

An Introduction to HTML

by Frank Ducrest, 1999 (with corrections in 2004 and 2006)

I. Hypertext

I.1 HTML?

HTML stands for hypertext markup language, a simple programming language that is used to create hypertext (also called hypermedia) documents. The term hypertext refers to documents that contain both graphics, text, and user selectable links (also called hyperlinks) to other documents. Hypertext documents are meant to be viewed "on-line" using a browser.

I.2 The History of Hypertext

Hypertext has been around in one form or another since computers became accepted as interactive devices in the middle 1970's. The first hypertext documents were nothing more than text documents meant to be read using special programs. These documents contained special characters that the program would recognize as links to other parts of the same document or to other documents on the same computer. When a link was selected by the document user, the program would retrieve and display another text document or portion of a text document. Later, as interactive computing and computer graphics became synonymous in the middle to late 1980's, hypertext documents started to include graphical images, sounds, animation, and user input.

Today, hypertext is commonly found in the help documents that accompany programs in graphical user interfaces such as the Microsoft Windows GUI, the Apple Macintosh Operating System GUI, Gnome, KDE and others. Hypertext documents are the basis for thousands of multimedia programs. To date, the most successful uses of hypertext has been on the World Wide Web of the Internet and cross-platform Intranets. (*An Intranet consists of common computer applications or a desktop that is provided for all members of an enterprise, no matter what type of computer or operating system is being used. Hypertext documents are ideal for creating portions of such applications or desktops.*) A hypertext document written in HTML may be viewed on a machine based on any Microsoft Windows, Macintosh OS, UNIX, Linux, and other operating system based computers. All that is required is that the hypertext language(s) being used be supported in a program (such as a browser) that runs on the operating system of the local machine.

I.3 The Internet, Hypertext, and HTML

First called the ARPANET, the Internet was started in the late 1960's by the U.S. Department of Defense as an experiment in creating a communications network that would survive a war. It remained as a way for the various research laboratories doing defense work to easily communicate and share resources with one another and as an experiment in communication techniques. At first, these sites consisted of a few universities, private corporations, and government installations. A set of protocols (*i.e., rules, procedures, methods, and standards*) were established to enable researchers at these sites to have access to programs, data, hardware, and colleagues that were at other sites. These protocols included email (electronic mail), FTP (file transfer protocol), and TELNET (use of a remote computer to run software) and are still in use today. Many other protocols have been added, such as HTTP and SSH.

By the mid 1980's, the Internet had grown to include most the defense industry and research universities in the United States. In addition, institutions and installations in many NATO countries were added. Universities began to place large quantities of text documents and free programs on computers that were linked to the Internet and to make these documents and programs available to anyone using the Internet. In order to do this, remote users were allowed to log on to these computers via FTP or Telnet as a special user called ANONYMOUS! All of this development was done exclusively on computers running the UNIX operating system. At the time, this was all done in what is called a "blinking cursor interface". This was an interface without the benefit of graphics. For example, to use an FTP program a user would type in "ftp" followed by the Internet address of the remote computer. Once connected to remote computer, the user would have to log on, then navigate the directory structure of the remote computer using typed commands. Although use of the Internet required an arcane knowledge set, it was not seen as a problem because the people using the Internet had this knowledge.

As the demand for access to documents and programs by less technical users increased, the GOPHER protocol was developed. By typing "gopher" on a terminal, UNIX computer users could run a program that allowed them to locate remote computers by selecting from numbered categories. Later, a series of search engines were added to help find particular documents. These search engines were called "ARCHIE" and "VERONICA". ("JUGHEAD" was introduced but was not successful.) Although primitive, these search engines revolutionized the way documents could be located on the Internet. For the first time, an Internet user could search for information via key words or phrases, instead of by location. By its success, GOPHER increased the number of people using the Internet and the type of documents available on the Internet.

In the late 1980's, an effort was begun to merge the ease of use of a graphical user interface with the Internet. Hypertext documents and programs that read hypertext documents were ideal for this. In order for hypertext documents at one computer installation to be readable by computer users at other computer installations, a standard hypertext language was needed. This language became known as Hypertext Markup Language, or HTML. HTML is referred to as a meta language because it consists of special codes called tags that are placed within a text document. These codes are not visible when the document is read, but instead affect how the document is displayed. For example, certain commands affect the color or size of the text, while others place images in the document. Special programs were developed to read HTML tagged documents. The first of these was called MOSAIC and was freely distributed. Later, commercial companies such as Netscape and Microsoft developed other programs to read HTML documents. These programs became known as "browsers".

Hypertext became so popular that a new section of the Internet was created. This became known as the World Wide Web or, more simply, "the web". The World Wide Web is now the largest part of the Internet. The Internet itself now consists of tens of thousands of major computer installations world wide and at least hundreds of thousands, possibly even millions, of lesser sites. Although still used to create most documents on the World Wide Web, HTML is considered inadequate for the more involved Web documents. Many of the documents on the Web are now created in a language called JAVA (developed by Sun Microsystems) or a simpler version called JAVA Script. Databases and other application programs can also be connected to HTML documents via

various software servers such as CGI (common gateway interface), Allarie's Cold Fusion, JAVA socket programs, etc.

II. Programming in HTML

II.1 Viewing and Editing HTML Documents

Viewing HTML documents is generally done inside of a browser, but editing is often done in another program, often a simple text editor. Today, many free and commercial products exist to create and edit HTML documents without having to write the tags directly.

To create or edit an HTML document in a using a simple text editor, start the browser and a text editor such as Notepad or Nedit. Open an existing document or create a new document. To create a new HTML document, save the document in the editor as a file ending in ".html". Open the same document in the browser. Save each change to the document in the editor, then use the Reload (or Recycle) option in the browser to see the change that has been made.

II.2 Basic Parts

HTML commands are called tags and are placed inside of the angle brackets "<>" (the less-than and greater-than symbols). Anything not inside of these brackets will be displayed as text. All things inside of these brackets are tags.

