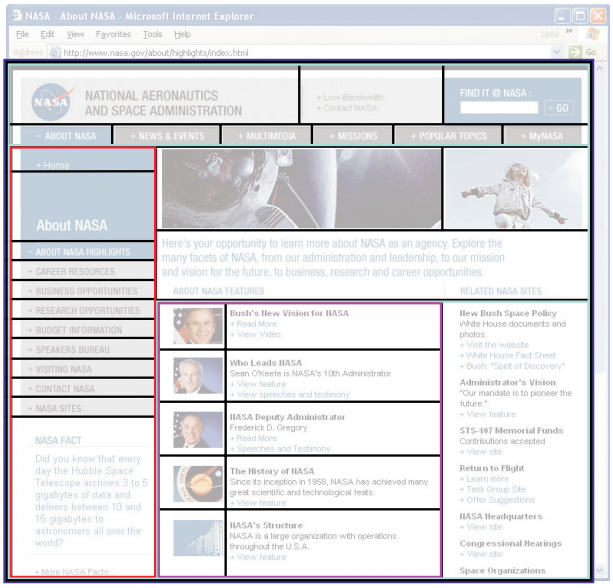

FIGURE 6-27 *Layout analysis of Figure 6-26. Study this analysis to visualize how the tables provide the structure for the page content in Figure 6-26.* ■

Making Cells That Span More Than One Row or Column

By default, each cell in a table is confined to just one row and column. To vary the layout of a table, you can expand a cell to make it span more than one row or column. To do so, you give the cell's `<td>` tag a *rowspan* or *colspan* attribute. For example, a cell that spans two rows and three columns has the tag:

L 6-7
```
<td rowspan="2" colspan="3">
```

HTML Hyperlinks and Web Design

In this chapter, you learned how to create HTML hyperlinks that either link to another Web page or provide users with a way to jump around to different places on a Web page via named anchor bookmarks. Any page on the Web can be the target of such a link. Now that you have this capability to link to other pages, it is appropriate to reflect on how links form Webs and how those Webs can have shapes that follow the five basic hypermedia design paradigms.

How Links Form Webs

Think about how a spider weaves a web. No matter how complicated the web turns out to be, each path gets created by the spider's creating a link from one spot to another. In technical networking jargon, these spots are called nodes. Out on the World Wide Web, your pages work like nodes. You can link any page to any other page, depending on the kind of navigational possibilities you want to provide. Just as the spider's web has a certain shape depending on how the spider connects its nodes, so also does your Web take on a shape, depending on the kinds of patterns you use in your linkages.

Try This!

Linking Your Home Page to Your Résumé Page

The simplest kind of hypermedia shape is formed by linking two pages together. If you have never done this before, you will understand the process better if you create such a link. Earlier in this chapter, you created a Web page called *resume.html*. In this exercise, you add to the résumé page a link to your home page. If you do not already have a home page, this is an excellent time to get one, and these instructions will coach you. To create a link to your home page, follow these steps:

1. Use the Notepad to open the *resume.html* page you created earlier in this chapter. Click to position your cursor at the spot where you would like to provide an option for users to go to your home page. A good place to put such a link is next to the return-to-contents links that you put at the end of each section of your résumé. If you do not have a home page yet, you still can create the link. Home page instructions come later in this exercise.

Try This! *continued*

2. At the spot where you want to put the option to go to your home page, type the following code, which will create such a link. In the `href` attribute, if you already have a home page out on the Web, type the HTTP address of your home page. If you do not have a home page yet, simply type **index.html** as a placeholder for the home page you will create later in this chapter. To create the link to your home page, type this code:

```
<a href="http://www.northpole.com/santa/index.html">Go to my home page</a>.
```

3. Save the Notepad file and open it with your browser to see how your link appears onscreen. If it does not appear quite like you want, use the Notepad to fine-tune its appearance. Then save the file and click your browser's Refresh button to view the modified version of your page.
4. If you have a home page, click the link to go to your home page to see if the link works properly. Congratulate yourself heartily if the link works. If the link does not work, repeat the steps in this exercise more carefully, and keep trying until you get the link to work.
5. If you do not yet have a home page on the Web, you should start one. In this chapter, you have learned all the HTML codes you need to create a very attractive home page. To create a home page, you simply use the Notepad to create a new file. Into this new file, type the minimum HTML that is needed to create a Web page. For a home page, that HTML would read as follows:

```
<html>
<head>
  <title>Santa Claus's Home Page</title>
</head>
<body>
The text and graphics of your home page go here. The design is totally up to you.
Remember that home pages are normally short. The purpose of a home page is to
establish your identity and provide links that visitors can click to learn more
about you. See, for example, my home page at www.udel.edu/fth.
</body>
</html>
```

6. When you save your home page, put it in your *website* folder and give it the filename *index.html*. This is the default filename that comes up at a Web site if you go to the site's HTTP address without specifying a specific filename. You can go to my home page, for example, by going to www.udel.edu/fth, which automatically brings up the default file at www.udel.edu/fth/index.html.
7. If you save your home page as *index.html* in the *website* folder in which your *resume.html* file also resides, the link you type in step 2 of this exercise can simply read as follows:

```
<a href="index.html">Go to my home page</a>.
```

8. If you do not yet know how to publish pages on the World Wide Web, you are probably anxious to do so. Chapter 7 contains a complete Web page publishing tutorial that shows how to publish pages into your Web space. You will also find out how to get free Web space, in case you do not yet have a Web account for publishing your pages.

