Unit 1:HTML

Definition

- HTML stands for Hyper Text Markup Language
- HTML is the standard markup language for creating Web pages
- HTML describes the structure of a Web page
- HTML consists of a series of elements
- HTML elements tell the browser how to display the content
- HTML elements label pieces of content such as "this is a heading", "this is a paragraph", "this is a link", etc.

Note: html is mark up language because it can mark the text, it is different from programming language because programming lang is for giving instruction to computer and this is to build web pages.

Year	Version
1989	Tim Berners-Lee invented www
1991	Tim Berners-Lee invented HTML
1993	Dave Raggett drafted HTML+
1995	HTML Working Group defined HTML 2.0
1997	W3C Recommendation: HTML 3.2
1999	W3C Recommendation: HTML 4.01
2000	W3C Recommendation: XHTML 1.0
2008	WHATWG HTML5 First Public Draft
2012	WHATWG HTML5 Living Standard
2014	W3C Recommendation: HTML5
2016	W3C Candidate Recommendation: HTML 5.1
2017	W3C Recommendation: HTML5.1 2nd Edition
2017	W3C Recommendation: HTML5.2

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.

Web Page: A web page 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**

How HTML5 is different from previous HTML versions

HOSTINGER

Three. Two. Online

HTML Historical Milestones

1992

HTML 2.0

Developed by The IETF's HTML Working Group, which closed in 1996. It set the standard for core HTML features based upon current practice in 1994.

1997

HTML 3.2

W3C's first recommendation for HTML which represented the consensus on HTML features for 1996. HTML 3.2 added widely deployed features such as tables, applets, text-flow around images, superscripts & subscripts, while providing backwards compatibility with the existing HTML 2.0 standard.

2000

XHTML 1.0

With a wealth of new features, XHTML 1.0 was a reformulation of HTML 4.01 in XML, and combined the strength of HTML 4 with the power of XML.

1999

HTML 4.01

Added support for more multimedia options, scripting languages, style sheets, better printing facilities, and documents that are more accessible to users with disabilities.

2015

HTML 5

Made to replace HTML 3.2, HTML 4, and XHTML 1.x, HTML5 has a plethora of new features compared to its predecessors. These include offline media storage support, more specific content elements (like footer, header, navigation, etc.), simpler inline doctype, audio, and video embedding support.

2016

HTML 5.1

Better capabilities regarding video experience, web forms, image accessibility, and the checking of spelling and grammar.

2017

HTML 5.2

HTML is the primary language of the World

HTML 1.0

- The basic version of HTML has support for basic elements like text controls and images. This was the very basic version of HTML with less support for a wide range of HTML elements. It does not have rich features like styling and other things that were related to how content will be rendered in a browser.
- The initial version of HTML does not provide support for tables, font support, etc., as it provides us in the latest version.

HTML 2.0

- HTML version 2.0 was developed in 1995 with basic intention of improving HTML version 1.0
- Concept of form came into force.
- Browsers also came with the concept of creating their own layers of tags that were specific to the browser itself.

HTML 3.2

- Better support for new form elements.
- Support for CSS.
- supported for **frame tags**

HTML 4.01

- Extended the support of cascading styling sheets.
- In version 3.2, CSS were embedded in HTML page itself. Therefore, if the website has various web pages to apply to the style of each page, we must place CSS on each web page. Hence there was a repetition of the same block of CSS.
- Concept of an external styling sheet emerged.

HTML5

- This is the latest version of HTML. For a developer, it could be used in 2014.
- support for new form elements like input elements of different types; geolocations **support tags**, etc.

HTML Tags

HTML tags are like keywords which define how a 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.

When a web browser reads an HTML document, the browser reads it from top to bottom and left to right. HTML tags are used to create HTML documents and render their properties. Each HTML tag has different properties.

An HTML file must have some essential tags so that the web browser can differentiate between a simple text and HTML text. You can use as many tags you want as per your code requirement.

