World Wide Web - WWW

The **World Wide Web** (abbreviated as WWW or W3, commonly known as the web) is a system of interlinked hypertext documents that are accessed via the Internet. With a web browser, one can view web pages that may contain text, images, videos, and other multimedia and navigate between them via hyperlinks.

Tim Berners-Lee, a British computer scientist is considered as the inventor of the web. In 1990, he wrote a program (to link the webpages) that would eventually become the World Wide Web. The World Wide Web consists of all the public Web sites connected to the Internet worldwide, including the client devices (such as computers and cell phones) that access Web content.

The Web is just one of the ways that information can be exchangedover the Internet. The Internet(not the Web), is also used for e-mail, which relies on **SMTP** (Small Mail Transfer Protocol), Usenet news groups, instant messaging and files sharing through the**FTP** (File Transfer Protocol). Therefore, the Web is just a portion of the Internet, even though a large portion it does not mean that www is the internet.The two terms are not synonymous and should not be confused.The WWW is just one of many applications of the Internet and computer networks.

Web is a huge network of millions of websites connected by telephone lines, cables, and satellite links (wireless). Web is spread globally hence; it provides information 24X7 across all the time zones.

The World Wide Web is based on these technologies:

- **HTML** - **H**yper**T**ext **M**ark-up**L**anguage (Technic used to create web pages)
- **HTTP** - **H**yper**T**ext **T**ransfer **P**rotocol (Tool to make web pages & sites linked & available to other computers & users over Internet)
- **Web servers** and **Web browsers** (Combination of Hardware & Software to access information over Internet & web sites)

Web Server-

Web server, can refer to either the hardware (the computer) or the software (the computer application) that helps to deliver **web** content that can be accessed through the Internet. Any computer that is having very high specifications & having server software installed on it can be called as **Web Server**. Web servers are used to host all types of web sites, which remains online (always on & functioning) 24X7 & provides information & services on demand. Information & services are demanded using **web browsers**, which are the special software capable of interacting web pages & display them on user's computers. First web browser **Mosaic**was developed by**Marc Andreessen**in 1993. Mosaic was the first **Graphical User Interface*(GUI)*** browser that was capable of displaying text as well as pictures, audio & video contents.

Web Sites-

Website is a collection of web pages that are interrelated with each otherthrough the hyperlinks. Websites can be found using its unique names. These names generally based on the nature of web sites or the business or objectives of the company or the name of the organisation owning &hosting it. Websites serves the owners to fulfil its various objectives and goals. Humans can find the website by its name, which is known as "Domain" name. In other words, Domain name is a unique address of a website on the Internet.Computerscan't

understand names, as it can only understand the numbers, and hence each website is assigned particular & unique **IP address**. **IP** is the **internet protocol**, which governs the rules to communicate over the internet.

DNS – Domain Name System-

Paul Mockapetris invented **DNS** in 1983.To establish a successful website a meaningful name is selected, which is called domain name. Each domain name ideally& compulsorily needs to be unique so that computers don't get confused with two different websites with the same names. A huge database is maintained by **IANA**. The ***Internet Assigned Numbers Authority* (*IANA*)** is a non-profit private American corporation, which oversees global IP addresses assignment and domain name allocation & registration. It means that all the domain names registered all over the world are maintained in a giant database through various regional domain registering offices, to ensure that no domain name is assigned twice to two different websites / companies. In short two companies cannot have 100% same names.

DNS translates Internet domain and host names to IP addresses. DNS automatically converts the names we type in our Web browser address bar to the IP addresses of Web servers hosting those sites. IP addresses are having pure numerical format, which looks like – **248.168.15.7**

It means that when user type **www.abc.com**, computer looks for its assigned / linked IP address which may be **230.155.20.7,** and user lands on the home page (starter page or flash page) of the ABCCompany's website.

Domain name registration is done by paying fees on yearly basis. It is charged to maintain the giant web address database& to run the regional registration offices. The domain name registration charges may range from Rs.500/- to Rs.1500/- per year and domain name can be registered from 1 to 10 years.

In web address along with domain name, domain type (also known as extension) is also used to identify the nature of website and / or geographical location of the website.

