

HTML

HYPER TEXT MARKUP LANGUAGE

HTML was designed by TIM BERNERS-LEE in 1993.

HTML describes the structure of a web page.

HTML consists of a series of elements.

HTML elements are represented by tags.

"Hypertext" refers to the hyperlinks that an HTML page may contain.

"Markup language" refers to the way tags are used to define the page layout and elements within the page.

HTML page extension always will be .html.

STRUCTURE OF An HTML DOCUMENT

The `<!DOCTYPE html>` declaration defines this document to be HTML 5

The `<html>` element is the root element of an HTML page.

The `<head>` element contains meta information about the document.

The `<title>` element specifies a title for the document.

The `<body>` element contains the visible page content.

Structure of HTML Documents

```
<html> root Element
  <head> meta information contains
    <title> Specifies a title </title>
  </head>
  <body> Page Contains
  </body>
</html>
```

Notes:-

HTML elements are the building blocks of HTML Page.

HTML describes the structure of web pages using HTML Elements.

HTML Elements are represented by tags.

HTML page extension always will be .html.

Head tag : Contains metadata , title , Page.css etc.

All the HTML Elements that can be used inside the <head> Elements are :-

- <style>
- <title>
- <base>
- <noscript>
- <script>
- <meta>

HTML Tags & Attributes

HTML Elements

Elements are the fundamentals of HTML. Each HTML Element is made of elements that are specified using tags.

The tags are used to open and close the object, whereas

The Element includes both tags and its content.

Ex :-

```
<h2> Title of the Document </h2>
      [-----]
      |           Element. with <h2>
      |           |
      |           +--> tag <--
```

Types of HTML Elements

Empty Elements :- The empty elements having no closing tag.

In XHTML the empty elements are "closed" in the opening tag like this: `
`

The empty elements in HTML are:

`<area>`, `<base>`, `
`, `<col>`, `<embed>`, `<hr>`,
``, `<input>`, `<keygen>`, `<link>`, `<meta>`,
`<param>`, `<source>`, `<track>` and `<wbr>`.

block-level Elements :-

for the styling purpose all HTML elements are divided into two categories :

- block-level Elements.
- In-line Elements.

⇒ all block-level elements have opening and closing tags. Block-level Elements are :

<address>, <article>, <aside>, <blockquote>, <canvas>, <dd>, <div>, <dl>, <dt>, <fieldset>, <figcaption>, <figure>, <footer>, <form>, <h1> - <h6>, <header>, <hr>, , <main>, <nav>, <noscript>, , <output>, <p>, <pre>, <section>, <table>, <tfoot>, and <video> .

⇒ In-line Elements :- They are used within other HTML Elements.

In-line Elements are :-

<a>, <abbr>, <acronym>, , <bdo>, <big>,
, <button>, <cite>, <code>, <dfn>, , <i>, , <input>, <kbd>, <map>, <object>, <q>, <samp>, <script>, <select>, <small>, , , <sub>, <sup>, <textarea>, <time>, <tt> and <var> .

-: Headings :-

Headings are defined with the `<h1>` to `<h6>` tags.

`<h1>` defines the most important heading.

`<h6>` defines the least important heading.

HTML Element	Default CSS	Pixel height
--------------	-------------	--------------

<code><h1> ... </h1></code>	2em	32 px
<code><h2> ... </h2></code>	1.5em	24 px
<code><h3> ... </h3></code>	1.17em	18.72 px
<code><h4> ... </h4></code>	1em	16 px
<code><h5> ... </h5></code>	0.83em	13.28 px
<code><h6> ... </h6></code>	0.75em	12 px

-: FORMATTING :-

HTML also defines special elements for defining text with a special meaning. The formating tags are divided into two categories:-

Physical tags used for text styling

(visual appearance of the text)

Logical tags or Semantic tag used to add semantic value to the parts of the text.

