WEB PAGE DESIGNING : AN INTRODUCTION

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Geologists and natural biologists have proved that world has been shrinking over the past millions of years. But technologists have proved that it does not take even half a century to shrink so much (though not geographically), thanks to the advent of Internet and advances in telecommunication. Today, we can learn about any corner of the world with a mere click of the mouse. Internet has become the world’s window to information and Web pages serve as the information-carrying documents. This paper gives an introduction to Web-related concepts, Web page designing using HTML codes and MS FrontPage.

1. INTRODUCTION

As a natural phenomenon, the world has been shrinking to a great extent over the past millions of years. But in a sense, the man-made technologies have overtaken Nature and in just a few decades’ time, it has been made possible for people all over the world to come closer and today the place we live in is called as a “global village” to point out the very less time and effort required to commute to and communicate with any part of the world. The computer and telecommunication technologies have contributed to a great extent in this direction. In particular, the recent trends in Internet arena like the Web and E-mail services have taken us a long way through the glorious path of communication between people in any part of the world.

It is easy for a spider to build its complicated yet fine web. But is it all that easy for us to build a more complicated, organised and presentable Web page? The answer is a big YES, provided we have an understanding of the concept of Web designing and related ones like Internet, Markup languages, Browsers, WWW, file formats, etc. This paper aims at giving an introduction of Web designing and a brief note on related topics. It also discusses about how to design a simple Web page using HTML tags on text editors like Notepad and using a Web designing software from the Microsoft Office, the MS FrontPage 98.
2. NOTES ON FEW WEB-RELATED TERMS

2.1 Internet

Internet is a family with various members namely, the WWW, E-mail, FTP, etc. by which information can be transferred. Technically, Internet is a worldwide system of computer network – a network of networks in which users at any one computer can get information from any other computer. (1) WWW cannot exist without Internet connectivity unlike the e-mail which needs only a modem connected at sender and receiver’s ends.

2.2 HyperText Transfer Protocol

Popularly known by the acronym, HTTP is a standard for exchanging information between HTTP servers and clients on the Web. (6) It gives the rules/specification for the working of Web servers and the browsers.

2.3 Hypertext

Hypertext means non-sequential writing – text that branches and allows choice to the reader, best read at an interactive screen. (2) The term was coined by Ted Nelson to mean an organisation of information units into connected association that a user can choose to make. An instance of such an association is called a Link. Hypermedia includes links among any set of multimedia objects including sound, motion, video, etc. Many of today’s Web page have a mix of text, graphics and multimedia.

2.4 File formats

There are several file formats which can be handled by various operating systems. The file extensions help the OS to understand the type of the files. Sound (.wav, .aiff), image (.jpeg, .gif), audio-video (.avi), movie (.mpeg), etc. are few types with their respective extensions to quote. An exhaustive list can be seen on the Web site www.wotsit.org. Also, from the Web side, without these file extensions, the browser would not identify the files to be displayed.

2.5 Browser

A browser is basically a client program that uses HTTP and is used to view Web pages on the World Wide Web. Its function is to retrieve documents from the Web and format them in such a way that they can be viewed in our systems. Netscape Navigator and Internet Explorer are two popular browsers for Windows and Macintosh platforms while Lynx which can handle only text is designed for UNIX shell users. The browser actually acts as an intermediary between our system and any other system on the Web.
2.6 Markup languages

Markup languages are standards/codes which are to be followed while designing a Web page. With Internet growing so enormously, the markup languages have also had their share of expansion and presently, we have at least three namely, SGML, HTML and XML though the latter two are based on SGML.

