

Hyper Text Markup Language (HTML)

(1)

- HTML (Hyper Text Markup Language) is used for creating webpages and web applications. HTML was developed and maintained by World Wide Web (W3C) Consortium.
- In HTML the term Hyper signifies the navigation from one location to another in a non-linear fashion. That is, clicking a hyperlink on a web page takes you to the relevant page on the Internet or website, which is not necessarily the next page on the website.
- 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.
- Web Page:- A webpage is a document which is commonly written in HTML and translated by a web browser. A web page can be identified by entering an URL. A web page can be of the static or dynamic type. With the help of HTML only, we can create static web pages.
- Website:- A website is a collection of publicly accessible, interlinked webpages that share a single domain name. Websites can be created and maintained by an individual, group, business or organization to serve a variety of purposes. Together, all publicly accessible websites constitute the World Wide Web.
- www:- It is a large hypertext information service that allows a user to browse information.

- The World Wide Web (WWW) commonly known as the Web, is an information system where documents and other web resources are identified by URL (Uniform Resource Locator), which may be interlinked by hypertext, and are accessible over the Internet. URL is used to identify a resource on Internet.
- The Internet (Interconnect Network) is the global system of interconnected computer networks that use the Internet Protocol suite (TCP/IP) to link devices worldwide. Internet Protocol suite (TCP/IP) to link devices worldwide for billions of users.
- The internet is a network of global exchanges—including private, public, business, academic and government networks—connected by guided, wireless and fiber optic technologies.
- The terms Internet and World Wide Web are often used interchangeably, but they are not exactly the same thing; the Internet refers to the global communication system, including hardware and infrastructure, while the Web is one of the services communicated over the Internet.
- Web Browser: It is a software application for accessing information on the WWW. Each individual webpage, image, video is identified by a distinct URL, enabling browsers to retrieve these resources from a web server and display them on a user's device.
- Client-Server model:—It is a distributed application structure that partitions tasks or workloads between the providers of a resource or service, called servers, and service requestors, called clients.
- Protocol: It is a set of rules and guidelines for communicating between computers and other entities during the communication between

Introduction to HTML:- In 1989, Tim Berners-Lee invented the World Wide Web, an Internet based hypermedia initiative for global information sharing while at CERN, the European Particle Physics Laboratory.

→ He wrote the first webclient and server in 1990. His specifications of URIs, HTTP and HTML were defined so that Web technology spread and he is director of the W3C.

→ HTML is a subset of SGML (Standard Generalized Markup language). SGML is a meta markup language, it is used for defining markup languages, it allows you to define your own tags.

→ The HTML is not a compiled language and is directly interpreted by a browser. HTML provides GUI (Graphical User Interface) environment for user's input.

- Features of HTML:-
- 1) It is a very easy and simple language.
 - 2) It can be easily understood and modified.
 - 3) It is a markup language, so it provides a flexible way to design web pages along with the text.
 - 4) It is a platform-independent because it can be displayed on any platform like windows, Linux, Macintosh, etc.
 - 5) It is very easy to make an effective presentation with HTML because it has a lot of formatting tags.
 - 6) HTML is a case-insensitive language, which we can write either in lowercase or uppercase.
 - 7) It facilitates programmers to add Graphics, Videos and Sound to the web pages which makes it more attractive and interactive.
 - 8) It facilitates to add link on the webpage (by html anchor tag), so it enhances the interest of browsing of the user.

A Simple HTML Document (or) Basic Structure of an HTML Document.

HTML defines the content, i.e., the structure and layout of a web page with the help of tags and attributes. An element includes start and end tags, with some content inside/within them, and attributes provide additional information (such as alignment of element on a web page) about the elements.

Example:- <!DOCTYPE> Start of Document Declaration that

```
<html>
  <head>
    <title> Web Page Title </title>
  </head>
  <body>
    <h1> Write your First Heading </h1>
    <p> Write your First Paragraph </p>
  </body>
</html>
```

Description of HTML Example:-

→ description of HTML example:- It defines the document type or at instance

1) <!DOCTYPE>:- It defines the version of HTML.

the browsers about the version of HTML that is an HTML

2) <html>:- This tag informs the browser that it is an HTML document. Text between html tag describes the web document.

3) <head>:- It should be the first element inside the

<html> element, which contains the metadata (information about the document). It must be closed before the body tag opens.

4) <title>:- As its name suggested, it is used to add title of that HTML page which appears at the top of the browser window. It must be placed inside the head tag and should close immediately (optional).

5) `<body>`: Text between `<body>` tag describes the body content of the page that is visible to the end user. This tag contains

the main content of the HTML document.

6) `<h1>`: Text between `<h1>` tag describes the first level heading of the web page.

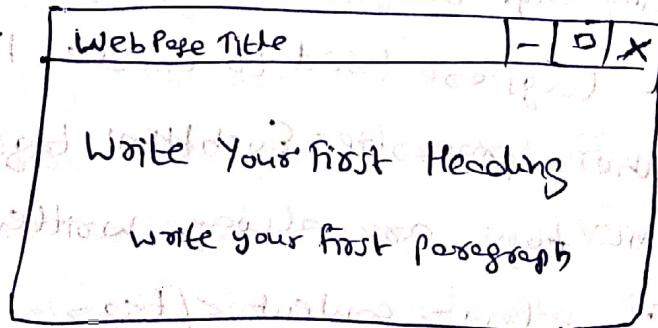
7) `<p>`: Text between `<p>` tag describes the paragraph of the webpage.

