LESSON 4

HTML Structural Design Techniques

■ OBJECTIVES

Upon completion of this lesson, you should be able to:

- Create a frameset.
- Add a navigation bar.
- Make a welcome page.
- Create a nested frameset.
- Include a title bar frame and page.
- Utilize frame and frameset options.

HTML provides many features that help Web page developers organize information. You are now familiar with HTML tables, but in this lesson you will learn about HTML frames. Frames are similar to tables in that they help Web designers divide up the browser screen space into two or more rectangular areas. However, frames provide additional functionality; they allow the designer to change the ways in which Web pages normally behave. Frames allow Web developers to combine two or more Web pages on the same screen, and these pages can interact with each other in various ways. Frames also support several attributes that may allow, or in some cases disallow, the user to adjust the appearance of the resulting Web page.

■ VOCABULARY

border attribute

cols attribute

frames

frame separator

frameset tag

left-hand navigation

name attribute

navigation bar

nested frameset

noresize attribute

pixel

rows attribute

src attribute

target attribute

title bar

Creating an HTML Frameset

In Lesson 2, you learned how to make your Web browser link from one Web page to another page through the use of hyperlinks. Now it is time to learn how to make your Web browser display two or more Web pages on the screen at the same time. The HTML tags that will help you accomplish this are the <frameset> tag and the <frame> tag.

As its name implies, the **frameset tag** allows you to define a set of rectangular areas on your browser screen called **frames** (see **Figure 4–1**). Each frame is capable of displaying a different Web page. In a way, you can make your Web browser behave as though you had multiple Web browsers running on your computer at the same time. However, a frameset allows a Web page in one frame to communicate with a page in a different frame. For example, a hyperlink in one frame can cause a Web page to be loaded into a different frame. You learn more about this concept later in this lesson.

> ◗ **VOCABULARY**
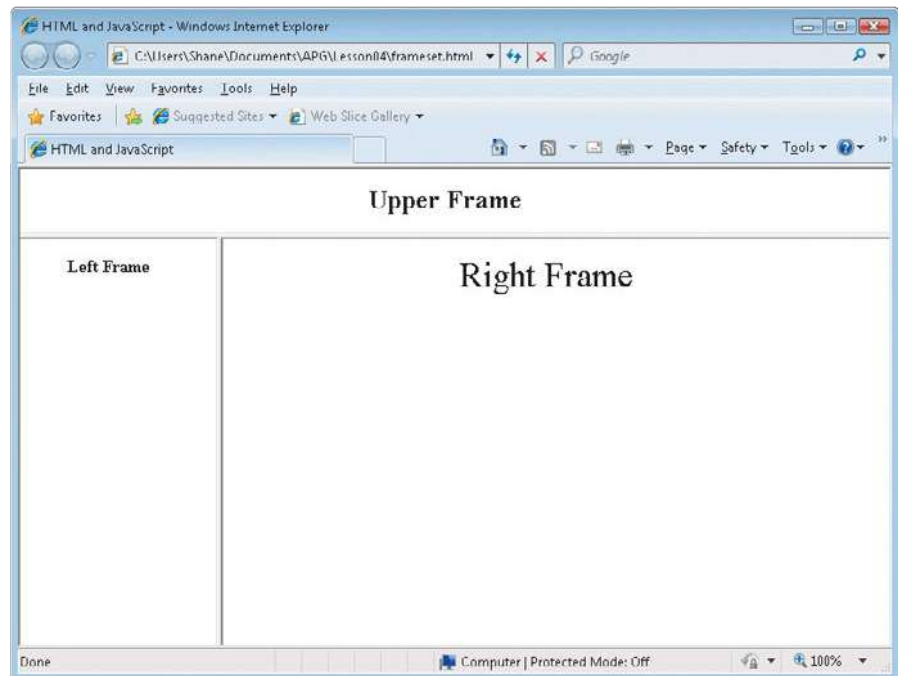> **frameset tag**
> **frames**

FIGURE 4–1   Three frames on a Web page

When you create your first HTML frameset file, you will notice that it has many things in common with the other HTML pages you created in the previous lessons. However, you should also recognize an important difference. Specifically, a frameset page does not contain the familiar <body> and </body> tags that are such an important part of standard Web pages. Instead, the frameset page contains <frameset> and </frameset> tags that mark the beginning and the end of frame definitions.

