What Makes A Webpage the Most Effective, Attractive and Useful Business Tool?

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Abstract: **This paper is intended to describe and discuss the major developments of a website design and internet that makes a website much more attractive, useful, an effective business tool and much more powerful than ever before. The paper is basically designed and prepared for the aspiring web designers and developers with a need to understand the HTML as well as website design in enough detail.**

Keywords: **SGML, HTML, CSS, Javascript, JQuery, XML, PHP, SQL, ASP, ASP. Net, AJAX, JQuery Mobile, App ML, Angular JS, Json, HTML Graphics, Open source, web browser, web server, homepage, website, web pages, URL, domain name, hyperlink, hypertext, www, internet, intranet, HTTP, SSL, TLS, firewall, browser plug-ins, spyware and adware, Active X, DNS, IP address, dynamic IP address, static IP address, Flash, Javascript, Java, secure site, caching, proxy server, the top level domains, search engine, world wide web accessibility, HTML templates, blog, RSS, Gopher, MME types, phishing, bookmarks and favourites.**

1. INTRODUCTION

The HTML is a simple mark up language used to create hypertext documents that are platform independent. Here, platform independent means HTML documents work in the same way on different platforms and browsers. Historically, HTML documents are SGML documents with generic semantics that are appropriate for representing information from a wide range of domains.

2. PURPOSE OF DEVELOPMENT OF WEB PAGES USING HTML

The vision of the HTML developers is that all communication devices must be able to reach the data made available on the internet. The devices include computers with different platforms, browsers and characteristics, pocket devices, cell phones and devices of speech. Compatibility of HTML with different platforms and browsers is the main issue that was kept in mind at the time of development that saves lot of time for developers who don't have to create several versions of a document for different users.

3. MAN BEHIND HTML (A BRIEF HISTORY)

Tim Berners Lee has coined the idea of web pages using HTML. HTML was brought to public domain in 1990. HTML stands for Hypertext Mark up Language which is the most widely used language on web to make or develop praiseworthy and useful web pages. In the 1990's the development of internet helped the development of HTML rapidly with continuous modifications (changes have been discussed lucidly in the paragraphs given below). The internet strongly depends on vendors and page creators who share the joint conventions for HTML. Originally, HTML was developed with the intent of defining the structure of documents like headings, paragraphs, lists and so forth to facilitate the sharing of scientific information between researchers. Since 1990, HTML has been continuously in use by the www (worldwideweb), a global information initiative. Now, HTML is being widely used to format web pages with the help of different tags available in HTML language.

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4. USER'S KNOWLEDGE REQUIREMENT BEFORE DESIGNING A WEBSITE

- A user should have a basic working knowledge of windows or Linux operating system.

- A user must be familiar with any text editor like notepad, notepad++ or edit plus etc.

- A user must be able to create directories and files on his/her computer.

- A user must be able to navigate through different directories.

- A user must be able to type content in a file and save them on a computer.

- A user must have clear understanding of images in different formats like JPEG, PNG format.

5. SOME OF THE MOST WIDELY USED LANGUAGES, COMPONENTS AND INTERRELATED TERMS ON WEB TO DEVELOP WEB PAGES ARE AS UNDER

5.1 Web page:

- A web page is the simplest programming model that provides an easy way to combine HTML, CSS, JavaScript and server code.

- A web page is a single document which displays text, graphics and other active elements. It is considered as an easy extendable with programmable web helpers, including databases, graphics and social networking.

- Web pages are formatted in a computer language called HTML (Hypertext Mark up Language).

- Many exciting web pages use multimedia.

5.1.1 Different types of web pages are:

There are six basic types of web pages.

1. Advocacy web page ------- contains content that describes a cause, opinion or idea.

2. Business/marketing web page ------- contains content that promotes or sells products or services.

3. Informational web page -------- contains factual information.

4. News web page -------- contains content like newsworthy material including stories and articles relating to current events, life, money, sports and the weather.

5. Portal web page ------- contains a variety of internet services from a single, convenient location.

6. Personal web page ------- is maintained by a private individual who normally is not associated with any organisation.

5.1.2 Classic webpage:

Classic webpage refers to a webpage that does not use AJAX and is required to reload the entire page if the content is required to be changed.

5.1.3 Server side dynamic webpage:

A server side dynamic webpage refers to a webpage whose construction is controlled by an application server processing server side scripts. In server side scripting, parameters determine how the assembly of every new webpage proceeds, including the setting up of more client side processing.

5.1.4 Client side dynamic webpage:

A client side dynamic webpage refers to a webpage that processes the webpage using HTML scripting running in the browser as it loads. Scripting language like JavaScript determines the way the HTML in the received page is parsed into the DOM (Document Object Model) that represents the loaded webpage.

5.2 Web server:

- Web server refers to an information technology that processes requests via HTTP, the basic network protocol used to distribute information on the world wideweb. The term can refer either to the entire computer system, an appliance or specifically to the software that accepts and supervises the HTTP requests.

- The main function of a web server is to store, process and deliver web pages to clients. The communication between client and server takes place using the HTTP. Pages delivered are most frequently HTML documents, which may include images, style sheets and scripts in addition to text content.