Hypermedia Design Paradigms

Whenever you link two or more Web pages, you create a hypermedia design that can be visualized. The extent to which you can visualize your webs determines how successful you will be in planning the navigational pathways users can traverse at your Web site. The goal is to provide your users with navigation options that are both appropriate and quick. Users get frustrated if they need to click more than three or four times to find the information they are looking for. If you can visualize your site's design, you can foresee pages that will take too long to click through. Then you can add links that create new pathways to these pages.

My *Multimedia Literacy* textbook, which is also published by McGraw-Hill, identifies five design paradigms you can use to create these kinds of links. This chapter concludes by presenting these five design paradigms. Your challenge is to reflect on these five paradigms and try to imagine if there might be some web design that they cannot describe. If you can think of a way of linking pages that cannot be described by these five paradigms, you may well have invented a new paradigm.

The five design paradigms are the linear list, the menu, the hierarchy, the network, and the hybrid.

Linear List

The simplest design is the **linear list paradigm** illustrated in Figure 6-28. The linear list is a hypermedia design paradigm that enables users to move back and forth through a serial sequence of pages, moving forward to new materials or backward to review. The linear list is most appropriate for situations in which you want to show a sequence of pages in a slideshow format.

FIGURE 6-28 *The linear list lets users move forward to see new pages or backward to review. This paradigm is appropriate for sequences of Web pages that you want users to view in a slideshow manner. If the sequence is long, however, you will also want to provide a link to the menu so users can jump out of the slideshow if they lose interest.* ■

Menu

The second way to design a navigational pathway is to create a menu like the one shown in Figure 6-29. A **menu paradigm** is a hypermedia design pattern that permits users to select one from a number of choices listed onscreen. When the user chooses an item on the menu, the item linked to it appears.

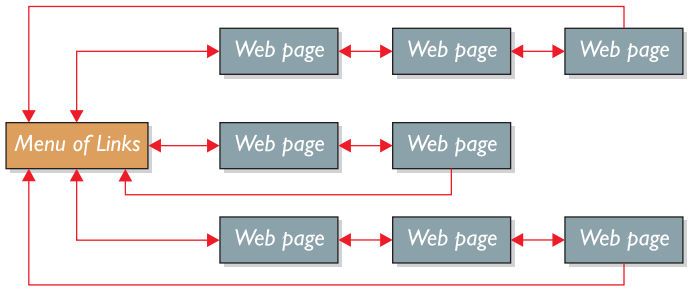

FIGURE 6-29 *The menu design presents users with a set of choices. In this example, the menu lets users begin one of three possible sequences of Web pages. Each sequence ends by going back to the menu, from which users can make another choice.* ■

Hierarchy

The third kind of design is the **hierarchy paradigm** shown in Figure 6-30. A hierarchy is a hypermedia design paradigm in which each object provides users with a menu of choices that trigger more menus with more choices. There is no limit to the size or number of menus and