An HTML document has certain minimal components. The start of an HTML document is indicated by the start of the HTML tag.

```
<HTML>
```

The end of an HTML document is indicated by the end of the HTML tag.

```
</HTML>
```

Within an HTML document, there are two sections. These are the Head and Body sections. The Head section comes first and is opened and closed with the beginning and end of the HEAD tag.

```
<HEAD>
```

```
</HEAD>
```

The Body section comes after the Head section. It is opened and closed with the BODY tag.

```
<BODY>
```

```
</BODY>
```

Here is the outline of the basic components of an HTML document. The dots (:) indicate places where other things will be placed.

```
<HTML>
```

```
<HEAD>
```

```
:
```

```
</HEAD>
```

```
<BODY>
```

```
:
```

```
:
```

```
:
```

```
</BODY>
```

```
</HTML>
```

II.3 The Title Tag

An HTML document can be given a title that will be displayed in the name bar of the browser window via the Title tag. The Title tag is placed in the Head section.

Like the HTML, Head, and Body tags, the Title tag comes in pairs. The text inside a Title tag pair will be displayed in the name bar of the browser window. Here is an example title tag:

```
<TITLE>This is my Web Page!</TITLE>
```

Here is an example HTML file with a Title tag:

```
<HTML>
<HEAD>
<TITLE>This is my Web page!</TITLE>
</HEAD>
<BODY>
</BODY>
</HTML>
```

Exercise: Part 1

Create an HTML file and put the above code in it. Open the file in your browser. The text inside the Title tag (“This is my Web Page!”) will be displayed on the name bar of the browser window.

II.4 Text on a Web Page

Anything outside of the angle brackets of a tag is text. Text that is placed in the body of an HTML document (i.e., text that is between bracketed sections of the body tag) will be displayed by the browser when the file is loaded. For example:

```
<BODY>
This will be displayed as text by a browser!
</BODY>
```

Text font size can be regulated via the H tag. This is the letter H followed by a number from 1 to 6, 1 being the largest and 6 the smallest. The H tag does not come in paired sections. Whatever font size is used in an H tag remains in effect until another H tag is encountered. As a bonus effect, the H tag causes a line change. Here is an example of the use of the H tag:

```
<HTML>
<HEAD>
<TITLE>This is my Web page!</TITLE>
</HEAD>
<BODY>
<H1>
This will be displayed as large sized text!
<H3>
```

This will be displayed as medium sized text!

<H5>

This will be displayed as small sized text!

</BODY>

</html>



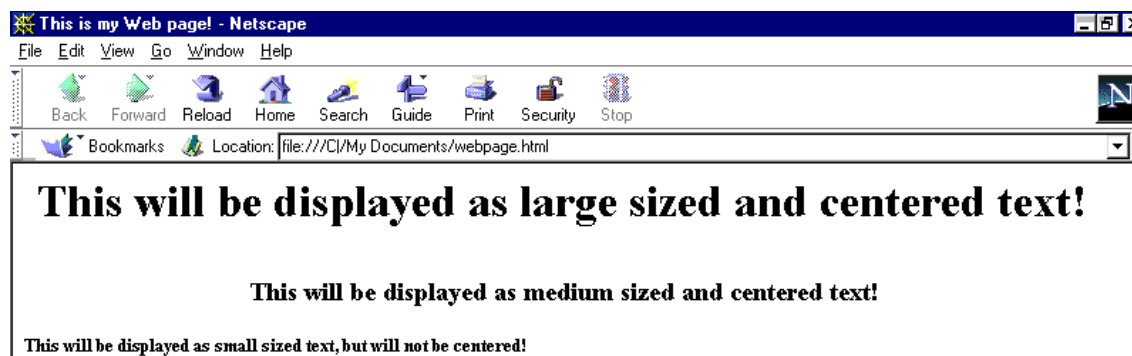
Exercise: Part 2

Include in the body of your HTML page a line with the current date in small font, a line with your name in large font, and a line with the name of your class in medium font.

II.5 Centering Text on a Web Page

Justification can be regulated via the Center tag, which comes in pairs. For example:

```
<HTML>
<HEAD>
<TITLE>This is my Web page!</TITLE>
</HEAD>
<BODY>
  <H1>
  <CENTER>
  This will be displayed as large sized and centered text!
  <H3>
  This will be displayed as medium sized and centered text!
  </CENTER>
  <H5>
  This will be displayed as small sized text, but will not be centered!
  </BODY>
</html>
```



Exercise: Part 3

Leave the date on your HTML page left justified, but center your name and class. Add a short left justified biographical paragraph at the end of the of your page. (This paragraph may be fictitious.)

II.6 Text Color

Text color can be regulated via the Text argument to the Body tag. This looks like the following.

```
<BODY TEXT = "#hhhhh">
```

The hexadecimal (base 16) digits after the number sign (#) regulate the strength of the red, green, and blue pixels that together create the various colors displayed on monitor screens. Red is regulated by the first two digits, green by the middle two digits, and blue by the last two digits. The larger the number, the brighter the color. Hexadecimal digits are 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F. For example, bright red text would be given by "#FF0000", bright green would be given by "#00FF00", and bright blue by "#0000FF".

Here is an example HTML page with red text.

```
<HTML>
<HEAD>
<TITLE>This is my Web page!</TITLE>
</HEAD>
<BODY TEXT="#FF0000">
  <H1>
  <CENTER>
  This will be displayed as large sized and centered text!
  <H3>
  This will be displayed as medium sized and centered text!
  </CENTER>
  <H5>
  This will be displayed as small sized text, but will not be centered!
  </BODY>
</html>
```

Considering how confusing hexadecimal is, it is fortunate that most browsers now accept words for colors! For example,

```
<BODY TEXT=GOLD>
```

will make text appear gold.

Here is an example HTML page with gold text.

```
<HTML>
<HEAD>
<TITLE>This is my Web page!</TITLE>
</HEAD>
<BODY TEXT=GOLD>
  <H1>
  <CENTER>
  This will be displayed as large sized and centered text!
  <H3>
  This will be displayed as medium sized and centered text!
  </CENTER>
  <H5>
  This will be displayed as small sized text, but will not be centered!
  </BODY>
</html>
```

Exercise: Part 4

Make the text in your HTML page the color of your choice.

II.7 More About Text Color

To switch colors of text after the Body tag, use the Font tag with the color argument. The following example changes the text color to white.

```
<FONT COLOR=DARKBLUE>
This text will be dark blue.
</FONT>
```

Any text following the opening of the FONT tag will be the color indicated. Text after the close of FONT tag will revert to the default text color established in the Body tag.

