

Learning HTML to Create Web Pages

By Greg Bell and Alissa Huelsman-Bell

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Introduction

Over the past few years, computers have become nearly indispensable tools for people all over the world. People from all walks of life use computers for a multitude of purposes. Recently, the popularity of a new aspect of technology has entered into the spotlight: connectivity. We have found that computers can be used to share information and to communicate with others. Now I can send an entire letter to a friend, and he or she can receive it almost instantly through a medium called e-mail. Using my computer, I can research almost anything simply by “hooking up” with a server anywhere in the world and downloading relevant information. New advances in technology are being made every day, and they constantly change the face of not only our society, but also our very lives.

This booklet is designed to teach you about the Internet and creating web pages.

Chapter 1 The Internet

A. Networks

Once upon a time, not too long ago, computers were huge, mammoth machines. The average computer was the size of a small office building and could weigh up to 30 tons! As you can image, these computers were very expensive to own and operate. Only a handful of select businesses and government agencies could afford to own computers.

Luckily, people soon learned to make computers out of smaller and less expensive parts. As the size and cost of computers shrank, more companies and organizations could afford to buy them. One of the most common places to find computers was in large universities and research companies. Here, eager students and scientists would wait hours for only a few minutes of the computer's precious processing time.

The cost and size of computers continued to shrink over the years, and their use grew more popular. Businesses found they could keep track of information much better by using computers instead of their paper filing systems, and the popularity of these machines sky rocketed. Some businesses and organizations even had several computers, each keeping track of a specific set of information.

Soon people began to think about how this information was saved. If Computer A had some information on a topic, and Computer B had some information on a topic, then a computer user would have to go to each computer and get the needed pieces of information separately. This was very inefficient. Finally, someone realized that it would be a lot easier if the two computers could communicate.

After some experimentation, people found ways to get computers to communicate, and the first network was created. A **network** is a group of two or more computers that can share information or resources. Unfortunately, the network was extremely limited. Only computers of the same manufacture could communicate on a network. As more companies built newer and different types of computers, this incompatibility proved to be problematic since a single company or organization may have owned many different types of computers.

B. ARPAnet

During the early years of the computer industry, as computers began to shrink and become more useful, the United States and Russia were immersed in a cold war. The primary result of this cold war was a world-wide build up of powerful weapons and a general sense of paranoia. The government of the United States had some serious concerns.

The government was funding a variety of projects regarding different military and space-related projects across the country. This work was funded by a group known as the Advanced Research Projects Association or ARPA. Since many of these projects were related at a variety of levels, it was decided that communication between the central research organizations, companies, and universities that were involved with ARPA was critical. After some consideration, ARPA decided to create the world's largest computer network to support and manage the development of ARPA projects.

This new network was named **ARPAnet**. Unlike any other network, it had several major requirements that had never been dealt with before. First, since so many different organizations were involved that used different types of computers, the network had to be able to support many different types of computers. Secondly, the network had to be designed to withstand a large-scale disruption of service or the loss of any computer on the network. This was in case the United States suffered any major catastrophe such as nuclear war. ARPA felt that the destruction of any component of the network should not affect the rest of the network. The final requirement was that the network could not be constrained by physical location since many of these research sites were distributed across the United States.

A team of the nation's best computer scientists was assembled to wrestle with these requirements. What was fashioned by this ARPAnet team has become the foundation of the Internet we know today.

C. Protocols

The first problem faced by these scientists was how to get all of the different types of computers to communicate with one another. This problem can be compared to attempting to communicate with people who all speak and understand different languages. Until everyone learns the same language, communication can be difficult, if not impossible.

The ARPAnet team solved this problem by creating a new "language" for the computers to understand. Such a language that allows computers to communicate is known as a **protocol**. The protocol that was developed for ARPAnet was a combination of two protocols. The most basic protocol was the **Internet Protocol (IP)**. IP is a very simple protocol that defines how the computer transfers information from one computer to another via a network. The more complex protocol is the **Transmission Control Protocol (TCP)**. This protocol provides a level of reliability and safety for the data transmitted across the network. The ARPAnet team found that when these two protocols are used together, computers can have a highly reliable and fast exchange of information, even on a busy or widely geographically distributed network. The combined protocol set, **TCP/IP**, became the standard language of the Internet.

Protocols are very much like the English language in that they can be layered. Protocols start very simply with basic building blocks. In this way, IP is like letters. When you put certain letters together in the right order, you can create words that represent a meaning greater than

the single letters can. TCP uses IP to create a message with a special purpose as well. In English, words are used in larger structures like sentences, paragraphs, and books. These larger structures have a special, unique meaning that is even greater than the individual letters or even the individual words. Similarly, a computer can use TCP/IP protocols to create different channels of meaning for different purposes. Figure 1 demonstrates how protocols and the English language are similar.

D. Services

The ARPAnet team had created an excellent foundation that could easily be built upon. In the years following the initial ARPAnet project, many protocols were created for special purposes. These protocol and purpose combinations are called **services**. Services provide special meanings for the communication between computers on a network.

There are literally hundreds of standard services that make up the Internet today. A few of these services are very important because they helped to create the abilities that shaped and molded the Internet and how we use it. The following are a few of the most popular and influential services on the Internet:

Electronic Mail: Electronic mail (or e-mail) is the most popular and common service used on the Internet. E-mail works very much like the post office works, only much faster. Almost everyone on the Internet has an e-mail address. This address is unique to an individual or group. An electronic message, document, or computer file may be sent from any point on the Internet to a person's e-mail address.