SGML stands for Standard Generalised Markup Language. It is a standard defined by the ISO for describing the structure and content of a document in order to facilitate hypertext capabilities and portability across operating systems and hardware. (3) It is a way of expressing data in text-processing applications. It has been around for more than a decade; both XML and HTML are document formats derived from SGML. Thus they all share certain characteristics, such as a similar syntax and the use of bracketed tags. But HTML is an application of SGML, whereas XML is a subset of SGML.(7)

HTML, an acronym for HyperText Markup Language is a format that tells a computer as to how to display a Web page. The documents themselves are text files with special tags or codes (written within angular brackets) that a Web browser knows to interpret and display on a computer screen. HTML as already noted, is based on the SGML and is recommended by the World Wide Web Consortium. The recent version is HTML 4.01

XML is a new technology/standard based on SGML that allows us to create our own tags. The XML tags give meaning of the tags which are particularly understood by the systems unlike HTML thus enabling quick interchange and searching of data. A more detailed account on XML is given later in this paper.

2.7 WWW in a capsule

The World Wide Web or WWW as it is popularly known is a collection of several million Web sites which are in turn a collection of files that are accessible by browsers. The mastermind behind the WWW, Tim Berners-Lee says in his book “Weaving of the Web”, that the idea of a web structure was in his minds since his school days. His vision was to design computer systems which would have the capacity of “random association” - a special ability of human brain along with the capability to logically organise and process data. Tim’s dream for such an invention came true during his association with CERN project in Geneva in 1980s while he wrote a program named “ENQUIRE” to help him remember connections among various people, computers and projects at the lab. (8,9) The success in this small scale was a milestone for the invention of today’s Web. The first WWW server was developed on NeXTSTEP operating system and the software was ported to other platforms in 1991 thus marking the beginning of today’s complicated and most popular member among the Internet family. Before the Web, using Internet involved simple text-only connection. Today’s Web has the capacity to display both text and graphics in full colours on the same page.

The WWW as we know is an assemblage of millions of Web sites. Each Web site is identified by Uniform Resource Locator (URL) which has the server protocol (http), site type (ftp, www, etc.) site name (yahoo, isibang, etc.) and domain name (.com,.org, etc.) as its
3. WEB DESIGNING

In the light of the above concepts, we shall now proceed to some of the aspects of Web designing as such using HTML tags and MS Front Page 98.

Before the Web designing software packages like the FrontPage and Netscape Composer were designed, Web designing was a laborious process which consisted of using the tags explicitly on a text document like Notepad and view the document using a browser. HTML tags are used till date for rendering data/information. The software packages have however facilitated users in designing Web pages to a large extent as they are icon-based. The software packages are developed in such a way that they understand the tags to be used while we click a particular icon. Hence all Web pages are basically based on HTML.

One can do wonders using HTML tags in Web designing. In this paper, we illustrate with an example, (figure 1 and 2, Appendix) the design and way of using tags for a simple Web page which has links to multimedia files, image files, links to other Web sites and within the Page, etc.

3.1 Points to remember while using html tags:

✧ In general, all html documents must have opening and closing tags. For eg., a document starting with <html> need to be closed at the end of the document as </html>. Few exceptions include <a>, <p> and <br>

✧ The latest tags must be closed first ie. For eg., if a document contains tags in the order <html><body><p><em>…..then, the order of closing must be </em></p></body></html>. This concept is similar to the concept of Loops in programming language ie. A loop can have any number of loops within itself but must not close after the parent loop.

✧ Any small error like missing quotes (opening or closing) in the attributes of link tag <A> would result in non-retrieval of the linked file/URL. For eg., <a href="self.htm"><img src="Photos\Charm.jpg">

✧ Linking of PowerPoint files using HTML tags is not possible. Instead, Java scripts or VB scripts need to be used.

For the moment, we shall forget the above points as we would move on Microsoft FrontPage 98 (henceforth known as FP). FP is of version 3.0.2.926 and is a member of Micorosoft family. For those who are familiar with any of the MS Office member, particularly Word, using FP would not be difficult as many of those features are incorporated in FP for the sake of ease and uniformity. Also, the options are too many and icon-based and hence anybody with even average creativity can manage to build a Page. For the sake of example, a simple Page has been
created using a few options like ‘frames’, ‘marquee’, etc. which are relatively laborious to write using HTML tags (figure 3, Appendix).

