## What is web?

A document access from server side to client side through by internet that is called WEB. The Web is the common name for the World Wide Web, a subset of the Internet consisting of the pages that can be accessed by a Web browser.

The World Wide Web (WWW), commonly known as the Web, is an information system where documents and other web resources are identified by Uniform Resource Locators (URLs, such as https://example.com/), which may be interlinked by hyperlinks, and are accessible over the Internet. The resources of the Web are transferred via the Hypertext Transfer Protocol (HTTP), may be accessed by users by a software application called a web browser.

## Web Application

A web application is a computer program that utilizes web browsers and web technology to perform tasks over the Internet. Web applications use a combination of server-side scripts (PHP and ASP) to handle the storage and retrieval of the information, and client-side scripts (JavaScript and HTML) to present information to users. This allows users to interact with the company using online forms, content management systems, shopping carts and more. In addition, the applications allow employees to create documents, share information, collaborate on projects, and work on common documents regardless of location or device.

## What is a Website?

A website is a group of globally accessible, interlinked web pages which have a single domain name. It can be developed and maintained by an individual, business or organization. The website aims to serve a variety of purposes. Example: Blogs, universities website, e-Shopping websites and others.

A website is hosted on a single or multiple web server. It is accessible via a network like the Internet or a private local area network via IP address.

## HTTP (Hypertext Transfer Protocol)

HTTP stands for Hyper Text Transfer Protocol. It is invented by Tim Berner. Hyper Text is the type of text which is specially coded with the help of some standard coding language called as Hyper Text Markup Language (HTML). HTTP/2 is latest version of HTTP, which was published on May 2015.

The protocols that are used to transfer hypertext between two computers is known as Hyper Text Transfer Protocol.

HTTP provides standard between a web browser and web server to establish communication. It is set of rules for transferring data from one computer to another. Data such as text, images, and other multimedia files are shared on the World Wide Web. Whenever a web user opens their web browser, user will indirectly uses HTTP. It is an application protocol which is used for distributed, collaborative, hypermedia information systems.

**History:**

Tim Berners Lee and his team at CERN gets credit for inventing original HTTP and associated technologies.

1. **HTTP/0.9 version 0.9 –**

   This was first version of HTTP which was introduced in 1991.

2. **HTTP/1 version 1.0 –**

   In 1996, RFC 1945 (Request For Comments) was introduced in HTTP version 1.0.

3. **HTTP/1.1 version 1.1** –

   In January 1997, RFC 2068 was introduced in HTTP version 1.1. Improvements and updates to HTTP version 1.1 standard were released under RFC 2616 in June 1999.

4. **HTTP/2 version 2.0 –**

   The HTTP version 2.0 specification was published as RFC 7540 on May 14, 2015.

5. **HTTP/3 version 3.0 –**

   HTTP version 3.0 is based on previous RFC draft. It is renamed as Hypertext Transfer Protocol QUIC which is a transport layer network protocol developed by Google.

**Characteristics of HTTP:**

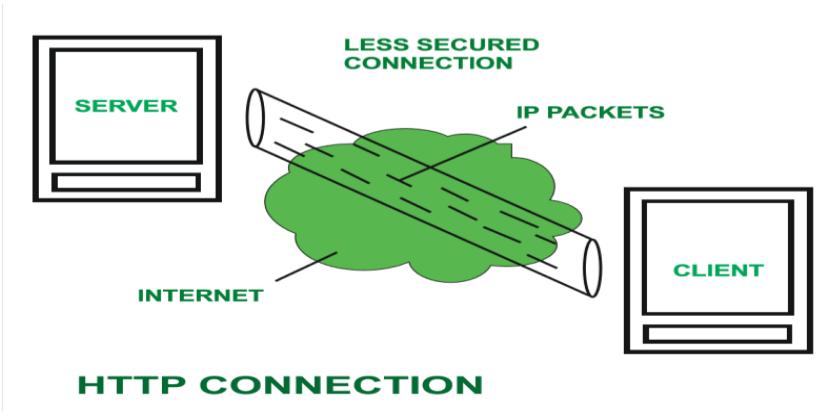
HTTP is IP based communication protocol which is used to deliver data from server to client or vice-versa.

1. Server processes a request, which is raised by client and also server and client knows each other only during current request and response period.
2. Any type of content can be exchanged as long as server and client are compatible with it.
3. Once data is exchanged then servers and client are no more connected with each other.
4. It is a request and response protocol based on client and server requirements.
5. It is connection less protocol because after connection is closed, server does not remember anything about client and client does not remember anything about server.
6. It is stateless protocol because both client and server does not expecting anything from each other but they are still able to communicate.