In addition, the frameset tag can contain a rows attribute or a cols attribute. The purpose of the *rows attribute* is to give you the means to define horizontal frames and to specify the height of each frame. Similarly, the cols attribute allows you to create vertical frames and to designate the width of each frame. Because you can define only horizontal or vertical frames within any given frameset, the <frameset> tag may contain a rows attribute or a *cols attribute*, but not both.

As you will see in the following step-by-step, the frameset tags encapsulate two or more <frame> tags. In turn, the <frame> tags contain at least two important attributes called name and src that allow you to give each frame a name and to specify the source Web page that you want to display in each frame. The purpose of the *src attribute* (source) is quite clear, but the function of the *name attribute* is not immediately apparent. Don't worry: You will learn more about this attribute in Step-by-Step 4.2.

> ▶ VOCABULARY
>
> **rows attribute**
>
> **cols attribute**
>
> **src attribute**
>
> **name attribute**

Step-by-Step 4.1

In this step-by-step, you create your first frameset file. As you will see, it's a simple task. You work in your text editor to enter basic HTML codes.

1. Open Notepad, SimpleText, or your favorite text editor.

2. Create a new blank document, if necessary.

3. Enter the HTML text shown in **Figure 4–2** in the exact order as shown in the figure. Don't leave out a single angle bracket (<) or slash (/). Every character and letter is important.

FIGURE 4–2   Your first frameset file

> **WARNING**
>
> As you have already learned, you can save files with either an .htm or .html extension. Be careful! If you used the .htm extension, you must change all the filenames in **Figure 4–2** accordingly. For example, change navbar.html to navbar.htm in the frameset file.

```
<html>

<head>
<title>HTML and JavaScript</title>
</head>

<frameset cols="180,*">
<frame name="LeftFrame" src="navbar.html">
<frame name="RightFrame" src="welcome.html">
</frameset>

</html>
```

4. Save your newly created HTML text file as **frameset-1.html** or **frameset-1.htm** in the same folder you saved the files from the previous lessons.

> **NOTE**
>
> The asterisk (*) means "whatever is left."

Adding a Navigation Bar

One design that is commonly used by professional Web designers is to place a Web page in a narrow left-hand frame that contains many hyperlinks. When the user clicks on any of these links, the appropriate Web page is displayed in the larger right-hand frame. This design technique is often referred to as **left-hand navigation**, and the Web page containing the hyperlinks is called a navigation bar. A **navigation bar** is a series of hyperlinks, usually organized horizontally or vertically on a Web page or in a frame. It is used to navigate a Web site. **Figure 4–3** shows an example of a Web page with a navigation bar.
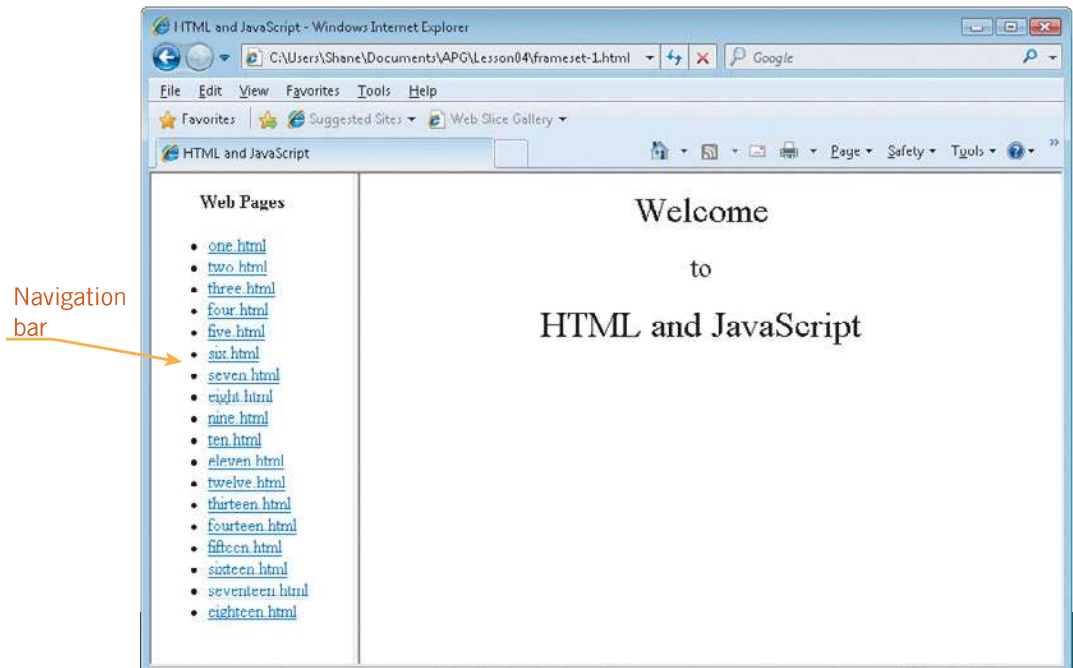
Navigation bar