→ An HTML file is a text file, so to create an HTML file we can use any text editor. Text Editors are the programs which allow editing of written text, hence to create a

webpage, we need to write our code in some text editor.

→ Notepad is a simple text editor and suitable for beginners to learn HTML. Once you open the text editor, write the above HTML code in your text editor. Save the file with extension `.html` like `demo.html`, and open it in your browser, then here is the output produced in the browser of above

HTML document/code.



HTML versions:

1) HTML 1.0 : The first version of HTML was 1.0, in 1991.

2) HTML 2.0 : which was released in 1995.

3) HTML 3.2 : which was published by W3C in 1997.

4) HTML 4.01 : very stable version of HTML in 1999.

5) HTML5 : Draft version in 2008, still under development.

Building Blocks of HTML: An HTML document consists of its basic building blocks which are:-

1) Tags:- An HTML tag surrounds the content and applies meaning to it. It is written between < and > brackets.

2) 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 and value.

3) Elements:- An HTML element is an individual component of an HTML file. In an HTML file, everything written within tags are termed as HTML elements.

→ HTML Tags:- HTML tags are like keywords, which defines how web browser will format and display the content. With the help of tags, a web browser can distinguish between an HTML content and a simple content.

→ HTML tags contain three main parts: opening tag, content and closing tag. But some HTML tags are unclosed tags.

→ HTML tags are used to create HTML documents and render their properties. Each HTML tags have different properties.

→ HTML tags are always written in lower case letters.

a) Syntax:- <tag> content </tag>

Example:- 1) Bold Tag

2) <h2> Heading Tag </h2>

→ Unclosed HTML tags:- Some HTML tags are not closed,

Ex: 1)
 tag:- Here br stands for break line, it breaks the line of code.

Ex: 2) <hr> tag:- Here hr stands for horizontal rule. This tag is used to put a line across the webpage.

④

⇒ HTML Meta tags:- DOCTYPE, title, link, meta and style

a) HTML Text tags:- <p>, <h1>, <h2>, <h3>, <h4>, <h5>, <h6>,

, <abbr>, <acronym>, <u>, , <ins>, <strike>, etc.

e) HTML link tags:- <a> and <base>

d) HTML Image and Object Tags:- , <object>, <map>, <param> and <object>.

e) HTML List Tags:- , , , <dt>, <dd> and <dd>

f) HTML Table Tags:- <table>, <tr>, <td>, <th>, <tbody>, <col>

<thead>, <tfoot>, <colgroup>, and <caption>.

g) HTML Form tags:- <form>, <input>, <textarea>, <select>, <option>, <optgroup>, <button>, <label>, <fieldset>, <legend>.

h) HTML Scripting tags:- <script> and <noscript>

→ HTML Attribute:- HTML attributes are special words which provide additional information about the elements;

Attributes are the modifiers of the HTML element.

→ Each element or tag can have attributes, which defines the behavior of that element. The attribute should always be applied with its name and value pair.

→ Attribute should always be applied with start tag.

→ The attributes name and values are case sensitive, and it is recommended by W3C that it should be written in lowercase only.

→ You can add multiple attributes in one HTML element, but need to give space between two attributes.

Syntax:- <element attribute_name = "Value"> Content</element>

→ 1) **title** attribute:- The title attribute is used as text tooltip in most of the browsers. It displays its text when user move the cursor over a link or any text. You can use it with any text or link to show the description about that link or text. Example with `<h1>` tag is:

Ex: `<h1 title="This is heading tag"> Example of title attribute </h1>`.

→ 2) **href** attribute:- The href attribute is the main attribute of `<a>` anchor tag. This attribute gives the link address which is specified in that link. The href attribute provides the hyperlink, and if it is blank, then it will remain in same page.

a) Example with link Address:-

` This is a link `

b) Example without link address:-

` This is a link `

→ 3) **src** attribute:- The src attribute is one of the important and required attribute of `` element. It is source for the image which is required to display on browser. This attribute can contain image in some directory or another directory. The image name or source should be correct else browser will not display the image.

Ex: ``

In this, height and width are the attributes of img tag.

→ Note:- We have used attribute with double quotes, but some people might use single quotes in HTML. Here both are same.

Ex: 1) ` A link to HTML `

2) ` A link to HTML `

→ But in HTML5, we can also omit the use of quotes around attribute values. ` HTML5 `

3. HTML Elements:- An HTML file is made of elements. These elements are responsible for creating webpages and define content in that webpage. An element in HTML usually consists of a start tag `<tag name>`, close tag `</tag name>` and content inserted between them.

→ Technically, an element is a collection of start tag, attributes, end tag, content between them.

Example:- `<p> Hello World </p>`.

→ void element:- All the elements in HTML do not require to have start tag and end tag, some elements does not have content and end tag such elements are known as void elements or empty elements. These elements are also called as unpaired tag.

Example: `
` (represents a linebreak), `
` (represents horizontal line)

→ block level element:- These are the elements, which structure main parts of webpage, by dividing a page into coherent blocks. A block level element always starts with newline and takes the full width of webpage, from left to right. Examples are: `<h1>`, `<p>`, `<h2>`, `<div>`, `<dd>`, ``, `<table>`, ``, `<video>` and etc.