**How it works?**

First of all, whenever we want to open any website then first we open web browser after that we will type URL of that website (e.g., www.sirmasood.com ). This URL is now sent to Domain Name Server (DNS). Then DNS first check records for this URL in their database, then DNS will return IP address to web browser corresponding to this URL. Now browser is able to send request to actual server.

After server sends data to client, connection will be closed. If we want something else from server we should have to re-establish connection between client and server.




**Advantages:**

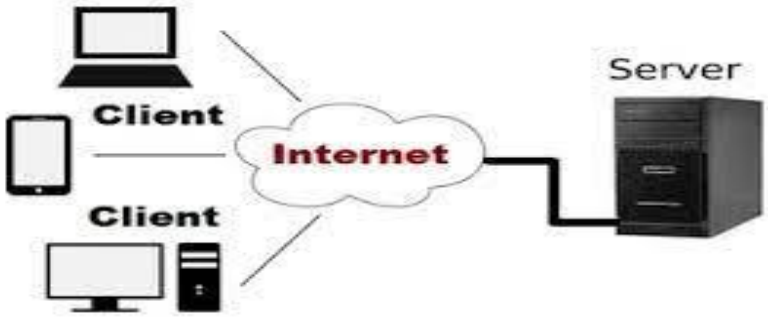
1. Memory usage and CPU usage are low because of less simultaneous connections.
2. Since there are few TCP connections hence network congestion are less.
3. Since handshaking is done at initial connection stage, then latency is reduced because there is no further need of handshaking for subsequent requests.
4. The error can be reports without closing connection.
5. HTTP allows HTTP pipe-lining of request or response.

**Disadvantages:**

1. HTTP requires high power to establish communication and transfer data.
2. HTTP is less secure, because it does not uses any encryption method like https use TLS to encrypt normal http requests and response.
3. HTTP is not optimized for cellular phone and it is too gabby.
4. HTTP does not offer genuine exchange of data because it is less secure.
5. Client does not close connection until it receives complete data from server and hence server needs to wait for data completion and cannot be available for other clients during this time.

**Client-Server Model**

A client-server network is the medium through which clients access resources and services from a central computer, via either a local area network (LAN) or a wide-area network (WAN), such as the Internet. A unique server called a daemon may be employed for the sole purpose of awaiting client requests, at which point the network connection is initiated until the client request has been fulfilled.



### Server-side programming

Server-side programming refers to a program that runs on the server and focuses on the generation of dynamic content. Server-side programming is used for querying and interacting with the database, accessing files on a server, interacting with other servers, processing user input, and structuring web applications. Popular programming languages for server-side programming include C++, Java and ASP, JSP, PHP, Python, and Ruby on Rails.

### Client-side programming

Client-side programming refers to a program that runs on the client machine and focuses on the user interface and other processes such as reading and writing cookies. Client-side programming is used for sending requests to the server, interacting with local storage, interacting with temporary storage, creating interactive web pages, and functions as an interface between client and server. Popular programming languages for client-side programming include HTML, CSS, JavaScript, and VBScript.

### What is HTML?

HTML stand for Hypertext Markup Language, for creating Web pages and online applications. Hypertext Markup Language, a standardized system for tagging text files to achieve font, color, graphic, and hyperlink effects on World Wide Web pages. HTML consists of a series of elements. HTML elements tell the browser how to display the content.

HTML is not considered a programming language as it can't create dynamic functionality. Instead, with HTML, web users can create and structure sections, paragraphs, and links using elements, tags, and attributes. HTML elements are the building blocks of a web page. A tag tells the web browser where an element begins and ends, whereas an attribute describes the characteristics of an element.

HTML elements label pieces of content such as "this is a heading", "this is a paragraph", "this is a link", "and this is a Table and Images" etc.

The World Wide Web Consortium (W3C) maintains and develops HTML specifications, along with providing regular updates like (HTML 3.2, HTML4 and HTML5, HTML5.1 and HTML5.2)

### Difference between HTML and HTML5

In 1991 Tim Berners-Lee invented HTML. The first version of HTML consisted of 18 tags .Since then, each new version came with new tags and attributes added to the markup. The most significant upgrade of the language so far was the introduction of HTML5 in 2014.

The main difference between HTML and HTML5 is that HTML5 supports new kinds of form controls. HTML5 also introduced several semantic tags that clearly describe the content, such as **<article>, <header>,** and **<footer>.**

### What is an HTML Element?

An HTML element is defined by a start tag, some content, and an end tag:

***<tagname>*** Content goes here**...** ***</tagname>***

The HTML element is everything from the start tag to the end tag. There are two types of tags.