- All HTML tags must be enclosed within < > these brackets.
- Every tag in HTML performs different tasks.
- If you have used an open tag <tag>, then you must use a close tag </tag> (except some tags)

HTML Attribute

- HTML attributes are special words which provide additional information about the elements or attributes are the modifier of the HTML element.
- Each element or tag can have attributes, which defines the behavior of that element.
- Attributes should always be applied with the start tag.
- The Attribute should always be applied with its name and value pair.
- 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

1. `<element attribute_name="value">content</element>`

HTML Elements

An HTML file is made of elements. These elements are responsible for creating web pages and define content in that webpage. An element in HTML usually consist 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**.

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**.

**Some Void elements are
 (represents a line break) , <hr>(represents a horizontal line), etc.**

Nested HTML Elements: HTML can be nested, which means an element can contain another element.

What are Semantic Elements?

A semantic element clearly describes its meaning to both the browser and the developer.

Examples of non-semantic elements: `<div>` and `<span>` - Tells nothing about its content.

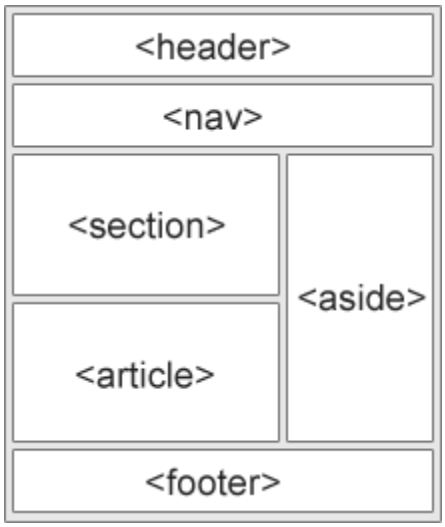
Examples of semantic elements: `<form>`, `<table>`, and `<article>` - Clearly defines its content.

Semantic Elements in HTML

Many web sites contain HTML code like: to indicate navigation, header, and footer.

In HTML there are some semantic elements that can be used to define different parts of a web page:

- <article>
- <aside>
- <details>
- <figcaption>
- <figure>
- <footer>
- <header>
- <main>
- <mark>
- <nav>
- <section>
- <summary>
- <time>



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

Block-level element:

- These are the elements, which structure main part of web page, by dividing a page into coherent blocks.
- 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.

Following are the block-level elements in HTML.

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

X x

Formatting and Fonts

HTML Formatting is a process of formatting text for better look and feel. HTML provides us the 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. There are almost 14 options available for how text appears in HTML and XHTML.

In HTML the formatting tags are divided into two categories:

- Physical tag: These tags are used to provide the visual appearance to the text.
- Logical tag: These tags are used to add some logical or semantic value to the text.

Here, we are going to learn 14 HTML formatting tags. Following is the list of HTML formatting text.

Element name	Description
<b>	This is a physical tag, which is used to bold the text written between it.
	This is a logical tag, which tells the browser that the text is important.
<i>	This is a physical tag which is used to make text italic.
	This is a logical tag which 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 teletype. (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 conventional unit.
<small>	This tag is used to decrease the font size by one unit from base font size.

Example

Write html program to write paragraph in this formatting.

Formatting paragraph

Website is a hyper-media information storage system linking resources around the world. In website, browsers allow highlighted words or an icon which is called hyper links to display text, video, graphics and sound on a local computer screen. **With the introduction of World Wide Web in 1989, the concept of websites has become more popular**. On this web, anyone can create a home page, which ~~hundred~~ millions of users can watch on their computers and respond.

Program

```
<html>
<body>
<h1>Formatting paragraph</h1>
<p> <b>Website is a hyper-media information storage system linking resources around the world</b>. In website, browsers allow highlighted words or an icon which is called hyper links to display text, video, graphics and sound on a local computer screen.<strong> With the introduction of <u><mark>World Wide Web </mark>in 1989</u>, the concept of websites has become more popular</strong>. On this web, anyone can create a home page, which<strike> million</strike> billions of users can watch on their computers and respond.</p>
</body>
</html>
```

HTML Heading

A HTML heading or HTML h tag can be defined as a title or a subtitle which you want to display on the webpage. When you place the text within the heading tags <h1>.....</h1>, it is displayed on the browser in the bold format and size of the text depends on the number of heading.