5.3 Proxy server:

- Proxy server refers to a specialized web server that allows web browsers to receive web pages from web servers without communicating with them directly.

- Proxy server is allowed to connect to the internet, but the individual web browsers are only allowed to "talk" to the proxy server.

- Proxy servers are often used to provide more secure web access in organisation.

5.4 Server:

Server refers to a computer that manages network resources and provides centralized storage area.

5.5 Server side programming:

Server side programming refers to writing code that runs on the server, using languages supported by the server (such as Java, PHP, C#). JavaScript is also used to write code that executes on the server side.

5.6 Client:

Client refers to a computer that can access the contents of servers or storage areas.

5.7 Client side programming:

Client side programming refers to writing code that runs on the client and is done in languages that can be executed by the browser.

5.8 ActiveX:

- ActiveX is Microsoft's technology for signing plug-ins that adds additional software to a computer when a web page is accessed.

- ActiveX is considered to be a useful way to allow the installation of worthwhile add-ons such as Adobe Acrobat Reader, Macromedia Flash player and Real player.

5.9 Internet:

- The internet refers to the global system of interconnected computer network to link billions of devices across the world using TCP/IP (Internet protocol suite).

- The internet is a network of networks that consists of millions of private, public, academic, business and government networks of local to global scope, linked by a broad array of electronic, wireless and optical networking technologies.

- The internet carries an extensive range of information resources and services such as the interlinked hypertext documents (web pages) and applications of the WWW, electronic mail, telephony and peer-to- peer networks for file sharing.

- Some widely used internet services include webcasting, electronic commerce, web publishing, electronic mail, FTP, Telnet, news groups, mailing list, chat rooms and instant messaging.

- In order to connect to the internet, a user must have access to an ISP, which acts as the middleman between a user and the internet.

- A user can access the internet through an ISP, OSP and WSP.

5.10 ISP (Internet Service Provider):

ISP provides temporary internet connections to individuals and companies. Most ISP offers broadband internet access via a cable, DSL or fibre connection.

- **Dial-up- access:**

Dial-up- access provides an easy and inexpensive way to connect to the internet. With dial-up-access, a user uses a computer, a modem and a regular telephone line to dial into an ISP. It is good for home or small business users.

- **DSL (Digital Subscriber Line):**

DSL provides high speed connections over a regular copper telephone line.

- **Cable modem:**

Cable modem provides high speed internet connections through a cable television network.

- **OSP (Online Service Provider):**

OSP supplies internet access to individuals and companies with variety of special contents and services.

- **WSP (Wireless service provider):**

WSP provides wireless internet access to users with wireless modems or web enabled handheld computers or devices.

5.11 Intranet:

Intranet refers to a network based on TCP/IP protocols belonging to an organisation, usually a corporation, accessible only by the organizations members, employees or others with authorization.

5.12 Websites:

A website is a collection of web pages, graphics and other elements which are linked together to form a larger, structured document like an interactive book.

A website could be a single page or it could be made from thousands of pages. All pages and other elements are placed in a folder on a host server. An internet address known as URL (Uniform Resource Locator) is assigned to this folder, so that when a browser asks for a desired website, it will know where to look. When a user visits a website, a user usually start at the websites homepage, from where a user can navigate the rest of the website.

5.12.1 Types of websites:

- **Informational websites:**

Informational websites refer to websites whose content basically intended to inform visitors and promote a business or service.

- **Business promotional websites:**

Business promotional websites refer to websites that present basic information about business, services, locations and industry etc.

- **e-commerce websites:**

E-commerce websites refer to websites whose content primarily intended for the sale and purchase of goods and a payment gateway such as paypal or world pay.

- **Static websites:**

Static website refers to a non editable brochure website.

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- **Editable brochure website:**

Editable brochure website refers to a website that requires a content management system.

- **Dynamic websites:**

Dynamic website refers to an editable website with more user engagement (login areas) and a self managed through a content management system (CMS).

5.13 CMS:

- CMS stands for content management system.

- CMS refers to a web based tool to allow any authorised user access to edit the website.

- CMS is required to manage and maintain day to day happenings. CMS is typically done by the client, who has no prior experience in web page programming.

5.14 Homepage:

- A homepage refers to the introductory page of a website, usually serving as the table of contents for the site.

- A homepage or index page is considered to be the main web page of a website. It is also called the front page or start page as it appears upon opening a web browser.

5.15 Hyperlink:

- A hyperlink refers to a reference to data that the reader can directly follow either by clicking or by hovering. Hyperlinks are often used to implement reference mechanisms such as table of contents, footnotes, bibliographies, indexes, letters and glossaries.

- Hyperlinks available in resources enable users easily to navigate their browsers to related resources.

- A hyperlink may point to a whole document or to a specific element within a document.

5.16 Hypertext:

- The term hypertext was coined /introduced by Ted Nelson in 1965.

- Hypertext refers to text which contains links to other texts.

- Hypertext is the underlying concept defining the structure of the WWW with page often written in the HTML.

