

Languages in WEB



E-Business Technologies

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Submitted to

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Declaration

I, hereby declare that all the work for this document is solely done by me. The examples used in the document to explain HTML and JavaScript are practiced by me. All the sources are cited in the footer of the page as well as at end of the document in alphabetical order.

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Introduction¹

The internet is a network of computers all over the globe. These computers are interconnected to each other and can send and receive data. Internet has become a part of our modern daily life. The World Wide Web is a facet of the internet. The World Wide Web is made up of millions of files and documents which consists of images, audio, video etc. These files and documents are host on different computers over internet. The base for all these web documents is HTML and other web languages. You can access internet over many different devices like Personal Computer, Laptop, mobile phones, game consoles, personal digital assistants (PDA) and so on. All these devices are programmed in such a way that they can interpret HTML code. This software is called a **Web Browser**.

A **web browser** is a program intended to render HTML documents. It is also called **user-agent** or **Client**. A computer that serves data to the client is called a **Server**. The client and server are connected to each other through internet. Now-a-days, internet world is not just limited to HTML. It also uses other technologies like Flash, Shockwave, JavaScript, ASP, PHP, XML, AJAX etc.

Web designing is a skill how you design the content of your web page. Some of the technologies used for web designing are:

- Markup languages like HTML and XML
- Style sheet languages like CSS (Cascading Style Sheet) and XSL
- Client-side scripting like JavaScript and VBScript
- Server side scripting like PHP and ASP (Active Server Pages)
- Multimedia technologies like Flash and Sliverlight

Some of the technologies which we are going to discuss are HTML, JavaScript, PHP, XML and AJAX.

1. HTML

HTML stands for **Hyper Text Markup Language**. It is not a programming language. It is used to convert ordinary text to active text for display purpose and to use it over the web. It allows you to format the content of a webpage using a set of markup tags. These tags are predefined. The rules of HTML are predefined or maintained by World Wide Web Consortium (W3C) which is a non-profit organization that defined many of the open technical standards.

HTML is simple to use and flexible language. It is free and not owned by any company. There is no license required to purchase HTML.

¹ Beginning HTML with CSS and XHTML: Modern Guide and Reference published by Apress written by David Schultz and Craig Cook.

HTML gives you same look of the web page in any of the web browsers below:

- Microsoft Internet Explorer default for Windows OS.
- Apple Safari default for Mac OS.
- Mozilla Firefox for Windows, Linux and Mac OS.
<http://www.mozilla.com/firefox/>
- Netscape Navigator for Windows, Linux and Mac OS.
<http://browser.netscape.com>
- Opera
<http://www.opera.com>
- Konqueror is a free browser and file manager for Linux.
<http://www.konqueror.org>
- OmniWeb is a browser for Mac OS.
<http://www.omnigroup.com/applications/omniweb/>

1.1 How HTML works?²

HTML files are host on the Web server. When someone request for a HTML page it is called HTTP request. The Web server responds to request from a Web client (browser). This is called HTTP response. The Web server sends an unbroken string of ASCII text as response to the user over the internet. This ASCII text is converted by user's browser into a readable text.

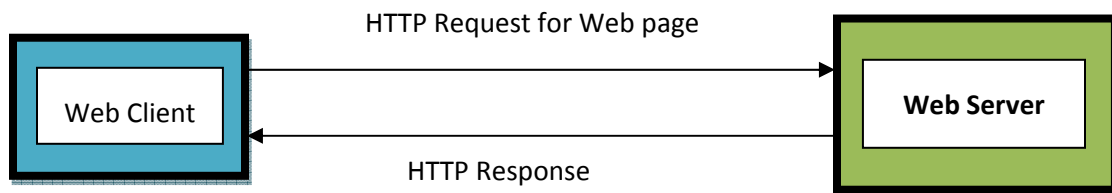


Figure 1- Working of HTML

1.2 HTML Tags

- HTML markup tags are written with in **angular brackets** e.g. <HTML>, <BODY>, <HEAD>
- HTML tags are nested and they have beginning and ending tag e.g. <HTML>... </HTML>
- HTML tags are not case-sensitive.
- HTML document begins with <HTML> tag and end with </HTML> tag.
- The text between <HTML> and </HTML> tells about the web page.