File Transport Protocol: The file transport protocol (FTP) is one of the oldest services on the Internet. FTP is used to copy a file from one computer on the Internet to another computer. Most of the other Internet services are based on FTP in some way or another.

Network News Service: The Network News Transport Protocol (NNTP) is the protocol that makes up the Network News Service, which is also known as Usenet. Usenet is a collection of information, gathered and ordered in electronic listings known as newsgroups. Newsgroups contain information about subjects as varied as nuclear fusion, model airplane building, or rumors about upcoming episodes on *The X-Files*.

Internet Relay Chat: Internet Relay Chat (IRC) is a relatively new service to the Internet. IRC is a very popular service that allows Internet users to "chat" or discuss topics of interest in "chat rooms." Chatting is nothing more than typing a message to other Internet users and getting an instant response.

World Wide Web: The World Wide Web is the newest major service to the Internet. It uses a protocol known as **Hyper-Text Transport Protocol (or HTTP)** to send special types of files

across the Internet. The World Wide Web and how it works will be discussed in greater detail in later chapters.

E. The Internet Today

As more research groups became involved with ARPA, ARPAnet grew at an alarming rate. Finally, as the cold war with Russia started to decline, ARPA was disbanded, however, ARPAnet continued on. Many universities, colleges and research organizations found value in the large computer network. After ARPA, governmental research was funded by the National Science Foundation, and the network was renamed the **Internet**, since an internet is a large collection of networks. Soon the Internet reached beyond the shores of North America, and other countries started connecting to it.

At first, only research organizations and universities were connected to the Internet. Later, a handful of computer companies began using the Internet to support their products and communicate via e-mail. Other businesses began finding value in the Internet using e-mail and the World Wide Web to communicate better with clients, competitors, and business partners.

Today the Internet rivals the telephone as a major channel of communication. It is estimated that over 80 million computers are connected to the Internet at any given moment and that over 300 million people have access to it. This number is growing exponentially. It is predicted that in the next five to ten years almost everyone on the planet will have access to the Internet, and all computers, including those miniature computers in televisions, cellular phones, and even coffee machines, will be connected to the Internet in some way or another.

Chapter 2

The World Wide Web

A. Humble Beginnings

For research scientists, the Internet was an essential tool. Research teams working at different sites around the world could communicate via e-mail. Computer files containing research papers could be sent from one location to another via FTP or Usenet. However, there were still a few holes in the system.

One enterprising research scientist named Tim Berners-Lee found an intriguing problem. He was part of a research team that spanned Europe. Whenever any part of the team made a breakthrough or updated its portion of the project, its members would forward the information to a secretary who would update the central project documentation and send copies back out to all involved. Tim Berners-Lee thought there must be a better way to update information.

Berners-Lee set out to create a simple information resource that would allow a user to move access information from a variety of sources on the internet and combine the information instantly to create a seamless, effortless document. He envisioned the location of the information to spread out from a single point like a spider's web and named his new project the **World Wide Web**. Starting with a different version of the File Transport Protocol (FTP), Berners-Lee created a new protocol known as **Hyper-Text Transport Protocol (HTTP)** that could quickly collect information from a variety of Internet sites and combine the data into an application known as a **browser**.

B. Hypertext & HTML

How many times has this happened to you: You are reading a book, and something happens in the plot line that is related to a previous event. You can't quite remember exactly what happened, so you spend an hour flipping through the book, trying to find the exact passage. **Hypertext** was invented to help solve problems like these.

The theory behind hypertext is that a certain part of a book or document may be related to another section of the document, another chapter of the book, or another book entirely! Hypertext allows a user to move between these connections to find more information about a specific topic of interest, or perhaps a more detailed explanation of an unfamiliar concept. With hypertext, once your background research is complete, you can return to the starting point and continue to read.

For research papers or textbooks, hypertext is a wonderful tool to make research easier and to provide a more circumspect view of the information presented. Here's an example. I am reading an article about buying a new car. This article is not written for the novice car buyer,

but someone with detailed knowledge about engines and legal agreements--all things with which I am unfamiliar. The article mentions that I should only buy a car if it is equipped with ABS. I do not know what ABS is. I check my dictionary, but since ABS is car jargon, it is not listed. I don't have any friends who are car experts, so I have no one to call to find out, and it's too late to call the car dealership. I need to go buy a car tomorrow, and I want to be prepared. Had this article been in hypertext, I could have "clicked" on ABS. My browser would have taken me to another document which defined ABS as the Anti-Locking Brake System, and it would have provided some explanation as to why an ABS is a good thing to have. I could have then returned to my original article with a simple click, now comfortable in my knowledge and ready to buy a new car equipped with ABS.

Hypertext has been around for some time, but until recently, few computers had implemented hypertext in an efficient and easy platform. Tim Berners-Lee needed a structure to make hypertext not only easy to use, but also easy to create and update. Berners-Lee used a template called a **Markup-Language** and created what is now known as **Hyper-Text Markup Language** or **HTML** for short.

In its original form, HTML was quite limited and supported only basic formatting rules and hypertext links. The first browsers, however, were able to use HTML to format and generate professional looking documents quickly from across the Internet. Gradually, its use began to grow, primarily in areas such as research and development. Few people saw much use for the new service at first, but that would soon change.

C. Mosaic

Sometime in the early 1990s, a group of computer science students from the National Center for Supercomputing Applications (NCSA) were assigned a task. They were to extend the text-based World Wide Web browser into a windowing application that could use graphics and sounds. The exercise was designed to teach the students how to create new technology.