FIGURE 4–3   Two-frame Web page

The Target Attribute

You do not have to learn any new HTML tags to create your navigation bar. The navigation bar is created by using tags you have already used in previous lessons. However, you will use a new attribute in the <a> tag that will associate the links in the left-hand frame to the Web pages in the right-hand frame. The **target attribute** tells the browser which frame it should use to display the target Web page. It is important to note that the target attribute uses the frame name that you defined with the name attribute in the <frame> tag in Step-by-Step 4.1.

VOCABULARY

left-hand navigation

navigation bar

target attribute

pixel

EXTRA FOR EXPERTS

The numbers that accompany the rows and cols attributes can be absolute *pixel* values or percentage values. A **pixel** is an individual "dot" of light on a computer screen. In the file you just created, you made the frameset column 180 pixels wide. There are thousands of pixels on a typical computer screen, far too many to count. Therefore, it is sometimes easier to specify percentage values of a screen instead of counting pixels. A percentage value will automatically determine the proper number of pixels to dedicate to a frame. For example, you can enter the tag <frameset cols="20%, *">.

Step-by-Step 4.2

In this step-by-step, you learn how to create a navigation bar to link to the previous 18 Web pages you created in Lessons 1, 2, and 3. Your navigation bar will contain an unordered list of 18 hyperlinks, and these links will refer to the Web pages you saved as one.html, two.html, three.html, through eighteen.html. Open Notepad, SimpleText, or your favorite text editor, if it is not already open.

1. Click **File** on the menu bar, and then click **New** to create a new blank document.

2. Enter the HTML text exactly as shown in **Figure 4–4**.

   Hint: You can take advantage of the copy and paste commands to help you enter the 18 <li tags>, which are very similar. To enter the <li> tags, type the first **
one.html ** tag, copy the tag, and paste it to the next line. Now that the tag is copied, simply select **one**, and then type **two** in both places in the tag. Repeat this for all 18 tags, entering each subsequent number for the appropriate filenames.

FIGURE 4–4 Navigation tags in a frames page

```
<html>

<head>
<title>HTML and JavaScript</title>
</head>

<body>
<div align="center"><b>Web Pages</b></div>
<ul>
<li><a href="one.html" target="RightFrame">one.html</a></li>
<li><a href="two.html" target="RightFrame">two.html</a></li>
<li><a href="three.html" target="RightFrame">three.html</a></li>
<li><a href="four.html" target="RightFrame">four.html</a></li>
<li><a href="five.html" target="RightFrame">five.html</a></li>
<li><a href="six.html" target="RightFrame">six.html</a></li>
<li><a href="seven.html" target="RightFrame">seven.html</a></li>
<li><a href="eight.html" target="RightFrame">eight.html</a></li>
<li><a href="nine.html" target="RightFrame">nine.html</a></li>
<li><a href="ten.html" target="RightFrame">ten.html</a></li>
<li><a href="eleven.html" target="RightFrame">eleven.html</a></li>
```

```
<li><a href="twelve.html" target="RightFrame">twelve.html</a></li>
<li><a href="thirteen.html" target="RightFrame">thirteen.html</a></li>
<li><a href="fourteen.html" target="RightFrame">fourteen.html</a></li>
<li><a href="fifteen.html" target="RightFrame">fifteen.html</a></li>
<li><a href="sixteen.html" target="RightFrame">sixteen.html</a></li>
<li><a href="seventeen.html" target="RightFrame">seventeen.html</a></li>
<li><a href="eighteen.html" target="RightFrame">eighteen.html</a></li>
</ul>
</body>

</html>
```

INTERNET

Normally when a user clicks on a hyperlink, the target Web page will be loaded into the same frame as the link. The target attribute overrides this behavior and sends the proper Web page to the "target" frame.