- The hypertext pages are interconnected by hyperlinks, typically activated by a mouse click, key press sequence or by touching the screen.

- Hypertext documents can either be static (prepared and stored in advance) or dynamic (continually changing in response to user input).

- Hypertext can be used to develop very complex and dynamic systems of linking and cross referencing. Static hypertext is generally used to cross reference collections of data in documents, software applications or books on CD's.

- The hypertext includes graphics, video and sound.

- The most famous implementation of hypertext is the WWW.

5.17 Hypermedia:

- Hypermedia is a term derived from hypertext.

- Hypermedia refers to a non linear medium of information which includes graphics, audio, video, plain text and hyperlinks.

- Most modern hypermedia is delivered via electronic pages from a variety of systems including media players and web browsers.

5.18 Web browser:

• A web browser is generally designed to read HTML documents and display them.

• A web browser refers to a software application for retrieving, presenting and traversing information resources (web page, image, and video) on the World Wide Web.

OR

• A web browser can also be defined as an application software or program designed to enable users to access, retrieve and view documents and other resources on the internet.

• Web browsers rely on layout engines to parse HTML into a DOM (Document object model). When a web page is loaded, the browser creates a DOM of the page.

5.19 WWW:

• In 1990, Tim Berners Lee developed or created both the first web server and the first web browser called worldwide web (www) for NEXT computer and later renamed Nexus. He introduced this browser to his colleagues at CERN in March 1991.

• It is the most widely used service on the internet.

• WWW or simply web consists of a worldwide collection of electronic documents called web pages.

• The basic building blocks of the www are the three most commonly used web standards – HTML, CSS and JavaScript.

• In 1993, Marc Andreessen's created a new web browser called Mosaic and later renamed Netscape at the NCSA (National Centre for Supercomputing Applications). Mosaic, is a discontinued early web browser.

• Mosaic was the first browser to display images inline or graphics with text instead of displaying images in a separate window. It was easy to install and use.

• The browser does not display the HTML tags, but uses them to determine how to display the document.

• In order to display a document correctly, the browser must know both type and version.

• All major web browsers are Google Chrome, Firefox, Internet Explorer, Safari and opera.

5.20 Some important features of all major web browsers are discussed below:

5.20.1 Google Chrome:

• Google Chrome provides huge applications and rich media, which normal browsers are not built.

• Chrome is being built on web kit, the basis of Apple's Safari browser and the browser in the Google Android mobile platform, and using Google Gears, a web application plug-in/ platform.

• Google Chrome provides multi-processing and multi-threading capabilities to handle all types of user demands, giving each element of a page its own memory and process.

• Google Chrome provides new tabs, above the address bar to handle different processes.

• Now chrome uses a new Java script Virtual Machine from Denmark called V8.

• No more closing tabs when the browser slows down.

• **Chrome's Omni box------** when you start typing in the address bar, chrome offer suggestions to auto complete your request.

- Now, a user can browse without anything from the session being written to your computer – no cache, no history, no cookies, nothing.

- Personalized Homepage with screenshots of the pages you visit most.

- **Extra Secure -------** the browser includes Google's ever growing list of spyware and malware sites, and every tab is "sand boxed", which means whatever happens in the tabs can't affect your computer.

5.20.2 Firefox:

- Mozilla Firefox is open source web browser.

- Mozilla Firefox 3 much faster than internet explorer

- Smart location bar helps users to get frequently visited or recently discovered, sites in super quick fashion.

- Places organiser replaces the bookmark manager to drag and drop links around nested folders.

- Firefox provides to make your own smart bookmark.

- Provide smart bookmark.

- Provide stream lined "Remember password" handling system.

- Native looks for every system.

- Improved looks for every system.

- Improved download manager.

- A strong phishing and malware protection.

- More intuitive interface.

- **Souped up Add---ons manager…………………….** Enable and disable third party helpers like Flash, Quick time and anything else that makes content work.

5.20.3 Internet Explorer:

- **Cleaner Interface -------** moving the address bar, tabs and navigation buttons onto a single row.

- **Tab Pinning------- i**n internet explorer 9, tabs can be pinned to the windows 7 task bar, just like programs. Right click on the task bar icon brings up a jump list for quick navigation around the website.

- **Internet Explorer is fast------**with hardware accelerated rendering, IE 9 jumped to the head of the pack in sun spider.

- **Tab Isolation-------** means that each tab runs as its own process on your computer meaning that (is theory) if one crushes, it doesn't take down all the rest with it.

- **Smaller Notification--------** The new notifications display in IE 9 is less intrusive, but still easy to spot.

- **Download Manager -----** built in download manager is available.

- **Tracking Protection List Available--------** IE 9 makes it easy to keep website from tracking your browsing habits using tracking protection list.

- **Smart Screen Filter------** verifies URLs against Microsoft's black list and blocks known malicious websites.

- **One Box-------** combines the address and search bar into one Bing is the default, of course, but you can switch to Google, if that's your thing.

- **Standard Compliance -------** IE 9 implements a lot of the new HTML 5 standards, including embedded video and audio, Canvas and SVG.