² <http://www.howstuffworks.com/web-page.htm>

- The text written in <BODY> and </BODY> tags represents content of the web page.
- The text written in between <H1>...<H6> and </H1>...</H6> tags displays heading of the web page.
- The text in between <P> and </P> tags displays paragraph.

1.3 How to prepare HTML document?

Anyone can use HTML tags to create and publish their web pages just using simple editor like NOTEPAD. This NOTEPAD file has to be saved with **‘.html’** or **‘.htm’** extension. One can also use HTML editors like MS FrontPage or Dreamweaver to create HTML pages.

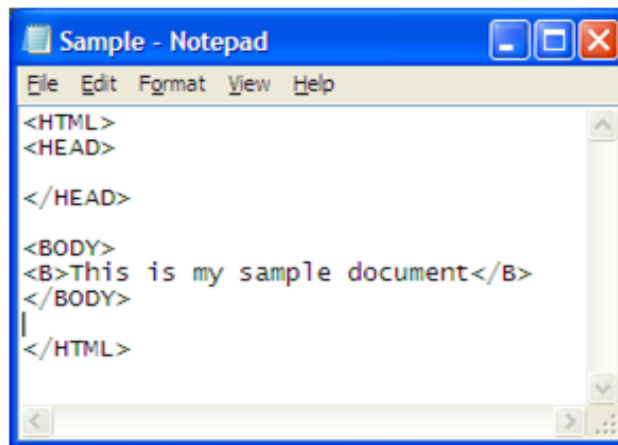


Figure 2- HTML code in Notepad

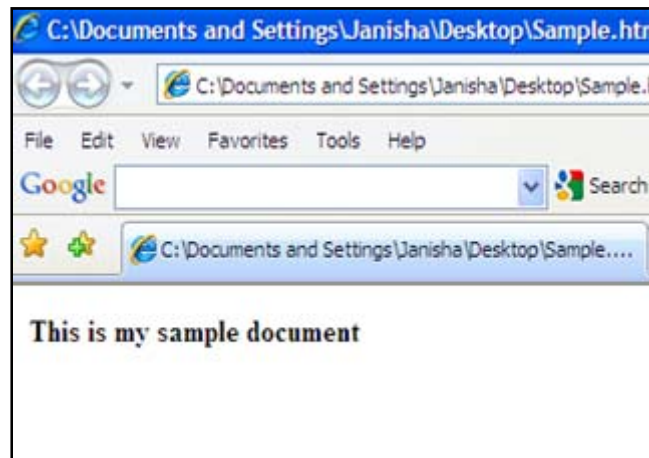


Figure 3- HTML document display in browser

To publish the HTML document, one needs Internet Information Server (IIS) or Personal Web Server (PWS). IIS comes along with Windows XP, 2000, NT and Vista. PWS is outdated for professional use.

1.4 Limitations of HTML

- HTML does not recognize spaces, tabs or margins.
- It does not recognize paragraph breaks or line breaks.
- It does not support all the font styles.

2. JavaScript³

JavaScript is also known as **ECMA Script**. It is maintained by ECMA organization. JavaScript is mainly used to make HTML pages more interactive. Just like HTML JavaScript is also available free without license. It is an interpreted language which means that scripts are executed without prior compilation. It is a case sensitive language. It is a light programming language.

JavaScript code is embedded within HTML document. It is executed by the web browser. Script written in body part of a HTML document is executed when the HTML page loads where as script written in the header part is executed when some event is triggered or when called. It is written between `<SCRIPT LANGUAGE="JavaScript">` and `</SCRIPT>` tags.

2.1 How JavaScript works?

JavaScript is also called Client-side scripting language. It means that it runs inside a browser. Browser has a built-in interpreter, which reads JavaScript code in a web page and execute it when the page loads in the browser. JavaScript is mainly used for validation purpose.