3. Save your newly created HTML file as **navbar.html** or **navbar.htm** in the same folder as the other files you have created in these lessons.

Creating a Web Site Welcome Page

Typically, a professional Web site developer will create a welcome page that users see when they first access the site. As you learned in Lesson 1, the primary purpose of the welcome page is simply to give users a good first impression of the Web site and to ensure that they recognize the purpose of the Web site. For example, a company that wants to sell books, music, or other products over the Web wants to create a welcome page that will catch the user's eye, display exciting examples of their media products, emphasize the company name, and allow easy access to the various parts of the Web site.

Step-by-Step 4.3

In this step-by-step, you create a simple welcome page. In fact, you do not have to enter any HTML tags for this page that you have not already used in earlier lessons. As you enter the tags, keep in mind that this page has a particular purpose—it is your welcome page. As you learn more about creating Web pages, you could continue to enhance this page to liven up your Web site and give the user a memorable experience. One of the primary goals of commercial Web sites is to give users a reason to return to the site again and again.

1. Open Notepad, SimpleText, or your favorite text editor, if it is not already open.

2. Click **File** on the menu bar, and then click **New** to create a new blank document.

3. Enter the HTML text exactly as shown in **Figure 4–5**.

FIGURE 4–5   Creating a simple welcome page

```
<html>

<head>
<title>HTML and JavaScript</title>
</head>

<body>
<div align="center"><font size="6">Welcome</font></div>
<br>
<div align="center"><font size="5">to</font></div>
<br>
<div align="center"><font size="6">HTML and JavaScript</font></div>
</body>

</html>
```

4. Save your newly created file as **welcome.html** or **welcome.htm** in the same folder where you have been saving the HTML files for the lessons in this book.

5. Open the file **frameset-1.html** in your Web browser and view the **frameset-1.html** document you created in Step-by-Step 4.1. Your screen should look similar to **Figure 4–6**. The left frame displays the HTML file navbar.html, while the right frame displays the HTML file welcome.html. These HTML files are the files specified with the src attribute in the frameset file frameset-1.html.
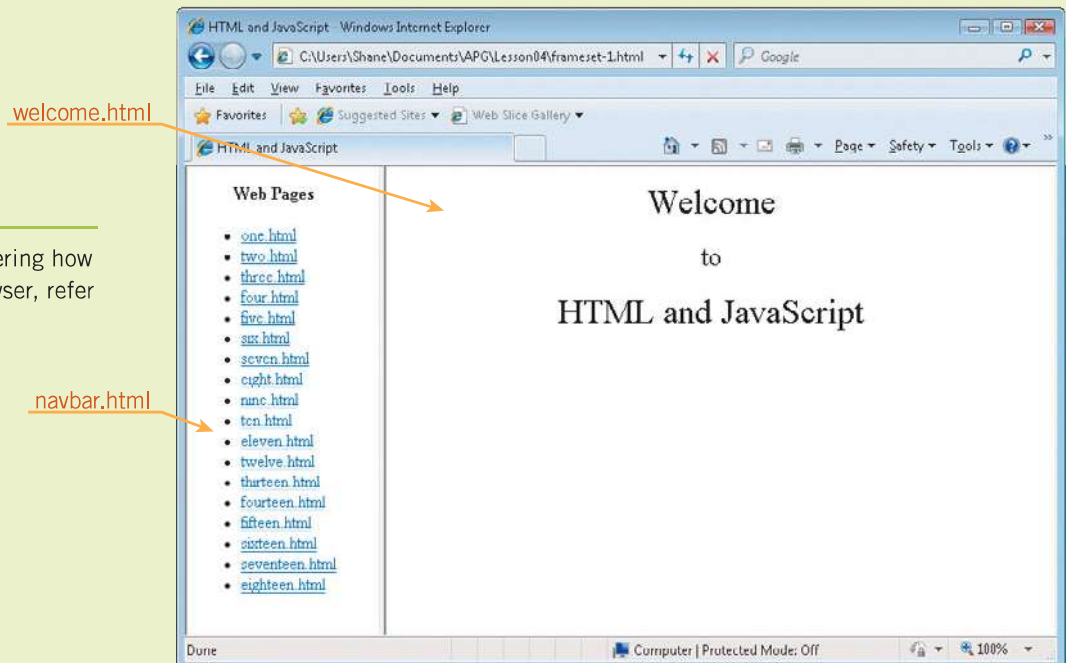
NOTE

Remember that the files you created in previous lessons (one.html, two.html, three.html, and so on) must be located in the same folder as the files you create in this lesson. If they are not in the same folder, your hyperlinks will not function correctly.