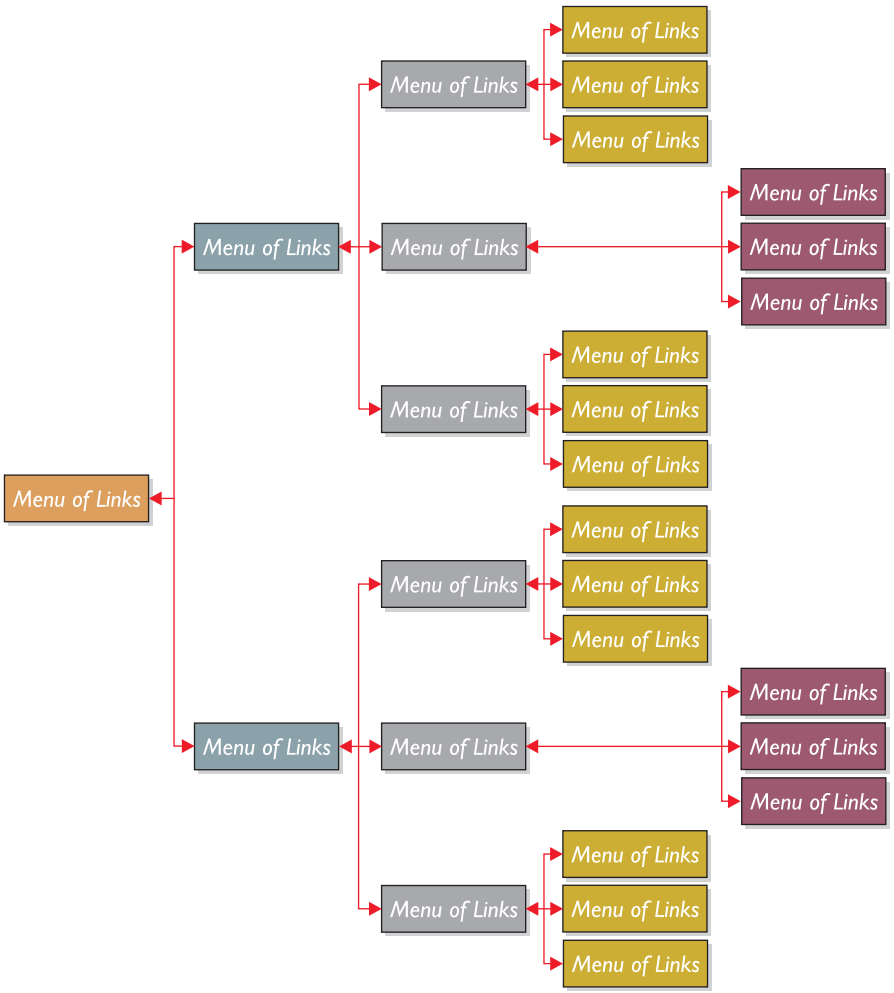

FIGURE 6-30 *The hierarchy presents users with a menu of menus. If you have a large Web site with dozens or hundreds of pages, the hierarchy enables you to design pathways through which users can drill down to the desired page.* ■

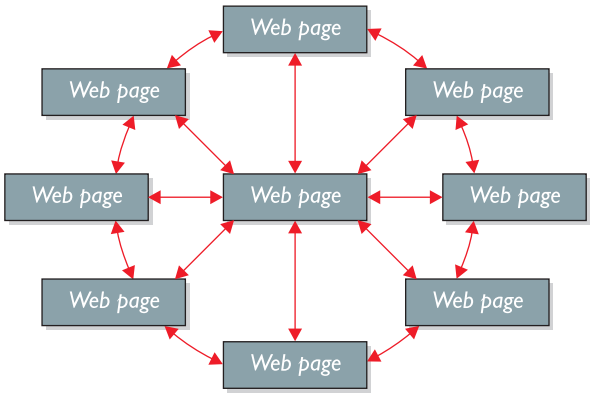

FIGURE 6-31 *The network paradigm contains multiply linked items that provide the richest kind of navigation. Users can find a way to get anywhere they want in this web within three clicks. You should use this design whenever you need to provide alternate pathways through a complex web.*

submenus you can have in such a hierarchy. Large Web sites typically use a hierarchy to provide a way for users to drill down to the information they want.

Network

The most complicated design is the network shown in Figure 6-31. The **network paradigm** is a hypermedia design pattern in which objects can be multiply linked in any direction to any object in your web. Especially when a web is large, the network design enables users to navigate to any page with a minimum of mouse clicks. A tight design enables users to get wherever they want within three clicks.

Hybrid

Web sites often use more than one design paradigm, employing lists, menus, hierarchies, and networks where appropriate. For example, a sophisticated network design may trigger a linear list with simple navigation that lets users move back and forth through the pages as in a slideshow. When a user gets to the end of the list, the network design returns to provide richer navigation options. Designs that combine paradigms are called hybrids. Figure 6-32 shows an example of a **hybrid paradigm**, which is a hypermedia design paradigm that provides multiple navigational pathways by employing linear lists, menus, hierarchies, and network designs as appropriate throughout a large Web site.

