# UNIT 4

## World Wide Web?

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.

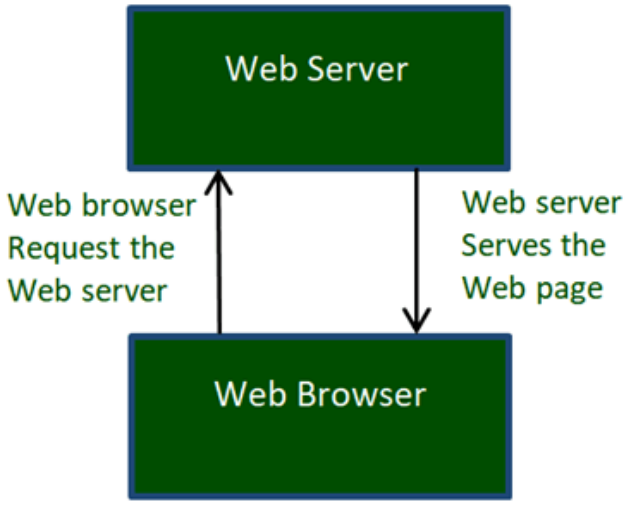
A web page is given an online address called a Uniform Resource Locator (URL). A particular collection of web pages that belong to a specific URL is called a website, e.g., *www.facebook.com*, *www.google.com*, etc. So, the World Wide Web is like a huge electronic book whose pages are stored on multiple servers across the world.Small websites store all of their WebPages on a single server, but big websites or organizations place their WebPages on different servers in different countries so that when users of a country search their site they could get the information quickly from the nearest server.

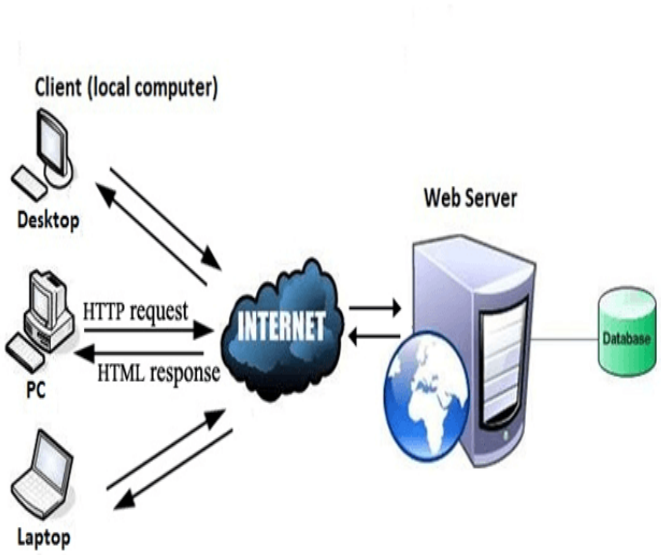
The World Wide Web was invented by a British scientist, Tim Berners-Lee in 1989. He was working at CERN at that time. Originally, it was developed by him to fulfill the need of automated information sharing between scientists across the world, so that they could easily share the data and results of their experiments and studies with each other.

CERN, where Tim Berners worked, is a community of more than 1700 scientists from more than 100 countries. These scientists spend some time on CERN site, and rest of the time they work at their universities and national laboratories in their home countries, so there was a need for reliable communication tools so that they can exchange information.

### How the World Wide Web Works?

Now, we have understood that WWW is a collection of websites connected to the internet so that people can search and share information. Now, let us understand how it works!

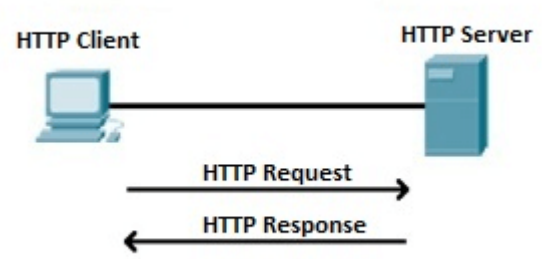


The Web works as per the internet's basic client-server format as shown in the following image. The servers store and transfer web pages or information to user's computers on the network when requested by the users. A web server is a software program which serves the web pages requested by web users using a browser. The computer of a user who requests documents from a server is known as a client. Browser, which is installed on the user' computer, allows users to view the retrieved documents.

## Hypertext Transfer Protocol (HTTP):

Hyper Text Transfer Protocol (HTTP) is an application layer protocol which enables WWW to work smoothly and effectively. It is based on a client-server model. The client is a web browser which communicates with the web server which hosts the website. This protocol defines how messages are formatted and transmitted and what actions the Web Server and browser should take in response to different commands. When you enter a URL in the browser, an HTTP command is sent to the Web server, and it transmits the requested Web Page.




When we open a website using a browser, a connection to the web server is opened, and the browser communicates with the server through HTTP and sends a request. HTTP is carried over TCP/IP to communicate with the server. The server processes the browser's request and sends a response, and then the connection is closed. Thus, the browser retrieves content from the server for the user.

## Web Browser

A browser is a software program that is used to explore, retrieve, and display the information available on the World Wide Web. This information may be in the form of pictures, web pages, videos, and other files that all are connected via hyperlinks and categorized with the help of URLs (Uniform Resource Identifiers). For example, you are viewing this page by using a browser.

A browser is a client program as it runs on a user computer or mobile device and contacts the webserver for the information requested by the user. The web server sends the data back to the browser that displays the results on internet supported devices. On behalf of the users, the browser sends requests to web servers all over the internet by using HTTP (Hypertext Transfer Protocol). A browser requires a smartphone, computer, or tablet and internet to work.

### Examples of Web Browser

- The **WorldWideWeb** was the first web browser. It was created by W3C Director Tim Berners-Lee in **1990**. Later, it was renamed **Nexus** to avoid confusion caused by the actual World Wide Web.
- The **Lynx NCSA Mosaic**,**Netscape Navigator**, **Internet Explorer** ,**Opera, Apple's Safari** , **Mozilla Firefox** , **Mobile Safari** , **Google Chrome** , **Opera Mini** , **Edge**

### Features of Web Browser

1. **Refresh button:** Refresh button allows the website to reload the contents of the web pages. Most of the web browsers store local copies of visited pages to enhance the performance by using a caching mechanism. Sometimes, it stops you from seeing the updated information; in this case, by clicking on the refresh button, you can see the updated information.

2. **Stop button:** It is used to cancel the communication of the web browser with the server and stops loading the page content. For example, if any malicious site enters the browser accidentally, it helps to save from it by clicking on the stop button.
3. **Home button:** It provides users the option to bring up the predefined home page of the website.
4. **Web address bar:** It allows the users to enter a web address in the address bar and visit the website.
5. **Tabbed browsing:** It provides users the option to open multiple websites on a single window. It helps users to read different websites at the same time. For example, when you search for anything on the browser, it provides you a list of search results for your query. You can open all the results by right-clicking on each link, staying on the same page.
6. **Bookmarks:** It allows the users to select particular website to save it for the later retrieval of information, which is predefined by the users.

## URL (Uniform Resource Locator)

A **uniform resource locator** is the address of a resource on the internet or the World Wide Web. It is also known as a web address or uniform resource identifier (URI). For example, **https: www.javatpoint.com**, which is the URL or web address for the javatpoint website. A URL represents the address of a resource, including the protocol used to access it.
A URL includes the following information:

- It uses the protocol to access the resource.
- It defines the location of a server by IP address or the domain name.
- It includes a fragment identifier, which is optional.
- It contains the location of the resource in the directory of the server.

A URL forwards user to a particular online resource, such as a video, webpage, or other resources. For example, when you search information on Google, the search results display the URL of the relevant resources in response to your search query. The title which appears in the search results is a hyperlink of the URL of the webpage. It is a **Uniform Resource Identifier**, which refers to all kinds of names and addresses of the resources on the webservers. URL's first part is known as a **protocol identifier**, and it specifies the protocol to use, and the second part, which is known as a resource name, represents the IP address or the domain name of a resource. Both parts are differentiated by a colon and two forward slashes like http://www.javatpoint.com**.**

## SERVER

A server commonly refers to a computer program that receives and responds to requests made over a network. It receives the request for a web document from the client and sends the requested information to the client computer on the Internet. A device can be both a client and a server at the same time, as an individual system has the ability to provide resources and use them from another system in one go. There are different types of servers, including mail servers, virtual servers, and web servers.