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5.20.4 Safari:

• Safari is considered to be an excellent browser due to its speed, clean aesthetics and ease of use. Some of few extremely attractive features of safari are:-

• **Browsing and search snapback** ---- allows user to instantly jump back to the original search, user made after clicking a bunch of results.

• **URL Path Navigation------** it is possible to view and navigate through the various levels of a nested site using safari.

• **Web Inspector-----**with the latest version of safari (3.1), you can inspect HTML and CSS element right from your browser.

• **Activity Window -------** This functionality lets you see what pages, images and scripts are downloading behind the scenes when you browse the web.

• **Inline Dictionary -------** Safari, being a cocoa app (OSX) allows us to instantly define words we find.

• **Selection of Speech ------** This functionality is used to highlight any portion of text and select services→ Speech →Start speaking text.

• **Quick Notes ------** This functionality is used to instantly capture text to a note-taking interface **---** in this case stickies.

• **E-mail Page Link ------** This functionality provides emailing the link to the current page.

5.21 Opera:

• Opera browser was first released in 1996.

• The opera mini browser uses the Presto layout engine that runs on most handheld devices particularly mobile phones supporting Java Midlets.

• **Duplicate the tab -------** Using this functionality, the new tab will duplicate the history.

• **Go to URL ------** In Opera, select the address, right click and select "Go to URL".

• Reloads page after every 30 seconds.

• **Fit to window width -------** This functionality is used to remove the horizontal scrollbar and shrink the content.

• **Rewind -------** This functionality is used to bring the user to the desire page if a user has already opened several pages.

• **Nicknames for collections of sites -------** This functionality provides favourite news sites opening in thin tabs.

• **Tab Closing --------** Opera shows the previous active tab.

• **Instant Back ---------** Opera shows the previous page from the cache instantly.

• **Page Zoom -----** Opera's zoom feature allows you to view the site without losing the visual presentations.

• **Crush Recovery -------** Opera automatically saves last session, so a user can see the tabs in the same order when a user opens the browser.

• Opera is also used as the PC web browser.

5.22 URL:

• URL stands for Uniform Resource Locator.

• Each web page has a unique address, called a URL,tells a browser where to locate the web page.

• A URL consists of a protocol, domain name and sometimes the path to a specific web page or location on a web page.

• Most URL's begin with http:// which stands for hypertext transfer protocol, the communications standard that enables pages to transfer on the web.

5.23 Secure site:

Secure site refers to a site that uses the HTTPs protocol to ensure that user's information cannot be stolen by a third party between the sender and the receiver.

5.24 HTTP:

- HTTP stands for hypertext transfer protocol.

- HTTP refers to the protocol that web browsers and web servers use to communicate with each other over the internet.

- HTTP is a connectionless text based protocol.

5.25 Blog:

- Blog was first introduced and used in 1999.

- Blog refers to a website that contains online personal reflections, comments and often hyperlinks provided by the writer.

- Blog is a regularly updated website or web page, generally run by an individual or small group, generally written in an informal or conversational style.

5.26 HTML graphics:

- HTML graphics refer to a digital representation of information such as a drawing, chart or photograph.

- Two common file formats for graphical images on the web are JPEG (Joint Photographic Experts Group) and GIF (Graphics Interchange Format). These formats use compression techniques to reduce the size of graphics file and thus speed downloading.

5.27 Multimedia:

Multimedia refers to any application that integrates text with elements like graphics, sound, video and virtual reality.

5.28 Domain name:

Domain name refers to the text version of IP address.

5.28.1 Top level domains (TLD):

Top level domains are the last part of every domain name. The top level domains are .com, .org, .edu, .uk, .net and so on.

5.28.2 Two types of top level domains:

- Two letter country domains such as .uk (United kingdom)

- Three letter domains such as .com, .org and .net.

5.28.3 The original generic domains:

The generic domains are: .com, .edu, .gov, .int, .mil, .net and .org.

5.28.4 Additional top level domains added in recent years are:

Some new domains are: .biz, .info, .name, .pro, .aero, .coop and .museum.

5.29 DNS (Domain Name System or server):

DNS (Domain Name System or server) translates the domain name into its associated IP address, so data can route to the correct computer.

5.30 IP address:

- IP address refers to a numerical address allocated to each computer or device (computer/printer) on a communication line.

- An IP address helps in host or network interface identification and location addressing.

5.30.1 Static IP address:

- Static IP address refers to an address that is permanently assigned to a device (computer/printer) by an ISP and does not change even if the computer reboots.

- A static IP address is usually assigned to a server hosting websites and providing email, database and FTP services.

5.30.2 Dynamic IP address:

Dynamic IP address refers to an IP address dynamically assigned to a computer by an ISP each time the computer or router reboots.

5.31 Search engine:

- Archie was the first search engine created by Alan Emtage in 1990 at Mc Gill University in Montreal.

- Search engine refers to a software program generally used by a user to find websites, web pages, images and internet files.

- In order to find a web page or pages, a user enter a relevant word or phrase, called search text or keywords, in the search engine's text box. Many search engines use a program called spider to read pages on websites and create a list of pages that contain the keywords. A web page that is listed as the result of the search is called a hit.