The font tag can also contain a size argument. For example:

```
<FONT COLOR=DARKBLUE SIZE=2>  
This text will be small and dark blue.  
</FONT>
```

Font sizes work in reverse of the H tag. Small size numbers produce small text and large numbers produce large text. The size change created by the font tag affects only text inside of the font tag. Note: The font tag does not change lines.

The following HTML code will produce text of various colors and sizes.

```
<HTML>  
<HEAD>  
<TITLE>This is my Web page!</TITLE>  
</HEAD>  
<BODY TEXT=GOLD>  
<H1>  
<CENTER>  
This will be displayed as large sized and centered gold text!  
<FONT COLOR=BLUE SIZE=4>  
This will be displayed as medium sized blue text!  
</FONT>  
</CENTER>  
<H5>  
This will be displayed as small sized gold text, but will not be centered!  
</BODY>  
</html>
```

Exercise: Part 5

Make the text in your HTML page the colors of your choice. Use the font tag in your biographical paragraph to vary the color and sizes within the paragraph.

II.8 Miscellaneous Tags

There are several other paired tags that are used to format text. These are tags for creating italic text (`<I></I>`), underlining text (`<U></U>`), and making bold text (``). These tags do not cause a line change.

```
<I>This text will be in italics.</I>  
<B><U>This text will be underlined and bold.</U></B>
```

The paragraph tag (`<P>`) breaks what would be contiguous text into paragraphs separated by a blank line. For example:

```
<P>  
This is a paragraph.  
<P>  
This is another paragraph.
```

The horizontal line tag (`<HR>`) inserts a horizontal line in the body of an HTML page. For example:

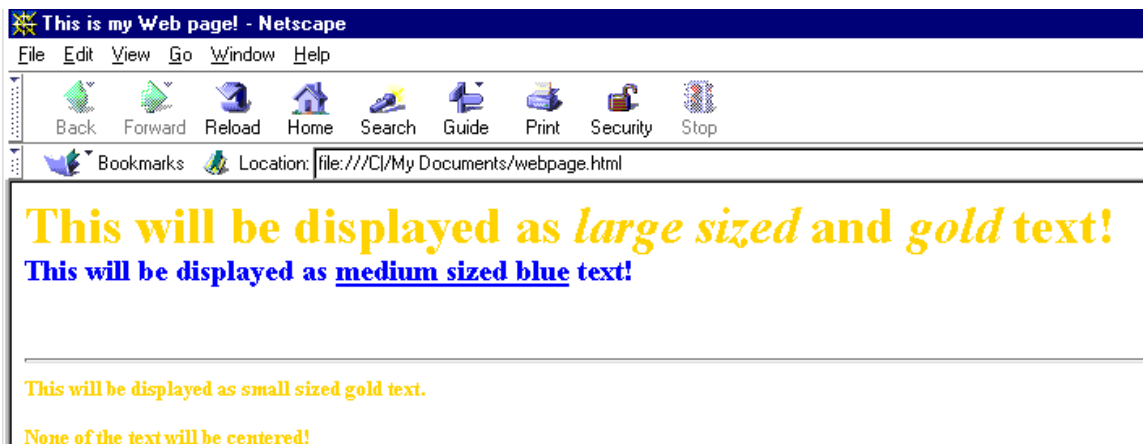
```
<P>  
One paragraph.  
<HR>  
Another paragraph.
```

The break tag breaks text into two lines, but does not skip a line unless two or more are used together. For example:

```
<P>  
Text one one line and <BR> text on another line.
```

Here is an example of the use of these tags in an HTML document:

```
<HTML>
<HEAD>
<TITLE>This is my Web page!</TITLE>
</HEAD>
<BODY TEXT=GOLD>
  <H1>
  This will be displayed as <I>large sized</I> and <I>gold</I> text!
  <BR>
  <FONT COLOR=BLUE SIZE=4>
  This will be displayed as <U><B>medium sized blue</B></U> text!
  </FONT>
  <H5>
  <HR>
  This will be displayed as small sized gold text.
  <P>
  None of the text will be centered!
</BODY>
</html>
```



Exercise: Part 6

Use the bold, italics, underline, paragraph, break, and horizontal line tags to enhance the text in your HTML page.

II.9 Background Color

Background color can be changed from the browser default in much the same way text color is changed. To change the background color, the BGCOLOR argument is added to the Body tag, as in this example that produces a white background.

```
<BODY TEXT=BLUE BGCOLOR=WHITE>
```

Unlike text color, only one background color per HTML document is allowed.

The following is an example with a background color of red.

```
<HTML>
<HEAD>
<TITLE>This is my Web page!</TITLE>
</HEAD>
<BODY TEXT=GOLD BGCOLOR=RED>
  <H1>
  <CENTER>
  This will be displayed as large sized and centered gold text!
  <FONT COLOR=BLUE SIZE=4>
  This will be displayed as medium sized blue text!
  </FONT>
  </CENTER>
  <H5>
  This will be displayed as small sized gold text, but will not be centered!
  </BODY>
</html>
```

Exercise: Part 7

Add a background color to your HTML page.

II.10 Background Images

Instead of a background color, an HTML document can consist of a tiled graphic image loaded from a ".GIF" or ".JPG" graphics file. To place a ".GIF" or ".JPG" image file in the background, just replace the BGCOLOR argument with the BACKGROUND image argument.

Here is an example:

```
<BODY TEXT=GOLD BACKGROUND="3stooges.gif">
```

In the example, the file 3STOOGES.GIF is tiled across the background of the HTML document when it is viewed in a browser.

```
<HTML>
<HEAD>
<TITLE>This is my Web page!</TITLE>
</HEAD>
<BODY TEXT=GOLD BACKGROUND="3stooges.gif">
  <H1>
  <CENTER>
  This will be displayed as large sized and centered gold text!
  <FONT COLOR=BLUE SIZE=4>
  This will be displayed as medium sized blue text!
  </FONT>
  </CENTER>
  <H5>
  This will be displayed as small sized gold text, but will not be centered!
  </BODY>
</html>
```

Exercise: Part 8

Add a background image to your HTML page.