# Web Server

A web server offers web pages or other content to the web browser by loading the information from a disc and transfer files by using a network to the user's web browser. It is used by a computer or collection of computers to provide content to several users over the internet. This exchange was done with the help of HTTP communicating between the browser and the server. There are some examples of web servers given below; you can also download these web servers from given below *download links:*

- Apache: https://www.apache.org/
- Tomcat: https://tomcat.apache.org/

# Web Hosting

Web hosting refers to a service provided by the web host to websites to make them available for the users on the internet. It gives you space on its server that allows you to post your website on the internet. Without a web host or web hosting, your site can not be viewed by the users, so after creating a site, you will need a web hosting service.

The web host stores your website or webpages in high-powered computers, which are known as **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 webpages will be delivered to them through the browser.
A web hosting is a service that allows users to post a website or web pages onto the internet. Website data is hosted or stored on special computers known as servers. To access any website, the user needs to type the website address (Domain Address) into the browser's address bar. After that, the browser will connect the user to the server, and the webpage will be displayed through the browser.

# DNS: Domain Name System

DNS stands for Domain Name System. The internet world is completely based on IP (Internet Protocol) address. To access any website you need to know its IP address which is a long numeric code and is not possible to learn.
Now, here comes the role of DNS. A DNS is an internet service that translates a domain name into corresponding IP address. Domain name used here is alphabetic and can be easily remembered.
For example, **www.example.com** is a domain name of a site. And with the help of DNS it will get translate into its IP address 198.105.232.4.

### How DNS works

DNS works with the help of DNS servers. When a user enters the domain name into the web browser, the request goes to the DNS server. The DNS server determines the IP address using a look-up table. Then it sends the requested information to user?s web browser through proper servers.

Furthermore, a DNS system has its own network. If one DNS server does not know how to translate a particular domain name, it will ask another server, then another server, and so on, until they find out the correct IP address. A DNS server holds a list of all IP addresses along with its domain names, which can be retrieved when required.

# W3C:

W3C stands for **World Wide Web Consortium**.

It is basically the main international establishment for the **WWW(World Wide Web)**. The main motive behind the World Wide Web Consortium is to lead the web to its full potential and to ensure regular development of the web. It serves the purpose of developing various protocols in order to ensure the growth of the web. It consists of organizations that provide full time working for staff in order to ensure the development of the web. Currently, the W3C is being led by Tim Berners-Lee and has a staff of 443 members. The main headquarters of W3C is located in Cambridge, Massachusetts, United

The World Wide Web Consortium (W3C) is an international community where Member organizations, a full-time staff, and the public work together to develop Web standards. Led by Web inventor and Director Tim Berners-Lee and CEO Jeffrey Jaffe**,** W3C's mission is to lead the Web to its full potential. Contact W3C for more information.

**Characteristics of W3C**

- It is responsible for creating and publishing web standards.
- It also ensures the growth and development of web.
- It also develops the standards for web scripting, web applications and other dynamic contents.
- It is an organization which helps in the promotion of interoperability by the promotion and designing of open protocols.
- W3C uses the principles of modularity, simplicity and extensibility while designing web protocols.

# HTML

HTML is an acronym which stands for **Hyper Text Markup Language** which is used for creating web pages and web applications. Let's see what is meant by Hypertext Markup Language, and Web page.

**Hyper Text:** HyperText simply means "Text within Text." A text has a link within it, is a hypertext. Whenever you click on a link which brings you to a new webpage, you have clicked on a hypertext. HyperText is a way to link two or more web pages (HTML documents) with each other.

**Markup language:** A markup language is a computer language that is used to apply layout and formatting conventions to a text document. Markup language makes text more interactive and dynamic. It can turn text into images, tables, links, etc.

- HTML stands for HyperText Markup Language.
- HTML is used to create web pages and web applications.
- HTML is widely used language on the web.
- We can create a static website by HTML only.
- Technically, HTML is a Markup language rather than a programming language.

# XHTML

XHTML stands for **EXtensible HyperText Markup Language.** It is a cross between HTML and XML language.XHTML is almost identical to HTML but it is stricter than HTML. XHTML is HTML defined as an XML application. It is supported by all major browsers.

Although XHTML is almost the same as HTML but It is more important to create your code correctly, because XHTML is stricter than HTML in syntax and case sensitivity. XHTML documents are well-formed and parsed using standard XML parsers, unlike HTML, which requires a lenient HTML-specific parser.

XHTML was developed to make HTML more extensible and increase interoperability with other data formats. There are two main reasons behind the creation of XHTML:

- It creates a stricter standard for making web pages, reducing incompatibilities between browsers. So it is compatible for all major browsers.
- It creates a standard that can be used on a variety of different devices without changes.

### Changes in Document Structure

- All documents must have a DOCTYPE.
- The xmlns attribute in <html> is mandatory and must specify the xml namespace for the document.
- <html>, <head>, <title>, and <body> are mandatory with their respective closing tags.
- All XHTML tags must be in lower case.
- All XHTML tags must be closed.
- All XHTML tags must be properly nested.
- The XHTML documents must have one root element.

## DHTML

**DHTML** stands for **Dynamic Hypertext Markup language** i.e., **Dynamic HTML**.Dynamic HTML is not a markup or programming language but it is a term that combines the features of various web development technologies for creating the web pages dynamic and interactive.The DHTML application was introduced by Microsoft with the release of the 4$^{th}$ version of IE (Internet Explorer) in 1997.

### Components of Dynamic HTML

DHTML consists of the following four components or languages:

- HTML 4.0
- CSS
- JavaScript
- DOM.

### HTML 4.0

HTML is a client-side markup language, which is a core component of the DHTML. It defines the structure of a web page with various defined basic elements or tags.

### CSS

CSS stands for Cascading Style Sheet, which allows the web users or developers for controlling the style and layout of the HTML elements on the web pages.

### JavaScript

JavaScript is a scripting language which is done on a client-side. The various browser supports JavaScript technology. DHTML uses the JavaScript technology for accessing, controlling, and manipulating the HTML elements. The statements in JavaScript are the commands which tell the browser for performing an action.

### DOM

DOM is the document object model. It is a w3c standard, which is a standard interface of programming for HTML. It is mainly used for defining the objects and properties of all elements in HTML.

### Uses of DHTML

Following are the uses of DHTML (Dynamic HTML):

- It is used for designing the animated and interactive web pages that are developed in real-time.
- DHTML helps users by animating the text and images in their documents.
- It allows the authors for adding the effects on their pages.
- It also allows the page authors for including the drop-down menus or rollover buttons.
- This term is also used to create various browser-based action games.
- It is also used to add the ticker on various websites, which needs to refresh their content

# Html – Introduction

- HTML is the main markup language for describing the structure of web pages.
- HTML stands for HyperText Markup Language.
- HTML is the basic building block of World Wide Web.
- Hypertext is text is references to other text that the user can immediately access.
- Apart from text, hypertext may contain tables, lists, forms, images, and other presentational elements. It is an easy-to-use and flexible format to share information over the Internet.
- Markup languages use sets of markup tags to characterize text elements within a document, which gives instructions to the web browsers on how the document should appear.
- Html5 is the combination of three web technologies:
    1. HTML → to build webpage structure,
    2. CSS → to enhance look and feel( presentation layer).
    3. Javascript → to add functionality to HTML elements.

# History of HTML

- HTML was originally developed by Tim Berners-Lee in 1990.
- He is also known as the father of the web.
- In 1996, the World Wide Web Consortium (W3C) became the authority to maintain the HTML specifications.
- HTML also became an international standard (ISO) in 2000.
- HTML5 is the latest version of HTML, provides a faster and more robust approach to web development.

# HTML Versions

- ✓ HTML 1.0: The first version of HTML was 1.0, which was the barebones version of HTML language, and it was released in1991.
- ✓ HTML 2.0: Released in 1995, and it was standard language version for website design.
- ✓ HTML 3.2: HTML 3.2 version was published by W3C in early 1997. This version was capable of creating tables and providing support for extra options for form elements.
- ✓ HTML 4.01: HTML 4.01 version was released on December 1999, and it is a very stable version of HTML language. This version is the current official standard, and it provides added support for stylesheets (CSS) and scripting ability for various multimedia elements.
- ✓ HTML5 : HTML5 is the newest version of HyperText Markup language. announced in January 2008. There are two major organizations one is W3C (World Wide Web Consortium), and another one is WHATWG( Web Hypertext Application Technology Working Group) which are involved in the development of HTML 5 version, and still, it is under development.