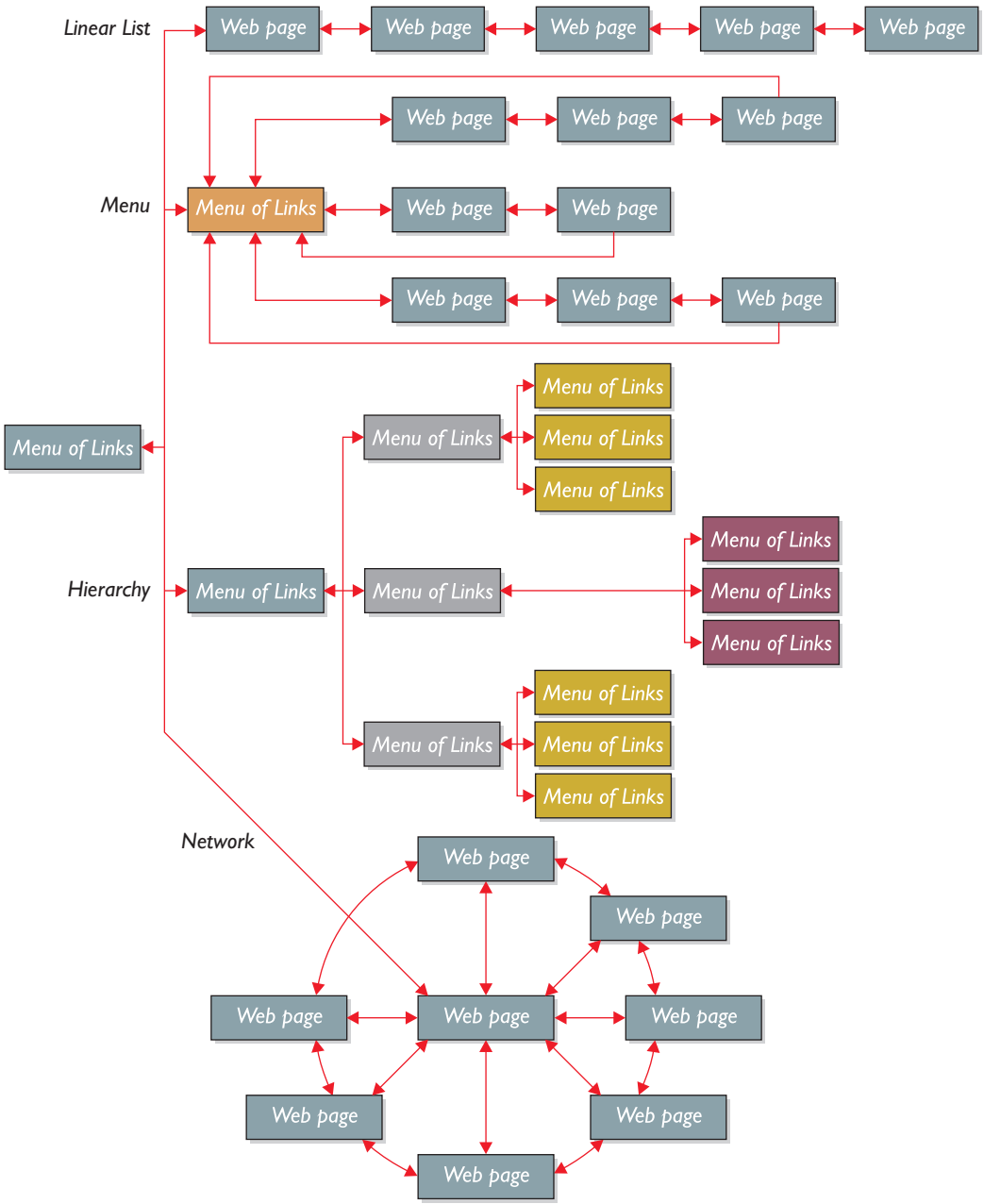

FIGURE 6-32 *Hybrid designs employ linear lists, menus, hierarchies, and networks where appropriate. If you think about the World Wide Web as a whole, its design represents the ultimate in hybrid hypermedia construction.* ■

Chapter 6 Review

Chapter Summary

After reading this chapter and completing the step-by-step tutorials and Try This! exercises, you should understand the following facts about the Internet:

How HTML Works

- HTML is the markup language used to create hypertext documents for the World Wide Web. HTML stands for hypertext markup language. The key to understanding how HTML works is to know what it means to mark up a text.
- To mark up a text means to insert special codes called tags into the text. The tags control how the text appears on a Web page.
- There are two HTML tag formats: paired tags and single tags. Paired tags come in pairs that consist of a start tag and a stop tag. Single tags function on their own with no stop tag.
- HTML has progressed through several versions, each of which added new functionality to what you can do on a Web page. However, HTML did not follow strictly the rules of its parent language, which is the standard generalizable markup language (SGML). To tighten up the HTML language and make it compatible with newly emerging XML tools, the W3C created a new language called XHTML.
- Pages authored in XHTML will render not only on the Web but also on pagers, PDAs, cell phones, tablet PCs, and other devices that are following the new XML-based wireless protocols. XHTML pages can also be mined by XML tools as data that can be used in server-to-server and business-to-business applications.