The example of few TLD (Top Level Domain types or general basic domain types) are as follows-

Name	Entity	Meaning
.com	commercial	This is an open domain type; any person or entity is permitted to register. Though originally intended for use by for **profit business entities**, for a number of reasons it became the "main" TLD (Top Level Domain) for domain names and is currently used by all types of entities including non-profits, schools and private individuals.
.org	organization	This is an open TLD; any person or entity is permitted to register. Originally intended for use by **non-profit organizations**, and still primarily used by some.
.net	network	This is an open TLD; any person or entity is permitted to register. Originally intended for use by domains pointing to a distributed network of computers, or "umbrella" sites that act as the portal to a

Name	Entity	Meaning
		set of smaller websites.
.edu	educational	The .edu TLD is limited to educational institutions like schools, colleges & universities.
.gov	governmental	The .gov TLD is limited to governmental entities and agencies.
.mil	US military	The .mil TLD is limited to use by the United States military.
.in / **.uk** / **.jp**	Country based TLDs	These extensions are denoting country code as extention. It can be combined with basic TLD like .com, which becomes .co.in or .co.uk These extensions are very easy to identify & get an idea about the origin of the company or where it was registered.

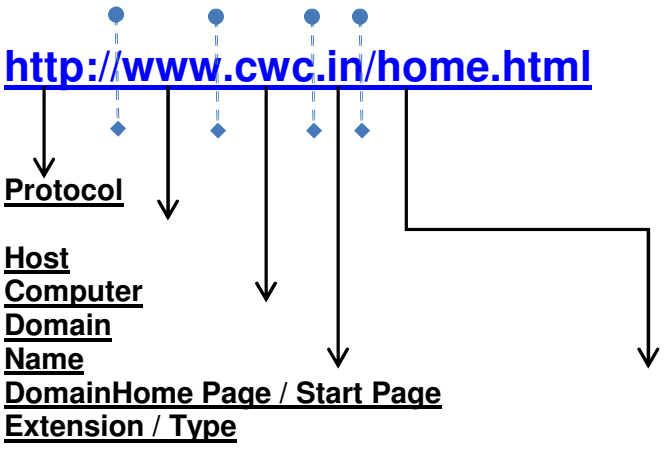
These domain types or extensions also helps to create two websites with the same name as when it combines with domain name it creates the difference in the URL. For example if there are 2 companies (one in UK & other in India) who wants register their names as "Protech Systems", but only one company can register their domain as www.protechsystems.com (one who registers first).
The domain extensions comes in the picture now and both the companies can register their names using geographical domain extension type and hence they can register as

1. http://www.protechsystems.in (Indian company)
2. http://www.protechsystems.co.uk/ (British company)

You can see how similar both the URL looks, but domain extension differentiates them meaningfully.In the same waywww.seashell.com is different than www.seashell.org though both of them may be Indian companies.

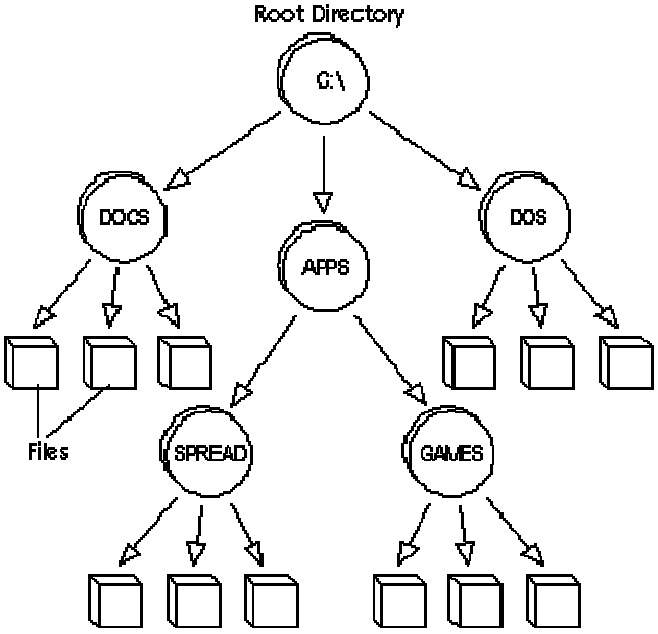
URL (Uniform Resource Location)-

It is the global address of documents and other resources on the World Wide Web. Any website or web page or data information on web can be found using URL. A typical URL looks as-