Led by a bright young undergraduate by the name of Marc Andressen, the group of students was able to complete its task. They created a new browser, which they named **Mosaic**. Originally created for the Unix operating system, the students had written Mosaic in such a way that it was easily ported (or rewritten) to all major operating systems including Microsoft Windows and Apple's Macintosh operating system.

The NCSA was initially so thrilled by the application and its potential that they released all versions for free. Mosaic spread like wild fire, and soon all major universities and research groups were rewriting their publications in HTML. Eventually, people began to write additional pages about themselves and their hobbies. These "home pages" also became extremely popular.

D. Explosion

So popular were "home pages" that many businesses began creating them as well. Originally, only computer companies that already had an Internet presence created home pages. Many business people felt that the Internet was a new medium and that home pages would provide a quick and easy way to sell their products and services.

Almost overnight, the World Wide Web blossomed. Since the first release of Mosaic in 1992, the World Wide Web has found its way into almost every business office, classroom, and company in America. The President of the United States has commented on the importance of the Internet and the World Wide Web. Universal Resource Locators (URLs) or web addresses have found themselves on almost all forms of advertising including ads in print, on television, and even at the movies!

The World Wide Web usage has exploded. Now almost 100 million people a day use the WWW in some way or another. There are estimates that over 400 million people have WWW access either at work, school, or home. No other technology or tool has become as successful in so little time.

Chapter 3

Browser Basics

A. Browser components

There are many different types of browsers available today. Mosaic is still available free of charge from the NCSA. Marc Andressen left the NCSA to help found a company called Netscape, which sells another browser. Microsoft has released a browser for its operating systems. Luckily, all browsers look and act much the same way.

Browsers are composed of a few basic components. These are diagrammed in Figure 3-A. The basic browser components are: Title Bar, Viewing/Page Area, Menu Bar, Menu Buttons, Directory Buttons, URL Bar, and Status Bar.

The **Title Bar** is the top line of the browser. It usually lists the browser name, followed by the title of the current page. This is useful to help people see what document they are currently exploring.

The **Viewing** or **Page Area** of the browser is the large open space where the content is displayed. Sometimes this area has scroll bars attached on the sides or bottom when the page is too large to fit on the screen at once. The scroll bars may be used to move around the page. The Page Area is where all of the data for a web page will be located.

The browser's **Menu Bar** is at the top of the browser and consists of typical "drop-down" menus. These menus are specific to the web and web browsing. One important menu selection will be Bookmarks (sometimes known as Favorites). Bookmarks are lists of your most commonly visited web sites.

Menu Buttons are usually situated directly below the Menu Bar. They include the most common functions of the browser:

- **Back** (takes you back one page in your hypertext)
- **Next** (takes you forward one page in your hypertext)
- **Home** (takes you back to your home page)
- **Reload** (reloads the data on the page)
- **Open** (allows you to open a new site)
- **Print** (sends the contents on the current page to your printer)
- **Find** (searches the current page for a specific word)
- **Stop** (stops the loading of the current page). These buttons allow you to navigate quickly through the World Wide Web.

Directory Buttons are usually directly below Menu Buttons. Directory Buttons are also navigation tools that allow connections to commonly accessed lists of sites.

The **URL Bar** is immediately above the main Viewing Area. URL stands for **Uniform Resource Locator** and is commonly known as a Web Address. URLs will be discussed in more detail later. The URL Bar gives you the URL of the page you are browsing.

The final component is the **Status Bar**. The Status Bar runs across the bottom of the browser and stores quite a bit of information. The Status Bar will indicate the progress of the page being downloaded or will identify the URL of a link on the current page. Information about the security of the page may also be displayed on the Status Bar.

B. Browser versions

A browser is a piece of software like a word processor, spreadsheet or game. However, browsers are constantly changing due to the rapid growth of the World Wide Web. In order to make improved functions available to customers, the major browser creators are releasing new versions very rapidly.

As a result, certain uses of functions may be limited in certain browser versions. Some browsers, such as Microsoft's Internet Explorer, are free, and the newest version may be downloaded from Microsoft's Web site. Others such as Netscape must be bought, but trial versions may be downloaded in order to preview new functions.

The important thing to remember about browser versions is that certain functions may not be available in all browsers. Many web pages will indicate the best browser version to view a particular page or site. You can determine your current browser version by clicking the "About..." selection from the Help Menu on the Menu Bar.

C. Browser extensions

Different browser versions include different functions. From time to time, a particular browser company may "extend" or modify a standard function to work better in its browser. These "extensions" are specific to a browser version and may not be compatible with all browsers.

It is important to understand this limitation. If I use a specific browser extension, and someone visits my web page with a different browser, s/he may not see the page as I intended. For that reason, it is best to avoid the use of browser specific extensions.

D. URLs

A **URL** is a **Uniform Resource Locator**. That is a fancy name for a web address. URLs are used to tell the computer where and how to get information to download from a web page or HTML file. At first URLs look complex and difficult to understand, but with a little information, they are easily readable and understandable.

A standard URL is made up of the following components: Protocol, Server Name, Path, Filename. The format is as follows: Protocol://Server Name/Path/Filename. We will briefly discuss each component.

A **Protocol** is how a particular home page is to be accessed. By far, the most common protocol is HTTP, but it is not the only one. Files may be read by using FTP to get a file from an FTP server or even the FILE protocol may read a file from your local hard drive or floppy disk. A protocol is always followed by a colon (:).