1. Pair tags
2. Empty tags.

**<h1>** First Heading **</h1>**

** **

This is My first paragraph. This is First document of web development using by Hyper Text Markup Language. This is not programming language just for display elements on browser.

** **

Some HTML elements have no content (like the **<br>** and **<hr>** element). These elements are called empty elements. Empty elements do not have an end tag.

## Web Browsers

Browser is an application program that provides a way to look at and interact with all the information on the World Wide Web. This includes Web pages, videos and images. The purpose of a web browser is to read HTML documents and display them correctly. Some famous browser names. (Chrome, Opera, Edge, Firefox, and Safari). A browser does not display the HTML tags, but uses them to determine how to display the document.

The first Web browser, called World Wide Web, was created in 1990. That browser's name was changed to Nexus to avoid confusion with the developing information space known as the World Wide Web. The first Web browser with a graphical user interface was Mosaic, which appeared in 1993. Many of the user interface features in Mosaic went into Netscape Navigator. Microsoft followed with its Internet Explorer (IE).

### Common Web browser features

Most Web browsers share standard features such as:

1. A home button- which, when selected, will bring a user to a pre-defined homepage.
2. A Web address bar, which allows users to input a Web address and visit a website.
3. Back and forward buttons- which will take the user to the previous or the next page they were on.
4. Refresh- a button which can be used to reload a Web page.
5. Stop- a button which makes a Web cease communication with a Web server, stopping a page from loading.
6. Tabs- which allow users to open multiple websites in a single window.
7. Bookmarks- which allow a user to select specific, predefined-by-the-user websites.

Many browsers also offer plug-ins, which extend the capabilities of the browser. These plug-ins can allow users to, for example, make use of tasks such as adding security features.

**HTML Document/Page Structure**

Below is a visualization of an HTML document structure:

```
<html>
    <head>
        <title>Page title</title>
     <style>
     </style>
     <script>
     </script>
    </head>
  <body>
   </body>
</html>
```

**Difference between the HTML Elements and HTML tags.**

An element in HTML represents some kind of Object structure, or semantics like (Heading, Paragraph, Table, Image and others). These are elements display and set on the browser generally we use HTML commands name is (TAGS), consists of a start tag, content, and an end tag. Such as example-1.

**Block Level elements**

Block level elements take up as much space as possible by default. Each block level element will start a new line on the page, stacking down the page. In addition to stacking vertically, block level elements will also take up as much horizontal space as possible.

The p element is an example of a block level element. Each new paragraph tag will appear on its own line vertically. Paragraphs with longer content will stretch all the way to the edge of the page.

**Examples of block level elements:**

- <p>
- <ol>, <ul>, <select>
- All headings
- <article>, <section>, 

**Inline Elements**

Inline elements display in a line. They do not force the text after them to a new line. An anchor (or link) is an example of an inline element. You can put several links in a row, and they will display in a line.

Examples of inline elements:

- <a>
- , , <b>, <i>, <u>, <mark>
- 

**Example-1**

```
<html>
    <head>
        <title>First Page</title>
    </head>
  <body>
    <h1>Pakistan</h1>
     <h2>Karachi.</h2>
 <p>This is paragraph. Here we use define Karachi. Karachi is a big city of Pakistan, and The population of Karachi, which currently stands at 16 million, will hit 27.5 million in 2020 and will double to 32 million by 2025, estimates the city government's final draft report on the Karachi Strategic Master Plan (KSMP) 2020.</p>
   </body>
</html>
```


# Pakistan

## Karachi.

This is paragraph. Here we use define Karachi. Karachi is a big city of Pakistan, and The population of Karachi, which currently stands at 16 million, will hit 27.5 million in 2020 and will double to 32 million by 2025, estimates the city government's final draft report on the Karachi Strategic Master Plan (KSMP) 2020.

## Exercise

### Theory Question

1) What is a web and web site?
2) Define HTML with detail.
3) Difference between Server side and client side Programming.
4) Browser features and some list of browser names.
5) What is HTTP and their types?

### Practical Question

1) Write a HTML program on Note Pad to display your BIO DATA on the browser.
2) Write a HTML Program on Note Pad to display information of Pakistan with at least two paragraph with some heading.

### Objective and MCQ

1) HTML Stand for _____.
   a) HyperText Main Language
   b) HyperText Markup Level
   c) HyperText Markup Language
   d) High Text Markup Language.

2) There are _____ types of tags
   a) One
   b) Two
   c) Three
   d) Four

3) <h6> tag for use large size of font heading
   a) True
   b) False

4) HTTP stand for _____.
   a) High Text Transfer protocol
   b) Hyper Text transfer program
   c) Hyper Text Transfer Protocol
   d) Hyper Text Travel protocol.