3.2 Some advanced mechanisms

With the proliferation of Web pages and their potential to enhance/speedup communication, the plain HTML was found to be insufficient. Hence, Web designers pondered if there can be “interactivity” that can be included in the Web pages and hence came the concepts like Applets, JavaScripts, DHTML, etc. All these Scripts/programs are used to make Web pages interactive. For eg. if Pages need to have submission forms, BBS, etc. then JavaScripts would be of help. A brief note about Applets, JavaScripts, and DHTML is given below:

3.2.1 Applets

Java applet is a Java program that can be included inside an HTML page. To run Java applets, a browser that supports Java is needed. Animation can be included in Web pages using applets. Java applet tags are used to indicate to the browsers that the information about the animation files are embedded with tags. The syntax for using applets for images is:

\[
\text{<applet code = "filename.class width=" widthheight=" height">}
\text{<param name=“startimage” value = “1”>}
\text{<param name="endimage" value = “x”>}
\text{</applet>}
\]

[Note: width and height are the dimensions of the images to be included; x is the numerical value of the last animation.] An example is given in figure 1. There are lot of Web sites which offer free downloadable applets which can be copied on to our system and used in our Pages. Eg. http://www.net800.co.uk/netstart/sirius.

3.2.2 JavaScript

JavaScript is an easy-to-use object scripting language designed for creating live online applications that link together objects and resources on both clients and servers. JavaScript is used to add functionality to Web pages. In the past, CGI scripts were used on a Web server to enable interactivity. JavaScript is run by the Web browser itself thus enabling it a cross-platform program and saving time and space. The syntax for JavaScript is:

\[
\text{<head>}
\text{<script language = “JavaScript”>}
\text{<!…Comment tag}
\text{<!…Begin}
\text{Actual script………}
\text{..................}
\text{//End of script..>}
\text{</script>}
\text{</head>
3.2.3 DHTML

It stands for Dynamic HTML. It is the integration of scripting, style sheets and HTML tags to create animated and interactive Web pages. It requires certain programming skills and an understanding of dividing the Web page into layers, using style sheets, etc. Layers are basic building blocks that allow to overlap and position text and graphics anywhere we want. Style sheets or Cascading Style Sheets (CSS) can precisely control font type, size, style, colour, etc. The benefits of using CSS include their ability to make a single change to font attribute which will be reflected in all pages of the Web site. For eg., A style sheet font definition looks like this:

```css
BODY {
    background-attachment: fixed;
}
.title {
    font-size: 34px;
    font-weight: 100;
    font-style: italic;
    font-family: "Times New Roman", "Times", serif;
    margin: 5px 0px 0px 0px;
    color: #94ACB6;
}
```

DHTML offers increased freedom in crafting an interactive environment that can include page scrolling, page selection and other navigational methods. Eg. of a DHTML-tagged site is the www.htmlguru.com.

3.2.3.1 Limitations of DHTML

Though DHTML has provided a rosy picture of the future of interactive Web pages, the success or extensive usage of DHTML is largely dependent on the browsers’ capacity to handle the DHTML tags. Hence there are certain limitations of DHTML like:

1. Browser compatibility: DHTML is not downward-compatible. Web developers need to write different versions for different browsers. For eg. in Netscape, the switch “doc” refers to “document” statement while IE must understand it as “document.all.object”. However, a Document Object Model which is a script to make DHTML codes compatible by both NS and IE can be used as follows:

```javascript
if (is.ns4) {
    doc = "document";
    sty = "";
}```
ii. Standards: W3C standards are not easily adopted by Netscape while IE which is more flexible is trying to adhere to the standards for handling DHTML tags. Until implementation across browsers becomes stable, it is felt that DHTML would not gain much grounds to stay in the Web world.

3.2.4 XML

Though growth of Web was envisioned to acquire popularity among users, it was not felt that it would result in the present chaotic state of the Internet. However, it is felt that a markup language like the XML or eXtensible Markup Language would come to the rescue. XML is a meta-markup language, a set of rules for creating semantic tags used to describe data.(3) An XML element is made up of a start tag, an end tag and data in between. The start and end tags describe the data within the tags, which is considered to be the value of the element.

Eg: <books>
        <book isbn="81-7635-206-3">
          <title>Teach Yourself HTML 4</title>
          <author>Dick Oliver</author>
        </book>
    </books>

Why xml must be used?

HTML is still more than adequate for marking up information if the ultimate goal is simply for it to be read by a human beings. But if we want to prepare for automatic processing of data, XML need to be incorporated into our Pages.(7)

Points to remember: There are certain points to remember while using XML tags as they are for HTML tags. They are:

 All elements must have an end tag.
 All elements must be cleanly nested (overlapping elements are not allowed).
 All attribute values must be enclosed in quotation marks. (in the above example, value is 81-7635-206-3 and it has to be given within quotes)
 Each document must have a unique first element, the root node. (In the above example, ISBN which is unique, is the root node.)

Having understood the basics of HTML tags and some of the advances in Web designing as a whole, we can finally have an overview of Web designing.
4. OVERVIEW OF WEB DESIGNING

4.1 Need for a Page

Irrespective of the style or software used, firstly, one must be convinced about the need for a Web page. For organisations and commercial centres, Web is a kind of advertisement medium for their products/services/activities, etc. For them, Internet is a channel for business and promotional activities. But for individuals, the motive may be different. Individuals create Pages just to put across to the world about themselves. It may have business motives or may be just plain fashion. Therefore, the design of the Web page largely rests on the established need for one.

4.2 Content

The anonymous maxim “Charm strikes the sight; merit wins the soul” would well suit our topic. Considering the latter part of the maxim, when the purpose of a Page is understood thoroughly, half of the content creation work may be said to be complete. As said earlier, a casual Page may contain links for personal photo album, favourite sites, bio-data, etc. while an institution or individual with commercial interest would need to have links for organisational objectives, products/services offered, space for advertisements, etc. Therefore, what goes into a Page has to be decided well before actual designing starts.

4.3 Appearance

One of the very important contributing factors for the popularity of today’s WWW is the fantastic capability of the Web to handle any sort of files – starting from plain text through images to graphics. Considering the former part of the above maxim, a Page must be designed in such a way that the surfer finds it pleasant to browse it and repeat his visit. Web designing is more an art and aesthetic sense is important.

4.4 A few general tips

♦ The colours used for background and text must have a good contrast and must not irritate the surfer. Consistency must be maintained while opting for colours.
♦ Font size must be normal and readable. Paragraph breaks must be given as and when required and lengthy paragraphs could be avoided.
♦ Putting in lot of images can be restricted as images take lot more time that the text to load.
♦ Frequent updating of WebPages is a must. Currency of information is one of the facilities which Internet offers and if the Pages are not updated regularly, the user would doubt the validity of the information provided.
♦ In case of lengthy Pages, linking of subtitles to information on different files may be avoided. Instead, information could be given on the same page thus reducing the time to open up a new file by the browser.