Formatting Includes,

``, ``, `<i>`, ``, `<mark>`, `<small>`, ``
`<ins>`, `<sub>`, `<sup>`.

Element Name

Description

 and

Formatting elements were designed to display special types of text:

 and Tags

The tag is a physical tag that stands for bold text.

The tag being a logical tag is used to emphasize the importance of the text.

 This text is bold

 This text is strong

<i> and Tags

These tags are define italic text.

<i> tag is only responsible for visual appearance of the enclosed text, without any text extra importance.

 tag defines emphasized text, with added semantic importance.

<i> This text is italic </i>

 This text is emphasized

<pre> Tag.

Tag is used to define preformatted text.

The browser render the enclosed text with white spaces and line breaks.

<mark> Tag

Tag is used to define present a part of text in one document as marked or highlight for reference purpose. It is a logical tag.

<h2> HTML <mark> MARKED </mark> formatting </h2>

<small> Tag

It is used to decrease the font size of the text.

The tag usually contains the items of secondary importance such as copyright notices, side comments, or legal notices.

 and <s> Tags.

 tag specifies a part of the text that was deleted from the document.

Browsers display this text as a Strike-through.

<s> tag defines text that is no longer correct, or irrelevant.

<ins> and <u> Tags.

<ins> tag defines the text that has been inserted (added) to the document.

<u> It is a Physical tag. It is used to underline the text.

<sub> and <sup> Tags

<sub> defines subscript text. It is used to display the content lightly below to the normal text.

Ex:- H_2O

<p> H ₂ O

<sup> defines Superscript. It is used to display the content lightly above to normal text.

Ex:- $x^2 + y^2 + 2ab = (x+y)^2$

<p> $x^2 </sup> 2 + y^2 </sup> 2 + 2ab = (x+y) ² 2 </p>$

<big> Tag

It is used to increase the font size of the text.

<strike> Tag

It is used to draw a strikethrough or a thin line on the text. It is physical.

Tag.

HTML COLORS

There are three ways of how you can change the color of the text in HTML:

- (1) HTML colors Names.
- (2) HEX color code
- (3) RGB Values.

HTML Colors Names

To use HTML color name, Put the name of the color (blue, Red etc).

```
<p style="color: red;">  
This text color is red  
</p>
```

HEX Color Code (Hexadecimal)

HEX stands for Hexadecimal color. It is specified with a hexadecimal (hex) notation for a mixture of red, Blue, green color value. Hex values are written as six-digit numbers, starting with a # sign. The value of Hex colors is 0-255.

The lowest value the given to light sources is 0 (hex 00). The highest value is 255 (hex FF)

- # ff0000 Red
- # 00ff00 Green
- # 0000ff Blue

Letters used digit may be Uppercase & Lowercase.

RGB Color Value

RGB stands for Red Green Blue. Color value is 0-255.

Syntax:-

`rgb(0, 0, 255)` Blue

`rgb(255, 0, 0)` Red

`rgb(0, 255, 0)` Green.

RGBA Colors

RGBA stands for Red Green Blue Alpha.
Color value of Alpha is (0-1).

Syntax:-

`rgba(255, 0, 0, 0.9)` Red

`rgba(0, 255, 0, 0.8)` Green

`rgba(0, 0, 255, 0.7)` Blue

HSL Color Value

HSL stands for Hingle Saturation Lightness.

HSL color wheel from 0 to 360.

0 is red, 120 is green, 240 is blue.

Syntax:-

`hsl(0, 100%, 50%)` Red

`hsl(240, 100%, 50%)` Blue

`hsl(300, 76%, 72%)` Pink

HSLA Colors

HSLA stands for Hue Saturation Lightness Alpha.
The alpha parameter color b/w number 0 to 1.

Syntax :-

`hsla(0, 100%, 50%, 0.3)` Grey

`hsla(240, 100%, 50%, 0.1)` Blue

-:- HTML Image :-

`` Tag is empty tag, it contains attributes only, and does not have a closing tag.