# Features of HTML

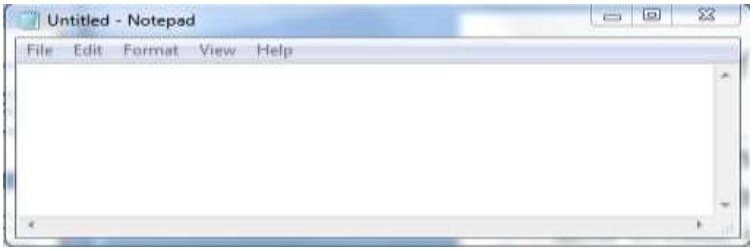
- ✓ It is a very easy and simple language.
- ✓ It is very easy to make an effective presentation .
- ✓ It is a markup language.
- ✓ It facilitates programmers to add a link on the web pages.
- ✓ It is platform-independent.
- ✓ It facilitates the programmer to add Graphics, Videos, and Sound to the web pages which makes it more attractive and interactive.
- ✓ HTML is a case-insensitive language.

# Creating Your First HTML Document

## *Step 1: Creating the HTML file*

Open up your computer's plain text editor and create a new file.

Open **Start > Programs > Accessories > Notepad**




## *Step 2: Type some HTML code*

Start with an empty window and type the following code:

```
<!DOCTYPE html>
    <html>
    <body>
    <h1>My First Heading</h1>
    <p>My first paragraph.</p>
    </body>
    </html>
```

## *Step 3: Saving the file*

Save the file on your computer. Select **File > Save as** in the Notepad menu.

Now save the file on your desktop as "myfirstpage.html ".

## *Step 4: View the HTML Page in Your Browser*

Open the saved HTML file in your favorite browser (double click on the file, or right-click - and choose "Open with").

The result will look much like this:


## Explanation of code

- ✓ <!DOCTYPE html> is the document type declaration.
- ✓ The <head> element is a container for the tags that provides information about the document, for example, <title> tag defines the title of the document.
- ✓ The <body> element contains the document's actual content (paragraphs, links, images, tables, and so on) that is rendered in the web browser and displayed to the user.

# HTML Document Structure/ Structural Elements)

- ✓ All HTML documents must start with a document type declaration: <!DOCTYPE html>.
- ✓ The HTML document itself begins with <html> and ends with </html>.
- ✓ The visible part of the HTML document is between <body> and </body>.

## The <!DOCTYPE> Declaration

- ✓ The <!DOCTYPE> declaration represents the document type, and helps browsers to display web pages correctly.
- ✓ It must only appear once, at the top of the page (before any HTML tags).
- ✓ The <!DOCTYPE> declaration is not case sensitive.
- ✓ The <!DOCTYPE> declaration for HTML5 is:

```
<!DOCTYPE html>
```

### *<html> tag*

- ✓ The <html> tag represents the root of an HTML document.
- ✓ The <html> tag is the container for all other HTML elements (except for the <!DOCTYPE> tag).
- ✓ Note: You should always include the lang attribute inside the <html> tag, to declare the language of the Web page. This is meant to assist search engines and browsers.

### *<head> tag*

- ✓ The <head> element is a container for metadata (data about data) and is placed between the <html> tag and the <body> tag.
- ✓ Metadata is data about the HTML document. Metadata is not displayed.
- ✓ Metadata typically define the document title, character set, styles, scripts, and other meta information.
- ✓ The following elements can go inside the <head> element:
  - o <title>
  - o <style>
  - o <base>
  - o <link>

### *<title> tag*

- ✓ The <title> tag defines the title of the document. The title must be text-only, and it is shown in the browser's title bar or in the page's tab.
- ✓ The <title> tag is required in HTML documents!
- ✓ The contents of a page title is very important for search engine optimization (SEO)! The page title is used by search engine algorithms to decide the order when listing pages in search results.
- ✓ The <title> element:
- ✓ defines a title in the browser toolbar
- ✓ provides a title for the page when it is added to favorites
- ✓ displays a title for the page in search-engine results

### *<body> tag*

- ✓ The <body> tag defines the document's body.
- ✓ The <body> element contains all the contents of an HTML document, such as headings, paragraphs, images, hyperlinks, tables, lists, etc.

### *Attributes of body tag*

| Attribute | Value | Description |
|---|---|---|
| alink | color | It defines the color of the active link in a document. |
| background | URL | It determines the background image for the document. |

| | | |
|---|---|---|
| bgcolor | color | It determines the background color of the content. |
| link | color | It determines the color of the unvisited link. |
| text | color | It determines the color of the text in the document. |
| vlink | color | It determines the color of the visited link. |

For example, the following code will create a webpage as shown below.

```
<html>
    <body bgcolor="yellow" text="blue" vlink="red">
        <h1>Welcome</h1>
        <a href="">Click here, link to next page</a>
    </body>
</html>
```


# Building blocks of HTML

An HTML document consist of its basic building blocks which are:

***Tags :*** An HTML tag surrounds the content and apply meaning to it. It is written between < and > brackets.

***Attribute :*** An attribute in HTML provides extra information about the element, and it is applied within the start tag. An HTML attribute contains two fields: name & value.

*Syntax :-*

<tag _name attribute_name= " attr_value"> content </ tag_name>

***Html element :*** An element is a collection of start tag, attributes, end tag, content between them.

# Html Elements

An element is a collection of start tag, attributes, end tag, content between them.

There are two types of tags in HTML:

- Container tags
- Empty tags

## Container tags

Container tags are generally divided into three parts, i.e., opening tag, content(which will display on the browser), and closing tag. In the content part, they can also contain some other tags. The majority of tags present in HTML are container tags. Examples are <html>, <head>, <body>, <p> etc.

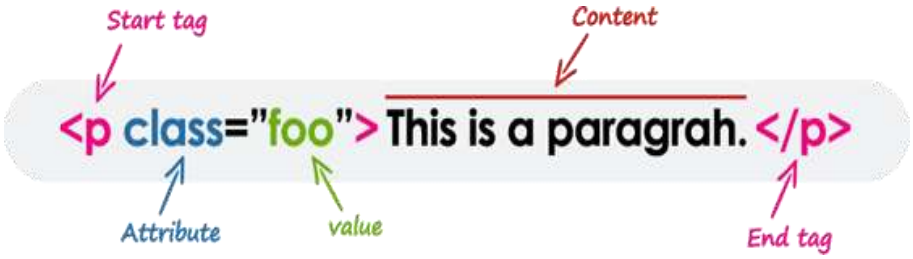
*Syntax :-*

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

Examples of some HTML container tags:

<h1>My First Heading</h1>

My first paragraph.




## Empty tags

The tags that do not contain any closing tags are known as empty tags. Empty tags contain only the opening tag but they perform some action in the webpage.

*Syntax :-*

<tagname>

or

<tagname/>

Some commonly used empty tags are:

- ***<br>:*** Inserts a line break in a webpage wherever needed.
- ***<hr>:*** Inserts a horizontal line wherever needed in the webpage.
- ***<img>:*** This tag is used to display the images on the webpage which were given in the src attribute of the tag.
- ***<input>:*** This is mainly used with forms to take the input from the user and we can also define the type of the input.
- ***<link>:*** When we store our CSS in an external file this can be used to link external files and documents to the webpage and it is mainly used to link CSS files.
- ***<meta>:*** Contains all metadata of the webpage. Metadata is the data about data and is described in the head tag.
- ***<source>:*** When an external media source is needed to be included in the webpage. source tag is used to insert any media source like audio, video etc… in our webpage.

***Example :*** This is a <br> paragraph with a line break.

## Nesting HTML Elements

- ✓ Placing one element inside another is called **nesting**.
- ✓ A nested element, also called a child element, can be a parent element too if other elements are nested within it.
  - Here is some bold text. Here is some emphasized text. Here is some <mark>highlighted</mark> text. .
- ✓ HTML tags should be nested in correct order.