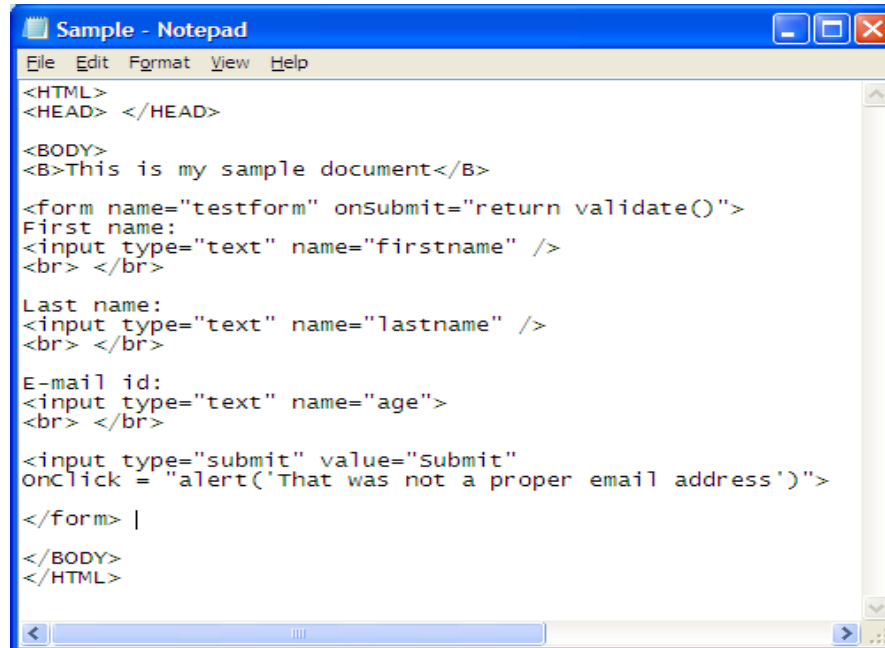
2.2 Uses of JavaScript

- JavaScript can be used to dynamically format text in the HTML pages.
- It reacts to events like after page has loaded or when user clicks some events.
- It can be used to detect what browser a user is using.
- It can be used to create cookies which stores and retrieve information on a user's computer.

³ <http://www.w3schools.com/JS/default.asp>

2.3 How to use JavaScript in HTML document?

JavaScript can be put in body part as well as in the head part of HTML document. Following is a sample code using JavaScript which is executed when Submit button is clicked.



```
Sample - Notepad
File Edit Format View Help
<HTML>
<HEAD> </HEAD>
<BODY>
<B>This is my sample document</B>
<form name="testform" onSubmit="return validate()">
First name:
<input type="text" name="firstname" />
<br> </br>
Last name:
<input type="text" name="lastname" />
<br> </br>
E-mail id:
<input type="text" name="age">
<br> </br>
<input type="submit" value="submit"
onClick = "alert('That was not a proper email address')">
</form> |
</BODY>
</HTML>
```