→ 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 newline and take width as per requirement. The inline elements are mostly used with other elements. Examples are: ``, `
`, `<button>`, `<code>`, `<i>`, ``, `<label>`, `<map>`, `<script>`, `<small>`, `<time>` etc.

Note: Block level elements can contain block level as well as inline elements.

- A** → HTML Formatting Tags: - HTML formatting is a process of formatting text for better look and feel. HTML provides us ability to format text without using CSS. These are 2 types,
- a) Physical tags; These tags are used to provide the visual appearance to the text.
 - b) Logical tags; These tags are used to add some logical or semantic value to text.
- 1) Bold Text: a) The HTML **** element is a physical tag, which displays text in bold font, without any logical importance. Example is ** This is bold Text **.
- b) The HTML **** tag is a logical tag, which displays the content in bold font and informs the browser about its logical importance. Example ** Importance Text **.
- 2) Italic Text: a) The HTML *<i>* element is physical elements which display the enclosed content in italic font, without any added importance. Example is: *<i> ItalicText </i>*.
- b) The HTML **** tag is a logical element, which will display the enclosed content in italic font with added semantics importance. Example is: ** Emphasized Text **.
- 3) Underlined Text: - If you write anything with an <u> element, is shown in underlined text. Example <u> ... </u> element, is shown in underlined text <u> </u> <p> <u> First Paragraph in underlined Text </u> </p>.
- 4) Masked Formatting: If you want to mask or highlight a text, you should write the content within **<mark>** and **</mark>**. Example: **<h2> I want to put <mark> Mask </mark> on your face </h2>**
- 5) Strike Text: - Any thing written within **<strike>** and **</strike>** element is displayed with strike through. It is a

than line which cross the statement. Example is:-

`<p><strike>Write your first paragraph with strikethrough</strike></p>`

6) Monospaced Font:- We know that most of the fonts are known as variable width fonts because different letters have different width (for example 'w' is wider than 'i'). Monospaced font provides similar space among every letter. Example is

`<p> Hello<tt> Mono spaced font</tt></p>`. (Here tt tag is used)

7) Superscript Text:- It means it is displayed half a character's height above the other characters. $b² + 4\text{gc}$.
(Op: $b^2 + 4\text{gc}$)

8) Subscript Text:- It means it is displayed half a character's height below the other characters. $H₂O$. (Op: H_2O)

9) Deleted Text:- Anything that puts within ` ... ` is displayed as deleted text. `<p> Hello Delete it</p>`

10) Inserted Text:- Anything that puts within `<ins> ... </ins>` is displayed as inserted text. `<p> Hello <ins> Insert it</ins></p>`

11) Larger Text:- If you want to put your font size larger than the rest of the text then put the content within `<big> ... </big>`. It increase one font size larger than the previous one.

Ex:- `<p> Hello <big> Big Font Text </big> Bye </p>`

12) Smaller Text:- It reduces one font size than the previous one Ex:- `<p> Hello <small> Small Font Text </small> Bye </p>`

B) HTML Heading:- A HTML heading 'h' tag can be defined as a title or a subtitle which you want to display on the webpage. Headings in HTML helps the search engine to understand and index structure of web page.

→ 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).

Ex:- 1) `<h1> Heading Number 1 </h1>`

2) `<h2> Heading Number 2 </h2>`

3) `<h6> Heading Number 6 </h6>`

→ HTML Paragraph:— HTML `p` tag is used to define a paragraph in a web page. It is notable that browser itself adds an empty line before and after a paragraph. An HTML `<p>` tag indicates starting of new paragraph. `<p> Hello </p>`

→ Note: If we are using various `<p>` tags in one HTML file then browser automatically adds a single blank line between the two paragraphs.

→ If you put a lot of space inside the HTML `p` tag, browser removes extra spaces and extra line while displaying the page.

The browser counts number of spaces and lines as a single one.

→ An HTML `char` tag is used to apply horizontal line between two statements or two paragraphs. Example:

`<p> First line <hr> Line followed by second line </p>`

→ HTML Phrase Tags:— The HTML phrase tags are special purpose tags, which defines the structural meaning of a block of text or semantics of text.

→ Text Abbreviation tag: To abbreviate a text, write the text between `<abbr>` and `</abbr>` tag.

Ex: `<p> An <abbr title="Hyper Text Markup Language"> HTM`

HTML `<abbr>` language is used to create web pages. `</p>`.

b) Definition tag: When you use the `<dfn>` and `</dfn>` tags, it allows to specify the keyword of the content. Examples,
`<p><dfn>HTML</dfn> is a Markup language.</p>`

c) Short quotations: An HTML `<q>...</q>` elements a short quotation. If you will put any content between `<q> ... </q>` then it will enclose the text in double quotes. Example is:

`<p> John Said : <q> Welcome to HTML. </q> </p>`
Output is:- John Said "Welcome to HTML."

d) Code tags: The HTML `<code>` and `</code>` element is used to display the part of computer code. It will display the content in monospaced font.

`<p> First Java program </p>`
`<p><code> class Demo { public static void main (String args[]) {
System.out.println ("Hello Java"); } } </code></p>`

e) Keyboard tag: In HTML the keyboard tag, `<kbd>`, indicates that a section of content is a user input from keyboard.

