**Introduction to Web Services**

**WWW**

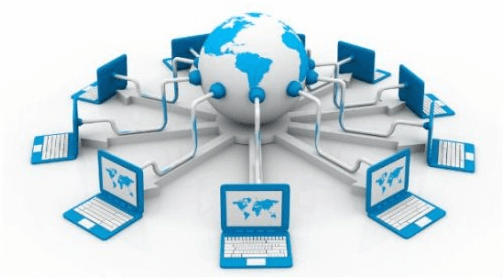
The World Wide Web (WWW) is a network of online content that is formatted in HTML and accessed via HTTP. The term refers to all the interlinked HTML pages that can be accessed over the Internet. The World Wide Web was originally designed in 1991 by Tim Berners-Lee while he was a contractor at CERN.

The World Wide Web is most often referred to simply as "the Web."

The World Wide Web is what most people think of as the Internet. It is all the Web pages, pictures, videos and other online content that can be accessed via a Web browser. The Internet, in contrast, is the underlying network connection that allows us to send email and access the World Wide Web.

The early Web was a collection of text-based sites hosted by organizations that were technically gifted enough to set up a Web server and learn HTML. It has continued to evolve since the original design, and it now includes interactive (social) media and user-generated content that requires little to no technical skills.

World Wide Web, which is also known as a Web, is a collection of websites or web pages stored in web servers and connected to local computers through the internet. These websites contain text pages, digital images, audios, videos, etc. Users can access the content of these sites from any part of the world over the internet using their devices such as computers, laptops, cell phones, etc. The WWW, along with internet, enables the retrieval and display of text and media to your device.



The building blocks of the Web are web pages which are formatted in HTML and connected by links called "hypertext" or hyperlinks and accessed by HTTP. These links are electronic connections that link related pieces of information so that users can access the desired information quickly. Hypertext offers the advantage to select a word or phrase from text and thus to access other pages that provide additional information related to that word or phrase.

A web page is given an online address called a Uniform Resource Locator (URL). A particular collection of web pages that belong to a specific URL is called a website, e.g., www.facebook.com, www.google.com, etc. So, the World Wide Web is like a huge electronic book whose pages are stored on multiple servers across the world.

**Hypertext Markup Langauge (HTML)**

First developed by [Tim Berners-Lee](https://www.computerhope.com/people/tim_berners-lee.htm) in [1990](https://www.computerhope.com/history/1990.htm), HTML is short for Hypertext Markup Language. HTML is used to create electronic documents (called pages) that are displayed on the [World Wide Web](https://www.computerhope.com/jargon/w/www.htm). Each page contains a series of connections to other pages called [hyperlinks](https://www.computerhope.com/jargon/h/hyperlink.htm). Every web page you see on the Internet is written using one version of HTML code or another.

HTML code ensures the proper formatting of text and images for your [Internet browser](https://www.computerhope.com/jargon/b/browser.htm). Without HTML, a browser would not know how to display text as [elements](https://www.computerhope.com/jargon/h/html-element.htm) or load images or other elements. HTML also provides a basic structure of the page, upon which [Cascading Style Sheets](https://www.computerhope.com/jargon/c/css.htm) are overlaid to change its appearance. One could think of HTML as the bones (structure) of a web page, and CSS as its skin (appearance).

Syntax:

<html>

<head>

<title>Basic Syntax</title>

</head>

<body>

Brain Mentors

</body>

</html>

**Extensible Markup Language (XML)**

XML stands for Extensible Markup Language. It is a text-based markup language derived from Standard Generalized Markup Language (SGML).

XML tags identify the data and are used to store and organize the data, rather than specifying how to display it like HTML tags, which are used to display the data. XML is not going to replace HTML in the near future, but it introduces new possibilities by adopting many successful features of HTML.

**There are three important characteristics of XML that make it useful in a variety of systems and solutions −**

XML is extensible − XML allows you to create your own self-descriptive tags, or language, that suits your application.