II.11 Foreground Images

GIF and JPG images may also be used in the foreground by use of the Image tag. Images displayed with the Image tag are placed on top of the background. The following example places a GIF file image of an eagle into the document. NOTE: The Center tag affects graphics displayed with the Image tag.

```
<IMG SRC="eagle.gif"></IMG>
```

The size of an image displayed with the Image tag may be regulated with the Height and Width arguments. Sizes are written in pixels or percentages of the page. What is displayed will in part be determined by the resolution mode of the monitor that the browser is operating in. For example:

```
<IMG SRC="eagle.gif" HEIGHT=150 WIDTH=100></IMG>
```

While the above example uses both the HEIGHT and WIDTH arguments, it is more usual to use only one. By using only the HEIGHT argument, the width of the image will be adjusted to fit automatically to maintain the proportions of the image. By using only the WIDTH argument, the height of the image will be automatically adjusted. For example:

```
<IMG SRC="eagle.gif" HEIGHT=150></IMG>
```

Since there is no guarantee that the resolution of monitor of the person viewing the HTML page is the same as the resolution of the monitor of the creator of the HTML document, percents can be substituted for pixels in the height and width arguments. If image has a height of 50%, it will have a height of 50% of the browser window, no matter what resolution the monitor displaying the browser window is set to. For example:

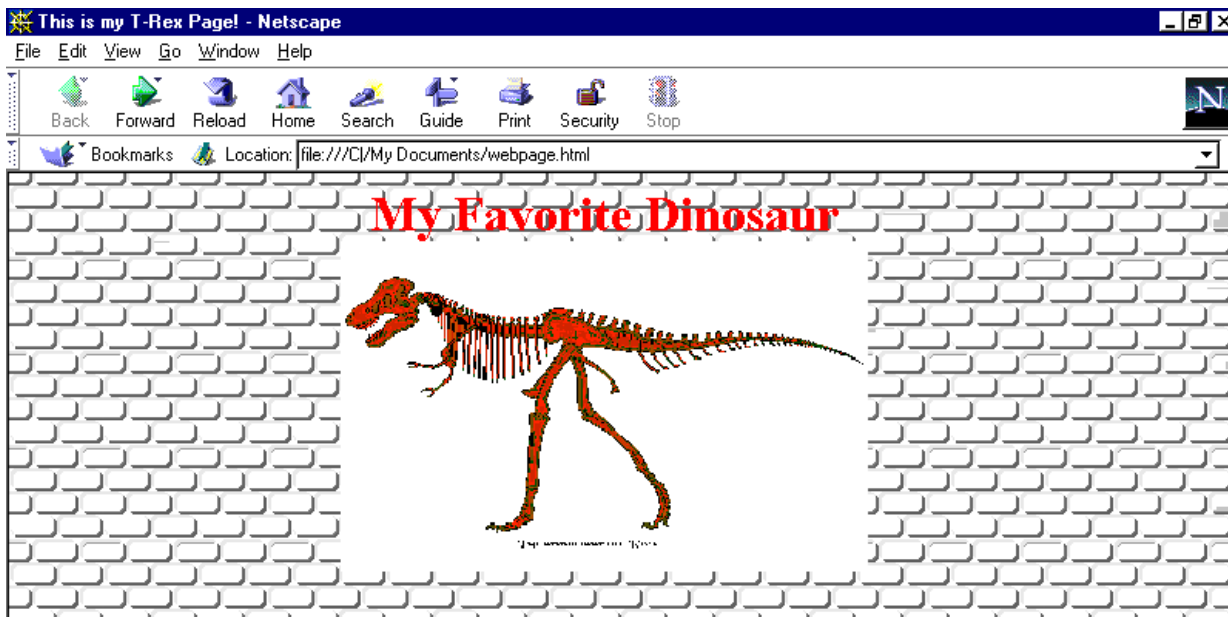
```
<IMG SRC="eagle.gif" HEIGHT=50%></IMG>
```

The ALT (alternate text) argument associates text with an image. While the image is loading and when the user places the mouse cursor over a displayed image, the alternate text is displayed. For example:

```
<IMG SRC="eagle.gif" HEIGHT=50% ALT="Not a falcon!"></IMG>
```

Here is an example of an HTML page that displays a foreground image of a dinosaur.

```
<HTML>
<HEAD>
<TITLE>This is my T-Rex Page!</TITLE>
</HEAD>
<BODY TEXT=RED BACKGROUND="brick.gif">
  <H1>
  <CENTER>
  My Favorite Dinosaur
  <BR>
  <IMG SRC="dino.gif" HEIGHT=50%
  ALT="An Underfed T-Rex"></IMG>
</BODY>
</html>
```



Exercise: Part 9

Scan a picture of yourself and add the image file to your HTML page.

II.12 Text and Graphics

Text can be placed next to graphical foreground images by using the ALIGN argument of the Image tag. By aligning the image left, following text is placed to the right of the image. For example:

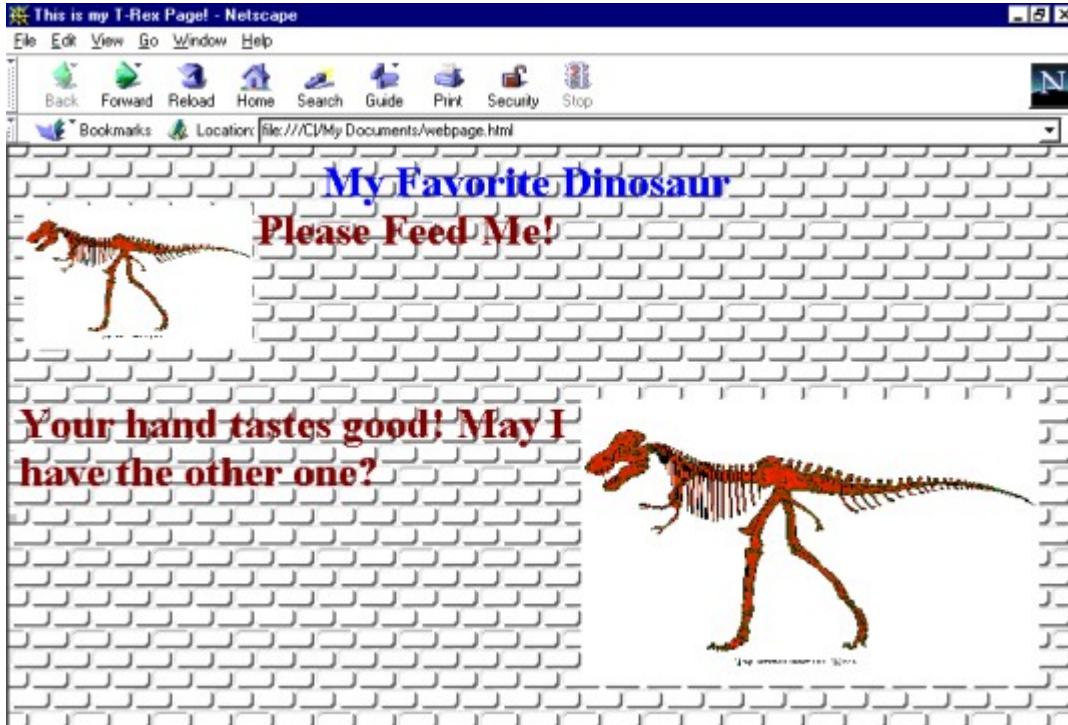
```
<IMG WIDTH=25% SRC="WETCAT.GIF" ALIGN=LEFT>  
Now is the time for all good men to dry off their Kitty-cats.</IMG>
```