`<p> Please Press <kbd>Window + R </kbd> to open the command prompt. </p>`

Output:- Please Press Window + R to open the command prompt.

f) Address tag: An HTML `<address>` tag defines the contact information about of the content. The content written between `<address>` and `</address>` tag, then it will be display in italic font.

`<p> Address Tag </p>`
`<address> You can ask your queries by contact us on
 example123@gmail.com

 You can also visit at ; koti, HYD. </address>`

→ HTML Anchors Tag: The HTML anchor tag defines a hyper link that links one page to another page. It can create hyperlink to other webpage as well as files, location, or any URL.

→ The href attribute is used to define the address of the file to be linked. It points to the destination page.

Syntax:- ` Link Text `

Example: ` Click for Second Page `

→ If we want to open that link to another page then we can use target attribute of `<a>` tag. With the help of this link will be open in next page.

Ex:- `<p> Click on this link to go on homepage of Google website. </p>`

→ The target attribute can only use with href attribute in anchor tag. If we will not use target attribute the link will open in some page.

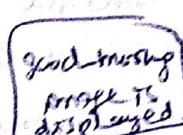
→ Appearance of HTML anchor tag:- An unvisited link is displayed underlined and blue. A visited link displayed underlined and purple, an active link is underlined and red.

→ HTML Image Tag:- HTML img tag is used to display image on the webpage. HTML img tag is an empty tag that contains attributes only, closing tags are not used in HTML image element.

Ex:- `<h2> HTML Image Example </h2>`

``

Output:- HTML Image Example,



i) The src is a necessary attribute that defines the source path of the image. It instructs the browser where to look for the image on the server. The location of image may be on the same directory or another directory.

ii) The alt attribute defines an alternate text for the image, if it can't be displayed. The value of the alt attribute describes the image in words.

→ If we want to give some height and width to display image according to our requirement, then we can set it with height and width attributes of image.

Ex:-

→ Always try to insert the image with height and width, else it may flicker while displaying on webpage.

→ To insert an image on your web, in some cases image is accessible in some other directory then you can access the image like this.

→ If src URL will be incorrect or misspell then it will not display your image on webpage, so try to put correct URL.

→ We can also link an image with other page or we can use an image as a link. To do this, put tag inside the <a> tag.

Ex:-

width="300" alt="robot image" />

Output:- Once you ~~click~~ on that link, it will display robot image.

- HTML Table Tags:- HTML table tag is used to display data in tables form, using `<table>` element. In each table, table row is defined by `<tr>` tag, table header is defined by `<th>` and table data is defined by `<td>` tag.
- In this, `<caption>` tag defines the table caption, `<tbody>` tag is used to group the body content in a table, `<thead>` is used to group the header content in a table, `<tfoot>` is used to group the footer content in a table.
- `<colgroup>` tag is used to specify a group of one or more columns in a table for formattings. `<col>` tag is used with `<colgroup>` element to specify column properties for each column.

```
>>> <table>
      <thead>
        <tr> <th> FirstName </th> <th> LastName </th> <th> Marks </th>
      </thead>
      <tbody>
        <tr> <td> Sanjay </td> <td> Kumar </td> <td> 60 </td> </tr>
        <tr> <td> Vijay </td> <td> Pratap </td> <td> 50 </td> </tr>
      </tbody>
    </table>
```

Output:-

FirstName	LastName	Marks
Sanjay	Kumar	60
Vijay	Pratap	50

- You can use `border` attribute of `table` tag in HTML to specify borders. But it is not recommended now. `<table border="1">`, It is now recommended to use `border` property of CSS (Cascading Style Sheets) to specify borders on table.

Ex:- `<style>`

```
table, th, td { border: 1px solid black; }
```

`</style>`

FirstName	LastName	Marks
Sanjay	Kumar	60
Vijay	Pratap	50

You can collapse all the borders in one border, by border-collapse property. It will collapse the borders into one.

<style>

```
table, th, td {
```

```
border: 2px solid black;
```

```
border-collapse: collapse;
```

}

```
</style>
```

| FirstName | LastName | Marks |
|-----------|----------|-------|
| Sonjay | Kumar | 60 |
| Vijay | Patel | 50 |

→ The cell padding attribute of HTML tag can be recommended to use CSS code.

```
<style>
```

```
table, th, td {
```

```
border: 1px solid black;
```

```
border-collapse: collapse;
```

```
th, td { padding: 10px; }
```

| FirstName | LastName | Marks |
|-----------|----------|-------|
| Sonjay | Kumar | 60 |
| Vijay | Patel | 50 |

```
</style>
```

→ We can specify the HTML table width using the CSS width property. It can be specified in pixels or percentage. We can adjust our table width as per our requirement. `table { width: 100%; }`.

→ If you want to make a cell span more than one row, you can use the rowspan attribute. It will divide a cell into multiple rows. The number of divided rows will depend on rowspan values.

Ex: <table>

```
<tr><th> Name </th><td> Sonivas </td></tr>
```

```
<tr><th rowspan="2"> MobileNo </th><td> 94123 45678 </td>
```

```
<tr><td> 95437 45674 </td></tr>
```

```
</table>
```

Name	MobileNumber
Sonivas	94123 45678
	95437 45674

Output:-

→ If you want to make a cell span more than one column, you can use colspan attribute. It will divide one cell from into multiple columns, and the number of columns depend on the value of colspan attribute.