The **Server Name** is the commonly used name of the server that stores the web page. The Internet uses a system known as DNS or Domain Naming Service, to keep track of the millions of computer names on the Internet. The Server name is always preceded by a double slash (/). Note that not all computers are set up to be web servers and therefore may not respond.

The **Path** details where on the server a specific home page is stored. If the path is omitted, the file is located in the main directory on the server. The path may include several directory names, split by a single slash (/). Note that certain punctuation such as spaces, apostrophes, quotes, and a few others may not be used in either the Server Name or Path.

The **Filename** is the name of the Home Page. A Filename will usually end in an extension such as .htm or .html. This tells the server that the file is an HTML file and may be used by the server. Sometimes a Filename is omitted in a URL. In that case, the page being read is a "default page" as defined by the server. The most common default pages names are index.html, default.html, or home.html.

Using these few rules, most web addresses (or URLs) can now be understood. <http://www.school.com/6thgrade/huelsmanbell/class.html> can easily be broken down into the following parts: The "http:" part tells us that our computer is going to use the HTTP protocol to connect to the server. The Server Name is "www.school.com" so the Internet will look for that machine name. The Path "6thgrade/huelsmanbell" indicates that the files are located in a directory known as "huelsmanbell" that resides in a directory labeled "6thgrade" on the server. Finally, the filename is "class.html", so that is the file that the computer will download and present in your browser.

Chapter 4

HTML Basics

HTML stands for Hyper-Text Markup-Language and is simply a way of specifying how you want a document to look within a browser. HTML files are simply text files that are saved with the extension .htm or .html. Text files cannot include any control characters or other non-standard characters, numbers or punctuation.

An interesting thing about HTML files is that when they are formatted, all extraneous white space is ignored. White space is defined as any additional spaces or tabs or returns in a document. This will become instantly clear when you begin working with HTML files.

A. Tags

When an HTML file is read by a browser, it is formatted by the use of tags. A tag is simply a set of markers that defines a special part of an HTML document. An HTML document may have several specific parts such as a title, a header, a body, a table, a list, or other special elements. Tags mark these areas and allow special things to happen to them. It is important to note that not all tags are supported by all the different versions of browsers. HTML is very forgiving. If a browser does not support a tag or a tag is misused, in most cases the browser simply ignores the offending tag.

HTML tags are also simple text. Unlike the rest of your documents, tags can be written in either capital or small letters. Tags are almost always in pairs. You use a start tag to denote the beginning of a special section and an end tag to denote the ending of that section. A start tag consists of a left angle bracket (<), a tag name, and a right angle bracket (>). The end tag looks just like the start tag except a slash (/) comes before the text within the brackets. For example, the tag to define the title of a document is TITLE. To indicate the start of a title section, you would use: <TITLE>. To indicate the completion of the title section, you would use: </TITLE>. Here's a real example: <TITLE>My Web Page</TITLE> That grouping of tags would define the title of your web page as "My Web Page."

Certain tags use attributes to define how the tag works. An attribute is usually included in the start tag. For example, you can use the COLOR attribute of the FONT tag to change the color of your text. We will take more about attributes later.

The best comparison to tags is parentheses. You can place parentheses inside of parentheses, but you must always do so in pairs. Likewise, you must always try to remember to close your tags (place the end tag appropriately) or else strange things may happen to your page!

B. Basic template

There are certain basic parts to a web page. These basic components can be used to create a generic template from which all other web pages can be based. The basic template will use the following tags: HTML, HEAD, TITLE, and BODY.

The **HTML tag** is the master tag. It defines the entire document as HTML to the browser. Because of this, you will always want the start HTML tag as the first thing in your HTML file and the close HTML tag as the last.

The **head tag** defines head information such as the title to the browser. It is usually placed at the top of the document right after the HTML tag so that it may be read first.

The **title tag** defines the title of the page to the browser. The title is placed on the Title Bar of the browser as an identification of the page.

The **body tag** defines the look of the main page window and contains the entire body of the web page. With the exception of the HTML tag, this is usually the largest section in any web page.

The basic template is as follows:

```
<HTML>  
<HEAD>  
<TITLE>Put your title here</TITLE>  
</HEAD>  
<BODY>  
Put the body of your page here.  
</BODY>  
</HTML>
```

You will notice several things about how this template was used. The HTML start and end tags denote the beginning and ending of the document. The TITLE tags are enclosed in the HEAD tags. The main text of the page would go in the BODY section.

Chapter 5 HTML Formatting

A. Paragraphs and breaks.

HTML is primarily used to publish information. The system supports many standard writing concepts. One of the primary tags is the **paragraph tag**. The paragraph tag is `<P>`. Paragraph tags are used to denote the beginnings and the endings of paragraphs.

An example of using the paragraph tag follows:

```
<P>This is paragraph 1. I am employing the paragraph tag presently. I use this tag instead of indenting. When the paragraph is finished, I will close the paragraph tag and open a new paragraph tag.</P>
```

```
<P>This is paragraph 2. Notice that instead of creating a new paragraph by indenting, HTML makes a new paragraph by essentially skipping a line.</P>
```

This would be result in the following output as follows:

This is paragraph 1. I am employing the paragraph tag presently. I use this tag instead of indenting. When the paragraph is finished, I will close the paragraph tag and open a new paragraph tag.

This is paragraph 2. Notice that instead of creating a new paragraph by indenting, HTML makes a new paragraph by essentially skipping a line.

From time to time, you may need to add an additional space to an HTML document. The **break tag**, `
` is used to do this. Unlike most other tags, `
` does not require a close tag. Whenever the browser sees a `
` tag, it will insert a return and start on the next line.