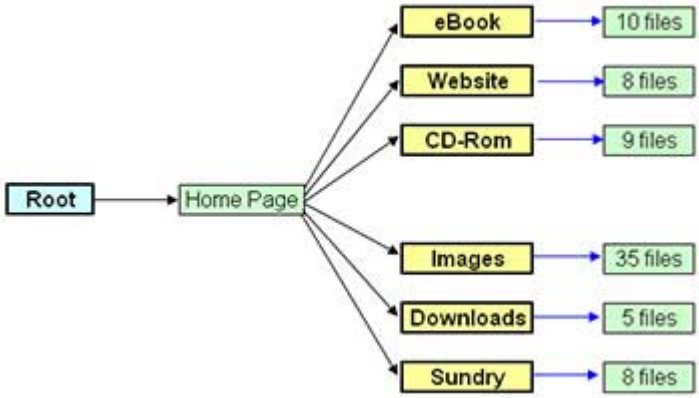


Root Directory

It's the top **directory** in a **file system**. The root directory is provided by the operating system and has a special name; for example, in **DOSsystems** the root directory is called "\". The root directory is sometimes referred to simply as the ***root***.



When a visitor types your domain name in to their browser, they are automatically directed to your website's default file. For example, to go to Yahoo!, you type yahoo.com. It does not show up in your browser, but you are actually looking at the index.html page.



Absolute and a Relative URL

Uniform Resource Locator (URL) is an address that specifies where a particular document or a resource is located on the World Wide Web (WWW). Best example of a URL is the address of a web page on the WWW such as **http://www.cnn.com.** Absolute URL, also called an **absolute link,** is a complete internet address that takes a user to the exact directory or file of a website. A Relative URL or a **partial internet address**, points to a directory or a file relative to the current directory or a file.

What is Absolute URL?

Absolute URL, which provides a complete address of a web page or a resource on the WWW, generally has the format given bellow.

Protocol://hostname/other_details

Usually, the Hyper Text Transfer Protocol (http://) is used as the protocol section. However, the protocol also could be "**ftp://", "gopher://", or "file://".** The hostname is the name of the computer that the resource is residing. For example, the hostname of the CNN's central web server is www.cnn.com. The other_details section includes information about directory and the file name. The exact meaning of the other_details section depends on both the protocol and host. The resource that is pointed by the absolute URL is normally resided on a file, but it can also be generated on the fly.

What is Relative URL?

As mentioned earlier, a relative URL points to a resource relative to the current directory or file. A relative URL can take several different forms. When referring to a file that resides in the same directory as the currently referred page, the relative URL can be simple as the name of the file itself. As an example, if you need to create a link in your home page to a file called my_name.html, which resides in the same directory as your home page, you can simply use the file name as follows:

<**a href**="my_name.html">My name</**a**>

If the file you need to link is within a sub directory of the referring pages directory, you need to include the subdirectory name and the file name in the relative URL. For example if we are trying to link a file my_parents.html that is within a directory called parents, which actually resides inside the directory that contains your home page, the relative URL will look like the following.

<**a href**="parents/my_parents.html">My Parents</**a**>

Additionally, if you want to refer to a resource that resides on a directory that is in a higher level in the directory structure than the directory that contains the referring page, you can use two consecutive dots. For example, if you want to refer to a file called home.html that in a directory above your home page, you can use a relative URL as follows.

<**a href**="../home.html">Home</**a**>

Difference between Absolute URL and Relative URL

The main difference between an **absolute URL** and a **relative URL** is that, an absolute URL is a complete address that points to a file or a resource, while a relative URL points to a file relative to the current directory or file. Absolute URL contains more information than a relative URL, but using relative URLs are much easier since they are shorter and more portable. However, relative URLs can only be used to refer to links that reside on the same server as the page that refers them.

Protocol

Protocol simply means the rules of the communication. To find & view webpages & sites on web HTTP is the widely used protocol to access webpages.

Host Computer

It is the computer where the website is located. Almost all the public websites are located / connected on world wide web, whereas private websites are having restricted & selective connections & access & in general term they are known as Intranet i.e. a private site of any company which can be accessed only by its employees & business associates & partners.