Ex: <table style="width: 100%;">

```
<tr> <th> Name </th> <th colspan="2" > Mobile No. </th> </tr>
<tr> <td> Vijay </td> <td> 9491245678 </td>
<td> 95474 96437 </td> </tr>
```

</table>

Output:

Name	Mobile No
Vijay	9491245678 95474 96437

→ ~~Table~~ caption is displayed using HTML <caption> tag and it must be used after <table> tag only. <caption> Employee Details </caption>

→ 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) Numbered list (or) ordered list (OL) 2) Unordered list (or) Bulleted list (ul tag) 3) Description list or definition list (dl).

→ HTML ordered list: - It displays the elements in numbered format. The html tag is used for ordered list. To represent items either in numerical order format or alphabetical order format, or any other format where an order is emphasized.

→ Type = "1": - This is the default type. Items are numbered with numbers.

b) Type = "I": - List items are numbered with Upper Case Roman Numbers.

c) Type = "i": - List items are numbered with Lower Case Roman Numbers.

d) Type = "A": - List items are numbered with uppercase letters.

e) Type = "a": - List items are numbered with lowercase letters.

Above 5 types of attributes used in tag.

Ex: <ol type="i">

HTML Java SQL

Output: i. HTML ii. Java iii. SQL

→ The start attribute is used with tag to specify from where to start the list items.

Ex: <ol type="A" start="5">:: It will show capital alphabets starting with "E".

→ If you use the reserved attribute with tag then it will numbered the list in descending order (7,6,5,4,3,2,...1).

Ex: <ol reversed>

HTML Java SQL

Output: 3. HTML 2. Java 1. SQL

→ 2) HTML Unordered List:- We can use unordered list where we do not need to display items in any particular order. The tag is used for the unordered list. There are 4 types of attributes in .

a) Type = "disc" :- This is the default style. List items are marked with disc.

b) Type = "circle" :- List items are marked with circles.

c) Type = "square" :- List items are marked with squares.

d) Type = "none" :- List items are not marked.

Ex: a) HTML Java SQL

b) <ul type="circle"> HTML Java SQL

→ 3) HTML Description list:- HTML description list (or) Definition list display elements in definition form like in dictionary. There are three description list tags.

a) <dl> tag defines the description list.

b) <dt> tag defines the data term.

c) <dd> tag defines data description or definition.

Ex:- <dl>

<dt> HTML </dt> <dd> is a Markup language </dd>

<dt> JavaScript </dt> <dd> is a scripting language </dd>
</dl>

→ HTML Form:- An HTML form is a section of a document

which contains controls such as text fields, password fields, checkboxes, radio buttons, submit buttons, menus etc.

→ An HTML form facilitates the user to enter data i.e. to send to the server for processing such as name, email address, password, phone number, etc. Form consists elements and attributes.

→ <form> element:- It provides a document section to take input from the user. It provides various interactive controls for submitting information to webserver such as textfield, textareas, password field etc.

① <input type>:- In HTML, <input type=" " > is an important element of HTML form. The "type" attribute of input element can be various types, which defines information field. Following is a list of all types of <input> element of HTML

→ 1) <input type="text">:- Defines a one-line text input field.

Ex:- <form>

<label> Enter first name </label>

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

<label> Enter last name </label>

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

<p>Note: Default Max character length 20 </p>

</form>

Q:-

Enter Firstname	<input type="text"/>
Enter Lastname	<input type="text"/>
Note: Default Max character length 20.	

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2) <input type = "password">:- It allows a user to enter the password securely in a webpage. The entered text in password field converted into '*' or '.', so that it cannot be read by another user.

3) <input type = "submit">:- It defines a submit button to submit the form to the server when the "click" event occurs.

4) <input type = "reset">:- The reset button used when the user performs a click event, it by default reset the all inputted values.

Eg: <form action = "https://www.javatpoint.com/html-tutorial">

```

    <label> Enter User Name </label> <br>
    <input type = "text" name = "username" > <br>
    <label> Enter Password </label> <br>
    <input type = "password" name = "password" > <br>
    <input type = "submit" value = "Submit" > <br>
    <input type = "reset" value = "Reset" >
  
```

</form>

Output:

Logistics

Enter User Name:	<input type="text"/>
Enter Password:	<input type="password"/>
<input type="button" value="Submit"/>	<input type="button" value="Reset"/>

5) <input type = "radio">:- It defines the radio buttons, which allow choosing an option between a set of related options. At a time only one radio button option can be selected at a time.

Eg: <form>

<p> kindly select your favorite color </p>

<input type = "radio" name = "color" value = "red" > Red

<input type = "radio" name = "color" value = "blue" > Blue

<input type = "radio" name = "color" value = "green" > Green

<input type = "submit" value = "Submit" >

</form>

→ 6) <input type="checkbox">: - These are displayed as square boxes

which can be checked or unchecked to select the choices from the given options.

Ex: <form>

<p> kindly select your favourite sports </p>

<input type="checkbox" name="Sport1" value="Cricket"> Cricket

<input type="checkbox" name="Sport2" value="Tennis"> Tennis

<input type="checkbox" name="Sport3" value="Football"> Football

</form>

→ 7) <input type="button">: - It defines a simple push button, which can be programmed to control a functionality on any event such as, click event.