Creating Your Web Page Résumé

- An HTML document begins with the `<html>` start tag and ends with the `</html>` stop tag. Between those tags come the `<head>` start and `</head>` stop tags, followed by the `<body>` start and `</body>` stop tags.
- You create the Web page title via the `<title>` start and `</title>` stop tags, which go between the document's `<head>` and `</head>` tags. The title you type between the `<title>` and `</title>` tags will appear in the browser's title bar when someone visits the page.
- Heading styles cause the headings on a Web page to appear in progressively larger fonts, depending on the level of the heading. The smallest heading style is H6, and the largest is H1. In addition to making the text larger, heading styles create a structure that can be used to outline the document. You should use heading styles whenever a document has this kind of an outline structure. To create a heading 1 style, for example, you type the heading between the `<h1>` start and `</h1>` stop tags.
- You create paragraphs on a Web page by typing the text between the paragraph `<p>` start and `</p>` stop tags. Although the browsers will forgive the omission of the `</p>` stop tag, the rules of XHTML, if strictly enforced, require every start tag to have a corresponding stop tag. Thus, you should form the habit of including the `</p>` stop tag at the end of each paragraph.
- You create lists with the unordered list `<ul>` start and `</ul>` stop tags for a bulleted list or the ordered list `<ol>` start and `</ol>` stop tags for a numbered list. Between these tags, you type the list items, which must begin and end with the list item `<li>` start and `</li>` stop tags. Although the browsers will forgive the omission of the `</li>` stop tag, the rules of XHTML require its presence, so you should include it.
- Horizontal rules create neat-looking dividing lines between different parts of a Web page. You create a horizontal rule by typing the `<hr>` tag at the spot on the page where you want the rule to appear. The `<hr>` tag is a single tag which, by definition, does not have a corresponding stop tag.

- You create bookmark names with the anchor tag, which has the format . In typing this command, you replace *bookmarkname* with the actual name you want the bookmark to have.
- You create links to a bookmark via the anchor tag by using the format Click Me!. In typing this command, you replace *bookmarkname* with the actual name of the bookmark, and replace Click Me! with the hypertext that will appear onscreen.
- To link one Web page to another, you type an anchor tag by using the format University of Delaware, and replace the Delaware information with your link's actual HTTP address and hypertext.
- Netiquette calls for Web pages to end with a few lines of text indicating who owns the page and how to contact the owner. A mailto is a link that, when clicked, opens a new message window addressed to the person identified in the link. It is customary for Web page owners to include a mailto link to their e-mail address to make it easy for you to contact them. The format is:

L 6-8
```
<a href="mailto:santa@northpole.com">
    santa@northpole.com</a>
```

- To create white space on a Web page, you use the and tags to begin and end a paragraph. To end the current line and move to a new line, you use the <br> break tag. To create a single white space onscreen, you use the   space code, which can be used to display simultaneous white spaces onscreen, as in   .
- To make text appear bold on a Web page, you surround it with the start and stop tags. To italicize something, you surround it with the emphasis start and stop tags.
- Resist the temptation to press the ENTER key repeatedly to add white space in an attempt to create pagination on a Web page. If you want a new page, create a new Web page and link to it from a hypertext link or a navigational icon. Otherwise, just let your text flow onto the screen so users can scroll down to peruse it, uninterrupted by feigned white-space paging.

HTML Graphics and Animated GIFs

- Web page images should be in either the GIF or JPEG file format. You can also use the relatively newer PNG format discussed in Chapter 2. Paint Shop Pro is a Windows program you can use to convert images into the proper format. You can also use Paint Shop Pro for image capture, creation, viewing, and manipulation. A try-before-you-buy version lets you try Paint Shop Pro free for 60 days before deciding whether to purchase the software.
- To convert an image with Paint Shop Pro to a different file format, you use the File | Save As dialog, which has a Type field that lets you choose the format in which to save the converted file.
- Although you can make an image appear smaller by dragging its handles in a WYSIWYG Web page editor, this does not reduce the file size of the image and therefore consumes more bandwidth than a truly resized image. Paint Shop Pro has an Image | Resize option that enables you to reduce the actual size of the image, thereby saving valuable bandwidth. When you resize an image, you should choose the option to lock the aspect ratio so the image's dimensions do not distort and cause the picture to appear too thin or too short.
- Unless you have a special reason for keeping your images encoded in 16 million colors (24-bit format), you should convert the images to 256 colors (8-bit format), which will make them appear three times faster on your Web page due to the smaller file size.
- A background tile creates a special effect by drawing an image repeatedly across and down the screen until the entire window has been covered. If the image is designed in such a way as to hide the edges when tiled, you get a

seamless appearance in the background. If you plan to display printed text on the tiled background, be sure to choose a tile that will not interfere with the readability of your text.

- Transparency is a special effect in which one of the colors in a bitmap becomes translucent. Instead of seeing that color, you see through it into the background color or image on the screen.
- An animated GIF is a graphic that contains multiple images intended to be shown in a sequence at specific times and locations on the screen. A looping option causes your Web browser to keep showing the frames in the GIF file continually, and, as a result, you see an animation onscreen.
- Clip art is pre-drawn artwork organized into a catalog or library that you can browse in search of appropriate icons, buttons, banners, backgrounds, tiles, or animated GIFs for use on Web pages.