Figure 4- JavaScript code

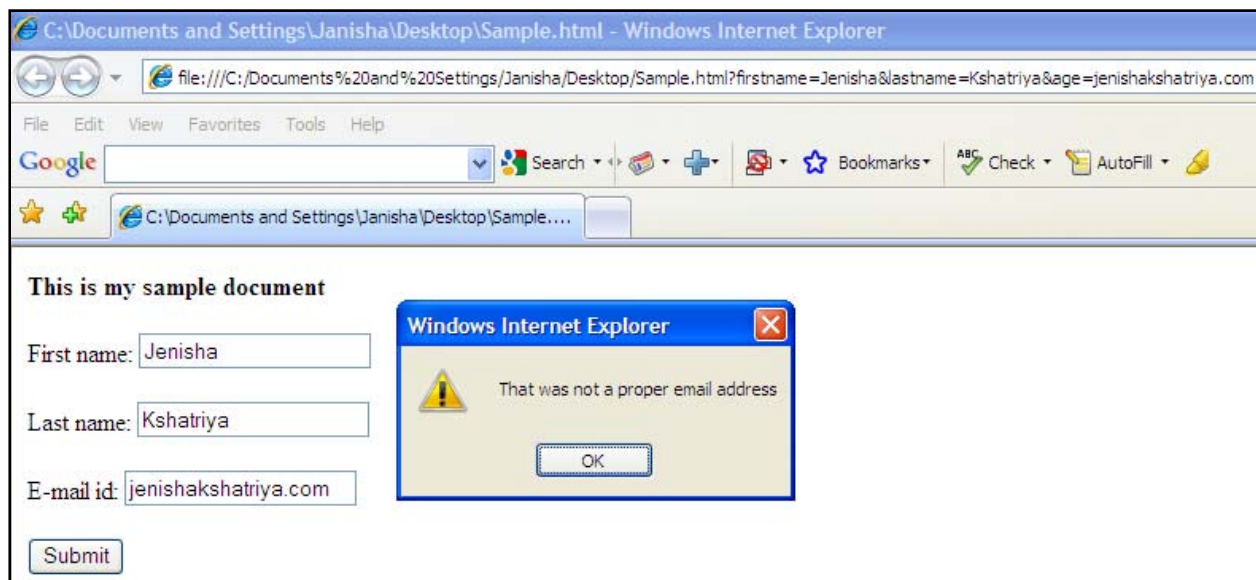


Figure 5- JavaScript validation in browser

2.4 Limitation of JavaScript

- JavaScript cannot use printer or any other device on user's PC or in a LAN.
- It cannot directly access files on user's PC or in a LAN.
- It cannot do multiprocessing or multithreading.

3. PHP

PHP stands for **PHP: Hypertext Preprocessor**. It helps in creating interactive HTML pages. It is free and widely used. An alternative to PHP is Microsoft' ASP. PHP and ASP are server-side scripting languages because their code is executed on the Web Server. PHP scripts are executed on the server and it supports many databases like Oracle, MS SQL, Sybase, Informix, Generic ODBC, etc. It is open source software and can be downloaded from www.php.net.

PHP files have **'.php'**, **'.php3'** or **'.phtml'** extensions. PHP files can contain HTML tags and JavaScript. PHP runs on different platforms like Windows, Mac OS, Linux, etc. PHP has capability to access data and software on the server.

PHP code always begins with **<?php & ends with ? >**.

3.1 How PHP works?

Web pages for some websites are customized. PHP code in the web page will determine the customization. When a user sends any request to the web server for accessing dynamic information, PHP code will react to user's request. Browser helps in providing information to the web server with the help of cookies or by other means. The server responds to each customized request by sending required information to user's browser.

3.2 Limitations of PHP

- PHP is not pure Object Oriented scripting language.
- Performance of PHP is lower than C or C++ language.

4. XML⁴

XML stands for **Extensible Markup language**. It is just like HTML but it can have user-defined tags and they are self-descriptive. XML tags are not predefined. Like HTML, XML is not used for designing web pages. It is mainly used for data transfer and store data. XML is a way to encode

⁴ <http://www.softwareag.com/xml/about/starters.htm>

text as well as data to process the content without much of human intervention. It can be used to exchange information across different hardware, operating systems and applications.

XML supports Unicode and multilingual documents. XML is widely accepted by big companies like Sun Microsystems, SAP, Microsoft, etc as data transfer medium. XML is used to create new languages like XHTML for designing web pages, WSDL (Web Service Definition Language) for describing web services, WAP (Wireless Application Protocol) & WML (Wireless Markup Language) as markup languages for handy devices, SMIL (Synchronous Multimedia Integration Language) for describing multimedia for web, RDF (Resource Description Framework) to describe resources, etc. XML is compatible with almost all the web browsers.

4.1 How XML works?⁵

For XML, following files are required:

1. DTD (Document Type Definition) file which defines the functioning of tags.
2. XSL (Extended Stylesheet Language) file defines how the tags should be displayed in the browser.
3. XML file in which actual data and text are stored. It consists of sequence of elements and tags.