Ex: <form>

<input type="button" value="clickme"

on click = "alert('You are learning HTML')"

</form>

→ 8) <input type="file">: - It is used to select one or more files from the user device storage once you select the file, and after submission, this file can be uploaded to the server with the help of JS code and file API.

Ex: <form>

<label> Select file to upload: </label>

<input type="file" name="newfile">

<input type="submit" value="Submit">

</form>

→ 9) <input type="image">: - It is used to represent a submit button in the form of image.

Ex: <input type="image" alt="Submit" src="login.jpg" width="100px">

→ HTML5 Newly Added <input> types element:

1) <input type="color">: - It is used to define an input field which contains a colour. It allows a user to specify the color by the visual color interface on a browser.

The `color` type only supports color value in hexa-decimal format, and the default value is `#000000` (black).

Ex: <form>
 <p>Select your favorite color </p>

```
<input type="color" name="favcolor">
</form>
```

2) `input type="date"`:- It generates an input field, which allows a user to input the date in a given format. A user can enter the date by text field or by date picker interface.

Ex: a) <form>

Select Start and End Date :


```
<input type="date" name="startdate"> Start Date : <br>
```

```
<input type="date" name="enddate"> End Date : <br>
```

```
<input type="submit">
```

</form>

b) We can also use the `min` and `max` attributes to add restrictions to dates.

<form>

Enter a date before 1980-01-01:

```
<input type="date" name="bday" max="1979-12-31"> <br>
```

Enter a date after 2000-01-01:

```
<input type="date" name="bday" min="2000-01-02"> <br>
```

</form>

3) `input type="datetime-local"`:- It specifies a date and time input field, with no time zone depending on browser's support, a date picker can show up in the input field.

Ex: <form>

Birthday (date and time):

```
<input type="datetime-local" name="bdaytime">
```

</form>

4) `input type="file"`:- It defines a file-select field and a "Browse" button for file uploads.

```
<form> Select a file: <input type="file" name="myFile"> </form>
```

→ 5) <input type="email"> :- It creates an input field which allows a user to enter the email address with pattern validation. The multiple attribute allows a user to enter more than one email address.

Ex: <form> Enter your Email-Address </label>

<label> Enter your Email-Address </label>
<input type="email" name="email" required>

<input type="submit">

<p> Note : User can also enter multiple email addresses separating by comma or whitespaces as following

<label> Enter Multiple Email-Addresses </label>

<input type="email" name="email" multiple>

<input type="submit">

</form>

Output:-

Enter Your Email-Address

Note: User can also enter multiple email addresses separating by comma or whitespaces as following:

Enter Multiple Email Addresses

→ 6) <input type="month"> :- It creates an input field which allows a user to easily enter month and year in the format of "MM, YYYY" where MM defines month value and, YYYY defines the year value

Ex: <form> Enter your Birth Month-Year: </label>

<label> Enter your Birth Month-Year: </label>

<input type="month" name="newMonth">

<input type="submit">

</form>

→ 7) <input type="number"> :- It creates input field which allows a user to enter the numeric value. You can also restrict to enter a minimum and maximum value using min and max attribute

Ex. Enter your age<input type="number" name="num" min="18" max="80">

⑧ :- It creates an input field which enables user to enter the URL. (13)

Ex:- <form>

<label> Enter your website URL: </label>

<input type="url" name="website" placeholder="http://example.com">

<input type="submit" value="Send Data">

</form>

⑨ :- It creates an input field which allows a user to select a week and year from the drop-down calendar without time zone.

Ex:- <form>

<label> Select your best week of year: </label>

<input type="week" name="bestweek">

<input type="submit" value="Send Data">

</form>

⑩ :- It creates an input field which allows a user to enter a search string. These are functionally symmetrical to the text input type, but may be styled differently.

<form>

<label> Search here: </label>

<input type="search" name="q">

<input type="submit" value="Search">

</form>

⑪ :- It creates an input field to enter the telephone number.

The "tel" type does not have default validation such as email, because telephone number pattern can vary worldwide.

Ex. <form>

<label> Enter your telephone number (in format of 123-123-1234):

<label> <input type="tel" name="telephone"

<input pattern="[\d]{3}-[\d]{3}-[\d]{4}" required>

<input type="submit" >

</form>

→ 12) <input type="range">: It defines a control for entering a number whose exact value is not important (like a slider control). Default range is 0 to 100. However, you can set restrictions on what numbers are accepted with min, max and step attributes.

Ex: <input type="range" name="points" min="0" max="10">

→ Input Restrictions: Some of the attributes does input restrictions.

- 1) checked: Specifies that an input field should be preselected when page loads.
- 2) disabled: Specifies that an input field should be disabled.
- 3) max: Specifies the maximum value for an input field.
- 4) maxlength: Specifies the maximum number of characters for an input field.
- 5) min: Specifies the minimum value for an input field.
- 6) pattern: Specifies a regular expression to check the input value against.
- 7) readonly: Specifies that an input field is readonly (can't be changed).
- 8) required: Specifies that an input field is required (must be filled out).
- 9) size: Specifies the width (in characters) of an input field.
- 10) step: Specifies the legal number intervals for an input field.
- 11) value: Specifies the default value for an input field.

→ HTML Input Attributes: It defines the name of an input element.