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.

Headings in HTML helps the search engine to understand and index the structure of web page.

HTML Paragraph

HTML paragraph or HTML p tag is used to define a paragraph in a webpage. Let's take a simple example 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 the starting of a new paragraph.

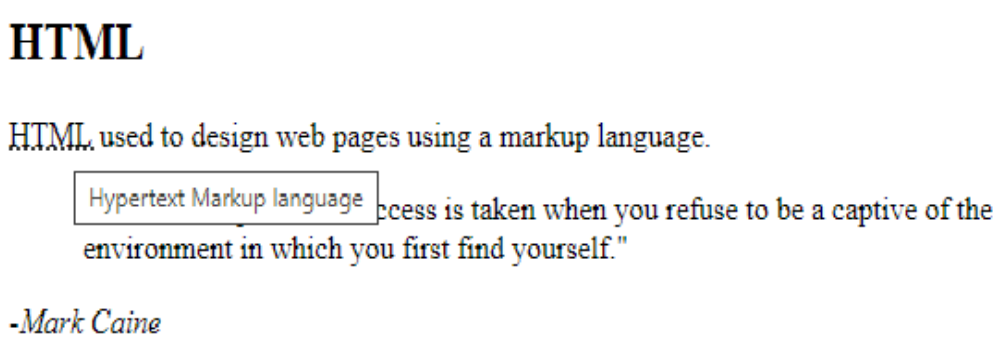
HTML Phrase tag

The HTML phrase tags are special purpose tags, which defines the structural meaning of a block of text or semantics of text. Following is the list of phrase tags, some of which we have already discussed in HTML formatting.

- **Abbreviation tag : <abbr>**
- **Acronym tag: <acronym> (not supported in HTML5)**
- **Marked tag: <mark>**
- **Strong tag: **
- **Emphasized tag : **
- **Definition tag: <dfn>**
- **Quoting tag: <blockquote>**
- **Short quote tag : <q>**
- **Code tag: <code>**
- **Keyboard tag: <kbd>**
- **Address tag: <address>**

Example

Write program in html to implement this web page.



Program

```
<html>
 <body>
   <h2> HTML</h2>
    <p><abbr title = "Hypertext Markup language">HTML  </abbr> used to design web pages using a markup language.
<blockquote><p>"The first step toward success is taken when you refuse to be a captive of the environment in which you first find yourself."</p></blockquote>
    <cite>-Mark Caine</cite>
   </p>
 </body>
</html>
```

HTML tag (Not Supported in HTML5)

HTML 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.

Syntax

** Content....**

Color Option

FF0000 means FF worth of Red, and no Green or Blue. The result is RED.

#0000FF means no Red or Green, and FF worth of Blue. The result is BLUE.

#FFFF00 means FF worth of Red and Green, and Blue. The result is YELLOW.

#000000 means no Red, Green, or Blue. The result is BLACK.

#FFFFFF means full FF amounts of Red, Green, and Blue. The result is WHITE.

Font Family/face Option

font-family: Verdana, Arial, Tahoma, Serif;

In this case, the main font is ***Verdana*** and if this is not available, your browser will use the fallback value. So, the first fallback is ***Arial***. If this font is also not supported by your browser, it will use the ***Tahoma*** font and if this font is also not supported, then the browser of the user will set the ***Serif*** font.

Example

Write HTML code to program fonts like this.

Program

```
<html>
<head>
<title>Font Tag</title>
</head>
<body>
<h2>Example of font tag</h2>
<p>This is normal text without any font styling</p>
 <p>
        <font color="blue">Text with normal size and default face</font>
 </p>
 <p>
        <font size="5" color="green">Text with Increased size and default face</font>
 </p>
 <p>
        <font color="red" face="cursive">Text with Changed face</font>
 </p>
</body>
</html>
```

HTML Comments

Comments are some text or code written in your code to give an explanation about the code, and not visible to the user. Comments which are used for HTML file are known as HTML comments. Anything written between these tags will be ignored by the browser, so comments will not be visible on the webpage.