- Some search engines mine data available in databases or open directories.

- Some popular search engines are: SAPO (1995), Google (1998), Ask.com (2006), Bing (2009).

5.32 SEO:

- SEO stands for search engine optimisation and has been introduced in the year 2016.

- SEO is considered to be a technical, analytical and creative process to improve the visibility of a website in search engines, with the aim of driving more potential customers.

5.33 Open source software:

In 1997, Eric Raymond published "The cathedral and the Bazaar", a reflective analysis of the hacker community and free software principles. The paper received significant attention in early 1998, and was one factor in motivating Netscape communication corporations to release their popular Netscape communicator internet suite as free software. This source code subsequently became the basis behind Sea Monkey, Mozilla Firefox, Thunder bird and Kompozer. The open source initiative was founded in February 1998 to encourage use of the new term and evangelize open source principles.

Open source software refers to computer software with its source code made available with a license in which the copyright holder provides the right to study, modify and distribute the software to anyone and for any purpose.

5.34 Plug-in:

- Plug- ins were invented to work around and remove the limitations of early versions of HTML and deliver some interactive content.

- Plug –in refers to a software component that adds a specific feature to an existing computer program like search engines, virus scanners or the ability to use a new file type such as a new video format.

- Plug- in is an additional piece of software that specializes in processing particular types of content. For example, Adobe Flash player. This plug-in is used to view a web page which contains a video or an interactive game.

- Some popular browser plug- ins include the Adobe Flash player, the Quick time player and the Java plug-in.

5.34.1 Some applications support plug-ins to achieve the following:

- To enable third party developers to create abilities which extend an application.

- To support easily adding new features to reduce the size of an application.

- To separate source code from an application because of incompatible software licenses.

5.34.2 Different types of applications that use plug-ins are:

- **Audio editors** ------ use plug-ins to generate, process or analyse sound.

- **E-mail clients** ---------- use plug-ins to decrypt and encrypt e-mail.

- **Graphics software** ------- use plug-ins to support file formats and process images. For example, Photoshop plug-in

- **Media players** ------------ use plug-ins to support file formats and apply filters.

- **Packet sniffers** ----------- use plug-ins to decode packet formats.

- **Text editors and IDE (Integrated Development Environment)** -------- use plug-ins to support programming languages or enhance development process.

- **Web browsers** -------- use plug-ins to expand their functionality. For instance, Adobe flash player, Java SE, Quick time, Microsoft Silver light and unity.

5.35 Add –ons:

- Add- on refers to a piece of software that enhances and customizes Mozilla based applications.

- Add – on are like apps that a user install to add or get bells, whistles, compare prices, check the weather, change the look of Firefox, listen to music or even update the facebook profile.

5.36 Bookmarks:

Bookmark refers to an internet browser feature that allows a user to go back to a previously visited website by clicking on the saved link- without retyping the site's address.

Bookmarks are also called favourites or internet shortcuts.

5.37 DOM (Document Object Model):

- DOM stands for Document Object Model.

- DOM refers to a cross platform and language independent convention for representing and interacting with objects in HTML, XHTML and XML documents.

5.37.1 DOM level1:

The level provided a complete model for an entire HTML or XML document, including means to change any portion of the document.

5.37.2 DOM level2:

The level introduced the function as well as an event model and support for XML namespaces and CSS.

5.37.3 DOM level3:

The level added support for Path and keyboard event handling, as well as an interface for serializing documents as XML.

5.37.4 DOM level4:

Large parts of W3C DOM are well supported by common ECMAscript enabled browsers, including Microsoft Internet Explorer (version6), Opera, safari, Gecko based browsers (like Mozilla Firefox, Sea Monkey and Camino).

5.38 ECMA Standard:

- ECMA script was developed by Brendan Eich of Netscape in 1995.

- ECMA script is a trademarked scripting language specification standardised by ECMA International in ECMA-262 and ISO/IEC 16262.

- Some well known implementations of the language are Javascript, Jscript and Action script. These languages are widely used for client side scripting language.

- ECMA script language includes structured, dynamic, functional and prototype based features.

- ECMA script supports web browsers like Internet explorer and Jscript, where it is implemented by JavaScript.

Some scripting languages/languages used in making websites are:

6. SGML

- SGML was the result of the efforts of many people channelled into four major activities: generic coding, the GML, SGML languages, SGML standard and major SGML applications. Generic coding began in the late 1960s, uses descriptive tags ('headings' rather than 'format-17'). Generic coding was created by William Tunnicliffe, chairman of the Graphic communication Association (GCA). In 1969, Charles Goldfarb, Edward Mosher and Raymond Lorie together invented GML (Generalized Mark up language) as a means of allowing the text editing, formatting and information retrieval subsystems to share documents. The generic code and GML later played an instrumental role in the development of the SGML standard.

- SGML stands for standard generalized mark up language.

- SGML is actually a meta-language i.e a computer language for writing mark up language.

- HTML is a mark up language written in SGML.