- 1) HTML Name attribute: It defines the name of an input element. The name and value attribute are included in HTTP request when we submit the form. If you will not use name attribute in any input field, then that input field will not be submitted. When we submit the form.
- 2) HTML Value attribute: The HTML value attribute defines the initial value or default value of an input field.

Ex: Enter your Name <input type="text" name="uname" value="Entername">.

- 3) Required attribute: It is a boolean attribute which specifies that user must fill that field before submitting the form.

Ex: <input type="text" name="uname" required>

Note: If you will try to submit the form without completing the email field then it will give an errors pop up.

4) readonly attribute: It specifies that the input field is readonly (cannot be changed).

Ex: `<input type="text" name="firstname" value="John" readonly>`

5) disabled attribute: It specifies that the input field is disabled.

A disabled input field is unusable and unclickable, and its value will not be sent when submitting the form.

Ex: `<input type="text" name="firstname" value="John" disabled>`

6) size attribute: It specifies the size (in characters) for input field.

Ex: `<input type="text" name="firstname" value="John" size="40">`

7) maxlength attribute: It specifies the maximum allowed length for the input field.

Ex: `<input type="text" name="firstname" maxlength="10">`

8) height and width attributes: The height and width attributes specify the height and width of an `<input type="image">` element.

Ex: Define an image as the submit button, with height and width attributes.

`<input type="image" src="img-submit.gif" alt="submit" width="48" height="48">`

9) min and max attributes: The min and max attributes specify the minimum and maximum values for an `<input>` element. These attributes works with the following input types: number, range, date,

datetime-local, month, time and week.

Ex: `quantity <input type="number" name="quantity" min="1" max="5">`

10) multiple attribute: It specifies that the user is allowed to enter more than one value in the `<input>` element. It works with: email, file

Ex: `Upload multiple files <input type="file" name="img" multiple>`

11) placeholder attribute: It specifies a hint that describes the expected value of an input field (a sample value or a short description of the format). The hint is displayed in the input field before the user enters a value. It works with the following input types: text, search, url, tel, email and password.

Ex: `<input type="text" name="fname" placeholder="First Name">`

12) step attribute: It specifies the legal number intervals for an `<input>` element. It can be used together with the max and min attributes to create a range of legal values. It works with the following input types: number, range, date, datetime-local, month, time, week. Example: If step=3, legal numbers could be -3, 0, 3, 6, etc.

`<input type="number" name="points" step="3">`

- Elements
- HTML Form Elements:
- 1) `<form>` → defines an HTML form for user input.
 - 2) `<input>` → defines an input control.
 - 3) `<textarea>` → defines a multiple input control (text area).
 - 4) `<label>` → defines a label for an `<input>` elements.
 - 5) `<button>` → defines a clickable button.
 - 6) `<select>` → defines a drop-down list.
 - 7) `<option>` → defines an option in the dropdown list.
 - 8) `<optgroup>` → defines a group of related options in a dropdown list.
 - 9) `<datalist>` → specifies a list of predefined options for input controls.
 - 10) `<output>` → defines the result of calculation.

→ HTML Form Attributes:

1) action attribute: The action attribute of `<form>` element defines the process to be performed on form when form is submitted, or it is a URL to process the form information.

The action attribute value defines a web page where information proceed. It can be .php, .jsp, .asp, or any URL where you want to process your form. If action attribute value is blank the forms will be processed to the same page.

2) method attribute: The method attribute defines an HTTP method which browser used to submit the form. The possible values of method attribute can be post or get.

a) post:- We can use the post value of method attribute when we want to process the sensitive data as it does not display the submitted data in URL.

Ex: <form action = "action.html" method = "post">

b) get:- The get value of method attribute is default value while submitting the form. But this is not secure as it displays data in URL after submitting the form.

Ex:- <form action = "action.html" method = "get">

3) target attribute: It defines where to open the response after submitting the form. _self is an attribute value then the response will display in current page only.

Ex: <form action = "action.html" method = "get" target = "self">

If we use _blank as an attribute it will load the response in new page.

4) autocomplete attribute: It is newly added attribute of HTML5 which enables an input field to complete automatically.

It can have two values "on" and "off" which enables auto complete either ON or OFF. The default value of auto complete attribute is "on".

Ex: i) <form action = "action.html" method = "get" autocomplete = "on">

ii) <form action = "action.html" method = "get" autocomplete = "off">

Note: It can be used with <form> element and <input> element both.

5) nonvalidate:- The non validate attribute is newly added Boolean attribute of HTML 5. If we apply this attribute in form then it does not perform any type of validation and submit the form.

Ex: <form action="action.html" method="get" nonvalidate>

→ <textarea> Element:- The textarea element defines a multi-line input field.

Ex. <textarea name="message" rows="10" cols="30">
The cat was playing in the garden</textarea>

→ <select> element:- The <select> element defines a dropdown list.

Ex: <select name="cars">
 <option value="volvo">Volvo</option>
 <option value="fiat">Fiat</option>
 <option value="benz">Benz</option>
</select>

→ The <option> element defines an option that can be selected. By default, the first item in the drop-down list is selected. To define a pre-selected option, add the selected attribute to the option.

Ex: <option value="Fiat" selected>Fiat</option>

→ visible values:- Use the size attribute to specify the number of visible values.

<select name="cars" size="3">
 <option value="volvo">Volvo</option>
 <option value="fiat">Fiat</option>
 <option value="benz">Benz</option>

 <option value="audi">Audi</option>

</select>

→ Allows multiple selections:- Use the multiple attribute to allow the user to select more than one value.