B. Headers, Lists, and Blocks

Header tags are used to define header information in a document such as a chapter or section title. Headers come in six sizes, H1, H2, H3, H4, H5, and H6. The smaller the number, the larger the header. Headers are primarily used to emphasize a phrase or topic. For example:

```
<H1>This is a Major Header </H1>  
<BR>  
<H4>This is a Minor Header</H4>
```

would be formatted into:

This is a Major Header

This is a Minor Header

You may sometimes need to create lists of subjects or topics or create bullet points for a report. HTML supports two main types of lists including unnumbered lists and numbered lists .

Unnumbered lists are commonly referred to as bullet lists. Each list element, defined by the tag will have a bullet in front of it. This sets each element of the list apart as follows:

```
<P>Things I must do today:</P>
<UL>
<LI>Take out the trash</LI>
<LI>Wash the dishes</LI>
<LI>Make my bed</LI>
</UL>
```

Note again that we have "nested" the tags inside of the tags. This brief topic would create the following:

Things I must do today:

- Take out the trash
- Wash the dishes
- Make my bed

A numbered (or **ordered**) list is very similar to an unnumbered list with the exception that each list element is given a number.

```
<P>Things I must do today:</P>
<OL>
<LI>Take out the trash</LI>
<LI>Wash the dishes</LI>
<LI>Make my bed</LI>
</OL>
```

would create:

Things I must do today:

1. Take out the trash
2. Wash the dishes
3. Make my bed

In addition to lists, there are also **blocks** <BLOCKQUOTE> of text. Blocks of text are set apart from the main text by indentation. Like most tags, blocks may be nested. For example:

This is my main text.

<BLOCKQUOTE>

This is my secondary text. It is set in from the main text by the blockquote tag. Though there is nothing special about this particular text, this could be a subchapter or a quote from a particular book on HTML.

<BLOCKQUOTE>

This block of text is even further indented than the previous. These types of staggers can continue for several levels, resulting in a "staggered." look to your web pages.

</BLOCKQUOTE>

Now we are back to our original indentation. Though nice, we will now return to our original text positioning.

</BLOCKQUOTE>

We are now back to our original text position.

Will format to:

This is my main text.

This is my secondary text. It is set in from the main text by the blockquote tag. Though there is nothing special about this particular text, this could be a subchapter or a quote from a particular book on HTML.

This block of text is even further indented than the previous. These types of staggers can continue for several levels, resulting in a "staggered." look to your web pages.

Now we are back to our original indentation. Though nice, we will now return to our original text positioning.

We are now back to our original text position.

Another useful formatting tool is the **horizontal rule tag** <HR>. Like the line break
, the <HR> is a single tag. It has no closing tag. The horizontal rule will draw a line across the page in order to indicate a break or to separate one part of the home page from another.

<P>This is section one. <HR> This is section two.</P>

will generate:

This is section one.

This is section two.

C. Font formatting

Fonts are a description of how letters and words look in print or on a computer screen. HTML includes some very basic ways to change the way a font looks on the screen. While there are literally thousands of options available, we will only concentrate on a few key tags.

The most common types of font manipulation are the **emphasis tags**. There are two common emphasis tags, **bold** and **italic** <I>. These tags can create a grouping of words that make a word bold or italicized for specific emphasis. These tags can be used together or in conjunction and may be added in the middle of a paragraph. See below:

```
<P>I like to add emphasis when I write. Sometimes I need a word to be easily recognized, so I will put it in <B>bold</B>. Other times, I only need a little emphasis so I will use <I>italics</I>. Every once in a while, I really need a lot of emphasis so I will use <I><B>both</B></I> tags!</P>
```

This would format to be:

I like to add emphasis when I write. Sometimes I need a word to be easily recognized, so I will put it in **bold**. Other times, I only need a little emphasis so I will use *italics*. Every once in a while, I really need a lot of emphasis so I will use ***both*** tags!

Note the order in which the tags were closed. As a rule, always close the innermost tag first, as I did with the bold tags. This will help avoid confusion.

Another common font formatting is the use of color. The **font tag** supports a variety of attributes. One of these attributes is color that may be set for a group of words. Most browsers are capable of supporting thousands of colors, but for most attributes, it's best to stick with the most common colors including: white, red, black, blue, yellow, green, orange, purple, turquoise, and magenta. To use the color attribute with a font tag, you must format the start tag as follows: . Note that the quotation marks are not required for most browsers, but it helps to emphasize the use. An example of colored fonts would be:

```
<P>In this example, I think I'll use colored fonts. For example I want this <FONT COLOR="green">word</FONT> to be green. I'd like to make <FONT COLOR="red">this whole section of text</FONT> to be red.</P>
```

Will translate to:

In this example, I think I'll use colored fonts. For example I want this word to be green. I'd like to make this whole section of text to be red.

Color can be a very powerful tool for illustrating points. However, a misuse of color can be quite distracting and may conflict with other things such as images or anchors.

D. Preformatted information

It can be very difficult to determine accurately how text will appear on a browser. Unlike a word processor or other text formatting programs, text in HTML is dynamic. Depending on the size of the browser, text may break at different points, sometimes resulting in perfect placement on one browser, but awkward placement on another.

It is sometimes advantageous to include text that has already been formatted for a specific purpose such as a report format. HTML has included a way to do this with the **preformatted text tag** <PRE>. Any text between the PRE tags, including all white space (spaces, tabs, returns) will be placed exactly as formatted. Also, additional HTML tags may be used in this manner.