By aligning the image right, following text is placed to the left of the image. For example:

```
<IMG WIDTH=25% SRC="WETCAT.GIF" ALIGN=RIGHT>  
Now is the time for all good men to dry off their Kitty-cats.</IMG>
```

Here is an example of using text with images.

```
<HTML>  
<HEAD>  
<TITLE>This is my T-Rex Page!</TITLE>  
</HEAD>  
<BODY TEXT=DARKRED BACKGROUND="brick.gif">  
<H1>  
<CENTER>  
<FONT COLOR=BLUE>  
My Favorite Dinosaur  
</FONT>  
</CENTER>  
<IMG SRC="dino.gif" ALIGN=LEFT HEIGHT=25%  
ALT="An Underfed T-Rex">Please Feed Me!</IMG>  
<BR>  
<BR>  
<BR>  
<BR>  
<IMG SRC="dino.gif" ALIGN=RIGHT HEIGHT=50%  
ALT="An Underfed T-Rex">Your hand tastes good!  
May I have the other?</IMG>  
</BODY>  
</html>
```



Exercise: Part 10

Illustrate your biographical paragraph(s) by including images that are aligned left or right.

II.13 Hyperlinks

Up until now, HTML documents have been examined as if they exist singly. Perhaps the most important feature of hypertext markup language is the ability to link documents together. With hyperlinks (or links), a browser user may move from one hypertext document to another without having to type in cumbersome URLs (Universal Resource Locators) simply by selecting a displayed link. Text or images may serve as links. A text link is usually underlined, while an image link is often displayed in a box (the box may be absent). In any case, when the user of a browser moves the mouse cursor over a hyperlink, the cursor changes shape to indicate that it is over a link.

Link colors can be regulated to make them more visible by adding the LINK and VLINK arguments to the BODY command. LINK is used to set the color of an unused link, while VLINK is used to indicate the color of a previously accessed link. In the following example, unused links are colored red, while previously accessed links are colored blue.

```
<BODY TEXT="#00FF00" LINK=RED VLINK=BLUE
BACKGROUND="3stooges.gif">
```

A link is defined with the Anchor tag (<A>). The usual syntax of the Anchor tag is as follows.

```
<A HREF="-- local path or URL--">text or Image tag</A>
```

Here is an example of a link to a local HTML document.

```
<A HREF="mypet.html">Learn about my pet!</A>
```

The phrase "Learn about my pet!" will be underlined when displayed. If the user selects this link, the browser will attempt to load and display the HTML document "MYPET.HTML".

Here is an example of a link using a URL that is not local. Note the use of *HTTP://*

```
<A HREF="http://www.yahoo.com">Yahoo</A>
```

The word "Yahoo" will be underlined when displayed. If the user selects this link, the browser will attempt to load and display the main page at www.yahoo.com.

Here is an example of a link to a local page. This link will be represented by an image that will be displayed in a box.

```
<A HREF="PET.HTML"><IMG SRC="PET.GIF"></IMG></A>
```

The following example is the same link with image, but there will be no box around the image because the BORDER argument in the image tag is set to 0.

```
<A HREF="PET.HTML"><IMG SRC="PET.GIF" BORDER=0></IMG></A>
```

The following is an example of an HTML document with links:

```
<HTML>
<HEAD>
<TITLE>This is my T-Rex Page!</TITLE>
</HEAD>
<BODY TEXT=DARKRED BACKGROUND="brick.gif">
  <H1>
  <CENTER>
  My Favorite Dinosaur
  </CENTER>
  <A HREF="HTTP://DINOSAURS.EB.COM">
    <IMG SRC="dino.gif" ALIGN=LEFT HEIGHT=25%
    ALT="An Underfed T-Rex" BORDER=0 >Please Feed Me!</IMG>
  </A>
  <BR>
  <BR>
  <BR>
  <BR>
  <A HREF="HTTP:// WWW.DINODON.COM">
    <IMG SRC="dino.gif" ALIGN=RIGHT HEIGHT=50%
    ALT="An Underfed T-Rex" BORDER=0>Your hand tastes good!
    May I have the other?</IMG>
  </A>
</BODY>
</html>
```

Exercise: Part 11

Add two links to your HTML page to documents or sites on the Internet. One link should be represented by underlined text. The other link should be represented by an image.

II.14 Named Hyperlinks

A lengthy HTML document that is mostly text takes little time to download, but it also may be difficult to locate a desired portion of the document. Hyperlinks can point to named points within an HTML document, either from inside of the same document or from another document.