HTML Tables and Web Page Layout

- A table is a Web page design element that divides the screen into a grid consisting of rectangular regions called cells. Into each cell you can enter text or graphics that align with the boundaries of the cell's rectangle. Because you can use a table to create any conceivable layout of cells onscreen, tables enable you to take control of the page and position your content exactly where you want it.
- You use three basic HTML tags to create tables. First, the `<table>` start and `</table>` stop tags begin and end the table. Inside the `<table>`, you use the `<tr>` start and `</tr>` stop tags to begin and end each row of the table. The code `<tr>` stands for table row. Inside each table row, you use the `<td>` start and `</td>` stop tags to begin and end each data cell. The code `<td>` stands for table data. Inside the table data cells, you put the textual and/or graphical content that you want in that cell of the table.
- Attributes added to the table tag modify the table's formatting. If you would like to see the table's edges onscreen, for example, you can give the table a border. The tag format is `<table border="2">` for a border that is two pixels thick.
- The `align` attribute can modify the `<table>`, `<tr>`, and `<td>` tags to control horizontal alignment. Values of the `align` attribute can be left, center, right, or justify, which means to double-justify the text. For example, a table cell in which the data is right-justified has the tag `<td align="right">`. The default value is left.
- The `valign` attribute controls vertical alignment. Its values can be top, middle, or bottom. For example, a table cell in which the data aligns with the bottom of the cell has the tag `<td valign="bottom">`. The default value is middle.
- To control both horizontal and vertical alignment, you can specify both `align` and `valign` attributes. For example, a table cell in which the data is right-justified at the bottom of the cell has the tag `<td align="right" valign="bottom">`.
- Sometimes you may want a table, a row, or a cell to have a background color. You can create colored backgrounds with the `bgcolor` attribute. For example, if you want the background of the entire table to be silver, you can make the table tag say `<table bgcolor="silver">`. If you want an individual cell to have a separate color, make the table data tag say `<td bgcolor="silver">`. This is just one of 16 defined color names, which are listed in Table 6-2.
- You can also specify colors by hex codes, with which you can mix 16 million different hues. The format is #RRGGBB, where RR is the red value, GG is the green value, and BB is the blue value. For example, `<table bgcolor="#000080">` creates a navy blue background because it has such a lot of blue (80) but no red or green in it. The highest color value is white, which is #FFFFFF.

- Cell spacing is the amount of space the browser puts between the borders of the cells. Cell padding is the amount of white space the browser puts inside the borders of the cells. You set cell spacing and padding via the following table tag attributes, which can be either integer values or percentages

L 6-9
```
<table cellspacing="5" cellpadding="10%">
```

- When you use tables to control the layout of a Web page, you should form the habit of indenting your table tags to show the document's structure. The browser ignores these indentations at runtime, so they will not affect your page's appearance. When you later need to edit or update something on your page, however, you can use the indentations to find more quickly the place in the document where you want to make your change.
- You can subdivide any table cell by creating a table inside a cell. Putting a table inside a cell provides another layer of structure on the Web page. There is no limit to the number of cells you can subdivide. Because subdividing cells enables you to create any conceivable pattern of rectangular regions on the screen, it provides an unlimited array of possibilities for laying out Web pages.
- By default, each cell in a table is confined to just one row and column. To vary the layout of a table, you can expand a cell to make it span more than one row or column. To do so, you give the cell's `<td>` tag a `rowspan` or `colspan` attribute. For example, a cell that spans two rows and three columns has the tag `<td rowspan="2" colspan="3">`.

HTML Hyperlinks and Web Design

- Whenever you link two or more Web pages, you create a hypermedia design that can be visualized. The extent to which you can visualize your webs determines how successful you will be in planning the navigational pathways that users can traverse at your Web site. The goal is to provide your users with navigation options that are both appropriate and quick.
- The linear list is a hypermedia design paradigm that enables users to move back and forth through a serial sequence of pages, moving forward to new materials or backward to review. This paradigm is appropriate for sequences of Web pages that you want users to view in a slideshow manner. If the sequence is long, however, you will also want to provide a link to the menu so users can jump out of the slideshow if they lose interest.
- A menu is a hypermedia design paradigm that permits users to select one from a number of choices listed onscreen. When a user chooses an item on the menu, the item linked to it appears.
- A hierarchy is a hypermedia design paradigm in which each object provides users with a menu of choices that trigger more menus with more choices. If you have a large Web site with dozens or hundreds of pages, the hierarchy enables you to design pathways through which users can drill down to the desired page.
- The network is a hypermedia design pattern in which objects can be multiple linked in any direction to any object in your web. Especially when a web is large, the network design enables users to navigate to any page with a minimum of mouse clicks. A tight design enables users to get wherever they want within three clicks.
- A hybrid is a hypermedia design paradigm that provides multiple navigational pathways by employing linear lists, menus, hierarchies, and network designs as appropriate throughout a large Web site. If you think about the World Wide Web as a whole, its design represents the ultimate in hybrid hypermedia construction.