FIGURE 4–6
A welcome page with a
navigation bar

welcome.html

NOTE

If you need help remembering how to open a file in your browser, refer back to Step-by-Step 1.3.

navbar.html

Creating a Nested Frameset

There are times when it is desirable to place a third frame into your frameset to display a horizontal frame across the top of your browser window. You can then place a new Web page into this new frame that functions as a consistent title for your Web page.

If you recall the discussion about horizontal and vertical frames in the first part of this lesson, you should be asking yourself an important question. To be specific, we stated early on that it is only possible for a frameset to contain either horizontal frames or vertical frames, but not both. So, you might be curious: How are you supposed to create a horizontal frame in which to display your title page if you already have vertical frames defined in your existing frameset?

A ***nested frameset*** solves this problem. The term *nested* is a word that programmers and Web developers use to describe a structure, keyword, or tag that contains one or more additional instances of the same item. In this case, you will use a <frameset> tag inside another <frameset> tag to create both vertical and horizontal frames.

▶ **VOCABULARY**
nested frameset

Step-by-Step 4.4

In this step-by-step, you create a nested frameset by adding additional <frameset> tags to your existing document. These tags define the new frame. You then save the HTML file with a new filename, preserving your original HTML file.

1. Open Notepad, SimpleText, or your favorite text editor, if it is not already open.

2. Click **File** on the menu bar, and then click **Open** to open the Open dialog box.

3. Click the **File type** arrow, click **All Files**, and then navigate to the folder where you stored your HTML files for this book.

4. Open the **frameset-1.html** or **frameset-1.htm** file you created in Step-by-Step 4.1 for editing.

5. Modify the HTML document by adding the tags shown in bold here and in **Figure 4–7**.

```
<frameset rows="60,*">
<frame name="UpperFrame" src="title.html">
<frameset cols="180,*">
<frame name="LeftFrame" src="navbar.html">
<frame name="RightFrame" src="welcome.html">
</frameset>
</frameset>
```

FIGURE 4–7   Creating a nested frameset

```
<html>

<head>
<title>HTML and JavaScript</title>
</head>

<frameset rows="60,*">
<frame name="UpperFrame" src="title.html">
<frameset cols="180,*">
<frame name="LeftFrame" src="navbar.html">
<frame name="RightFrame" src="welcome.html">
</frameset>
</frameset>

</html>
```

6. Use the **Save As** command to save the changes in a new file as **frameset-2.html** or **frameset-2.htm** in the folder where you have been saving the files for the lessons in this book.

Creating a Title Bar

Just as the Web page you created in Step-by-Step 4.2 is referred to as a navigation bar, a page that has the specific purpose of displaying a constant title for a Web site is commonly called a *title bar*. In this step-by-step, you create a title bar to be displayed in the new frame you defined in Step-by-Step 4.4 in the file frameset-2.html. **Figure 4–8** shows an example of a Web page with a title bar.
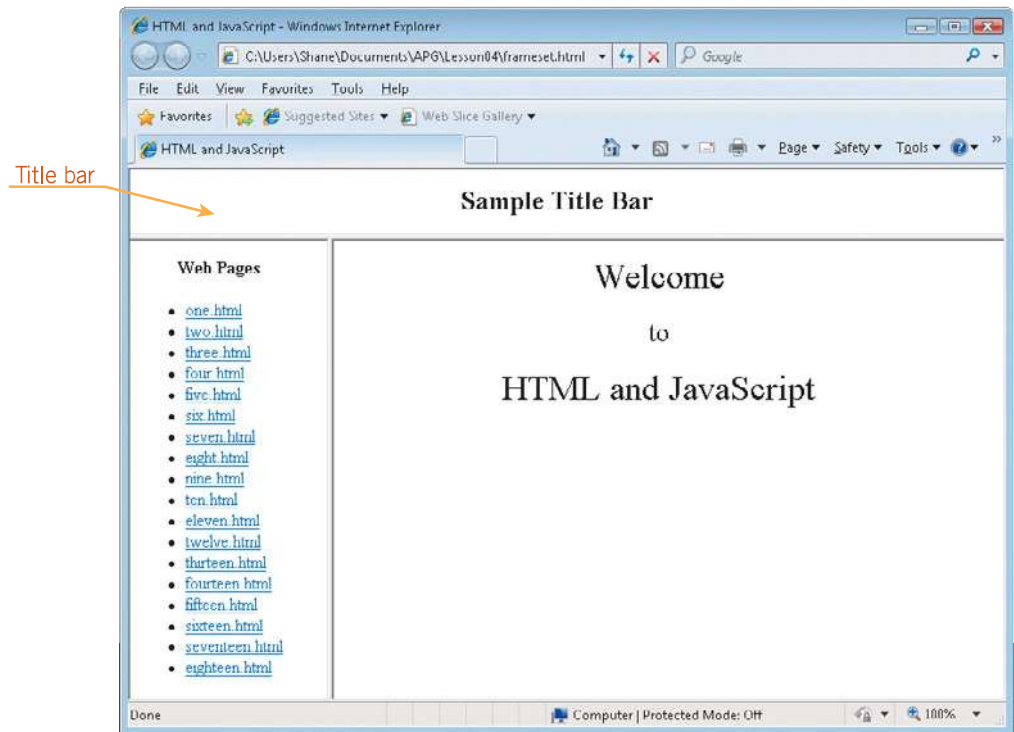
▶ **VOCABULARY**
title bar