# Block-level and Inline HTML elements

For the default display and styling purpose in HTML, all the elements are divided into two categories:

- ✓ Block-level element
- ✓ Inline element

## *Bock-level elements*

- ➢ A block-level element always start with new line and takes the full width of web page, from left to right.
- ➢ These elements can contain block-level as well as inline elements.
- ➢ The most commonly used block-level elements are , <p>, <h1> through <h6>, <form>, <ol>, <ul>, <li>, and so on.
- ➢ The block-level elements should not be placed within inline-level elements. For example, the <p> element should not be placed inside the <b> element

**Example for block level elements**

```
<!DOCTYPE html>
<html>
            <head>
    </head>
<body>
    <div style="background-color: lightblue">This is first div</div>
    <div style="background-color: lightgreen">This is second div</div>
    <p style="background-color: pink">This is a block level element</p>
</body>
</html>
```


## *Inline elements*

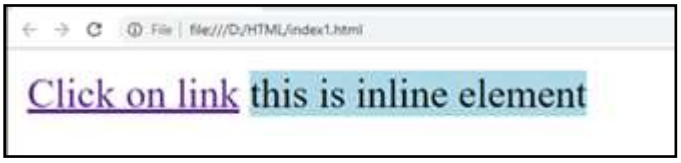
- ➢ Inline elements are those elements, which differentiate the part of a given text and provide it a particular function.
- ➢ These elements does not start with new line and take width as per requirement.
- ➢ The Inline elements are mostly used with other elements.
- ➢ the commonly used inline-level elements are

  <img>, <a>, , , <b>, , <i>, <code>, <input>, <button>, etc.

**Example for inline elements**

```
<!DOCTYPE html>
<html>
    <head>
    </head>
```

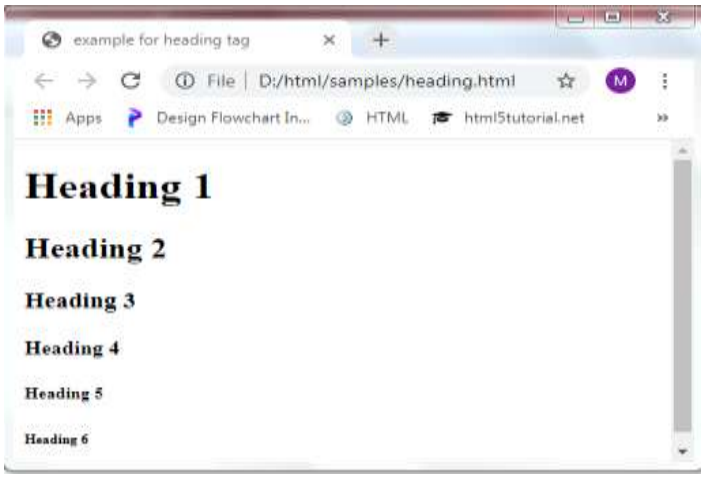
```
<body>
    <a href="https://www.javatpoint.com/html-tutorial">Click on link</a>
    <span style="background-color: lightblue">this is inline element</span>
    </body>
</html>
```




# HTML Headings tags

- There are six different HTML headings which are defined with the <h1> to <h6> tags, from highest level h1 (main heading) to the least level h6 (least important heading).
- h1 is the largest heading tag and h6 is the smallest one. So h1 is used for most important heading and h6 is used for least important.
- By default, browsers display headings in larger and bolder font than normal text.

```
<html>
<head>
  <title> example for heading tag</title></head>
<body>
<h1>Heading 1</h1>
<h2>Heading 2</h2>
<h3>Heading 3</h3>
<h4>Heading 4</h4>
<h5>Heading 5</h5>
<h6>Heading 6</h6>
</body>
</html>
```



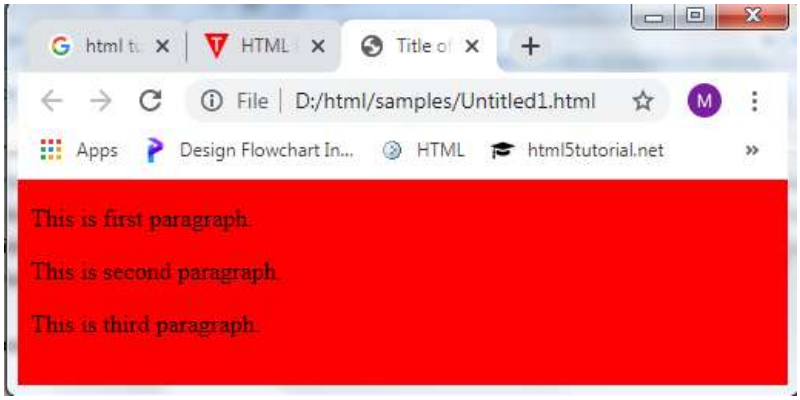

# HTML Paragraph <p> tag

HTML paragraph or HTML p tag is used to define a paragraph in a webpage. Let's take a simple example given below to see how it work. It is a notable point that a browser itself add an empty line before and after a paragraph. An HTML <p> tag indicates starting of new paragraph.

If we are using various <p> tags in one HTML file then browser automatically adds a single blank line between the two paragraphs graph. browser removes extra spaces and extra line while displaying the page. The browser counts number of spaces and lines as a single one.

***Example for <p> tag***

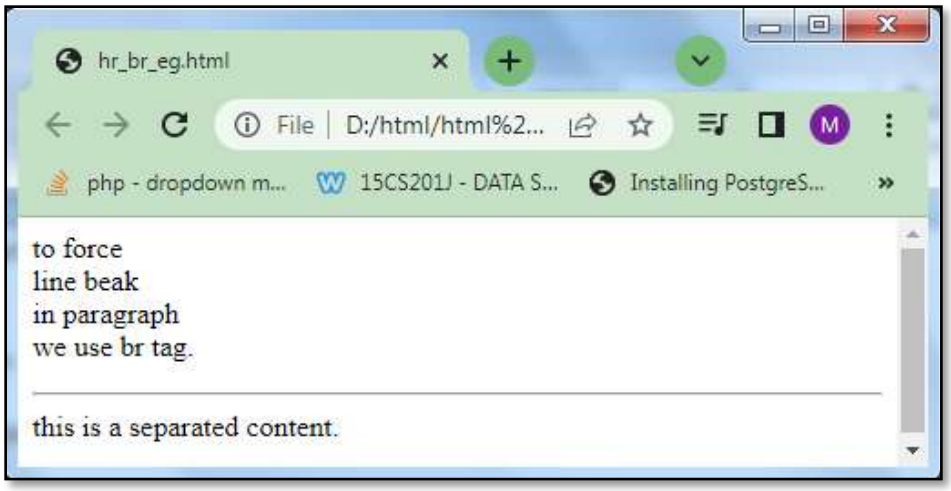
```
<!DOCTYPE html>
<html>
<head>
<title>Untitled Document</title>
</head>
<body bgcolor="red">
<p> this is
first
paragraph </p>
<p> this is second paragraph </p>
<p> this is third paragraph </p>
</body>
</html>
```




# HTML Line Break & Horizontal Line

An HTML <br> tag is used for line break and it can be used with paragraph elements. The <hr> element is most often displayed as a horizontal rule that is used to separate content (or define a change) in an HTML page. An HTML <hr> tag is used to apply a horizontal line between two statements or two paragraphs. <hr> and <br> are empty tags. Following is the example which is showing use of <hr> and <br> tag with paragraph.

```
<html>
    <body>
        <p>to force<br> line beak <br>in paragraph<br>
        we use br tag.
        <hr>this is a separated content.
        </p>
    </body>
</html>
```




# HTML Text Formatting

HTML Formatting is a process of formatting text for better look and feel. HTML provides us ability to format text without using CSS. There are many formatting tags in HTML. These tags are used to make text bold, italicized, or underlined. Some of them are listed in table below.

| Element name | Description |
|---|---|
|  | This is used to bold the text written between it. |
|  | It tells the browser that the text is important. |
|  | This is used to make text italic. |
|  | This is used to display content in italic. |
| <mark> | This tag is used to highlight text. |
| <u> | This tag is used to underline text written between it. |
| <tt> | This tag is used to appear a text in monospaced font. (not supported in HTML5) |
| <strike> | This tag is used to draw a strikethrough on a section of text. (Not supported in HTML5) |
| <sup> | It displays the content slightly above the normal line. |
| <sub> | It displays the content slightly below the normal line. |
| <del> | This tag is used to display the deleted content. |
| <ins> | This tag displays the content which is added |
| <big> | This tag is used to increase the font size by one unit from base font size. |
| <small> | This tag is used to decrease the font size by one unit from base font size. |