FTP (File Transfer Protocol)

Website & web services are very dynamic in nature; it means it undergoes constant changes & updating. For example new products & services keep on getting added, new promotional offers may be announces with seasonal criteria, all these creates the need to add new webpages and / or modify existing webpages. FTP is used to transfer new pages to webserver where the website is hosted.

File Transfer Protocol (FTP) is a standard Internet protocol for transmitting files between computers on the Internet. Like the **Hypertext Transfer Protocol (HTTP)**, which transfers displayable Web pages and related files, and the **Simple Mail Transfer Protocol (SMTP)**, which transfers e-mail, FTP is an application protocol that uses the Internet's **TCP/IP protocols**. FTP is commonly used to transfer Web page files from their creator to the computer that acts as their server for everyone on the Internet. It's also commonly used to download programs and other files to your computer from other servers. FTP can be used to transfer files from one computer to other even though both the computers may not have websites**(Peer to Peer)**.

As a user, you can use FTP with a simple command line interface (for example, from the Windows MS-DOS Prompt window) or with a commercial program, that offers a graphical user interface. Your Web browser can also make FTP requests to download programs you select from a Web page. Using FTP, you can also update (delete, rename, move, and copy) files at a server. You need to logon to an FTP server. However, publicly available files are easily accessed using anonymous FTP.

Steps to start & run a website-

1. Conceive the objectives, purposes& goals to be fulfilled through the proposed website.

2. Select a meaningful & relevant name i.e. Domain name, for the website.

3. Check for the availability of the selected domain name.

4. If selected domain name is available, get it registered by paying registration fees.

5. Create Site map on paper showing placing & linking of various webpages of the site.

6. Select theme, layout (with navigation pattern i.e. top row navigation, left side navigation, right side navigation) and matter to be displayed on the site which may be

including pictures, audio & video and it may have some links to other websites / webpages.

7. Design & develop webpages & website.

8. Get website hosted on a server by paying due charges (on package basis, against the bunch of services provided by website hosting company).

9. For low budget companies or amateur entrepreneurs & enthusiasts, there are few sites who offer free (or charging very nominal amount) website hosting e.g. **www.geocities.com, www.tumblr.com&www.in.godaddy.com** etc.

10. Link website with leading search engines for better visibility & presence on web & in the search executed by users.

11. Periodic up gradation & updating of contents displayed on website using FTP (File Transfer Protocol) software.

12. Adding new features & utilities in the website with laps of time.

Website is source of information & center of various activities & options hence it is very important to build an impressive & expressive website. Webpage is expected to be user friendly and simple yet attractive to attract more & more users. Following points should be considered to create effective & useful webpages.

The main things to consider when choosing a web hosting server & plan are:

1. Security
2. Speed
3. Space
4. Email capabilities
5. Reports
6. Administrative functions
7. Reliability
8. Support
9. Extra features
10. Cost

1. Security

The security features of a web hosting plan's servers is important to website development, especially if your website will be an e-commerce website through which customer payments are processed, or if customers will be transmitting personal information to you via your website. Without a secure server, customers may be hesitant to transmit personal and financial information through your website. Encryption capabilities and the ability to set up a dedicated secure server for your company are security features you should look for in your web-hosting plan.

2. Speed

The speed at which your website loads is very significant in e- business. When people visit your website, if it takes more than a few seconds for the site to load they will get impatient and move on, forgetting your website altogether. When you evaluate a web-hosting plan, be

sure to ask the web host what type of internet connection they use to ensure that it is a high-speed connection.

3. **Space**

The space that your web-hosting plan allows for your website and the bandwidth that is available for your use matters. In most cases, any web-hosting plan provides adequate space for a standard website, but make sure that you can increase the space provided for your web-hosting plan if necessary as your website evolves. Bandwidth restrictions can hinder the ability of website visitors to download or upload data.

4. **Email Capabilities**

Email capabilities should be included in every web-hosting plan. The number of email addresses provided, the ability to use email aliases, and the ability to set up auto responders are things to be considered. In addition, restrictions on the size of files (attachments) that can be sent and received or stored on the email server can be of importance.

5. **Reports**

Access to server logs and other reports regarding website activity should be standard features of a web-hosting plan. Using such reports aids in your marketing efforts as you can tell where your traffic is coming from and which marketing mediums are producing results. You can also determine which of your web pages of most popular and which ones are not being visited.