Key Terms

animated GIF *(25)*
body *(7)*
cell padding *(31)*
cell spacing *(31)*
clip art *(26)*
head *(7)*
hierarchy paradigm *(39)*
horizontal rule *(11)*
hybrid paradigm *(40)*
hypertext markup language (HTML) *(2)*
hypertext reference (href) *(13)*
linear list paradigm *(39)*
list item tag *(4)*
mailto *(16)*
mark up *(3)*
menu paradigm *(39)*
named anchor *(12)*
network paradigm *(40)*
non-breaking space ( ) *(16)*
ordered list *(10)*
page title *(7)*
paired tag *(3)*
standard generalizable markup language (SGML) *(4)*
start tag *(3)*
stop tag *(3)*
table *(26)*
tag *(3)*
tile *(24)*
transparency *(24)*
unordered list *(10)*
XHTML *(4)*

Key Terms Quiz

1. Loosely derived from SGML, _____ is the markup language used to create hypertext documents for the World Wide Web. A newer version called _____ brings the language into compliance with the stricter rules of SGML and makes it compatible with newly emerging XML tools.
2. To mark up a text means to insert special codes called _____ into the text.
3. To create a(n) _____, you type the `<hr>` tag at the spot in an HTML file where you want this Web page element to appear.
4. In HTML, bulleted lists are known as _____ lists, and numbered lists are called _____ lists.
5. A(n) _____ is a link that, when clicked, opens a new message window addressed to the person identified in the link.
6. To create white space on a Web page, you use the <_____> and <_____> tags to begin and end a paragraph, respectively.
7. To end the current line and move to a new line, you use the <_____> tag.
8. Web page images should be in either the _____ or _____ file format. You an also use the relatively newer _____ format.
9. A(n) _____ is a graphic that contains multiple images intended to be shown in a sequence at specific times and locations on the screen.
10. A/an _____ is a Web page design element that divides the screen into a grid consisting of rectangular regions called cells.

Multiple-Choice Quiz

1. What tag marks the beginning of an HTML document?
   a. `<body>`
   b. `<head>`
   c. `<html>`
   d. `<start>`
2. What tags do you use to create the page title?
   a. `<body>` and `</body>`
   b. `<h1>` and `</h1>`
   c. `<label>` and `</label>`
   d. `<title>` and `</title>`

3. Which syntax do you use to create a named anchor bookmark?
   a. `<a name="bookmarkname"></a>`
   b. `<a href="#bookmarkname">Click Me!</a>`
   c. `<a href="http://www.udel.edu"> University of Delaware</a>`
   d. `<a href="mailto:santa@northpole.com"> santa@northpole.com</a>`
4. To make text appear bold on a Web page, you can surround it with what pair of tags?
   a. `<bold> </bold>`
   b. `<em> </em>`
   c. `<emphasize> </emphasize>`
   d. `<strong> </strong>`
5. An image encoded in 16 million colors (24-bit format) is about how many times larger than the same image encoded in 256 colors (8-bit format)?
   a. Three
   b. Five
   c. Six
   d. Twelve
6. In a table, the table data `<td>` start and `</td>` stop tags go between what pair of tags?
   a. `<td> </td>`
   b. `<tr> </tr>`
   c. `<td> <tr>`
   d. `<tr> <td>`
7. Which attribute controls horizontal alignment of a `<table>`, `<tr>`, or `<td>` table element?
   a. `Align`
   b. `Colspan`
   c. `Rowspan`
   d. `Valign`
8. Which hypermedia design pattern best describes the design of the World Wide Web when considered as a whole?
   a. Linear list
   b. Hierarchy
   c. Network
   d. Hybrid
9. What kind of a list is bulleted by default?
   a. Linear
   b. Linked
   c. Ordered
   d. Unordered
10. In HTML, how can you subdivide a table cell into several more cells?
    a. Create another table inside it.
    b. Press ENTER to move down to the next line.
    c. Press TAB to generate a new cell.
    d. Use a `<subdiv>` tag.

Essay Quiz

1. Go to www.w3.org/MarkUp and read how the World Wide Web consortium oversees the continued evolution of HTML. What mechanism is provided by the W3C for you to request new features to be added to HTML and XHTML?
2. This chapter got you started creating your Web page résumé. Now you should complete your résumé by adding all the sections you sketched when you designed your résumé at the start of this tutorial. If you have any trouble, refer to the step-by-step instructions in this chapter for creating new paragraphs, headings, list items, and horizontal rules.
3. Each item in your bulleted table of contents should be linked to its corresponding section in your résumé. Insert named anchor bookmarks at the beginning of each new section in your résumé. Then link each item in your table of contents to the corresponding bookmark in your résumé. Test the links to make sure they work. At the end of each section in your résumé, provide a way for users to return to your table of contents.
4. Take any image and use Paint Shop Pro to increase its color depth to 16 million colors (24-bit format). Inspect the file's size with the Windows Explorer and make a note of how large the file is. Now decrease the color depth to 256 colors (8-bit format). Inspect the file's size again. By what percentage has the size of the file decreased? Will this make the file appear more quickly when it gets downloaded from the Internet for display on a Web page?

5. This book's Web site contains several images designed for use as tiles on Web pages. Download several of these images, and try tiling them onto your Web page résumé. What is the filename of the tile that appears best on your Web page résumé? Why do you like that tile better than the others?