For example, the examine the results of the following bit of HTML:

```
<P>This  is
        freeform
      <B>      poetry.      </B>
Ha  Ha  Ha  Ha  Ha  !    !    !</P>
```

In standard HTML, it would appear as:

This is freeform **poetry**. Ha Ha Ha Ha Ha!!!

If tagged with the <PRE> tags, it would appear as:

```
This      is
          freeform
                    poetry.
Ha  Ha  Ha  Ha  Ha  !    !    !
```

Also, please note that the PRE tag will also change the font to a more distinct writer type of font.

Chapter 6

Graphics and Multimedia

Part of the immense popularity of the World Wide Web has come from the user-friendly interface. Much of this perception is due to the wide acceptance of graphics and multimedia. These make the experience of browsing on the World Wide Web (known as surfing) much more enjoyable.

A. Graphic Formats

Most browsers can support many different graphic formats, but the two main graphic formats that have been the most successful are Compuserv's **Graphic Interchange Format**, or **GIF** (pronounced gif as in gun...not jif as in the peanut butter) and the **Joint Picture Exchange Group**, or **JPG** (pronounced j-peg) formats. Each is important and has a place on every home page. It is important to learn a little about each format to determine its proper usage.

When you put a picture on your home page, that image must be downloaded from the server that also holds the HTML file to the person viewing your page. Image and other multimedia files can be very large. Some people with high-speed connections to the Internet can download images very quickly. Other people aren't so lucky. Images can take a very long time to download, so the size of the image is very important.

GIF is the older of the two graphic standards. It was developed by the Compuserv online service in order to help transmit images. GIFs are limited to only 256 colors, but are crystal clear, even under great magnification. Most images start out as GIFs before they are converted to other formats. Photographs that have been scanned and converted to GIFs tend to be very large which makes them very bad for web pages. However, original artwork and drawings seem to work better as GIF files.

JPG is a newer format and was designed with GIF as its basis. The images stored as JPGs are compressed, meaning that part of the information is removed from the image. This is hidden by using many more colors – millions in fact! However, under magnification, JPGs don't hold up as well as GIFs. Most people use JPG as their standard image on web pages.

In a nutshell, use GIF files for artwork and drawings. Use JPG for photographs. You can use many different types of graphic editors to convert from one format to another. Browsers cannot do this.

B. Image Placement

Images are placed on web pages using the **image tag**. The image tag also has several attributes. The first and most important of which is the **source (SRC) attribute**. The source

attribute tells the browser which image file to load. The HTML code, `` would load an image named myfile.jpg.

Two things are important to note. The quotation marks are not required but suggested. Also, rather than include a single file name, you can include an entire URL as the source of an image.

Another attribute is the **alignment attribute**. This tells how to load the image relative to any text. The **alignment tag** `<ALIGN>` has three options: TOP, CENTER, and BOTTOM. The default is BOTTOM, which means that the bottom of the image will align with the bottom of the text. Similarly, an ALIGN of TOP would set the top of the image with the top of the adjoining text and CENTER would cause the graphic to be centered along the adjoining text.

There are also attributes to control the **height** and **width** of the image to be loaded. Additional attributes can control text to be displayed as the image is loaded. As a general rule, the order of attributes does not matter. An example of loading an image with many attributes would be:

```
<IMG SRC="http://www.mysite.com/mypicture.jpg" ALIGN=BOTTOM HEIGHT=100  
WIDTH=100 ALT="My picture">
```

In this example, the source of the image is located on a different web server. As the file is downloaded, the browser will display the words "My picture." Regardless of the original picture size, the image displayed will be forced to be only 100 pixels by 100 pixels and aligned at the bottom of the adjoining text.

C. Sound and Video

Sound and video are also becoming increasingly popular on the World Wide Web. As a result, we will discuss these topics very briefly.

Sound may be handled in one of three major ways. A sound may be recorded and saved in a sound file. To replay the sound, the sound must be completely downloaded to the client machine by the server. Also, recorded sounds tend to be very large, so long clips of sound take up lots of space and take a long time to download. The second way is to digitize the music by programming the instruments and the notes played. The resulting file is very small and downloads very fast, but the resulting sound is not very good. The final way of sending sound is called "streaming-audio." Streaming audio sends large recorded files, but the browser is smart enough to go ahead and start playing the music or sound without having to wait for the entire file to be downloaded. Currently, to use streaming audio, you need a very fast Internet connection.

Video is subject to the same limitations. Recorded video files are very large and take a long time to download. New technology will soon allow streaming video on fast Internet connections. However, there are tricks to make very simple video and animation. Using a special form of the GIF graphic format, several images can be stored in sequence in one file.

When loaded by a browser, these GIFs continually overwrite one another resulting in animation very similar to that created by a cartoon.

Chapter 7 Hypertext

Hypertext is one of the most important features of the World Wide Web. Its easy use and the ability to move seamlessly from one site to the next are some of the critical reasons for the Web's amazing success. Creating a link to another home page, HTML file, another section in the current page, or other object is very easy to do. A browser highlights the identified text or image with color and/or underlines to indicate that it is a hypertext link.

A. Anchors and Links

There is only one tag to manage all of the advanced hypertext resources--the **anchor <A> tag**. Through the use of attributes, the anchor tag can be used to perform many different functions.