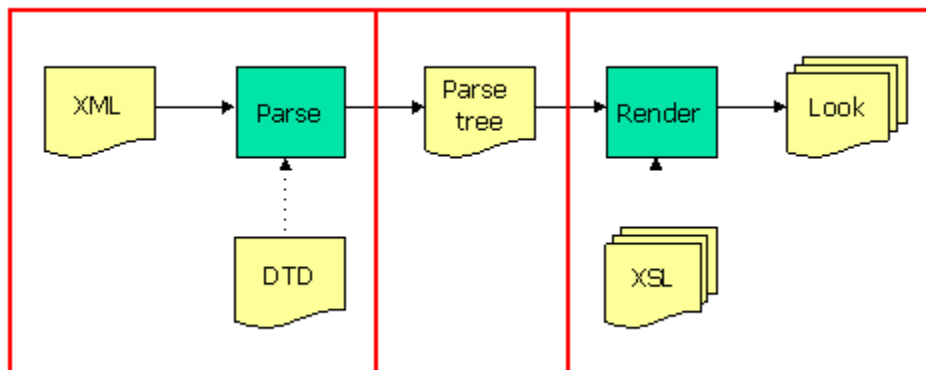


Figure 6- XML working structure

XML processor in any application parses data using XML file and DTD or Schema to create a Parse tree. Stylesheets can be created by developers to customize data display for different devices like mobile phone, browsers in PCs, text-to-speech devices and many more.

⁵ <http://www.scs.carleton.ca/~weiss/links/xml/talks/apps/sld006.htm>

5. AJAX⁶

AJAX stands for **Asynchronous JavaScript and XML**. It is based on JavaScript and HTTP request. AJAX is a technique that is used for creating better and faster interactive web applications. Using AJAX, one can transfer data between the browser and a web server asynchronously. It allows you to update your web page with the required information without reloading or refreshing the web page. This makes the web page work faster by just displaying as much information required in the same web page. Google Suggest also suggest to use AJAX. Some of the web sites that are using AJAX are **Google Maps, Google Suggest, Wikimapia, LiveMarks, BackBase, Kiko, Kayak, Meebo**, etc.⁷

AJAX is based on following standards of Web:

- HTML
- JavaScript
- CSS
- XML

5.1 How AJAX works?

Ajax Web Application Model

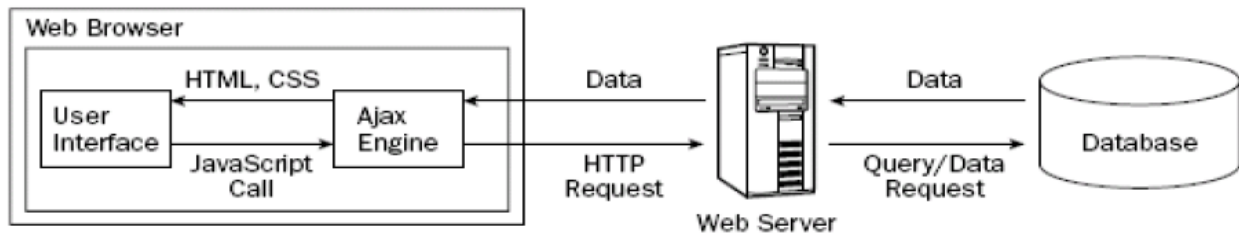


Figure 7- AJAX web application model

Any AJAX web application has an AJAX engine in the web browser. It is nothing but a JavaScript object or a function, which is called whenever any information is requested from the web server. This AJAX engine communicates with the web server for required data. The web server queries the database and sends the required information to web server. The web server sends this data to AJAX engine which then sends data in HTML format to the browser for display. This process is done without reloading the web page. Only the required information is updated in the web page.

⁶ <http://www.w3schools.com/Ajax/Default.Asp>

⁷ http://www.dynamicajax.com/fr/AJAX_Example_Sites-.html

Summary

The following things are possible with the help of web languages:

- Easy access to required content at single click with the help of web pages.
- Fast availability of information due to internet and web sites.
- Emails have replaced newsletters.
- Less searching time.
- Grow in online business and marketing. It has become boon to online shopping websites like ebay.com, amazon.com, yatego.com and many more.
- Enforces the administrator to change the content and keep the site updated at regular intervals.

References

- AJAX example site (http://www.dynamicajax.com/fr/AJAX_Example_Sites-.html)
- Beginning HTML with CSS and XHTML: Modern Guide and Reference published by Apress written by David Schultz and Craig Cook.
- Carleton University
(<http://www.scs.carleton.ca/~weiss/links/xml/talks/apps/sld006.htm>)
- How Stuff works (<http://www.howstuffworks.com/web-page.htm>)
- W3school website (<http://www.w3schools.com/Ajax/Default.Asp>)
- W3school website (<http://www.w3schools.com/JS/default.asp>)
- XML basics (<http://www.softwareag.com/xml/about/starters.htm>)