6. **Administrative Functions**

Sometimes a web developer serves as a **webmaster** (person who creates andadministers website functioning), but for the most part, a website owner needs to be able to quickly and easily make changes to the website. This is accomplished through the administrative features of a web-hosting plan, generally on online accessible control panel.

7. **Reliability**

The reliability of the company that provides your web-hosting plan is crucial. The length of time they have been in business, their percent of uptime, and their backup and data retrieval practices play a big part in whether or not your web-hosting plan is reliable. Downtime results in lost business, so reliability is a critical consideration.

8. **Support**

Technical support is something that should definitely be a part of a web-hosting plan. Different web hosts will have different levels of support with some offering person-to-person phone support while others respond to email or online requests. Some provide 24-hour technical support and others do not. Find out about the quality and convenience of technical support that is provided before selecting a web-hosting plan.

9. **Extra Features**

There are many standard features that should be provided in a web-hosting plan, and then there are options that may cost extra. A full- service web-hosting plan may cost a bit more

than limited plans, but may be worth it. Some of the features to look for include FTP access capabilities for the purpose of sharing files and support for software you may use for your website.

10. **Cost**

The cost is important when choosing a web-hosting plan; however, it is not the most important consideration. Sometimes you really do get what you pay for. Therefore, cost should be factored into your decision but going with the cheapest web-hosting plan is not always the best idea. In addition, free web hosting plans are usually not worth having.

Tips to make website user friendly

1. Size of web pages should be small (in few kbs less than 50/60 Kbs.)

2. Headers should not be in excess & it should be used only if necessary.

3. Paragraph & overall write-up should be concise, avoid too much write-up on the single page, and provide links for the further details.

4. If web page is longer than normal, then provide navigation button to reach at the top & provide “Back” & “Home” buttons / links on each page.

5. Follow consistence look & feel for all the pages with decent & common fonts with soothing background colours and / or images.

6. Use bold fonts to highlight keyword & links so that reader can notice them easily.

7. Company Logo should be placed at suitable corner, not disturbing the contents of the page.

8. Information / contents of website should be categorized for comfortable viewing.

Creating Web Pages

Creating webpages is the most important task as the success of any website purely depends upon its look & feel. Webpages should be nice looking, concise, quick loading & user friendly.

Following elements are of a prime importance in the process of webpage designing-

- **Pre-designed Templates**- templates can be defined as sample created with predefined colours, fonts, page layout & a central theme to create webpages. When a predesigned or readymade template is used user needs not to do more other than filling his / her details in the template & save it as a webpage for his / her website.Most templates are created by expert designers & programmers keeping in mind the most common elements of a webpage and hence if users don’t want to take many efforts in selecting right & attractive colour, font and background theme combination, then he / she can opt for the readymade templates. Templates are pre-programmed so users need not to have in-depth knowledge of HTML coding. There are many software that provides number of such free templates e.g. Dream Weaver, Front-page& Golive etc.

- **Webpage Designing Software-**Templates are quick short cut to create a webpage;similarly, there are few software, which provide short cut to create whole websites. Website is nothing but collection of interlinked webpages. Software like Dream Weaver, Front-page can be used to build complete website & few of them are having in-built FTP functionality to transfer webpages to the hosting server computer. Though these software makes website building very easy, users don't have full control over it as most of the coding is done automatically by the software itself. To get 100% customisation in webpages & site it is advisable to have full control in coding, and that is achieved through hard coding (also called hand coding).

- **Hard / Hand Coding of Webpage-** To retain full control on look & feel of webpage & to implement all the functionalities on the website, hand coding is used. In simple words, when full webpage is created by typing HTML codes using various HTML tags in a text editor and save it with **".html"**extension. Most commonly used text editors for HTML coding are **notepad, ultra edit, coffeecup editor** etc.