The `src` (source) attribute specifies the URL
[web address] / path of the `img`.

Syntax :-

```
<img src = "logo.jpg" width = "100px" height = "100"  
alt = "sample" align = "left" >
```

Attributes of image (``) tag

V Space :- Specifies the amount of space to the top and the bottom of the image.

H Space :- Specifies the amount of space to the left and right of the image.

Alt :- Specifies alternate text for an image is not found.

Animated Image :- HTML allows animated GIFs!

```

```

External links / backlinks / inbounded links
Internal links - easy, fast and free to create.

HTML LINKING

HTML links & Hyperlinks

when you add a link click on a link
and jump to another document.

The href (hyperlink reference) attribute specifies
the destination address of the link.

```
<a href="Path/address of your document"> Title </a>
```

A Link :- It indicates the colour of the active
hyperlink. An active link is the one of
which the mouse button is pressed.

✓ Link :- It indicates the color of the hyperlink
after the mouse is clicked on it.

Link Attribute Target

The Target Attribute specifies where to open the
linked document.

The target attribute can have one of the following values :-

- blank - opens the linked document in a new window or tab.
- self - opens the linked document in the same window/tab as it was clicked (default)
- parent - opens the linked document in the parent frame.
- top - opens the linked document in the full body of the window.

Local Links

Absolute URL - full web address

```
<a href = "https://www.youtube.com/codewithharry">Channel</a>
```

Relative URL (without https://www....)

```
<a href = "html_codewithharry"> HTML </a>
```

HTML Links - Image As a Link

```
<a href = "default.asp">
  <img src = "Smiley.gif" alt = "HTML tutorial">
</a>
```

Internal Links

An internal link is a link in your site that navigates the visitor to another page in your website.

```
<a href = "resume.pdf"> Resume </a>
```

External Links (Global Link)

The External links navigates the visitor away from your site to another website in the Internet (like: google, youtube etc.)

```
<a href = "https://www.google.com"> Google </a>
```

External links also known as backlinks or inbounded link.

Link to Email

```
<a href = "mailto:abc123@gmail.com"> Email </a>
```

This link navigates the visitor away from your site to Email.

HTML TABLES

The HTML tables allow displays the data (i.e. image, text, link) in columns and rows of cells.

An HTML table consist of the `<table>` element and one or more `<tr>`, `<th>` and `<td>` elements.

An HTML table is defined with the `<table>` tag.

Each table row is defined with the `<tr>` tag.

A table header is defined with the `<th>` tag.

By default, table headings are bold and centered.

A table data/cell is defined with `<td>` tag.

- Adding captions to Tables

`<Caption>` elements to specify a caption for tables.
It should be placed immediately after the opening `<table>`

`<Caption> Student details </caption>`

Cell Spacing is used to set space between different table cells.

Cell padding is used for the space b/w the edges of the cells and the content of the cell.

Structure of Table

```
<body>
<table style="width: 100%; border: 2px solid black; cellpadding: 5px; border-collapse: collapse; margin-bottom: 10px;">
    <caption align="center" style="margin-bottom: 10px;">Student details </caption>
    <tr>
        <th> Sr. No </th>
        <th> Name </th>
    </tr>
    <tr>
        <td> 1 </td>
        <td> ABC XYZ </td>
    </tr>
    <tr>
        <td> 2 </td>
        <td> ABC XYZ </td>
    </tr>
</table>
</body>
```

Rowspan & Colspan

The Rowspan & colspan attribute are `<td>` tag. These are used to specify the number of rows or columns a cell should span. The rowspan attribute is for rows as well as the colspan attribute is for columns.