## *Bold Text -  and  tags*

HTML  tag is used to display the written text in bold format, without any extra importance. It is strictly a presentational element. If you want to show your text in bold letters and not have real semantic meaning, then put it within ..... tag.

```
<b> this text is displayed in bold face.</b>
```

The  tag adds extra semantic meaning to the HTML document. The HTML  element defines text with strong importance. The content inside is typically displayed in bold.

```
<strong>this is important and displayed in bold.</strong>
```

## *Italic Text -  and  tags*

To make text italic in HTML, use the … tag or … tag. Both the tags have the same functioning, but  tag is a logical element, which will display the enclosed content in italic font, with added semantics importance.  element is physical element, which display the enclosed content in italic font, without any added importance.

```
<i> this text is displayed in italics.</i>
```

```
<em> this is important and displayed in italics.</em>
```

### *Highlight text - <mark> tag*

If we want to mark or highlight a text, we should write the content within <mark>.....</mark>.

```
<mark> this text is highlighted</mark>
```

### *Underlined Text - <u> tag*

If we write anything within <u>.....</u> element, is shown in underlined text.

```
<u> this text is underlined.</u>
```

### *Strike Text - <strike> tag*

Anything written within <strike>.....</strike> element is displayed with strikethrough. It is a thin line which cross the statement.

```
<strike> this is a text with strike through.</strike>
```

### *Superscript & Subscript*

The HTML <sup> element defines superscript text. Superscript text appears half a character above the normal line, and is sometimes rendered in a smaller font. Superscript text can be used for footnotes, like Well[1]:

```
<p>example for sup tag : area of square = a<sup>2</sup></p>
```

The HTML <sub> element defines subscript text. Subscript text appears half a character below the normal line, and is sometimes rendered in a smaller font. Subscript text can be used for chemical formulas, like $H_2O$:

```
<p>example for sub tag : chemical formula of water is H<sub>2</sub>O</p>
```

### *<big> and <small> tags*

If we want to put font size larger than the normal font size of our web page then put the content within <big>.....</big>. It increase one font size larger than the previous one.

```
<big>this text size is bigger than </big>normal text.
```

If we want to put font size smaller than the rest of the text then put the content within <small>.....</small>tag. It reduces one font size than the previous one. Example,

```
<small>this text size is smaller than </small>normal text.
```

### *<del> and <ins> tags*

The HTML <del> element defines text that has been deleted from a document. Browsers will usually strike a line through deleted text:

The HTML <ins> element defines a text that has been inserted into a document. Browsers will usually underline inserted text:

```
my favourite color is <del> blue</del><ins> red</ins>
```

### *Teletype - <tt> tag*

HTML <tt> tag (not supported in html 5) was used to define text in monospaced font. In monospace font, each letter has the same width, so that it would render as teletype. For example,

```
<tt>This text is teletype or monospaced.</tt>
```

### *Marquee tag*

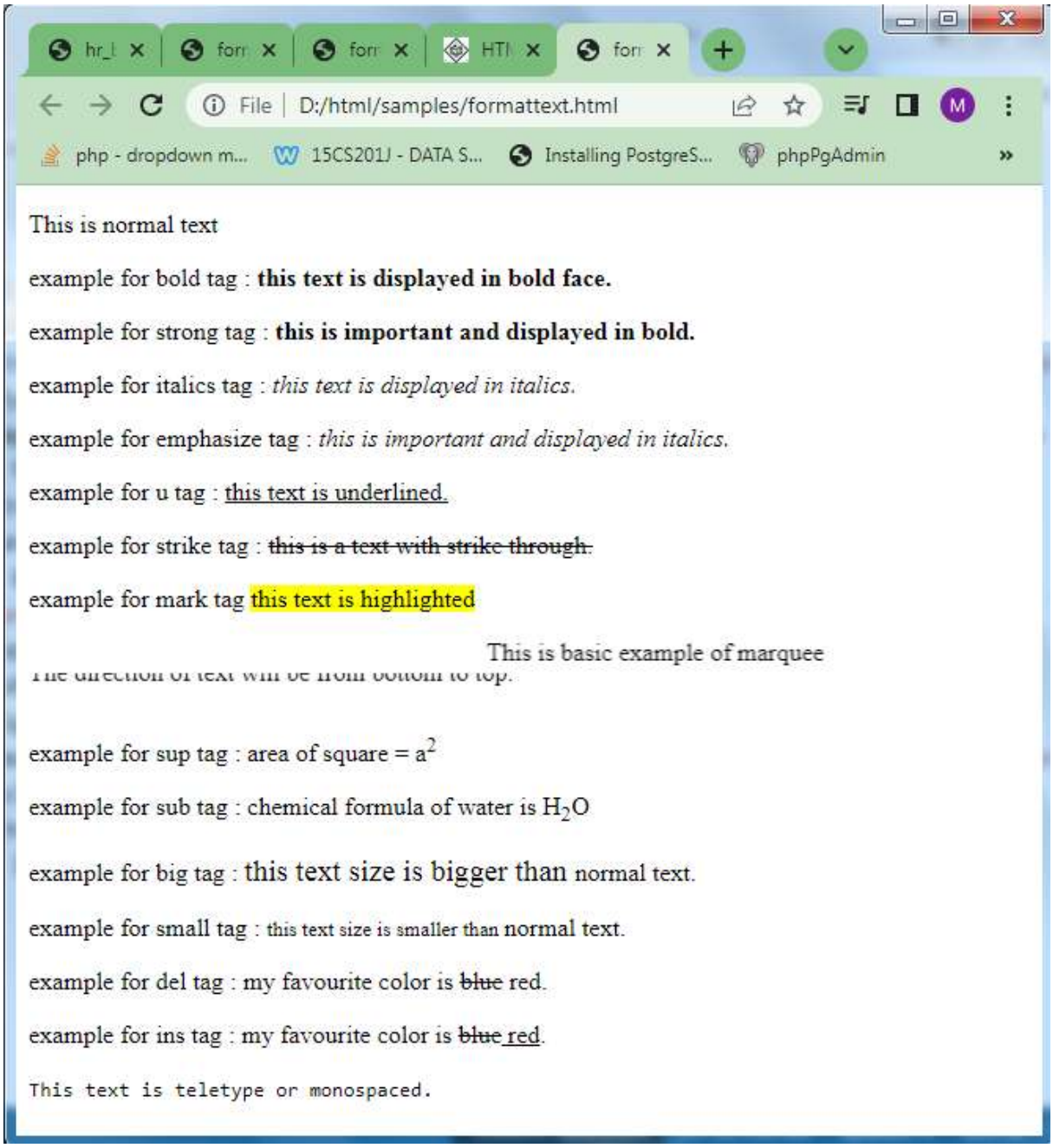
The HTML <marquee> tag is used for scrolling piece of text or image displayed either horizontally across or vertically down your web site page depending on the settings. For example,

```
<marquee>This is basic example of marquee, text moves horizontally</marquee>
```

```
<marquee direction = "up">The direction of text will be from bottom to top.</marquee>
```

***An example for above text formatting tags***

```
<html>
<body>
<p>This is normal text</p>
<p>example for bold tag : <b> this text is displayed in bold face.</b></p>
<p>example for strong tag : <strong>this is important and displayed in bold.</strong></p>
<p>example for italics tag : <i> this text is displayed in italics.</i></p>
<p>example for emphasize tag : <em> this is important and displayed in italics.</em></p>
<p>example for u tag : <u> this text is underlined.</u></p>
<p>example for strike tag : <strike> this is a text with strike through.</strike></p>
<p>example for mark tag <mark> this text is highlighted</mark></p>
<marquee>This is basic example of marquee</marquee>
<marquee direction = "up">The direction of text will be from bottom to top.</marquee>
<p>example for sup tag : area of square = a<sup>2</sup></p>
<p>example for sub tag : chemical formula of water is H<sub>2</sub>O</p>
<p>example for big tag : <big>this text size is bigger than </big>normal text.</p>
<p>example for small tag : <small>this text size is smaller than </small>normal text.</p>
<p>example for del tag : my favourite color is <del> blue</del> red.</p>
<p>example for ins tag : my favourite color is <del> blue</del><ins> red</ins>.</p>
<p><tt>This text is teletype or monospaced.</tt></p>
</body>
</html>
```


File | D:/html/samples/formattext.html
php - dropdown m...
15CS201J - DATA S...
Installing PostgreS...
phpPgAdmin
This is normal text
example for bold tag : this text is displayed in bold face.
example for strong tag : this is important and displayed in bold.
example for italics tag : this text is displayed in italics.
example for emphasize tag : this is important and displayed in italics.
example for u tag : this text is underlined.
example for strike tag : this is a text with strike through.
example for mark tag this text is highlighted
This is basic example of marquee
example for sup tag : area of square = a2
example for sub tag : chemical formula of water is H2O
example for big tag : this text size is bigger than normal text.
example for small tag : this text size is smaller than normal text.
example for del tag : my favourite color is blue red.
example for ins tag : my favourite color is blue red.
This text is teletype or monospaced.