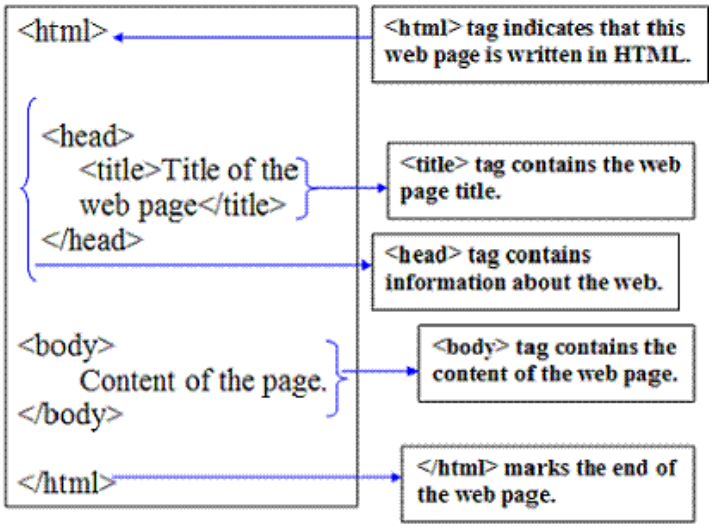
HTML Tags

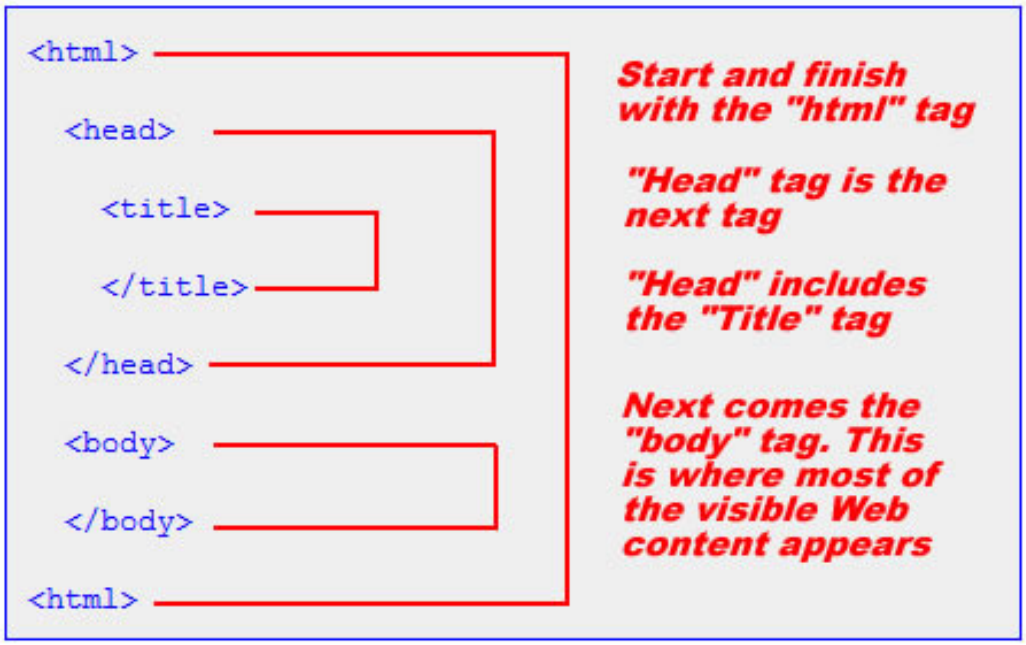
HTML tags are keywords (tag names) surrounded by **angle brackets** like <html>. HTML tags normally **come in pairs** like and . The first tag in a pair is the **start tag;** the second tag is the **end tag.** The end tag is written like the start tag, with a **slash** before the tag name. Start and end tags are also called **opening tags** and **closing tags.**

The purpose of a web browser (such as Google Chrome, Internet Explorer, Firefox, Safari) is to read HTML documents and display them as web pages.The browser does not display the HTML tags itself, but it uses the tags to determine how the content of the HTML page is to be presented/displayed to the user:

HTML Page Structure

HTML page is very simple to create. Any basic text editor can be used to create HTML page. HTML Code can be typed in Notepad, and save the page with **.html** or **.htm**extension. When the page is saved as .html page it can be opened using any browser like IE, Chrome or Firefox etc. The basic structure of HTML page is as shown below-





Basic HTML Tags

Tag	Description
<html>	Defines an HTML document
<body>	Defines the document's body
<h1> to <h6>	Defines header 1 to header 6
<p>	Defines a paragraph
 	Inserts a single line break
<hr>	Defines a horizontal rule
<!-->	Defines a comment

More details about HTML we will study in next chapter.