Ex: <select name="cars" size="4" multiple>

<option value="Volvo"> Volvo </option>

<option value="Saab"> Saab </option>

<option value="Fiat"> Fiat </option>

<option value="Audi"> Audi </option>

</select>

→ <button> element: The <button> element defines a clickable button.

Ex: <button type="button" onclick="alert('Hello World')"> Click Me! </button>

→ <datalist> element: The <datalist> element specifies a list of

predefined options for an <input> element. Users will see a drop

down list of the predefined options as they input data. The list
attribute of the <input> element must refer to the id attribute of the <datalist> element.

Ex: <form action="/action-page.php">

<input list="browsers" type="text" />

<datalist id="browsers">

<option value="Internet Explorer">

<option value="Chrome">

<option value="Opera">

</datalist>

</form>

→ <output> element: The <output> element represents the result

of a calculation (like one performed by a script).

Ex: <form action="/action-page.php">

$0 \leq a \leq 100$
 $0 \leq b \leq 100$

 <input type="range" id="a" name="a" value="50" min="0" max="100" />

 <input type="number" id="b" name="b" value="50" min="0" max="100" />

 = <output name="x" for="a b" />

 <input type="submit" />

① → HTML Comments:— comment tags are used to insert comments in the HTML source code. You can add comments by using the following syntax. `<!--Write your comments here-->`

→ Notice that there is an exclamation point (!) in the opening tag, but not in the closing tag. With comments we can place notifications and reminders in our HTML.

Ex: `<!-- Remember to add more information here-->`

→ HTML Colors:— HTML colors are specified using predefined

color names, or RGB, HEX, HSL, RGBA, HSLA values. HTML supports 140 standard color names. HSLA(Hue, saturation, lightness, alpha).

→ We can set the background color for HTML elements:

Ex: `<h1 style="background-color: DodgerBlue;"> Hellworld </h1>`

b) `<p style="background-color: Tomato"> HTML Programming..</p>`

→ We can set the color of text:

Ex: `<h1 style="color: MediumSeaGreen;"> BeonesLee </h1>`

→ We can set the color of borders:

Ex: `<h1 style="border: 2px solid Tomato;"> Hellworld </h1>`

→ In HTML, colors can also be specified using RGB values, HEX values, HSL values, RGBA values and HSLA values.

Ex: `<h1 style="background-color: rgb(255, 99, 71);"> Hello </h1>`

→ ~~for example~~, RGB consists of three parameters and defines the intensity of the color between 0 and 255.

Ex: `rgb(255, 0, 0) ⇒ red, rgb(0, 255, 0) ⇒ green, rgb(0, 0, 255) ⇒ blue, rgb(0, 0, 0) ⇒ black and rgb(255, 255, 255) ⇒ white`

→ In HTML, a color can be specified using a hexa decimal value

Ex: `#ff0000 (red), #00ff00 (green), #0000ff (blue), #000000 (black) and #ffffff (white)`

HTML Marquee Tag: It is used to create a scrolling text or scrolling image from left to right, right to left, top to bottom, bottom to top. There is no limit.

Ex: `<marquee behavior="scroll" direction="left">` continuous scrolling text `</marquee>`

b) `<marquee behavior="slide" direction="right">` slide stop

horizontal scroll text `</marquee>`

c) `<marquee behavior="alternate" direction="left">` side

Touch Margin Bounce Text `</marquee>`

d) `<marquee behavior="scroll" direction="left" scrollamount="3">` slow scroll speed `</marquee>`

e) `<marquee behavior="scroll" direction="right" scrollamount="12">` fast scroll speed `</marquee>`

f) /* side bounce margin bounce image */

`<marquee behavior="alternate" direction="left">`

``

`</marquee>`

g) /* click and hold to stop marquee */

`<marquee behavior="scroll" direction="left">`

`onmousedown = "this.stop();"`

`onmouseup = "this.start();"`

click and hold the mouse marquee stop

`</marquee>`

h) `<marquee behavior="scroll" direction="left" onmouseover="this.stop();"`

`onmouseout = "this.start();"`

Hover over and hold the mouse marquee stop `</marquee>`

→ hspace attribute specifies left or right margin for outside marquee vspace attribute value specifies the top or bottom margin for outside marquee. scrolldelay attribute value specifies time wait long before each marquee starts moving.

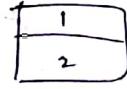
→ HTML Frame: - HTML frame is used to split the browser window in several individual frames that can contain a separate HTML web document. Frame provides technical sophisticated appearance to the website.

→ HTML document within frame include a other web pages link can be opened in the desired frame. Frames are generally include navigation link, header or footer, which help user to find and navigate to required information.

→ DisAdv: - The web developer must be track of more HTML documents linked with mainframe. It is difficult to point the entire page which is developed using frame.

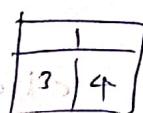
Ex: 1) <html> <frameset rows="35%, 65%">

<frame src="frame1.html" />
<frame src="frame2.html" />



Ex: 2) <html> <frameset cols="50%, 50%">

<frame src="frame1.html" />
<frame src="frame2.html" />



<frameset cols="50%, 50%">

<frame src="frame3.html" />

<frame src="frame4.html" />

</frameset>

</frameset>