FIGURE 4–8 Three frames with a navigation bar, title bar, and welcome page

Like the welcome.html or welcome.htm page HTML file you created in Step-by-Step 4.3, you do not have to use any new HTML tags to create this title bar Web page. But, as with welcome pages, professional Web developers will typically go to great lengths to create a title bar that will be eye-catching and memorable. Yours, however, will be very simple so that you can more easily grasp this new concept.

There is another aspect of frame-based Web pages that is worth mentioning here. By default, the browser will display semithick lines between each frame, and these lines are called *frame separators*. When the user moves the mouse over a frame separator, the pointer changes shape to indicate that the frame separator can be moved. The user can simply click and drag the separator to a new location. As you will learn in the next section, depending on your Web page design, this might or might not be a desirable characteristic of frames.

▶ **VOCABULARY**
frame separators

Step-by-Step 4.5

Frames help organize Web pages. In this step-by-step, you create a title frame that helps to organize your Web page. You also see how frames can be resized by dragging the frame separator.

1. Open Notepad, SimpleText, or your favorite text editor, if it is not already open.

2. Create a new blank document.

3. Enter the HTML text exactly as shown in bold in **Figure 4–9**.

FIGURE 4–9   HTML text for a title page

```
<html>

<head>
<title>HTML and JavaScript</title>
</head>

<body>
<div align="center"><font size="5"><b>HTML and JavaScript</b></font></div>
</body>

</html>
```