## <font> tag

HTML <font> tag is used to define the font style for the text contained within it. It defines the font size, color, and face or the text in an HTML document. <font> tag is not supported in html 5.

<font size=" " color=" " face=" "> Content....</font>

### Attributes of <font> tag

The font tag has basically three attributes which are given below:

1. Size
2. Face
3. Color

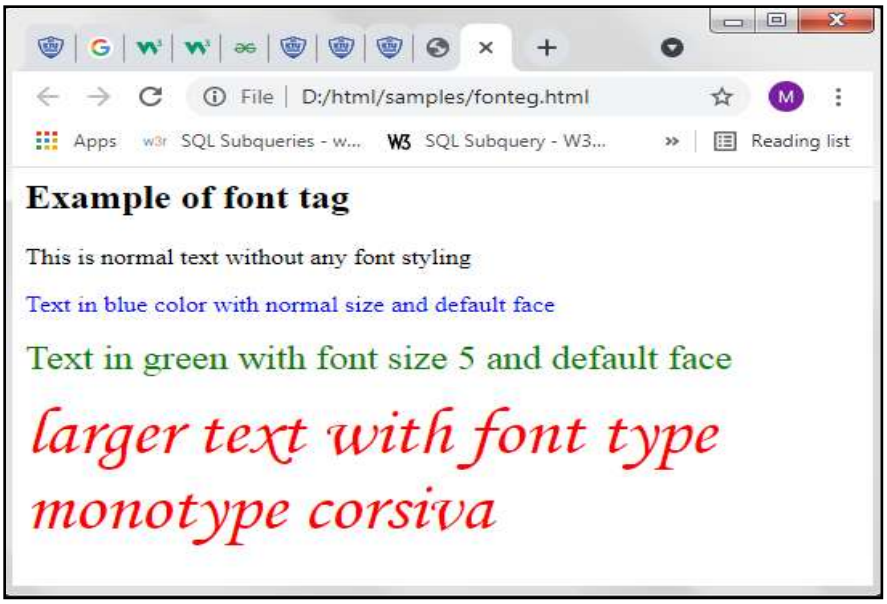
*Size attribute :* This attribute is used to adjust the size of the text in the HTML document using font tag with size attribute. The range of size of the font in HTML is from 1 to 7 and the default size is 3.

*Face attribute :* Font type can be set by using face attribute with font tag in HTML document. But the fonts used by the user needs to be installed in the system first.

*Color attribute :* Font color is used to set the text color using font tag with color attribute in HTML document. Color can be specify either with its name or with its hex code.

### *Example program to demonstrate font tag and its attributes.*

```
<!DOCTYPE html5>
 <html>
 <head>
 <title>Font Tag</title>
 </head>
 <body>
 <div border="5px">
 <h2>Example of font tag</h2> </div>
 <p>This is normal text without any font styling</p>
  <p>
    <font color="blue">Text in blue color with
  normal size and default face</font>
  </p>
  <p>
    <font size="5" color="green">Text in green with
  font size 5 and default face</font>
  </p>
  <p>
    <font color="red" size="7" face="monotype corsiva">larger text
   with font type<br> monotype corsiva</font>
  </p>
</body>
</html>
```




### *The <basefont> tag*

HTML <basefont> tag was used to specify the default value of font-size, color, and font-family for all content written within an HTML document.

The <basefont> was deprecated in HTML 4 and completely removed from HTML5 so do not use this tag, instead of it you can use CSS to style the document.

Syntax:- `<basefont color="blue" size="5" face="arial">`

In HTML the closing tag </basefont> is not required.

# HTML Images - <img> tag

- The <img> tag is used to display image on the web page.
- The <img> tag creates a holding space for the referenced image.
- The <img> tag is empty, it contains attributes only, and does not have a closing tag.
- The <img> tag has two required attributes:
  - src - Specifies the path to the image
  - alt - Specifies an alternate text for the image

Syntax

```
<img src="url" alt="alternatetext">
```

## Attributes of <img> tag

The src and alt are required attributes of HTML img tag. Attributes of HTML image tag are:-

### *src :*

the source or path (URL) of the image.

### *alt :*

The alt attribute provides an alternate text for an image. if the user cannot view the image (because of slow connection, an error in the src attribute, or if the user uses a screen reader), then the alternate text will displayed.

### *Setting width and height :*

If width and height are not specified, the web page might flicker while the image loads.

#### *Height :*

the height attribute specifies height of image in pixels.

### *Width :*

the width attribute specifies width of image in pixels.

### *Setting a border to Image:*

By default, every picture has a border around it. By using the border attribute, the thickness of the border can be changed. A thickness of “0” means that there will be no border around the picture. For example, here we set border with thickness 5px to an image.

```
<img src="rectangle.jpg" alt="rectangle shape" border="5">
```

### *Aligning an Image*

By default, an image is aligned on the left side of the page, but it can be aligned to the center or right using the align attribute. For example, below image is right aligned.

```
<img src="triangle.jpg" alt="triangle shape" width="200" height="100" align="right">
```

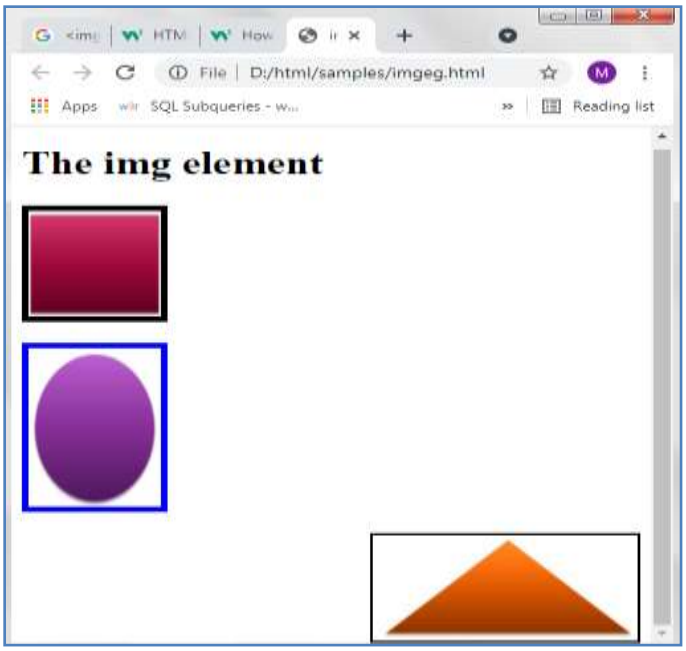
### *Using style attribute*

By using css style attribute, we can set border, alignment, size etc of an image. For example, here we use style attribute to set size and border of the image.

```
<img src="circle.jpg" alt="circle shape" style="width:100px;height:150px;border:5px solid blue;">
```

### *Example for <img> tag*

```
<!DOCTYPE html>
<html>
<body>
<h1>The img element</h1>
<p><img src="rectangle.jpg" alt="rectangle shape"
width="100" height="100" border="5"></p>
<p>
    <img src="circle.jpg" alt="circle shape"
         style="width:100px; height:150px; border:5px solid blue;"></p>
<div><img src="triangle.jpg" alt="triangle shape"
width="200" height="100" border="2" align="right"></div>
</body>
</html>
```




# HTML Lists

HTML Lists are used to specify lists of information. All lists may contain one or more list elements. There are three different types of HTML lists:

1. Ordered List or Numbered List (ol)
2. Unordered List or Bulleted List (ul)
3. Description List or Definition List (dl)

## HTML Ordered List or Numbered List

In the ordered HTML lists, all the list items are marked with numbers by default. It is known as numbered list also. The ordered list starts with <ol> tag and the list items start with <li> tag. For example,