Row Span :-

<table>

<tr>

<th rowspan="4"> User Info </th>

</tr>

<tr>

<td> 1 </td>

<td> Anshika </td>

<td> ADIT </td>

</tr>

<tr> <td> 2 </td>

<td> Kumkum </td>

<td> ADIT </td>

</tr>

</table>

Row Span

	1	Anshika	ADIT
USER INFO	2	Kumkum	ADIT
	3	Douishati	ADIT

Col Span :-

<table>

<tr>

<th colspan="3"> User Info </th>

</tr>

<tr>

<td> 1 </td>

<td> Anshika </td>

<td> ADIT </td>

</tr>

<tr>

<td> 2 </td>

<td> KumKum </td>

<td> ADIT </td>

</tr>

</table>

USER INFO

1	Anshika	ADIT
2.	KumKum	ADIT

Div & Span

`<div>` tag is used as a block part of the webpage.

`` tag is used as a inline part of the webpage.

`<div>` of Computer Science portal

` Geeks </div>`

Lists

HTML Lists Tags are used to specify information in the form of list.

A list is a record of short pieces of information.

Types of lists

- Ordered List
- Unordered List
- Description List
- Nested HTML Lists.

Ordered lists

Ordered list is used to list related items in a numbered or other specific order. This is useful when you want to show counts of items in some way.

Ordered list is created using HTML `` tag. Each item in the list starts with the `` tag. Starts a listing number (default)

```
<ol>
  <li> Coffee </li>
  <li> Milk </li>
</ol>
```

HTML Ordered List Style Type Attribute

List style Type

Numbers

Uppercase

Lowercase

Small Roman

Capital Roman

Example & Syntax

```
<ol type="1">
```

```
<ol type="A">
```

```
<ol type="a">
```

```
<ol type="i">
```

```
<ol type="I">
```

The Ordered List also called as Numbered List.

Unordered List

Unordered list are used to list sets of items when they have no special order or sequence. It is also called a bulleted list.

Unordered list is created using the HTML ``-tag. Each item in the list start with ``-tag. By default, a solid circle is used as bullet.

```

<ul>
    <li> Coffee </li>
    <li> Milk. </li>
</ul>

```

Unordered List Style Type

List Style Type

Syntax

disc
circle
square
none

```

<ul type = "disc">
<ul type = "circle">
<ul type = "square">
<ul type = "type: none">

```

Type value : Numbering Style

Disc : A solid circle •

circle : An unfilled circle o

Square : A Solid Square ■

Description List

Description list is different from the other two types of list. No bullet or number is provided for the list items. In this list type, the list element has two parts.

- ① A Definition term
- ② A Definition description.

Description list is surrounded with `<dl>.....</dl>` tag.

Definition term is presented in between `<dt>.....</dt>` tag.

Definition description should be surrounded within `<dd>.....</dd>` tag.

`<dl>`

`<dt> HTML </dt>`

`<dd> HYPER TEXT MARKUP LANGUAGE </dd>`

`</dt>`

Output

HTML

HYPER TEXT MARKUP LANGUAGE

Nested List

A list inside a new list - it is called as nested list.

Ex:-

 Web development & Design

 HTML

 CSS

 JAVASCRIPT

 BOOTSTRAP

 JQUERY

Audio & Videos

<audio> elements specifies a standard way to embed audio in a web page.

HTML audio tag is used to define sounds such as music and other audio clips :- mp3, wav, ogg.

<audio controls="autoplay">

<source src=".horse.mp3" type="audio/mp3">

</audio>

<video> Element specifies a standard way to embed a video in a web page.

The HTML video tag is used for streaming video files such as a movie clip, song clip on the web page. Video formats supported by HTML video tag: mp4, webM, ogg.

```
<video controls autoplay>
```

```
<source src="movie.mp4" type="video/mp4">
```

```
</video>
```

HTML Forms & Input

HTML forms contain form elements.

An HTML form is a section of a document which contains controls such as text fields, password fields, checkboxes, radio buttons, submit button, menus etc.

An HTML form facilitates the user to enter data that is to be sent to the server for processing such as name, email, password, phone number etc.

HTML Form Tags.

HTML <form> Elements. This HTML element provides a document section to take input from user.