The primary attribute is the **Hyperlink Reference** or **HREF**. The hyperlink reference attribute identifies the HTML file, object, or section of the current document to link to. Suppose you wanted to link to the HTML file "mydocument" on the server "www.mysite.com" when a user clicks on the phrase "To find out more about me, click here." The HTML to support this is listed below:

```
<P>This paragraph is all about me. Well actually, it's not everything about me. There is much more to know about me. <A HREF="http://www.mysite.com/mydocument.html">To find out more about me, click here.</A>.</P>
```

This would format to:

This paragraph is all about me. Well actually, it's not everything about me. There is much more to know about me. To find out more about me, click here.

If the user were to click on the underlined part, the browser would then load the homepage about me. If I wanted to go back to my first document, I could use the "Back" button from the menu buttons at the top of the browser.

B. Internal & External References

Instead of simply referring to another HTML document, you can also use the anchor tag to name a specific section of a document. To do this, you use the **NAME attribute** of the anchor tag. You can then input the section name, preceded by the section identifier "#" to move between sections of a single document. Look at the following example.

```
<A NAME="part1"><P>In the first section of my report I will be discussing how to use a stick of dynamite to get a computer started. If you are interested in frying your computer's circuits
```


with a cup of coffee, [click here](#part2) to skip to section two. Back to section one. By strategically placing a stick of dynamite under your computer and lighting it, you will produce an effect that your computer won't soon forget. </P>

```
<A NAME="part2"><P>Another excellent way to make your computer pay for all of its wrongdoing is to turn it on, make a fresh cup of coffee, and toss the coffee all over the keyboard and monitor, completely saturating it. This trick will also produce quite a spectacle. <A HREF="#part1">Click here</A> to return to section one. </P>
```

This example would produce the following inter-linked paragraphs:

In the first section of my report I will be discussing how to use a stick of dynamite to get a computer started. If you are interested in frying your computer's circuits with a cup of coffee, [**click here**](#) to skip to section two. Back to section one. By strategically placing a stick of dynamite under your computer and lighting it, you will produce an effect that your computer won't soon forget.

Another excellent way to make your computer pay for all of its wrongdoing is to turn it on, make a fresh cup of coffee, and toss the coffee all over the keyboard and monitor, completely saturating it. This trick will also produce quite a spectacle. [**Click here**](#) to return to section one.

Note how the NAME attribute identifies the beginning of a section. Also note that when used as part of an HREF document, you must precede the name with a hash (#) symbol. The hash symbol tells the browser that this is a section name and not a name of an external HTML file.

Chapter 8 Tables

A. Table Basics

Tables are unique structures that make up a special section of an HTML page. Used primarily to display data in a structured format, tables offer an alternative to standard HTML formatting. There are many tags that may be used in creating a table. We will concentrate on only a few of the most popular tags.

Of course, the basic table tag is `<TABLE>`. This tag defines the start and ending of the table section. The second basic table tag type is `<TR>` or **Table Row**. This tag simply tells the browser to start a new row (or series of horizontal elements or cells) in the table. The final basic table element is `<TD>` or **Table Data**. The `<TD>` tag is used to define single elements in the table. Table Rows may contain many series of Table Data tags. Always remember to close your tags.

Suppose we wanted to arrange the following scoreboard in a table format:

Team 1, the Braves, scored the following points per inning: 0, 0, 2, 1, 0, 3, 0, 1, 0.

Team 2, the Yankees, scored the following points per inning: 5, 0, 0, 0, 0, 1, 0, 0, 0.

To create a table we use the following HTML code:

```
<TABLE>
<TR>
<TD><B>Braves</B></TD>
<TD>0</TD><TD>0</TD><TD>2</TD>
<TD>1</TD><TD>0</TD><TD>3</TD>
<TD>0</TD><TD>1</TD><TD>0</TD>
</TR>
<TR>
<TD><B>Yankees</B></TD>
<TD>5</TD><TD>0</TD><TD>0</TD>
<TD>0</TD><TD>0</TD><TD>1</TD>
<TD>0</TD><TD>0</TD><TD>0</TD>
</TR>
</TABLE>
```

This table would have two rows, because there are two series of TR tags. There would be ten elements in each row, one for the team name, which will be written in bold text, and nine for each inning. The resulting table would look like:

Braves	0	0	2	1	0	3	0	1	0
Yankees	5	0	0	0	0	1	0	0	0

Remember, the `<TABLE>` and `</TABLE>` tags must surround the entire table definition. You can have any number of rows defined by the `<TR>` and `</TR>` tags. Within each row you can have any number of cells defined by the `<TD>` and `</TD>` tags. Each row of a table is formatted separately from the rows above and below it. This feature can allow you to create complex tables as required.

B. More Table Tags

There are many additional TABLE tags and attributes that may be used to add more flexibility to table creation. Some of these tags include:

The **caption**, `<CAPTION>...</CAPTION>` **tags** define the name of the table. It is usually placed at the top of the table. You can use the `ALIGN` attribute with the `CAPTION` tag to define the title to be placed at the bottom of the table if required. For example: `<CAPTION ALIGN=BOTTOM>Above table from Book 7</CAPTION>`.

Table header fields, or `<TH>..</TH>` are very similar to table data fields `<TD>..</TD>` except that they are generally used to define the title of the row or column (horizontal collection of data). table header `<TH>` information is in bold style and centered.

The following are attributes that may be used with the table `<TABLE>` , table header `<TH>`, table row `<TR>` or table data `<TD>` tag to define the orientation and look of the table:

The **alignment** `<ALIGN>` **attribute** may be set to `LEFT`, `CENTER`, or `RIGHT`. This defined the position of the data within a data element.