6.1 HTML:

Some major HTML events and versions are as under:

HTML versions

Version	year
HTML	1991
HTML 2.0	1995
HTML 3.2	1997
HTML 4.01	1999
XHTML	2000
HTML 5	2014

Some of the major specifications of HTML are discussed below:

6.1.1 HTML:

- HTML was created by Tim Berners Lee in late 1991.

- HTML stands for Hypertext Mark Up Language.

- HTML is a mark up language used to write web pages. A mark up Language is a set of mark up tags. HTML documents are described by HTML tags.

- HTML is used to divide up a document, specify its contents and structure, and define the meaning of each part (headings, paragraphs, bulleted lists etc). It uses elements to identify the different components of a web page.

- HTML has undergone or witnessed several changes in both type and version in the following form.

6.1.2 HTML 2.0:

- "HTML 2.0" was the first standard HTML specification which was published in 1995.

- HTML 2.0 specification includes both machine readable public text – SGML "code" and human readable text. Here, the public text means the text of the SGML DTD (Document type definition) for HTML. The public text includes the DTD, an SGML declaration and a version of the ISO Added Latin1 entity set.

6.1.3 HTML 3.2:

- HTML 3.2 is W3C's specification for HTML, developed in early 96 together with vendors including IBM, Microsoft, Netscape communications corporation, Novell, Soft Quad, Spyglass and Sun Microsystems.

- W3C is still working with vendors on extension for accessibility features, multimedia objects, scripting, style sheets, layout, forms, math and internationalization.

- HTML 3.2 provides full backwards compatibility with the existing standard HTML 2.0.

- Every HTML 3.2 document begins with <!DOCTYPE> declaration to distinguish HTML 3.2 from other versions of HTML. The <!DOCTYPE> declaration help browser, validation tools and other software to determine the version of HTML used in the document.

- HTML 3.2 includes the HEAD element, the BODY element, block level elements, text level elements, lists and tables.

Block level elements ------- include headings, address, preformatted text, definition list, paragraph, unordered list, ordered list.

Text level elements ------- include anchors, IMG, Applet, Font, BR, MAP

6.1.4 HTML 4.01:

- HTML 4.01 was a major version of HTML and it was introduced and published by W3C consortium in the year 1999.

- HTML 4.01 is an SGML application conforming to International standard ISO-8879- standard Generalised Mark up language.

- HTML 4.01 version has taken great stride towards the internationalization of documents with the goal of making the web truly world wide.

- HTML 4.01 supports more multimedia options, scripting languages, style sheets, better printing facilities and documents that are more accessible to users with disabilities.

6.1.5 HTML- 5:

- HTML 5 is the result of joint cooperation between the world wide web consortium (W3C) and the web Hypertext Application Technology working group (WHATWG).

- HTML 5 is the latest standard for HTML. Currently we are having HTML -5version which is an extension to HTML 4.01, and this version was published in 2012.

- HTML 5 was designed to replace both HTML 4, XHTML , and the HTML DOM level 2. HTML 5 was created to deliver rich content without the need for additional plug-ins. This version of HTML includes everything from animation to graphics, music to movies and can also be used to build complicated web applications.

- New features of HTML5 are based on HTML, CSS, DOM and Javascript.

- In HTML5, scripting has been replaced by more mark-ups.

- In HTML5, the <canvas> element for 2D drawing has been added. New content specific elements like <article>,<footer>,<header>, <nav>, <section> have been added. Also, new form controls like calendar, date, time, email, url and search have been added.

- In HTML5 error handling is made easier than in previous versions.

- HTML5 supports all major browsers like Google Chrome, Firefox, Internet Explorer, Safari, Opera and APIs.

- HTML 5 is designed as device independent or cross platform. It is designed to work whether a user is using a PC or a tablet, a smart phone or a smart TV.

- The HTML5 working group includes AOL, Apple, Google, IBM, Microsoft, Mozilla, Nokia and Opera.

- In HTML5, the development process is made visible to the public.

6.2 JavaScript:

- JavaScript was invented by Brendan Eich and was released by Netscape communications in 1995 with Netscape Navigator2.0.

- JavaScript became an ECMA standard in 1997. ECMA script-6 is the latest official version of JavaScript.

- JavaScript refers to a high-level, dynamic, untyped and interpreted programming language.

- JavaScript is prototype based with first class functions, making it a multi-paradigm language, supporting object oriented, imperative and functional programming styles.

- JavaScript has an API (Application Programming Interface) for working with text, arrays, dates and regular expressions.

- JavaScript virtual machines (VMs) and platforms built upon them made JavaScript good for server side web applications. On the client side, JavaScript has been implemented as an interpreted language.

- JavaScript is a powerful and the most popular programming language of HTML and the web.

- JavaScript can change HTML content.

- JavaScript can change, add and remove all the HTML elements and attributes in the page.

- JavaScript can react to all existing events in the page.

- JavaScript can create new events in the page.

- JavaScript can change HTML styles.

- JavaScript can validate data.

- JavaScript is a language used to program the behaviour of web pages.

- JavaScript is also used in game development, the creation of desktop, mobile applications and server side network programming with runtime environments such as Node.js.

- All web developers must learn JavaScript to make web pages as it is easy to learn.