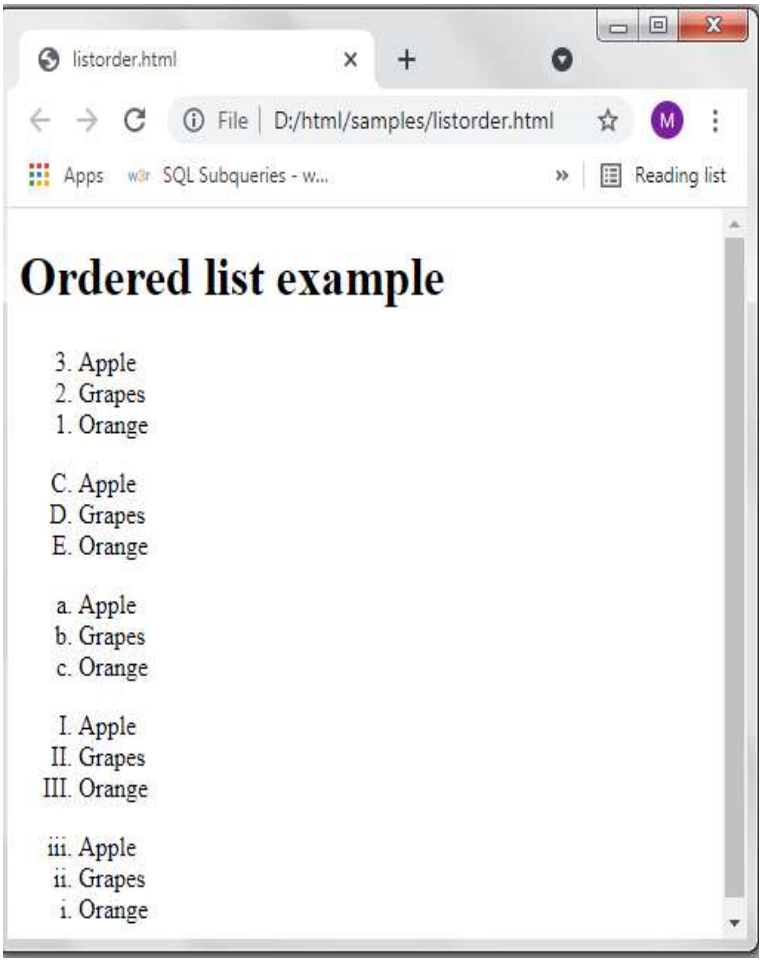
```
<ol>
    <li>Apple</li>
    <li>Grapes</li>
    <li>Orange</li>
</ol>
```

### *Attributes of <ol> tag*

| Attribute | Value | Description |
|---|---|---|
| reversed | Reversed | Specifies that the list order should be reversed (9,8,7...) |
| start | Number | Specifies the start value of an ordered list. For example <ol type="A" start="3"> displays list items starts with C. |
| type | <br>1<br>A<br>a<br>I<br>i | Specifies the type of marker to use in the list.<br>List items are numbered with the specified marker.<br>type = "1" – numbers (default)<br>type = "A" – upper case letters<br>type = "a" – lower case letters<br>type = "I" – upper case roman numbers<br>type = "1" – lower case roman numbers |

***An example for ordered list***

```
<!DOCTYPE html>
<html>
<body>
<h1>Ordered list example</h1>
<ol type="1" reversed>
    <li>Apple</li>
    <li>Grapes</li>
    <li>Orange</li>
</ol>
<ol type="A" start="3">
    <li>Apple</li>
    <li>Grapes</li>
    <li>Orange</li>
</ol>
<ol type="a">
    <li>Apple</li> <li>Grapes</li> <li>Orange</li>
</ol>
<ol type="I">
    <li>Apple</li> <li>Grapes</li> <li>Orange</li>
</ol>
<ol type="i" reversed>
    <li>Apple</li> <li>Grapes</li> <li>Orange</li>
</ol>
</body>
</html>
```




## Un ordered or bulleted list

We use unordered lists to group items having no numerical order. To create an unordered list, we use the <ul> tag. This tag comes in pairs, the content is written between opening <ul> and closing </ul> tags. Each element of an unordered list is declared inside the <li> tag.

The items in unordered lists are marked with bullets ( type = “disc”) by default. However, the default bullet style for the list items can be changed using a type attribute. Type attribute can take any one of the values disc, square or circle.

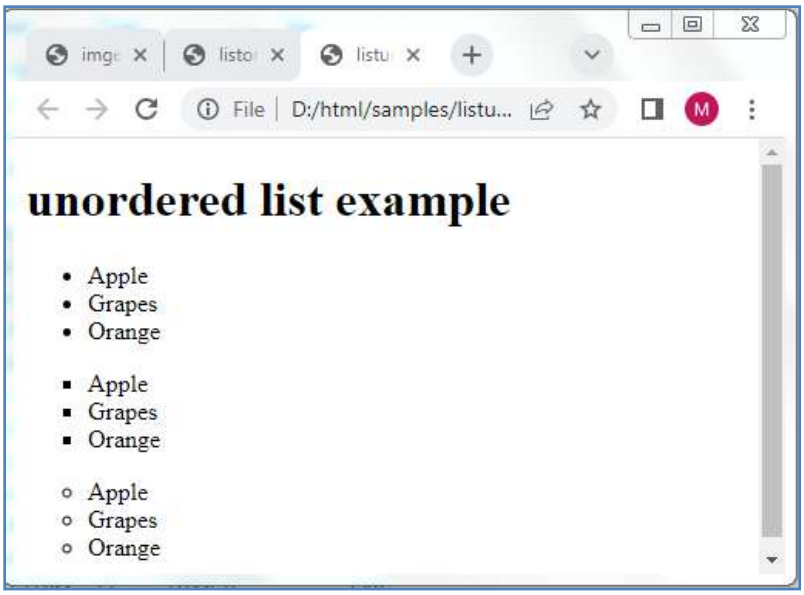
we can also use the CSS list-style-type (values are disc, square, circle and none) or list-style-image property to specify the type of a list item element. For example,

```
<ul>
    <li>Apple</li>
    <li>Grapes</li>
    <li>Orange</li>
</ul>
```

### *An example for unordered list*

```
<!DOCTYPE html>
<html>
<body>
<h1> unordered list example</h1>
<ul>
    <li>Apple</li>
    <li>Grapes</li>
    <li>Orange</li>
```

```
</ul>
<ul type="square">
    <li>Apple</li> <li>Grapes</li> <li>Orange</li>
</ul>
<ul style="list-style-type: circle">
    <li>Apple</li> <li>Grapes</li> <li>Orange</li>
</ul>
</body>
</html>
```




## Description List or Definition List

HTML Description list is also a list style which is supported by HTML and XHTML. It is also known as definition list and it is used to arrange terms or names with a description the same way as they are arranged in a dictionary.

the HTML definition list contains following three tags:

1. <dl> tag to define a description list
2. <dt> tag to define the description term
3. <dd> tag to describe the term in a description list.

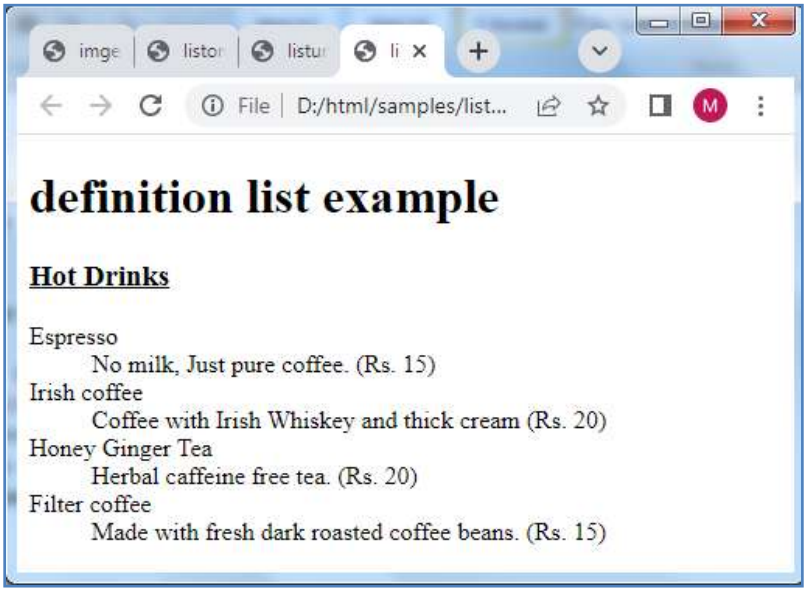
For example,

```
<dl>
    <dt>Fruits</dt>
    <dd>Apple, Orange, Grapes etc.</dd>
    <dt>Vegetables</dt>
    <dd>Onion, Tomato, Chilly etc.</dd>
</dl>
```