4. Save your newly created HTML file as **title.html** or **title.htm**.

5. Open your Web browser and open the **frameset-2.html** or **frameset-2.htm** file to view the frameset-2.html document you created in Step-by-Step 4.4 as a Web page. You should see a Web page that looks like the one shown in **Figure 4–10**.
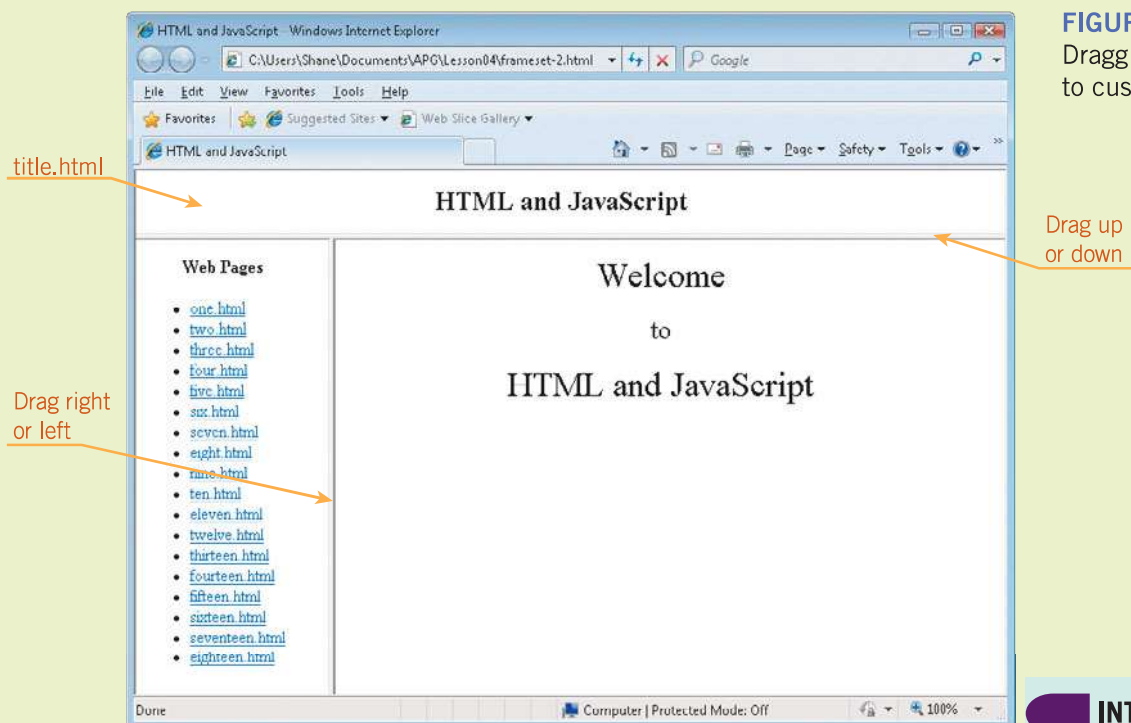
FIGURE 4–10
Dragging frame separators to customize the page

6. Frame pages can be customized by the user. Slowly roll your mouse over the bars (called frame separators) between the frames, as shown in **Figure 4–10**. When the mouse pointer changes to a double arrow, click and drag the bar to the left or right (for vertical frames), or up or down (for horizontal frames).

INTERNET

Frames are a great way to learn how Web pages can be organized into sections or parts. Tables provide another way to split a page into sections for artistic and organizational purposes.

Using Advanced HTML Options

Let's take a minute to make a couple of observations about the frames and framesets you have created so far. First, your Web browser is displaying frame separators that make it abundantly obvious where one frame ends and where another frame begins. Second, if you position your mouse cursor directly over any of these frame separators, you will see your mouse pointer change shape to indicate that the frame separator can be moved. This means the user can change the appearance of your Web pages simply by clicking and dragging a frame separator to a different position, as you experienced in the previous step-by-step.

The frame and frameset characteristics we have just described might be desirable in some situations. However, there are occasions when professional Web developers do not want the browser to display frame separators, nor would they want the user to change the layout of the screen at will. This is especially true when the developer includes custom-made graphic images in their Web pages. Such images are frequently designed to be a specific size and to fit within a frame. If the browser displays frame separators, or if the user were to change the size of the frames, the entire layout of the page could be disrupted, and the resulting clutter of images would be very unappealing.

Fortunately, two important HTML attributes can be used within the <frameset> and <frame> tags to address these issues, as shown in **Figure 4–11**. First, you can use the *border attribute* within the <frameset> tag to adjust the appearance of the frame separators. In addition, you can also use the *noresize attribute* within the <frame> tag to instruct the browser that the user should not be able to change the size of the frames. These two attributes can be used separately or together to get the appearance and behavior you want.