XML carries the data, does not present it − XML allows you to store the data irrespective of how it will be presented.

XML is a public standard − XML was developed by an organization called the World Wide Web Consortium (W3C) and is available as an open standard.

**XML Usage**

XML can work behind the scene to simplify the creation of HTML documents for large web sites.

XML can be used to exchange the information between organizations and systems.

XML can be used for offloading and reloading of databases.

XML can be used to store and arrange the data, which can customize your data handling needs.

XML can easily be merged with style sheets to create almost any desired output.

Virtually, any type of data can be expressed as an XML document.

**What is Markup?**

XML is a markup language that defines set of rules for encoding documents in a format that is both human-readable and machine-readable. So what exactly is a markup language? Markup is information added to a document that enhances its meaning in certain ways, in that it identifies the parts and how they relate to each other. More specifically, a markup language is a set of symbols that can be placed in the text of a document to demarcate and label the parts of that document.

Following example shows how XML markup looks, when embedded in a piece of text −

<message>

<text>Hello, world!</text>

</message>

This snippet includes the markup symbols, or the tags such as <message>...</message> and <text>... </text>. The tags <message> and </message> mark the start and the end of the XML code fragment. The tags <text> and </text> surround the text Hello, world!.

**Is XML a Programming Language?**

A programming language consists of grammar rules and its own vocabulary which is used to create computer programs. These programs instruct the computer to perform specific tasks. XML does not qualify to be a programming language as it does not perform any computation or algorithms. It is usually stored in a simple text file and is processed by special software that is capable of interpreting XML.

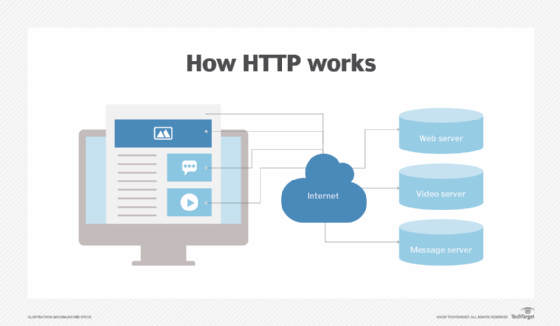
**Hyper Text Transfer Protocol (HTTP)**

HTTP (Hypertext Transfer Protocol) is the set of rules for transferring files -- such as text, images, sound, video and other multimedia files -- over the web. As soon as a user opens their web browser, they are indirectly using HTTP. HTTP is an application protocol that runs on top of the [TCP/IP](https://searchnetworking.techtarget.com/definition/TCP-IP) suite of protocols, which forms the foundation of the internet. The latest version of HTTP is [HTTP/2](https://searchnetworking.techtarget.com/definition/HTTP-2-protocol), which was published in May 2015. It is an alternative to its predecessor, [HTTP 1.1](https://whatis.techtarget.com/definition/HTTP-11), but does not it make obsolete.

**How HTTP works**

Through the HTTP protocol, resources are exchanged between client devices and servers over the internet. Client devices send requests to servers for the resources needed to load a web page; the servers send responses back to the client to fulfill the requests. Requests and responses share sub-documents -- such as data on images, text, text layouts, etc. -- which are pieced together by a client web browser to display the full web page file.

In addition to the web page files it can serve, a [web server](https://whatis.techtarget.com/definition/Web-server) contains an HTTP [daemon](https://whatis.techtarget.com/definition/daemon), a program that waits for HTTP requests and handles them when they arrive. A web browser is an HTTP client that sends requests to servers. When the browser user enters file requests by either "opening" a web file by typing in a URL or clicking on a [hypertext](https://whatis.techtarget.com/definition/hypertext) [link](https://whatis.techtarget.com/definition/link), the browser builds an HTTP request and sends it to the Internet Protocol address ([IP address](https://searchwindevelopment.techtarget.com/definition/IP-address)) indicated by the URL. The HTTP daemon in the destination server receives the request and sends back the requested file or files associated with the request.