***An example for definition list***

```
<!DOCTYPE html>
<html>
<body>
<h1> definition list example</h1>
<h3><u>Hot Drinks</u></h3>
```

```
<dl>
    <dt>Espresso</dt>
    <dd>No milk, Just pure coffee.  (Rs. 15)</dd>
    <dt>Irish coffee</dt>
    <dd>Coffee with Irish Whiskey and thick cream (Rs. 20)</dd>
    <dt>Honey Ginger Tea</dt>
    <dd>Herbal caffeine free tea. (Rs. 20)</dd>
    <dt>Filter coffee</dt>
    <dd>Made with fresh dark roasted coffee beans. (Rs. 15)</dd>
</dl>
</body></html>
```




# HTML Links – Anchor tag

- ✓ Links are found in nearly all web pages. Links allow users to click their way from page to page.
- ✓ The HTML anchor tag defines a hyperlink that links one page to another page.
- ✓ A link does not have to be text. A link can be an image or any other HTML element!

Syntax:-

**<a href="*url*">*link text*</a>**

The most important attribute of the <a> element is the href attribute, which indicates the link's destination. The link text is the part that will be visible to the reader. Clicking on the link text, will send the reader to the specified URL address. By default, links will appear as follows in all browsers:

- An unvisited link is underlined and blue
- A visited link is underlined and purple
- An active link is underlined and red

Links can of course be styled with CSS, to get another look!

## Attributes of <a> tag

### *The target Attribute*

The target attribute specifies where to open the linked document. The target attribute can have one of the following values:

- _self - Default. Opens the document in the same window/tab as it was clicked
- _blank - Opens the document in a new window or tab

- _parent - Opens the document in the parent frame
- _top - Opens the document in the full body of the window

Use target="_blank" to open the linked document in a new browser window or tab:

```
<a href="https://htmlbegtutorial.com/" target="_blank">html tutorial</a>
```

### *title attribute*

The title attribute specifies extra information about an element. The information is most often shown as a tooltip text when the mouse moves over the element.

```
<a href="https://www.htmlbeg.com" title="link to html tutorial">Visit our HTML Tutorial</a>
```

### *The download Attribute*

The download attribute specifies that the target (the file specified in the href attribute) will be downloaded when a user clicks on the hyperlink.

Download file when clicking on the link (instead of navigating to the file): for example,

```
<a href="/images/myw3schoolsimage.jpg"  download>
```

The optional value of the download attribute will be the new name of the file after it is downloaded. If the value is omitted, the original filename is used.

### *The hreflang Attribute*

The hreflang attribute specifies the language of the document in the link:

```
<a href="https://www.htmlbeg.com" hreflang="en">html tut</a>
```

A two-letter language code that specifies the language of the linked document. Here 'en' for english.

### *The rel Attribute*

The rel attribute specifies the relationship between the current document and the linked document.

Search engines can use this attribute to get more information about a link!

A link with a rel attribute:

```
<a rel="nofollow" href="http://www.functravel.com/">Cheap Flights</a>
```

The below table shows values can be set to the rel attribute.

| Value | Description |
|---|---|
| alternate | Provides a link to an alternate representation of the document (i.e. print page, translated or mirror) |
| author | Provides a link to the author of the document |
| external | Indicates that the referenced document is not part of the same site as the current document |
| help | Provides a link to a help document |
| license | Provides a link to licensing information for the document |
| next | Provides a link to the next document in the series |
| prev | The previous document in a selection |
| search | Links to a search tool for the document |

## Types of links

### *External and Internal links*

An Internal Link is a link in our website that navigates the visitor to another page in our website. Internal links only point within our own specific website or domain. The menu bar at the top of the website includes internal links. Links from pages on a site to its contact page are another simple example of internal links.

The External Link navigates the visitor away from our site to another website in the internet (like https://google.com). External links point from one domain to an entirely separate domain. They may be links from one website to another website to provide additional information for readers, or they may be links from a website to an affiliate program.

An example for internal and external links

```
<!DOCTYPE html>
<html><body>
<h2>External link example</h2>
<p><a href="https://www.google.com/">Google</a></p>
<h2>Internal link example</h2>
<p><a href="tut/tutorial.html">HTML </a></p>
<a href="somepage.html">HTML tutorial</a>
</body></html>
```

### *Using Image as Link*

To use an image as a link, just put the <img> tag inside the <a> tag. For example,

```
<a href="default.asp">
   <img src="smiley.gif" alt="HTML tutorial" style="width:42px;height:42px;">
</a>
```

### *Link to an Email Address*

HTML Link also used for create a Mailto link to send a email to a specific E-mail address. For this, use mailto: inside the href attribute to create a link that opens the user's email program (to let them send a new email):

When click on E-Mail link, it will open E-Mail application and opens the window for composing email to the mail address specified in the mailto.

For example,

```
<a href="mailto:someid@gmail.com">Send email</a>
```

# Media Tags : <audio> and <video> tags

HTML 5 has introduced two new multimedia tags, <audio> and <video>, for displaying the audio and video streams on a web page.

## HTML <Video> tag

The <video> tag is used to embed video content in a document, such as a movie clip or other video streams.

For example,

```
<html><body><h1> video tag example</h1>
<video width="320" height="240" controls autoplay>
    <source src="movie.mp4" type="video/mp4">
    <source src="movie.ogg" type="video/ogg">
    Your browser does not support the video tag.
</video>
```

```
</body></html>
```

- The controls attribute adds video controls, like play, pause, and volume.
- It is a good idea to always include width and height attributes. If height and width are not set, the page might flicker while the video loads.
- The <source> element allows you to specify alternative video files which the browser may choose from. The browser will use the first recognized format.
- The text between the <video> and </video> tags will only be displayed in browsers that do not support the <video> element.

### *Attributes of video tag*

| Attribute | Value | Description |
|---|---|---|
| autoplay | autoplay | Specifies that the video will start playing as soon as it is ready |
| Controls | controls | Specifies that video controls should be displayed (such as a play/pause button etc). |
| Height | *pixels* | Sets the height of the video player |
| Loop | loop | Specifies that the video will start over again, every time it is finished |
| Muted | muted | Specifies that the audio output of the video should be muted |
| Poster | *URL* | Specifies an image to be shown while the video is downloading, or until the user hits the play button |
| Preload | auto<br>metadata<br>none | Specifies if and how the author thinks the video should be loaded when the page loads |
| src | *URL* | Specifies the URL of the video file |
| Width | *pixels* | Sets the width of the video player |

### *HTML Video Formats*

There are three supported video formats: MP4, WebM, and Ogg.

| File Format | Media Type |
|---|---|
| MP4 | video/mp4 |
| WebM | video/webm |
| Ogg | video/ogg |

# HTML <Audio> tag

The HTML <audio> element is used to play an audio file on a web page. For example,

```
<html><body><h1> audio tag example</h1>
<audio controls>
    <source src="horse.ogg" type="audio/ogg">
    <source src="horse.mp3" type="audio/mpeg">
    Your browser does not support the audio element.
</audio></body></html>
```

- ✓ The controls attribute adds audio controls, like play, pause, and volume.
- ✓ The <source> element allows you to specify alternative audio files which the browser may choose from. The browser will use the first recognized format.
- ✓ The text between the <audio> and </audio> tags will only be displayed in browsers that do not support the <audio> element.

## *Attributes of <audio> tag*

| Attribute | Value | Description |
|---|---|---|
| autoplay | autoplay | Specifies that the audio will start playing as soon as it is ready |
| controls | controls | Specifies that audio controls should be displayed (such as a play/pause button etc) |
| loop | Loop | Specifies that the audio will start over again, every time it is finished |
| muted | Muted | Specifies that the audio output should be muted |
| preload | auto<br>metadata<br>none | Specifies if and how the author thinks the audio should be loaded when the page loads |
| src | *URL* | Specifies the URL of the audio file |

## *HTML Audio Formats*

There are three supported audio formats: MP3, WAV, and OGG.

| File Format | Media Type |
|---|---|
| MP3 | audio/mpeg |
| OGG | audio/ogg |
| WAV | audio/wav |