▶ **VOCABULARY**
border attribute

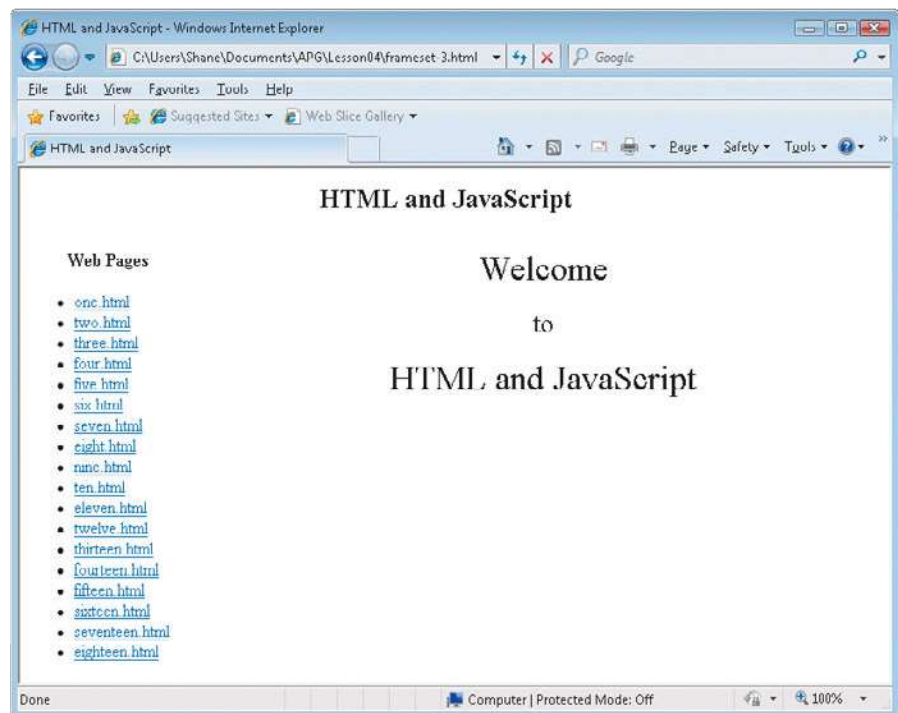**noresize attribute**

FIGURE 4–11 Eliminating frame separators on a Web page

Step-by-Step 4.6

In this step-by-step, you enter the tags that will make it impossible for a user to change the size of the frames in your Web page.

1. Open Notepad, SimpleText, or your favorite text editor, if it is not already open.

2. Open the HTML file **frameset-2.html** or **frameset-2.htm** you created in Step-by-Step 4.4 for text editing.

3. Modify the HTML document by adding the HTML text shown in bold here and in **Figure 4–12.**

```
<frameset border="0" rows="60,*">
<frame name="UpperFrame" noresize src="title.html">
<frameset border="0" cols="180,*">
<frame name="LeftFrame" noresize src="navbar.html">
<frame name="RightFrame" noresize src="welcome.html">
</frameset>
</frameset>
```

FIGURE 4–12   Using <frameset> and <frame> attributes

```
<html>

<head>
<title>HTML and JavaScript</title>
</head>

<frameset border="0" rows="60,*">
<frame name="UpperFrame" noresize src="title.html">
<frameset border="0" cols="180,*">
<frame name="LeftFrame" noresize src="navbar.html">
<frame name="RightFrame" noresize src="welcome.html">
</frameset>
</frameset>

</html>
```

4. Save your changes in a new HTML file as **frameset-3.html** or **frameset-3.htm** in the folder where you have been saving the other files you created in these lessons.

5. Open your Web browser and view the **frameset-3.html** document you just saved as a Web page. The Web page in your browser should not have frame separators. Refer back to **Figure 4–11.**

TECHNOLOGY TIMELINE

HTML Creation Tools

HTML is powerful, but it can take a long time to enter all the tags by hand. Someone finally asked, "Is there any way to make HTML files simpler to create?" A few years after HTML became the standard way of communicating online, enterprising programmers created software tools that take the pain out of typing in all those angle brackets and tags. Some of the most popular Web page development tools include Adobe Dreamweaver, Adobe GoLive, and Microsoft Expression. Each of these tools helps you create Web pages in much the same way professionals create documents in word-processing or desktop publishing software. In a program like Dreamweaver, most of the tags are created for you automatically as you design your page. However, don't believe for a minute that you do not need to know HTML tags to use these powerful and exciting Web page creation tools. There will be times when you will need to edit or make corrections to the tags created by these products. A tag view is always available.

SUMMARY

In this lesson, you learned:

- How to create a frameset.
- How to interpret frameset attributes and values.
- How to create a navigation bar in a frame.
- How to make a simple welcome page in a frame.

- How to insert nested tags and attributes.
- How to add a title bar frame to a frameset.
- How to remove the borders in a frameset.

◾ VOCABULARY REVIEW

Define the following terms:

border attribute	left-hand navigation	pixel
cols attribute	name attribute	rows attribute
frame	navigation bar	src attribute
frame separator	nested frameset	target attribute
frameset tag	noresize attribute	title bar

◾ REVIEW QUESTIONS

TRUE / FALSE

Circle T if the statement is true or F if the statement is false.

T   F   **1.**   A frameset can display either rows or columns, but not both.

T   F   **2.**   The rows attribute is used to define vertical frames.

T   F   **3.**   The <body> and </body> tags are required in a frameset page.