The World Wide Web and HyperText Markup Language [www2]

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ABSTRACT

The World Wide Web and Internet browsers such as Mosaic and Netscape are making the Internet a much friendlier and easier environment to navigate. It is now possible to link documents together, to include sounds, and to access graphics and digital movies. This article provides an overview of the WWW and includes a basic introduction to the HyperText Markup Language (HTML).

INTERNET AND THE WORLD WIDE WEB

The Intemet is a wide area network of networks, sometimes called the "global web" of information sources. It has roots in the United States Department of Defense Advanced Research Projects Agency Network (ARPANET) that was started in 1969. In 1986, the National Science Foundation formed NSFNET and built the foundation of the Intemet with high-speed, long-distance data lines. During the early 1990's, many networks connected with NSFNET and the concept of a global network became a reality (Barron & Orwig, 1995).

In the past, most of the communications through the Intemet consisted of cryptic, command line instructions, such as *telnet spacelinkmsfc.nasa.gov.* The interface was a text-only, case-sensitive, and often frustrating way to access a wealth of information stored in a conglomeration of databases and directories. In 1989, researchers at CERN (the European Laboratory for Particle Physics conceived the idea for the World Wide Web an Intemet environment in which documents and the information in them can be linked. Mosaic is one of the browser programs that and combine Newsgroups, Gophers, and other make it possible to navigate through the applications.

For example, an information screen (Mosaic Home Page) about the colleges available at the University of South Florida is illustrated in Figure 1.

University of South Florida

Click here to read about the area and the campus.

Colleges:

- Arts and Sciences
- Business
- Education
- Engineering
- Fine Arts

Figure 1. Mosaic Home Page for the University of South Florida

The options that are underlined (and usually highlighted in color) are linked to other documents; by clicking on any one of them, the user is branched immediately to the corresponding page. Links can also exist to graphics, sounds, digital movies, and other sites throughout the world.

BROWSERS FOR THE WORLD WIDE WEB

Since the birth of the WWW, a number of browsers have been developed by different organizations. Some of the more popular browsers include Mosaic, NetScape, and Lynx.

Mosaic, which was developed at NCSA (National Center of Supercomputing Applications at the University of Illinois), is the most popular browser at the present time. It was developed under a grant from the National Science Foundation and is available free of charge for Macintosh, Microsoft Windows, and UNIX environments. NetScape is the commercial version of Mosaic developed by Mosaic Communications Corporation. The original beta versions were disseminated free, but it is expected to become fully commercial soon. Lynx is a text-only browser. It is designed for users who cannot access the multimedia aspects of the Internet (because of slow access time or dial-up accounts), but can access the text and hyperlinks.

CREATING DOCUMENTS IN HTML

Even though different browsers were developed to view the WWW, there is only one common language, HTML (HyperText Markup Language), that is used to create documents. HTML consists of ASCII text that includes embedded tags (sets of paired tags used at the beginning and

end of texts) to instruct Mosaic and other browsers how to format the text, link to other sources, and display multimedia. HTML tags consist of less-than (<) and greater-than (>) signs. For example, < *TITLE> text </TITLE>* will make the text appear as a title in a document.

HTML documents can be created with a standard word processor, or they can be created with HTML editors (available as freeware or shareware on the Intemet). For example, the document in Figure I was created by adding HTML tags as illustrated in Figure 2.

```
<TITLE>University of South Florida</TITLE>
<HR>
Click <A HREF=campus.html>here</A> to read about the campus.
<P>
<HR>
<HEAD3>Colleges:<HEAD3>
<P>
<UL>
<Ll><A HREF=http://www.cas.usf.edu/>Arts and Sciences</A>
<Ll><A HREF=http://www.bsn.usf.edu/>Business</A>
<Ll><A HREF=http://www.coedu.usf.edu/>Education</A>
<Ll><A HREF=http://www.eng.usf.edu/>Engineering</A>
<Ll><A HREF=http://www.arts.usf.edu/>Fine Arts</A>
<Ll><A HREF=http://www.med.usf.edu/>Medicine</A>
</UL>
```

Figure 2. HTML Tags for USF Home Page

HTML is not case sensitive; the tag names do not have to be in uppercase. The "http" stands for HyperText Transfer Protocol, which defines a link (or anchor) to anywhere on the World Wide Web. For example, <A *HREF=http:llwww.cas.usfedul>Arts and Sciences<IA>* will link to the default document at the *www.cas.usfedu* site. See Figure 3 for basic HTML tags.

<P>: Paragraph. It equates to a carriage return.
<HR>: Hard Return.
<HEADn>..</HEADn>: It sets the level of the header (n= 1-6).
<UL>: Starts an unordered list (with bullets).
<Ll>: First item in the list.
<Ll>: Second item in the list.
</UL>: Ends a list.
<A HREF="resource address">text</A>: A hypertext reference.

Figure 3. Basic HTML Tags.