<form>

// form elements

</form>

Tags of description

<form> It defines an HTML form to enter inputs by the user side.

<input> It defines an input control.

<textarea> It defines a multiline input control (address).

<label> It defines a label for an input element.

<fieldset> It groups related element in a form.

<legend> It defines a caption for a <fieldset> element.

<select> It defines a drop-down list.

<optgroup> It defines a group of related options in a drop-down list.

<option> It defines an option in a drop-down list.

<button> It defines a clickable button.

HTML <input> Element

input type = "text" The HTML <input>

input type = "email" Element is fundamental

input type = "password" form Element

input type = "Number"

<form>

<input type = "text" name = name >

</form>

label tag It is considered better to have label in form.

<form>

<label> First name </label>
<input type="text" name="fname">

</form>

Radio Button.

This button is used to select one option from multiple options.

<form>

<label> Gender </label>

<input type="radio" name="gender"> Male

<input type="radio" name="gender"> Female

</form>

Checkbox Control

The checkbox control is used to check multiple options from given checkboxes.

<form>

<input type="checkbox" name="cricket"> Cricket

<input type="checkbox" name="football"> Football

<input type="checkbox" name="hockey"> Hockey

</form>

Button

HTML `<input type = "button">` are used to add a Submit & Reset button on web page.

`<form>`

Name : `<input type = "text" name = "name">`

Password: `<input type = "password" name = "pass">`

`<button type = "Submit"> Submit </button>`

`<button type = "Reset"> Reset it </button>`

`</form>`

Example

`<form>`

`<fieldset>`

`<legend> Student data </legend>`

`<label> Name : </label>`

`<input type = "text" name = "name">
`

`<label> Email : </label>`

`<input type = "Email" name = "email">
`

`<label> Password : </label>`

`<input type = "Password" name = "pass">
`

`<label> Address : </label>`

`<textarea> ---- </textarea>`

`<button type = "Submit"> Submit </button>`

`</fieldset>`

`</form>`

HTML 5

HTML 5 is the latest standard for browser to display and interact with web pages.

The latest version of Apple Safari, Google chrome, Mozilla firefox, and opera all supports many HTML5 features..and IE 9.0 will also have support for some HTML5 functionality.

- :- Features :-

New Semantic Elements - These are like `<header>`, `<footer>`, and `<section>`

Forms 2.0 - Improvements to HTML web form where new attributes have been introduced for `<input>` tag.

Audio & video - You can embed audio or video on your webpages without resorting to third-party Plugins.

Drag and Drop - the items from one location to another location on the same webpage.

Page Layout Semantic Elements

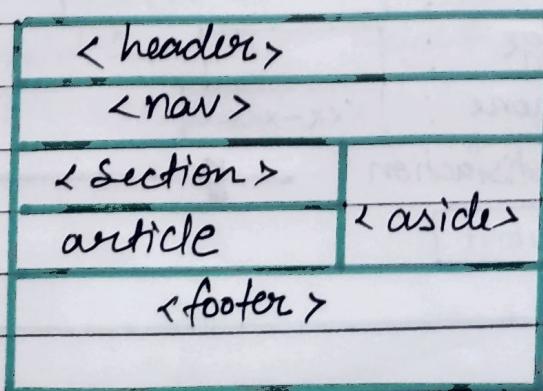
A Semantic Element clearly describes its meaning to both browser and the developer.

Block Elements :-

- section
- article
- header and footer
- hgroup (related to headers)
- menu
- nav (navigation)
- address
- aside (sidebar)

Inline Elements :-

- summary & details
- figure and figcaption
- time
- command
- dfn (define within the content)
- wbr (break text within word when it wraps across multiple lines)



J.K Page

Page Layout :- Page layout is the part of graphic design that deals with the arrangement of visual elements on a page.