To name a point inside of a document, the anchor tag is used. Instead of HREF, the argument NAME is used, followed by the name of the point. For example,

```
<A NAME="NameOfPoint"></A>
```

To make a hyperlink to a named point from inside of an HTML document, the anchor tag is again used, but with the HREF argument followed by the name of the point. A pound/number sign (#) precedes the point name. For example,

```
<A HREF="#NameOfPoint">HyperlinkLable</A>
```

To make a hyperlink to a named point from another HTML document, the anchor tag is again used, with the HREF argument, followed by the URL of the document, followed by the name of the point. Again, a pound/number sign (#) precedes the point name. For example,

```
<A HREF="HTTP://URL#NameOfPoint">HyperlinkLable</A>
```

Here is an example HTML file and that includes named points and links to those points.

```

<HTML>
<HEAD>
<TITLE>An Example with Named Points</TITLE>
</HEAD>
<BODY TEXT=DARKRED BGCOLOR=WHITE>
<H1>
The Mayflower Compact<h3>
<A HREF="#one">Paragraph 1</A>
<A HREF="#two">Paragraph 2</A>
<A HREF="#three">Paragraph 3</A>
<P>
<A NAME="one"><h2>Paragraph 1</A><h3>
In the name of God, Amen. We, whose names are underwritten, the Loyal Subjects of our dread
Sovereign Lord, King James, by the Grace of God, of Great Britain, France and Ireland, King, Defender
of the Faith, etc.<BR>
<A NAME="two"><H2>Paragraph 2</A><H3>
Having undertaken for the Glory of God, and Advancement of the Christian Faith, and the Honour of our
King and Country, a voyage to plant the first colony in the northern Parts of Virginia; do by these
Presents, solemnly and mutually in the Presence of God and one of another, covenant and combine
ourselves together into a civil Body Politick, for our better Ordering and Preservation, and Furtherance of
the Ends aforesaid; And by Virtue hereof to enact, constitute, and frame, such just and equal Laws,
Ordinances, Acts, Constitutions and Offices, from time to time, as shall be thought most meet and
convenient for the General good of the Colony; unto which we promise all due Submission and
Obedience.<BR>
<A NAME="three"><H2>Paragraph 3</A><H3>
In Witness whereof we have hereunto subscribed our names at Cape Cod the eleventh of November, in
the Reign of our Sovereign Lord, King James of England, France and Ireland, the eighteenth, and of
Scotland the fifty-fourth. Anno Domini, 1620.
</BODY>
</HTML>

```

Exercise: Part 12

Add a named point and a hyperlink to that point in your HTML page.

II.15 Email Links

Any browsing of the Web will turn up pages that have links similar to the following examples.

Send your comments to: webmaster@thecompany.com

Talk to me! Send me mail at: IAmLonesome@accessprovider.com

When these types of links are selected, the users e-mail program is activated so email can be sent to the address given in the link. (NOTE: This will work only if the browser contains an email program. If there is no email program in the browser, nothing will happen.)

To include this type of link in your HTML document, use an Anchor tag where the HREF path and the visible text is your e-mail address. For example:

Write to me at: `
somestudent@www.esa.com`

Note the "MAILTO:" argument that is used as the first part of the URL

Exercise: Part 13 (Optional)

Add an email link to your HTML page.

II.16 Lists

Lists of names, ideas, links, and images are typical features of HTML pages. In a list, items are shown vertically with bullets on the left.

Lists are delineated by several types of tags. Menu tags (<MENU> </MENU>) and UL tags () are most commonly used to mark the beginning and ending of a list. Each item in a list is started with the tag. The following is an example of an HTML document with a list:

```
<HTML>
<HEAD>
<TITLE>This is my T-Rex Page!</TITLE>
</HEAD>
<BODY TEXT=black BGCOLOR=WHITE>
<H2>
<UL>
<LI> Fe Fie Fo Fum
<LI> I smell the juice
<LI> of an English plum.
</UL>
</BODY>
</html>
```

The list in this example appears like this:

- **Fe Fie Fo Fum**
- **I smell the juice**
- **of an English plum.**

Here is an example of an HTML page with a list of links:

```
<HTML>
<HEAD>
<TITLE>This is my T-Rex Page!</TITLE>
</HEAD>
<BODY TEXT=black BGCOLOR=WHITE>
<H2>
<UL>
<LI><A HREF="http://www.bigfoot.com">FindPeople</A>
<LI><A HREF="http://www.hotbot.com">Hot Bot</A>
<LI><A HREF="http://www.yahoo.com">Yahoo</A>
</UL>
</BODY>
</html>
```

The list in this example appears like this:

- [FindPeople](http://www.bigfoot.com)
- [Hot Bot](http://www.hotbot.com)
- [Yahoo](http://www.yahoo.com)

A list may be included a an item in a list. Each sub-list is indented and the bullet changes. The following is an example of an HTML document with lists inside of a list.

```
<HTML>
<HEAD>
<TITLE>This is my T-Rex Page!</TITLE>
</HEAD>
<BODY TEXT=black BGCOLOR=WHITE>
<H2>
<UL>
<LI>Search Engine Links
  <UL>
    <LI><A HREF="http://www.webcrawler.com">Web Crawler</A>
    <LI><A HREF="http://www.hotbot.com">Hot Bot</A>
    <LI><A HREF="http://www.yahoo.com">Yahoo</A>
  </UL>
<LI>Comic Links
  <UL>
    <LI><A HREF="http://www.dilbert.com">Dilbert</A>
    <LI><A HREF="http://www.garfield.com">Garfield</A>
  </UL>
</UL>
</BODY>
</html>
```

The list in the previous example appears like this:

- **Search Engine Links**
 - [Web Crawler](http://www.webcrawler.com)
 - [Hot Bot](http://www.hotbot.com)
 - [Yahoo](http://www.yahoo.com)
- **Comic Links**
 - [Dilbert](http://www.dilbert.com)
 - [Garfield](http://www.garfield.com)

Exercise: Part 14

Add a list of your favorite things to your HTML page. Add a list of links to your favorite sites on the internet to your HTML page.

II.17 Tables

Tables are also popular for displaying groups of items or links. Tables are more complex than unordered lists, but offer an attractive means of producing readable sets of choices. Tables begin and end with the Table tag (<TABLE>, </TABLE>). If the argument BORDER is placed in the Table tag, the list is placed inside of a (hopefully) 3-dimensional looking border. The CELLPADDING argument is used to pad the space around the items in the list. This is generally used to improve readability when the table is made up of text. In addition, the background color of the table may be set with the BGCOLOR argument. The following is an example of the start of a table with a background of gray, a cell spacing of 4, and a border 2 pixels wide.

```
<TABLE BORDER=2 CELLPADDING=4 BGCOLOR="#CCCCCC">
```

The optional Table Header tag can come after the Table Header tag (<TH>, </TH>). In the Table Header tag, the COLSPAN argument is used to indicate the number of columns that will be spanned by the header. After the Table Header tag comes the text that will appear. The following example starts a table with a header that spans three columns.

```
<TABLE BORDER=2 CELLPADDING=4 BGCOLOR="#CCCCCC">  
<TH COLSPAN=3>Search Engines</TH>
```