6.3 CSS (Cascade style sheet):

- CSS was created by W3C (The worldwideweb consortium).

- CSS stands for Cascading Style Sheets.

- CSS is used to specify the layout of web pages.

- CSS styles define how to display HTML elements.

- CSS external style sheets can save a lot of work. External style sheets enable the designer/user to change the appearance and layout of all the pages in a website.

- CSS external style sheets are stored in CSS files.

- CSS style sheets were added to HTML 4.0 to solve some major problems of HTML-3.2.In HTML 4.0 all formatting could be removed from the HTML document and stored in a separate CSS file.

- All browsers support CSS today.

6.4 XML:

- XML was developed by world wide web consortium and introduced in the year 1996.

- XML was designed to store and transport data. The design goals of XML emphasize simplicity, generality and usability across the internet.

- XML stands for Extensible Mark up Language.

- XML is a mark up language that defines a set of rules for encoding documents in a format which is both human and machine readable.

6.5 XHTML:

- XHTML stands for extensible hypertext mark up language.

- XHTML is stricter than HTML.

- XHTML is HTML defined as an XML application.

- XHTML is well supported by all major browsers.

6.6 PHP:

- PHP is a server scripting language.

- It is a powerful tool for making dynamic and interactive web pages.

- PHP is a widely used, free and efficient alternative to competitors such as Microsoft's ASP.

6.7 ASP:

- ASP stands for Active Server Page.

- ASP is a Microsoft Technology.

- ASP is a program that runs inside IIS (Internet information Service). IIS comes as a free component with windows 2000 and higher version.

- An ASP file can contain text, HTML, XML and scripts. Scripts in an ASP file are executed on the server.

- ASP can change, edit or add any content of a web page.

- ASP can respond to user queries or data submitted from HTML forms.

- Using ASP we can access any data or databases and return the results to a browser.

- Using ASP we can customize a web page to make it more useful for individual users.

- ASP minimizes the network traffic.

- ASP provides security as ASP code cannot be viewed from the browser.

- ASP is simple to use and provides good speed.

- An ASP file has the file extension ".asp".

6.8 ASP.NET:

- ASP.NET was developed by Microsoft and first released in 2002 to allow programmers to build dynamic websites, web applications and web services.

- ASP.NET is the successor to Microsoft's Active Server Page (ASP) technology.

- ASP.NET is an open source server side web application framework designed for web development to produce dynamic web pages.

- ASP.NET is a development framework for building web pages and web sites with HTML, CSS, JavaScript and server scripting.

- ASP.NET feature includes Linux support, OSX support, Node.js support, Angular JS support, tag helpers, view components web API, Grunt JS support, browser support, no visual basic and no web forms.

6.9 AppML:

- AppML was first developed by Refsnes Data in the year 1999.

- AppML stands for Application Modelling language.

- AppML runs in any HTML page. No installation is required.

- AppML is a tool for bringing data to HTML applications from objects, from files and from databases.

- AppML extends HTML with data attributes.

- AppML adds controllers to HTML, to control the behaviour of HTML data.

- AppML was based on HTTP request communication between web client and the web server. Later this method became well known as AJAX.

- AppML was re-launched by w3 schools in the year 2015 with some new and advanced features.

6.9.1 Some new features of AppML are:

- AppML applications are developed to run over the internet.

- AppML applications are made platform independent.

- AppML applications are required to use internet standards only (HTML, CSS and JavaScript).

- AppML applications are made self describing.

- AppML applications must be future proof.

6.10 AJAX:

- AJAX stands for Asynchronous JavaScript and XML.

- AJAX refers to a set of web development techniques utilising many web technologies used on the client side to create asynchronous web applications.

- AJAX can locally modify the web page. The data that are modified are exchanged using the HTTP protocol.

- AJAX allows web page to be updated asynchronously by exchanging small amounts of data with the server behind the scenes.

- AJAX applications are both browser and platform independent.

- Some applications using AJAX are Google maps, Gmail, Youtube and Facebook tabs.

6.11 JQuery:

- JQuery was developed by John Resig and is licensed under the MIT license and GNU (General public license).

- JQuery is a JavaScript library that allows web developers to add extra functionality to their websites.

- JQuery is used for modifying text, processing form data, moving elements on a page and performing animations.

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- JQuery is also used by web developers to navigate HTML documents, handle events, perform animations and add Ajax interactions to web pages.

- JQuery can also work with Ajax code and scripting language, such PHP and ASP to access data.

- JQuery runs on the client side without reloading the page.

- JQuery is open source and provided for free.

- JQuery greatly simplifies JavaScript programming and is easy to learn.

- Some of the websites using JQuery are Google (code search), Twitter, Dell Inc, CBS News and Slashdot.

6.12 JQuery Mobile:

- JQuery Mobile was first released in 2010.

- The development of JQuery Mobile focuses on creating a framework compatible with a wide variety of smart phones and tablet computers.

- JQuery Mobile is compatible with all major desktop browsers as well as all major mobile platforms including Android, IOS, windows phone, Black berry, web OS, Symbian.

- JQuery Mobile is a framework for creating mobile web applications.