Comments of any code make code easy to understand and increase readability of code.

Comments are also part of the code, which gives an explanation of the code.

How to add comment In HTML

You can add comments in your HTML file using <! -- ... --> tag. So if you write anything between these comment tags that will be treated as a comment and the browser will not read it.

Syntax

1. **<! -- Write commented text here -->**

X_____**x**

HTML Anchor

The **HTML anchor tag** defines *a hyperlink that links one page to another page*. It can create hyperlink to other web page as well as files, location, or any URL.

The syntax of HTML anchor tag is given below.

```
<a href = "....."> Link Text </a>
```

Example of HTML anchor tag for another page.

Write program in HTML to link two pages.

First Page

```
<html>
<body>
<a href="second.html">Click for Second Page</a>
</body>
</html>
```

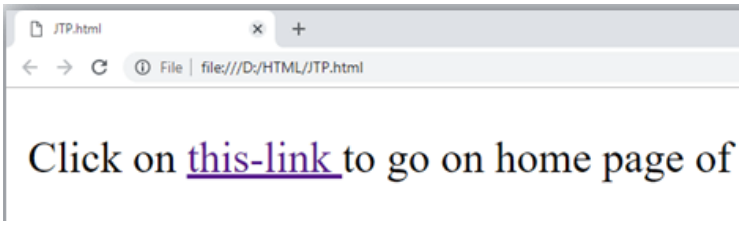
Second Page

```
<html>
<body>
<h1> this is second html page</h1>
</body>
</html>
```

Specify a location for Link using target attribute

Open that link to another page then we can use target attribute of <a> tag.

```
<p>Click on <a href="https://www.xyz.com/" target="_blank"> this-link </a>to go on home page of xyz.</p>
```



- The **target** attribute can only use with href attribute in anchor tag.
- If we will not use target attribute then link will open in same 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.

Example

Write an HTML program to open a location link.

```
<html>
<body>
<p>Click on <a href="https://www.google.com/" target="_blank"> this-link </a>to go on google home page.</p>
</body>
</html>
```

Output

Click on this-link to go on google home page.

HTML Image

HTML img tag is used to display image on the web page. HTML img tag is an empty tag that contains attributes only, closing tags are not used in HTML image element.

example of HTML image.

```
<img src="good_morning.jpg" alt="Good Morning Friends"/>
```

Attributes of HTML img tag

The src and alt are important attributes of HTML img tag. All attributes of HTML image tag are given below.

1) src

source or path of the image. It instructs the browser where to look for the image on the server.

2) alt

alternate text for the image, if it can't be displayed.

3) width

specify the width to display the image.

4) height

h3 the height of the image.

Use of height and width attribute with img tag

Some height and width to display image according to our requirement.

Use of alt attribute

We can use alt attribute with tag. It will display an alternative text in case if image cannot be displayed on browser.

```
<img src="animal.png" height="180" width="300" alt="animal image">
```

Use <img> tag as a link

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

Example:

```
<a href="https://www.xyz.com/what-is-robotics"><img src="robot.jpg" height="100" width="100"></a>
```

X_____X

HTML Table

HTML table tag is used to display data in tabular form (row * column). There can be many columns in a row. We can create a table to display data in tabular form, using <table> element, with the help of <tr> , <td>, and <th> elements. In Each table have, table row <tr> tag, table header <th>, and table data <td> tags.

<tr> tag basically uses to break table column if we not write tr tag row continuously print one after other..

Example

Write HtML code to create webpage contain table with data given below.

First_Name	Last_Name	Marks
Sita	pandey	60
Johny	Walia	80
Shekhar	Siraj	82
Chitra	Sharma	72

```
<table>
<tr><th>First_Name</th><th>Last_Name</th><th>Marks</th></tr>
<tr><td>Sonoo</td><td>Jaiswal</td><td>60</td></tr>
<tr><td>James</td><td>William</td><td>80</td></tr>
<tr><td>Swati</td><td>Sironi</td><td>82</td></tr>
<tr><td>Chetna</td><td>Singh</td><td>72</td></tr>
</table>
```

HTML Table with Border and Span

There are two ways to specify border for HTML tables.