Each table row is indicated by the Table Row tag (<TR>, </TR>). The ALIGN argument is often used to center the row items in their columns. This is written as follows.

```
<TR ALIGN=CENTER> ... </TR>
```

Each entry in a table row is placed in-between the <TD> and </TD> tags. For example, here is a centered table row of three columns. Each data item is a link to a search engine site.

```
<TR ALIGN=CENTER>  
<TD><AHREF="http://www.yahoo.com">Yahoo</A></TD>  
<TD><A HREF="http://www.webcrawler.com">Web Crawler</A></TD>  
<TD><A HREF="http://www.lycos.com">Lycos</A></TD>  
</TR>
```

Here is an example of an HTML document with a centered table with a gray background consisting of two rows and three columns. Each table item is a link to a search engine at a non-local URL.

```
<HTML>
<HEAD>
<TITLE>This is my Search Engine links page!</TITLE>
</HEAD>
<BODY TEXT=black BGCOLOR=WHITE>
<H4>
<CENTER>
<TABLE BORDER=2 CELLPADDING=4 BGCOLOR="#CCCCCC">
<TH COLSPAN=3>Search Engines</TH>
<TR ALIGN=CENTER >
<TD><A HREF="http://www.yahoo.com">Yahoo</A></TD>
<TD><A HREF="http://www.webcrawler.com">Web Crawler</A></TD>
<TD><A HREF="http://www.lycos.com">Lycos</A></TD>
</TR>
<TR ALIGN = CENTER >
<TD><A HREF="http://www.go.com">Go</A></TD>
<TD><A HREF="http://www.askjeves.com">Ask Jeves</A></TD>
<TD><A HREF="http://www.lawcrawler.com">Law Crawler</A></TD>
</TR>
</TABLE>
</CENTER>
</BODY>
</HTML>
```

The table produced looks like this:

Search Engines		
Yahoo	Web Crawler	Lycos
Go	Ask Jeves	Law Crawler

The following example is a table of images that are also links. Note that the table header is omitted.

```
<HTML>
<HEAD>
<TITLE>This is my image links page!</TITLE>
</HEAD>
<BODY TEXT=black BGCOLOR=WHITE>
<H4>
<CENTER>
<TABLE BORDER=2 CELLPADDING=4 BGCOLOR="#CCCCCC">
<TR ALIGN=CENTER >
<TD><A HREF="http://WWW.FLOWERS.COM">
    <IMG SRC="ONE.GIF"></IMG></A></TD>
<TD><A HREF="http://WWW.ROSES.COM">
    <IMG SRC="TWO.GIF"></IMG></A></TD>
</TR>
<TR ALIGN = CENTER >
<TD><A HREF="http://WWW.DOGWOOD.COM">
    <IMG SRC="THREE.GIF"></IMG></A></TD>
<TD><A HREF="http://WWW.DAISIES.COM">
    <IMG SRC="FOUR.GIF"></IMG></A></TD>
</TR>
</TABLE>
</CENTER>
</BODY>
</HTML>
```

The table produced looks like this:



The next example is of a table with one row of two cells. Each cell contains a list of three links. Note that the border argument is set to 0, which means that there will be no border around the table or its cells. The background color is set to white.

```
<HTML>
<HEAD>
<TITLE>This is my Search Engine links page!</TITLE>
</HEAD>
<BODY TEXT=black BGCOLOR=WHITE>
<H4>
<CENTER>
<TABLE BORDER=0 CELLPADDING=2 BGCOLOR=WHITE>
<TH COLSPAN=2>Search Engines</TH>
<TR>
<TD>
  <MENU>
  <LI><A HREF="http://www.yahoo.com">Yahoo</A>
  <LI><A HREF="http://www.webcrawler.com">Web Crawler</A>
  <LI><A HREF="http://www.lycos.com">Lycos</A>
  </MENU>
</TD>
<TD>
  <MENU>
  <LI><A HREF="http://www.go.com">Go</A>
  <LI><A HREF="http://www.askjeves.com">Ask Jeves</A>
  <LI><A HREF="http://www.lawcrawler.com">Law Crawler</A>
  </MENU>
</TD>
</TR>
</TABLE>
</CENTER>
</BODY>
</HTML>
```

The table produced looks like this:

Search Engines

- | | |
|----------------------|----------------------|
| • <u>Yahoo</u> | • <u>Go</u> |
| • <u>Web Crawler</u> | • <u>Ask Jeves</u> |
| • <u>Lycos</u> | • <u>Law Crawler</u> |

Exercise: Part 15

Add a table of at least four links to your HTML page.

II.18 Frames

Frames are used to divide the browser screen and allow multiple HTML documents to be displayed at one time. One HTML document is displayed in each frame. Frames are defined by the <FRAMESET></FRAMESET> and <FRAME> tags.

Frameset tags are used to divide the browser Window into rows and columns. The frameset tag is formed as follows.

```
<FRAMESET type = "size, size, ...">  
</FRAMSET>
```

where *type* is either *cols* or *rows*
size is the number of pixels, percent of the screen, or an * to indicate "all the rest"

Here is an example of the use of frameset to create screen of two frames, the leftmost frame being 145 pixels wide.

```
<frameset cols="145,*">  
</frameset>
```

Each frame is defined by using the frame tag. The frame tag is formed as follows:

```
<frame name="name-of-frame" src="html-file"  
marginwidth="#" marginheight="#" scrolling="type" frameborder="#">
```

where *name-of-frame* is the name given to identify the frame
html-file is the HTML file that is displayed in the frame
is a numeric pixel size
type is almost always *auto*

Here is an example of using the frame tag to define the content of the previous frameset example:

```
<frameset cols="145,*">
  <frame name="side" src="side.html"
    marginwidth="0" marginheight="0"
    scrolling="auto" frameborder="0">
  <frame name="main" src="main.html"
    marginwidth="0" marginheight="0"
    scrolling="auto" frameborder="0">
</frameset>
```

The HTML files used are as follows:

SIDE.HTML

```
<HTML>
<HEAD>
<TITLE>Side HTML File</TITLE>
</HEAD>
<BODY bgcolor=white>
<CENTER>
<H1>
This is the Side Page in the
Frame named Side!
</BODY>
</HTML>
```