♦ As far as possible, browser-specific designing must be avoided. For eg., Netscape does not handle Marquee and Parameter attributes while IE handles them. Few attributes of Applets namely alt, name and align are not handled by IE but only by Netscape. (4) We must
remember that there are lot many browsers available for different platforms and users are all over the world.

5. CONCLUSION

This paper aimed at giving an introduction to the concept of Web designing and related terms and also to design Web pages using HTML and FrontPage 98. The future of Web designing is believed to be bright and more and more concepts are going to emerge and newer techniques will invade the Web domain. One can keep pace with the developments if we understand that Web designing is a simple mixture of technical skills and aesthetic sense.

6. REFERENCE

3. http://builder.cnet.com/Authoring/Xml20/ss03.html
4. Lemay,Laura. Teach yourself web publishing with HTML 3.2 in 14 days. ND:Techmedia, 1998.
8. www.w3org/people/Berners-Lee/Weaving/Overview.html
Appendix
Figure 1. HTML Tags -- Input

<html>
<title>Sweet home</title>
<head>
<script language="JavaScript">
<!-- Begin
function a_plus_b(form) {
    a=eval(form.a.value)
    b=eval(form.b.value)
    c=a+b
    form.ans.value = c
}
function a_minus_b(form) {
    a=eval(form.a.value)
    b=eval(form.b.value)
    c=a-b
    form.ans.value = c
}
function a_times_b(form) {
    a=eval(form.a.value)
    b=eval(form.b.value)
    c=a*b
    form.ans.value = c
}
function a_div_b(form) {
    a=eval(form.a.value)
    b=eval(form.b.value)
    c=a/b
    form.ans.value = c
}
function a_pow_b(form) {
    a=eval(form.a.value)
    b=eval(form.b.value)
    c=Math.pow(a, b)
    form.ans.value = c
}
// End -->
</script>
</head>
<body>
<center>
<FORM name="formx"><input type=text size=4 value=12 name="a">
<input type="button" value="+" onClick="a_plus_b(this.form)">
<input type="button" value="-" onClick="a_minus_b(this.form)">
<input type="button" value="x" onClick="a_times_b(this.form)">
<input type="button" value="/" onClick="a_div_b(this.form)">
<input type="button" value="^" onClick="a_pow_b(this.form)">
<input type="number" size=4 value=3 name="b"> = <input type="number" value=0 name="ans" size=9>
</FORM>
</CENTER>

<p><applet width="249" height="50" code="SIRtypeFree.class">
<param name="Text" value="Welcome">
</applet></p>

<p><applet width="249" height="50" code="SIRtypeFree.class">
<param name="Text" value="Welcome to our web site|Click here to find out more information|Find out how to improve your web site">
<param name="Link" value="http://www.net800.co.uk/netstart/sirius">
<param name="Sound" value="type.au">
</applet></p>

<body bgcolor="white">

<h1 align="center">MY HOME</h1>

<h1 align="center"><font color="#EE82EE">MY HOME<img src="rooftop1.jpg" width="91" height="61"></font></h1>

<h1 align="center"><em><font color="red">Welcome to my home</font></em></h1>

<h2>I am Tony, the pussy cat. This is my cyber home and you are free to go into any part of the house!! I am living with my friend Jonny, the white cat. We stay in perfect harmony and stand for the popular slogan <nb&sp>UNITY IN DI</font><font color="red">VE</font><font color="green">RS</font> &quot;UNITY IN DIVERSITY"</h2>

<p><img src="dive.jpg" align="left" width="505" height="251"> <font size="5"><a href="more.htm">More about me</a></font></p>
<p><font size="5"><a href="hands.avi"/></a></font></p>
<table border="1">
<caption><font size="5" color="Red">Friends</font></caption>
<tr align="center">
<th>Sl.no.</th>
<th>Name</th>
</tr>
<tr align="center">
<td>1</td>
<td><a href="dogs.jpg">Ritu</a></td>
</tr>
<tr align="center">
<td>2</td>
<td><a href="dogs.jpg">Jilu</a></td>
</tr>
</table>

Brief explanation of some of the tags used:

<html> Beginning of a html document.
<applet> Beginning of the applet program (here, moving phrase with “typewriter” background sound effect.
<script> Beginning of JavaScript (here, the simple calculator)
<body> Beginning of the body of the document
<title> Title of the page to appear on the title bar
<h1>…<h6> Heading size
<em> Emphasise (italics)
<p> Beginning of paragraph
<img src> To call the image file to be used
<a href> To create an anchor
<caption> Title of the table
<tr> Table row
<td> Table data or value
<body background> Background colour of Page
</body> End of body of the document
</html> End of html document
Figure 3 Page source (Frames and Marquee)

<html>
<head>
<title>New Page 2</title>
<meta name="GENERATOR" content="Microsoft FrontPage 3.0">
</head>

<marquee scrollamount="4" border="2" scrolldelay="10">My Friends</marquee>

<frameset cols="174,*">
  <frame name="contents" target="main" src="marq.htm">
  <frame name="main" src="sn.htm" target="main">
</frameset>

<noframes>
<body>
<p>This page uses frames, but your browser doesn't support them.</p>
</body>
</noframes>
</html>