**Domain Names**

A domain name is an identification [string](https://en.wikipedia.org/wiki/String_(computer_science)" \o "String (computer science)) that defines a realm of administrative autonomy, authority or control within the [Internet](https://en.wikipedia.org/wiki/Internet" \o "Internet). Domain names are used in various networking contexts and for application-specific naming and addressing purposes. In general, a domain name identifies a [network domain](https://en.wikipedia.org/wiki/Network_domain" \o "Network domain), or it represents an [Internet Protocol](https://en.wikipedia.org/wiki/Internet_Protocol" \o "Internet Protocol) (IP) resource, such as a personal computer used to access the Internet, a server computer hosting a [website](https://en.wikipedia.org/wiki/Website" \o "Website), or the web site itself or any other service communicated via the Internet. In 2017, 330.6 million domain names had been registered.[[1]](https://en.wikipedia.org/wiki/Domain_name" \l "cite_note-1)

Domain names are formed by the rules and procedures of the [Domain Name System](https://en.wikipedia.org/wiki/Domain_Name_System" \o "Domain Name System) (DNS). Any name registered in the DNS is a domain name. Domain names are organized in subordinate levels (subdomains) of the [DNS root](https://en.wikipedia.org/wiki/DNS_root" \o "DNS root) domain, which is nameless. The first-level set of domain names are the [top-level domains](https://en.wikipedia.org/wiki/Top-level_domain" \o "Top-level domain) (TLDs), including the [generic top-level domains](https://en.wikipedia.org/wiki/Generic_top-level_domain" \o "Generic top-level domain) (gTLDs), such as the prominent domains [com](https://en.wikipedia.org/wiki/.com" \o ".com), [info](https://en.wikipedia.org/wiki/.info" \o ".info), [net](https://en.wikipedia.org/wiki/.net" \o ".net), [edu](https://en.wikipedia.org/wiki/.edu" \o ".edu), and [org](https://en.wikipedia.org/wiki/.org" \o ".org), and the [country code top-level domains](https://en.wikipedia.org/wiki/Country_code_top-level_domain" \o "Country code top-level domain) (ccTLDs). Below these top-level domains in the DNS hierarchy are the second-level and third-level domain names that are typically open for reservation by end-users who wish to connect local area networks to the Internet, create other publicly accessible Internet resources or run web sites.

**URL**

Also known as a internet address or web address, a URL (Uniform Resource Locator) is a form of [URI](https://www.computerhope.com/jargon/u/uri.htm) and standardized naming convention for addressing documents accessible over the [Internet](https://www.computerhope.com/jargon/i/internet.htm) and [Intranet](https://www.computerhope.com/jargon/i/intranet.htm). An example of a URL is [https://www.google.com](https://www.computerhope.com/), which is the URL for the Google Search [website](https://www.computerhope.com/jargon/w/website.htm).

**Website**

A site or website is a central location of [web pages](https://www.computerhope.com/jargon/w/webpage.htm) that are related and accessed by visiting the [home page](https://www.computerhope.com/jargon/h/homepage.htm) of the website using a [browser](https://www.computerhope.com/jargon/b/browser.htm). For example, the flipkart website address [URL](https://www.computerhope.com/jargon/u/url.htm) (Uniform Resource Locator) is [https://www.flipkart.com](https://www.computerhope.com/). From our [home page](https://www.computerhope.com/jargon/h/homepage.htm), you could get access to any of the web pages (like this one) contained on our website. The image shows how the Flipkart website looked in 2021.

**Web Browser**

A web browser takes you anywhere on the internet, letting you see text, images and video from anywhere in the world.

The web is a vast and powerful tool. Over the course of a few decades, the internet has changed the way we work, the way we play and the way we interact with one another. Depending on how it’s used, it bridges nations, drives commerce, nurtures relationships, drives the innovation engine of the future and is responsible for more memes than we know what to do with.