Lab Projects

• Lab Project 6-1: Graphic Design

The adage that a picture is worth a thousand words has never been more appropriate than on a Web page. One could argue that the hypermedia environment adds even more value to the picture because you can access it quickly when you need it. Being able to find the picture you want quickly may make the image worth a million words when it answers a question or solves a problem for which you need a solution quickly. Imagine that your employer has put you in this kind of a situation. Your school or small company is having budget problems, and your employer has asked you to develop a cost-effective strategy for creating Web site graphics. Get your word processor started, and follow these suggested ways of satisfying your employer's request for a graphic design strategy:

- Several good banner- and button-making utilities are available on the Web. See if you can find a utility that creates banners and buttons in a style compatible with your school or company's look and feel. Follow this book's Web site links to banner and button makers. Using your word processor, take notes identifying the names of the sites you visited, and report whether you would recommend them for use in your workplace. At the site you like best, create a sample banner and copy it into your report as an example.

  Note: *To copy a graphic from the Web into your word processor, right-click (Macintosh users CONTROL-click) the image and choose Copy; then go into your word processor, pull down the Edit menu, and choose Paste.*

- Paint Shop Pro has a button-maker built in. Make a sample button with Paint Shop. Copy the button into the report in your word processor, and write a paragraph indicating that the button came from Paint Shop. State whether you would recommend using the Paint Shop button maker to make buttons at your school or company Web site.

- FrontPage has a wide array of themes built in. If you are using FrontPage, you can audition these themes to see if there might be one suitable for use in your school or company. It is also possible to modify the FrontPage themes; if you find one that almost fits, you can fine-tune it. To audition the FrontPage themes, follow these steps:

  1. In FrontPage, click the New Page button to create a new page.
  2. Pull down the Format menu and choose Theme; the Themes dialog appears.
  3. In the list of themes on the left, click the theme you would like to see. The theme appears in the window on the right. Repeat this step and look at all the different themes.
  4. If you see a theme you like, use your word processor to record its name in the report you are writing.

- The Microsoft Clip Gallery is a rich source of graphics for illustrating Web pages. Follow this book's Web site link to the Microsoft Clip Gallery, and use the search tools to perform a keyword search for the kinds of graphics needed by your school or company. Use your word processor to add to your report any suitable graphics you may find. Type the graphic's filename, and paste a thumbnail of the graphic into your report.

If your instructor has asked you to hand in this assignment, make sure you put your name at the top; then save your graphic design recommendations on disk or follow the other instructions you may have been given for submitting this assignment.

• Lab Project 6-2: Page Layout

Page layout is a critical aspect of creating a Web site for any school or business. Because of the different screen sizes in common use today, you need to plan a design that will adjust to different window sizes. Every site on the Web faces this dilemma. Imagine that your employer has noticed that some Web sites seem to have better layout than others. Your employer has asked you to go out on the Web, analyze the designs of some of the better sites, and recommend a page layout strategy for your school or company Web site. To complete this assignment, follow these steps:

1. Visit some of the premier sites on the Web and observe how they lay out material on their Web pages. Sites with innovative screen layouts include:
   a. www.microsoft.com
   b. www.cnn.com
   c. www.amazon.com
   d. www.sony.com
   e. www.macromedia.com
   f. www.msn.com
2. At each of the sites you visited in step 1, resize your browser window and refresh the pages to see how they look at different screen resolutions.
3. All of these sites use tables to define their screen layout. As you learned in this chapter, tables permit you to design any conceivable layout pattern onscreen. One of the tricks you can use is to define certain columns of a table to be fixed to a predetermined pixel size, and set the others to a certain percentage of the window's width. When a user resizes the window, the columns that have percentage settings stretch or squeeze accordingly. Consider whether this kind of a design would be appropriate for your Web site.
4. At the microsoft.com site, notice especially how the menu bar at the top stretches or squeezes to fit the window when you resize your browser. Decide whether you want the menu bars at your site to work like this.
5. Use your word processor to write a three-part report, organized as follows:
   a. In the first part, describe the screen layout strategy you recommend for your workplace. If you found other Web sites by using this strategy, provide their Web addresses so your employer can go visit them to see what you mean.
   b. In part two, write a paragraph or two describing sites you found interesting but whose layouts you rejected. Give the Web addresses so your employer can visit them, and state why you decided not to follow their designs.
   c. In the third part, conclude your report with a brief paragraph stating why the solution you have recommended is better than the layouts you decided to reject.

If your instructor has asked you to hand in this assignment, make sure you put your name at the top; then save your page layout recommendation on disk or follow the other instructions you may have been given for submitting this assignment.

Main text file is embedded
because of difficulty w/ keyword references.
PLS. always export the text after done with the chapter.
(File - Export Text ...)

PLEASE PLACE THIS NOTE AT END OF CHAPTER,
AFTER BUILDING AS A REMINDER
DURING CORRECTIONS