MAIN.HTML

```
<HTML>
<HEAD>
<TITLE>Main HTML File</TITLE>
</HEAD>
<BODY bgcolor=white>
<CENTER>
<H1>
This is the Main Page in the Frame named
Main!
</BODY>
</HTML>
```

When viewed, the frameset HTML file looks like this:

<p>This is the Side Page in the Frame named Side!</p>	<p>This is the Main Page in the Frame named Main!</p>
--	--

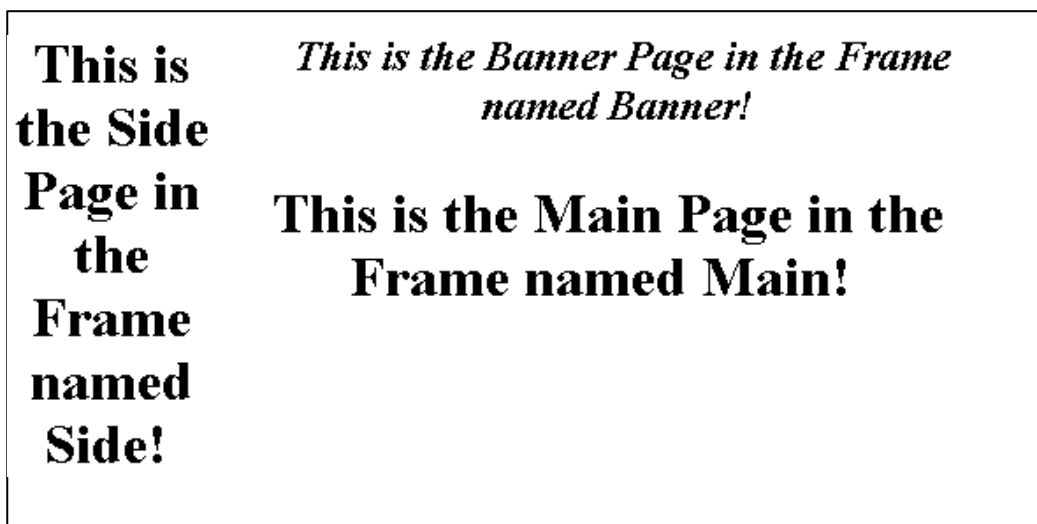
Frameset tags can be placed inside of other frameset tags to subdivide individual frames into sub-frames. Here is an example program with nested framesets.

```
<frameset cols="145,*">
  <frame name="side" src="side.html"
    marginwidth="0" marginheight="0" scrolling="auto"
    frameborder="0">
  <frameset rows="30%,*">
    <frame name="banner" src="banner.html"
      marginwidth="0" marginheight="0" scrolling="no"
      frameborder="0">
    <frame name="main" src="main.html"
      marginwidth="0" marginheight="0" scrolling="auto"
      frameborder="0">
  </frameset>
</frameset>
```

In this example, the second column is separated into two rows. The first row is given thirty percent of the frame, the second is given the rest. The files side.html and main.html are the same as in the previous example. The file banner.html is as follows:

```
<HTML>
<HEAD>
<TITLE>Banner HTML File</TITLE>
</HEAD>
<BODY bgcolor=white>
<CENTER>
<H2>
<I>This is the Banner Page in the Frame named Banner!</I>
</BODY>
</HTML>
```

When viewed, the HTML frameset file looks like this:



Links from an HTML document displayed in a frame load the linked document into the frame by default. While this may be what the programmer wants, it is more usual to use the target argument of the anchor tag to specify how the document will be displayed in the browser window. By setting target to the name of a frame, the document linked will be loaded into the frame named. By setting target to “_top”, the document linked will be displayed in the entire window.

Here is an example anchor tag for linking to the document EXAMPLE.HTML to be displayed in the frame “main”.

```
<A HREF="EXAMPLE.HTML" TARGET="main">  
  Display Document in Frame Main</A>
```

Here is an example anchor tag for linking to the document EXAMPLE.HTML to be displayed in the whole window.

```
<A HREF="EXAMPLE.HTML" TARGET="_top" >  
  Display Document in Window</A>
```

The following example uses a modified SIDE.HTML file with the above links and the file EXAMPLE.HTML as the file to be displayed by the links.

SIDE.HTML

```

<HTML>
<HEAD>
<TITLE>Side HTML File</TITLE>
</HEAD>
<BODY bgcolor=white>
<CENTER>
<H3>
<A HREF="EXAMPLE.HTML"
    TARGET="main">
    Display Document in Frame Main</A>
<br>
<br>
<A HREF="EXAMPLE.HTML"
    TARGET="_top" >
    Display Document in Window</A>
</BODY>
</HTML>

```

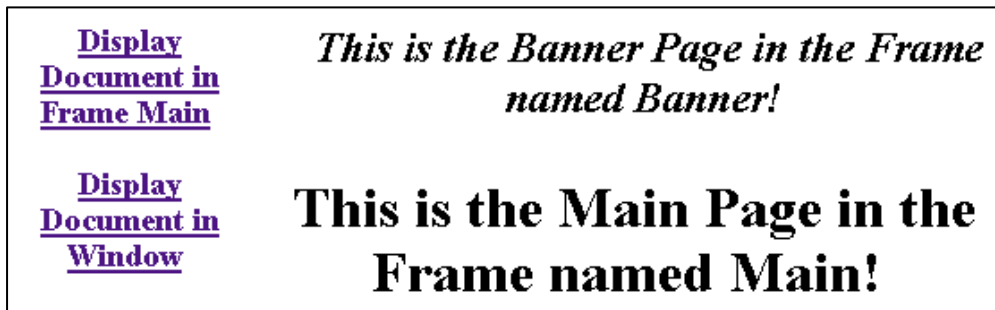
EXAMPLE.HTML

```

<HTML>
<HEAD>
<TITLE>Example File</TITLE>
</HEAD>
<BODY bgcolor=white>
<CENTER>
<H1>
Example Page!
<BR>
<IMG SRC="car2.gif"></IMG>
</BODY>
</HTML>

```

Here is frame file loaded into the browser:



Here is what the browser window looks like after the [Display Document in Frame Main](#) link has been selected:



Here is what the browser window looks like after the [Display Document in Window](#) link has been selected:



Exercise: Part 16

Create an HTML file containing at least two frames. The frames should display the file from Exercise: Part 15 in addition to one other HTML file.