HTML 5 Web forms

They are used to design the web forms. HTML 5 introduces several attributes in input types and elements for markup tool kit.

```
<form>
    Name : <input type = "text" name = "name">
    Email : <input type = "email" name = "mail">
    D.O.B : <input type = "date" name = "dob">
    Age : <input type = "number" name = "age">
    Phone : <input type = "tel" name = "mobile">
    Satisfaction : <input type = "range" name = "range">
    <button type = "submit" > Submit </button>
</form>
```

HTML 5 Web forms

Name :	<input type="text" value="Name"/>
Email :	<input type="email" value="@gmail.com"/>
D.O.B :	<input type="date" value="dd-mm-yyyy"/>
Age :	<input type="number"/>
Phone :	<input type="tel" value="XXX-XXX-XXX"/>
Satisfaction :	<input type="range"/>
<input type="button" value="Submit"/>	

Scalable Vector Graphics

SVG defines vector-based graphics in XML formats.

Every elements and every attribute in SVG files can be animated.

```
<svg width="100" height="100">  
  <circle cx="50" r="40" stroke="green"  
        stroke-width="4" fill="Yellow"/>  
</svg>
```

HTML 5 Media

Plug-ins can be added to web pages with the `<Object>` tag or the `<Embed>` tag.

Plug-ins can be used for many purposes: display maps, scan for viruses, verify your bank id etc.

```
<object width="100%" height="500px" data="Snippet.html">  
</object>  
<embed width="400" height="50" src="bookmark.swf">
```

Youtube The easiest way to play videos in HTML is to use Youtube.

```
<iframe width="420" height="315">  
  src="https://www.youtube.com?autoplay=1">  
</iframe>
```

HTML Editors

HTML text editors are used to create and modify web pages.

HTML codes can be written in any text editors including the notepad.

Common features of HTML Code Editors

- ⇒ Auto Completion
- ⇒ Adding library for HTML entities.
- ⇒ highlighting Syntax errors.
- ⇒ Cleaning of Messy code.
- ⇒ word to HTML conversion.
- ⇒ Advance HTML Editors have provides supports for other languages like CSS and JS.

Editors Used for Web Page

- Phage 5 HTML Editor
- Notepad ++
- Sublime text
- jEdit HTML Editor
- Adobe Brackets
- SynWrite Editor
- VisualCode Editor

Application of HTML

The World Wide Web Consortium (W3C) is an international community where member organizations, full-time staff and the general public work together to develop web standards.

The best known and widely used web standards are:-

- HTML (Hyper Text Markup Language)
- CSS (cascading Style Sheet)
- XML (extensible Markup language)

How its industry using HTML

- web designing and Applications.
- Web of devices.
- Web Architecture.
- Semantic Web.
- XML Technology
- Web Services
- Browsers and Authoring Tools.

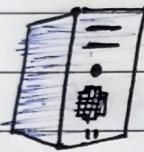
Website :- Website is a collection of related web pages that may contain text, images, audio and video. The first page of a website is called a home page. Each website has a specific Internet address (URL uniform Resolution Locator) that you need to enter in your browser to access a website.

A website can be two types:-

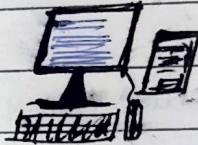
- Static Website
- Dynamic Website

Static Website :-

It is the basic type of website that easy to create. You don't need the knowledge of web programming and database design to create a Static website. Its webpages are coded in HTML. A Static website contains webpages with fixed contents.



Server



client / Browser.

Dynamic Website :-

It is a collection of dynamic website web pages whose content changes dynamically. It accesses content from a database or Content Management System (CMS). Dynamic website uses client-side Scripting or Server-side Scripting, or both to generate dynamic content.



Server



Database



client / Browser.

Top 10 Uses of HTML

- Web pages development.
- Web document creation.
- Internet navigation.
- Cutting edge feature.
- Responsive images on web pages.
- Client-side storage.
- Offline capabilities usage.
- Data entry support with HTML.
- Game development usage.
- Native APIs usage to enrich website.