- JQuery Mobile uses HTML5 and CSS3 for laying out pages with minimal scripting.

- JQuery Mobile is a HTML 5 based user interface system designed to make responsive websites and apps that are accessible on all smart phone, tablet and desktop devices.

6.13 Json:

- Json was developed and introduced by Douglas Crockford in the year 1999.

- Json stands for JavaScript Object Notation.

- Json is a light weight data interchange format.

- Json is an open standard format that uses human readable text to transmit data objects consisting of attribute value pairs.

- Json is "self describing" and easy to read, write and understand.

- Json is easy for machines to parse and generate.

- Json is language independent.

- Json is based on a subset of the JavaScript programming language, standard ECMA-262.

- Json is the primary data format used for asynchronous browser/server communication, largely replacing XML (used by AJAX).

6.14 Angular JS:

- Angular JS was first created and introduced by Misko Hevery in the year 2012.

- Angular JS is an open source web application framework mainly maintained by Google and by a community of experts.

- Angular JS aims to simplify both the development and the testing of applications by providing a framework for client side model-view-controller (MVC) and model-view-view model (MVVM) architectures, along with components commonly used in rich internet applications.

- Angular JS is perfect for single page application (SAP).

- Angular JS is the frontend part of MEAN stack, together with Node.js runtime, Express.js backend framework MongoDB database.

- Angular JS is used on the websites of NBC, Walgreens, Intel, Sprint, ABC News and approximately 8400 other sites out of 1million tested in July 2015.

6.15 SQL:

- SQL was designed by Donald D. Chamberlin and Raymond F. Boyce in the early 1970's.

- SQL stands for Structured Query Language.

- SQL refers to a special purpose programming language designed for managing data held in a RDBMS (Relational Database Management System) or for stream processing RDSMS (Relational Data Stream Management System).

- The scope of SQL includes data insert, query update and delete, schema creation and modification and data access control.

6.16 MySQL:

- MySQL is the most popular open source relational SQL database management system.

- MySQL is one of the best RDBMS being used for developing web based software application.

7.   WEB APPLICATION SECURITY

Web application security refers to a branch of information security that deals specifically with security of websites, web applications and web services.

7.1 Some major web security threats are:

7.1.1 Cross site scripting (XSS):

- Cross site scripting refers to a type of computer security vulnerability typically found in web applications.

- Cross site scripting enables attackers to inject client side script into web pages viewed by other users.

7.1.2 SQL injection:

SQL injection refers to a code injection technique used to attack data driven applications, in which malicious SQL statements are inserted into an entry field for execution(For example, to dump the database contents to the attackers).

7.1.3 Buffer overflow:

- Buffer overflow or buffer over run refers to an anomaly where a program, while writing data to a buffer, overruns the buffer's boundary and overwrites adjacent memory locations.

- This is a special case of the violation of memory safety.

- Buffer overflow is considered to be the best known form of software security vulnerability.

7.1.4 Code injection (php, JavaScript):

Code injection (php, JavaScript) refers to the general term for attack types which consist of injecting code that is the interpreted or executed by the application. This type of attack exploits poor handling of untrusted data and due to lack of proper input/output data validation.

7.1.5 Some common web security threats are:

Path disclosure, Denial-of-service attack, Arbitrary code execution, Memory corruption, Cross site request forgery, Data breach (information disclosure), Arbitrary file inclusion, Local file inclusion, Remote file inclusion.

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8. FIREWALL

- Firewall technology developed in the late 1980.

- Firewall refers to software that filters out unwanted traffic and foiling attempts to interfere with or take over a computer in a network.

- A Firewall is considered as a network security system that monitors and controls the incoming and outgoing network traffic based on predetermined security rules.

- A Firewall usually establishes a barrier between a trusted, secure internal network and another outside network, such as the internet (not considered to be a secure or trusted).

Types of firewall:

8. 1 Network firewall:

Network firewall refers to a software appliance running on general purpose hardware or hardware based firewall computer appliance that filters traffic between two or more networks.

8. 2 Host based firewall

Host based firewall refers to a software that provides a layer of software on one host that controls network traffic in and out of that single machine.

9. SOME COMMON AND USEFUL CONTENTS OF A WEBSITE MAY INCLUDE

Hours of operation, staff directory, employee bios, office locations, maps, driving directions, mission statements, history, performance indicators, business affiliations, contact information, e-mail links, contact request forms, print out capability, info sheets, marketing materials, press kits, directions, menus, product guides, shopping cart feature, product descriptions, photos, customer data capture, payment processing, return policies, order problem tracking, transit status.

10. APPLICATIONS OF HTML

- HTML mark up can represent hypertext news, mail, documentation and hypermedia, menus of options, database query results, simple structured documents with in-lined graphics and hypertext views of existing bodies of information.

- HTML is an application of ISO standard 8879:1986 Information Processing Text and office systems SGML Standard Generalised Mark up Language.

11. CONCLUSION

The paper has outlined the definition and its wide application lucidly and precisely. This paper is intended to incorporate all the essential, necessary and useful component of a website. The paper would surely improve new web designers view and understanding of a website and its development.

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