INSTRUCTIONAL APPLICATIONS

In the academic environment, universities are posting home pages with links to information about the school (location, faculty, etc.), online course outlines, and registration procedures. It is also possible to deliver course content through the WWW, providing information, interactivity, and multimedia components to teach basic concepts and skills. For example, the following sites are available:

Serbian Language Lab (http://www.umiacs.umd.edu/research/lpv/YU/HTML/jezik.html)

This site provides interactive instruction on the two styles of the Serbian language. Through audio and graphics, users are introduced to the Serbian alphabet; simple expressions; and the accent. A reading drill is also included that provides oral pronunciations of phrases for the learner to try.

Interactive Frog (http://curry.edschool. Virginia.EDU:80/~insttech/frog/)

Interactive Frog was created by the University of Virginia. Originally an interactive videodisc lesson, Interactive Frog provides instructions on frog dissections through text, graphics, and QuickTime movies. Over 40,000 people have accessed this program in the first six months of its Intemet delivery.

NetBioChem (http://ubu.hahnemann.edu/Heme-Iron/NetWelcome.html)

NetBiochem is available online through the Hahnemann University School of Medicine and the University of Utah School of Medicine. It contains learning materials for medical biochemistry. The current topics include Heme and Iron Metabolism, Macromolecules, and Nucleic Acids.

World-Wide-Web/Mosaic Training (http:llinfo.er.usgs.gov:4444/train/

The United States Geological Survey provides excellent tutorials about the World Wide Web, Mosaic, and hypermedia. The Mosaic tutorial was developed by the National Center for Supercomputing Applications and is available for both Macintosh and MS Windows environments.

Excellent graphics and text illustrate the use of Mosaic as an instructional tool.

Tutorial Gateway (http://www.civeng.carleton.ca~nholtz/tut/doc/doc.httml)

The Tutorial Gateway is designed by the Carleton University Department of Civil and Environmental Engineering to provide information on producing online tutorials using the language of the World Wide Web -- the Hypertext Markup Language (HTML). Interactive demonstrations are provided, along with the HTML commands that create multiple choice, true/false, single numeric, or algebraic expression interactions.

CONCLUSION

Comparing the text-only interface of the Intemet to the graphical interfaces of the World Wide Web is similar to comparing a DOS environment to Microsoft Windows or Macintosh. The and the associated browsers, such as Mosaic and Netscape, offer global multimedia resources at the click of a button. The potential for instructional applications is limited only by our imaginations (and transmission rates)!

HTML2.0 QUICK REFERENCE

1. WWW Document Header:

<html><head><title> ... </title></head></html> <body>...</body>

2. How to Format Text:

- Headings:

<hl>..... </h I > Most prominent heading
<h2>..... </h2>
<h3>..... </h3>
<h4>..... </h4>
<h5>..... </h5>
<h6>..... </h6> Least prominent heading

- Physical Styles:

Boldface: ...
Italics: ...
Underline: <u> ... </u>
Typewriter font: <tt>... </tt>

- Logical Styles:

Emphasis: ...
Stronger Emphasis: ...
Blink Text: <blink> ... </blink>

- Format a Paragraph:

Display Preformated Text: <pre>... </pre>
Block Quoted Text: <blockquote>... </blockquote>
To separate paragraphs (Same as a carriage return): <p>
Horizontal ruler: <hr>

3. How to Make a List:

- Unordered List:

List #1
List #2

- Ordered List:

List #1
List #2

- Definition List/Glossary:

<dl>
<dt>First term to be defined
<dd>Definition of first term
<dt>Next term to be defined
<dd>Next definition </di>

4. Hypertext Links and Anchors:

- To make an anchor: ...
- To link to an anchor: ...
- To make a hyper link on the web: ...
- To make a hyper link to an anchor: ...

5. Display an image/movie/sound:

- Display a picture: <img src="URL" alt="Alternate Text">
- Show a movie: <a href="file-name">
- Show an active map: <a href="URL> <img src="URL" ismap>
- Display sound: <a href="file-name">

6. How to make a form:

<fonn method="post" action="URL">... </form> <inputtype= name= value=.....
size=> <select>... </select>
<option>...
<textarea name= rows=..... cols= > ... </textarea>
Type: "text", "password", "checkbox", "radio", "submit", and "reset"

7. How to make a table:

<table border>
<caption>Table Name</caption>
<th>Content<th>Content<th>Content<tr>
<td>Content<td>Content<td>Content<tr>
<td>Content<td>Content<td>Content<tr>
</table>

RESOURCES

• A Beginner's Guide to HTML
URL: http://www.ncsa.uiuc.edu/General/Intenet/WWW/14TMLPrimer.html

• Running A WWW Service
URL: http:Hwww.hcc.hawaii.edu/handbook/handbook.html

•HTML Editors
URL: http://sol.cms.uncwil.edu/mosaicpaper/mpaper/node5.html

*HTML DTD Reference
URL: http://www.hal.com:80/users/connolly/html-specIL2Pindex.htm]

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