It’s important that everyone has access to the web, but it’s also vital that we all [understand the tools](https://blog.mozilla.org/firefox/internet-search-engine-browser/) we use to access it. We use web browsers like Mozilla Firefox, Google Chrome, Microsoft Edge and Apple Safari every day, but do we understand what they are and how they work? In a short period of time we’ve gone from being amazed by the ability to send an email to someone around the world, to a change in how we think of information. It’s not a question of how much you know anymore, but simply a question of what browser or app can get you to that information fastest.

**Web Server**

A web server is [server software](https://en.wikipedia.org/wiki/Server_software" \o "Server software), or a system of one or more [computers](https://en.wikipedia.org/wiki/Computer" \o "Computer) dedicated to running this software, that can satisfy [client](https://en.wikipedia.org/wiki/Client_(computing)" \o "Client (computing)) [HTTP](https://en.wikipedia.org/wiki/Hypertext_Transfer_Protocol" \o "Hypertext Transfer Protocol) requests on the public [World Wide Web](https://en.wikipedia.org/wiki/World_Wide_Web" \o "World Wide Web) or also on private [LANs](https://en.wikipedia.org/wiki/Local_area_network" \o "Local area network) and [WANs](https://en.wikipedia.org/wiki/Wide_area_network" \o "Wide area network).

A web server can manage client [HTTP](https://en.wikipedia.org/wiki/HTTP" \o "HTTP) requests for [Web Resources](https://en.wikipedia.org/wiki/Web_Resource" \o "Web Resource) related to one or more of its configured / served [websites](https://en.wikipedia.org/wiki/Website" \o "Website).

A web server usually receives incoming [network](https://en.wikipedia.org/wiki/Computer_network" \o "Computer network) [HTTP](https://en.wikipedia.org/wiki/HTTP" \o "HTTP) requests and sends outgoing [HTTP](https://en.wikipedia.org/wiki/HTTP" \o "HTTP) responses (one for each processed request), along with web contents, through transparent and / or [encrypted](https://en.wikipedia.org/wiki/Encryption" \o "Encryption) [TCP/IP](https://en.wikipedia.org/wiki/Transmission_Control_Protocol" \o "Transmission Control Protocol) connections (See also: [HTTPS](https://en.wikipedia.org/wiki/Hypertext_Transfer_Protocol_Secure" \o "Hypertext Transfer Protocol Secure)) which are started by client [user agents](https://en.wikipedia.org/wiki/User_agent" \o "User agent) before sending their HTTP request(s). Web servers may soon be able to handle other types of transport [protocols](https://en.wikipedia.org/wiki/Communication_protocol" \o "Communication protocol) for HTTP requests.

The purpose of a web server is to store and deliver [web contents](https://en.wikipedia.org/wiki/Web_content" \o "Web content) and / or [web resources](https://en.wikipedia.org/wiki/Web_Resource" \o "Web Resource). Examples of web contents may be [HTML files](https://en.wikipedia.org/wiki/HTML" \o "HTML), [XHTML files](https://en.wikipedia.org/wiki/XHTML" \o "XHTML), [image](https://en.wikipedia.org/wiki/Image" \o "Image) files, [style sheets](https://en.wikipedia.org/wiki/Style_sheet_(web_development)" \o "Style sheet (web development)), [scripts](https://en.wikipedia.org/wiki/JavaScript" \o "JavaScript), other types of generic files that may be downloaded by clients, etc.

**Web Hosting**

Web hosting is a service that allows organizations and individuals to post a website or web page onto the Internet. A web host, or web hosting service provider, is a business that provides the technologies and services needed for the website or webpage to be viewed in the Internet. Websites are hosted, or stored, on special computers called servers. When Internet users want to view your website, all they need to do is type your website address or domain into their browser. Their computer will then connect to your server and your web pages will be delivered to them through the browser.  
  
Most hosting companies require that you own your domain in order to host with them. If you do not have a domain, the hosting companies will help you purchase one.