The **vertical alignment** `<VALIGN>` **attribute** may be set to `TOP`, `BOTTOM` or `MIDDLE`. This attribute defined the vertical positioning in a data element.

The **no wrap** `<NOWRAP>` **attribute** tells the browser not to word wrap information in a particular data cell.

The **column spanning alignment** `<COLSPAN>` **attribute** may be set to any number. This will define a data element that is any number of data elements wide. This is used for complex formatting.

The **row spanning alignment** <ROWSPAN> **attribute** may also be set to any number. This will define the number of columns to wide to may a particular data element. This is used for complex formatting.

The following piece of HTML code creates a complex table:

```
<TABLE CELLPADDING=5 BORDER=2 VALIGN=top ALIGN=top>
<CAPTION><H2><B>High School/College (14 - early 20s)</B></H2></CAPTION>
<TR><TH COLSPAN=2>
Intellectual</TH><TH>Creative</TH><TH>Social</TH><TH>Emotional</TH></TR>
<TR>
<TD COLSPAN=2 VALIGN=top><UL>
<LI>Ability to abstract, analyze, and make inferences
<LI>Superior problem-solving abilities
<LI>Well-developed short and long term memory
<LI>Enhanced right-hemisphere functioning in the brain
</UL>
</TD>
<TD ROWSPAN=2 VALIGN=top><UL>
<LI>Excellent problem solving abilities
<LI>Resistance to early closure of a problem
</UL></TD>
<TD ROWSPAN=2 VALIGN=top><UL>
<LI>Well-developed leadership skills
<LI>Detatched attitude in interpersonal relations
<LI>Rejection of conformity pressures in thinking (independent judgments)
<LI>Introverted
</UL></TD>
<TD ROWSPAN=2 VALIGN=top><UL>
<LI>Mature
<LI>Impulsive
<LI>Risk taker
<LI>Need for autonomy
<LI>Dominant
<LI>Aggressive
<LI>Self-assertive
<LI>Emotional sensitivity
<LI>Tendency toward depression
</UL></TD>
<TR><TD VALIGN=top><CENTER><B>Math</B></CENTER><BR>
<UL>
<LI>High reasoning
<LI>Spatial abilities
```

```

<LI>Faster
<LI>Better short term memory
<LI>Tend to be independent learners
</UL></TD>
<TD VALIGN=top><CENTER><B>Language/Verbal</B></CENTER><BR>
<UL>
<LI>High general verbal skills
<LI>Better long-term memory
</UL></TD>
</TR>
</TABLE>
    
```

This complex piece of code would generate the following table:

High School/College (14 – early 20s)

Intellectual		Creative	Social	Emotional
<ul style="list-style-type: none"> • Ability to abstract, analyze, and make inferences • Superior problem-solving abilities • Well-developed short and long term memory • Enhanced right-hemisphere functioning in the brain 		<ul style="list-style-type: none"> • Excellent problem solving abilities • Resistance to early closure of a problem 	<ul style="list-style-type: none"> • Well-developed leadership skills • Detached attitude in interpersonal relations • Rejection of conformity pressures in thinking (independent judgments) • Introverted 	<ul style="list-style-type: none"> • Mature • Impulsive • Risk taker • Need for autonomy • Dominant • Aggressive • Self-assertive • Emotional sensitivity • Tendency toward depression
<p>Math</p> <ul style="list-style-type: none"> • High reasoning • Spatial abilities • Faster • Better short term memory • Tend to be independent learners 	<p>Language/Verbal</p> <ul style="list-style-type: none"> • High general verbal skills • Better long-term memory 			

Chapter 9

Advanced Topics

These are topics that may be of interest to you as you begin to explore the World Wide Web, but they are too detailed to go into at this time. However, it may be valuable to know and understand some basic concepts regarding these topics.

A. Forms

Forms are becoming increasingly popular on the World Wide Web. A form is a piece of HTML that is capable of accepting input from someone who reads the page. Not all browsers are capable of using forms, but most are.

Forms are typically used to enter information such as names and addresses. This information can then be sent to another web page, stored in a database, mailed to a person, or used as input in a program that may be running on the Web server.

B. Active Elements

Active elements are any number of small, sub-programs that may be run as the result of reading a web page. There are several popular types of active elements. The most popular today are: Java, Javascript, and Active/X. These active elements are small, actual programs that are downloaded by your browser and run on your local machine. They can do neat things like allow you to play games or watch videos. Most active elements are very simple today but are becoming very complex. One important thing to remember about active elements is that they are not writing in HTML but in their own programming language. These languages are sometimes very complex, so not everyone can easily create active elements for their web pages.

Java is a programming language invented by Sun Microsystems. Unlike most other computer languages, Java may be run on almost any computer. This quality makes Java a very popular programming language for the World Wide Web, because you do not often know what type of computer will connect to your Web site. Some people say that Java will soon run in every computer, including those in your automobile, toaster oven, or even your wristwatch!

Javascript is a scripting language written by Netscape Communications. A scripting language is not as complex as a programming language and usually easier to use. The downside is that scripting programs aren't as powerful as standard programs and usually much slower. Javascript can be written inside of standard HTML code.

Active/X was developed by Microsoft Corporation and is kind of a cross between a scripting language and a programming language. Currently only Microsoft's Internet Explorer browser supports Active/X.

C. CGI

CGI stands for Common Gateway Interface. The Common Gateway Interface is simply a way in which information may be passed from a web page to another program. Usually this information is collected via a form and then passed onward for further processing.