1. By border attribute of table in HTML
2. By border property in CSS

Example to enter multiple table attributes.

<table border="1" bgcolor="#98f5ff" align="right" color="red" >

HTML Border attribute

```
<table border="1" >
<caption>Student Records</caption>
 <tr>
 <th>Name</th>
 <th>Mobile No.</th>
 </tr>
 <tr>
 <td rowspan="2">Ajeet Maurya</td>
 <td >7503520801</td>
 </tr>
<tr>
 <td>9555879135</td>
```

```
  </tr>
</table>
```

Name	Mobile No.
Ajeet Maurya	7503520801
	9555879135

HTML <tbody> tag

The HTML <tbody> tag is used to group the table rows (<tr>) together, which indicates that this is body part of a table (<table>).

```
<!DOCTYPE html>
<html>
<head>
   <title>HTML tbody tag</title>
</head>
<body>
 <h2>Example of the tbody tag</h2>
 <table border="1" bgcolor="#98f5ff" align="right" >
  <thead>
     <tr>
      <th>EmpId</th>
      <th>Name</th>
      <th>Email-Id</th>
     </tr>
  </thead>
 <tbody>
    <tr>
      <td>121</td>
      <td>John</td>
      <td>john123@gmail.com</td>
    </tr>

    <tr>
      <td>122</td>
      <td>William </td>
      <td>william56@gmail.com</td>
    </tr>

    <tr>
```

```
      <td>123</td>
      <td>Amit</td>
      <td>amitk98@gmail.com</td>
    </tr>
  </tbody>
</table>
</body>
</html>
```

Example of the tbody tag

EmpId	Name	Email-Id
121	John	john123@gmail.com
122	William	william56@gmail.com
123	Amit	amitk98@gmail.com

For multiple styling

```
<p style="font-size:50px;color:blue">this is my paragraph</p>
```

X x

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

```
<ol>
 <li>Aries</li>
 <li>Bingo</li>
 <li>Leo</li>
 <li>Oracle</li>
</ol>
```

Output:

1. Aries
2. Bingo
3. Leo
4. Oracle

HTML Unordered List or Bulleted List

UI unordered list
li list item

```
<ul>
 <li>Aries</li>
 <li>Bingo</li>
 <li>Leo</li>
 <li>Oracle</li>
</ul>
```

HTML Description List or Definition List

The definition list is very appropriate when you want to present glossary,

<dl> tag defines the start of the list.

<dt> tag defines a term.

<dd> tag defines the term definition (description).

Example

```
<dl>
  <dt>Aries</dt>
  <dd>-One of the 12 horoscope sign.</dd>
  <dt>Bingo</dt>
  <dd>-One of my evening snacks</dd>
 <dt>Leo</dt>
 <dd>-It is also an one of the 12 horoscope sign.</dd>
  <dt>Oracle</dt>
  <dd>-It is a multinational technology corporation.</dd>
</dl>
```

Output:
Aries
-One of the 12 horoscope sign.
Bingo
-One of my evening snacks
Leo
-It is also an one of the 12 horoscope sign.
Oracle
-It is a multinational technology corporation.

HTML Ordered List | HTML Numbered List

There can be different types of numbered list:

- Numeric Number (1, 2, 3)
- Capital Roman Number (I II III)
- Small Romal Number (i ii iii)
- Capital Alphabet (A B C)
- Small Alphabet (a b c)

Type	Description
Type "1"	This is the default type. In this type, the list items are numbered with numbers.
Type "I"	In this type, the list items are numbered with upper case roman numbers.
Type "i"	In this type, the list items are numbered with lower case roman numbers.
Type "A"	In this type, the list items are numbered with upper case letters.
Type "a"	In this type, the list items are numbered with lower case letters.

```
<!DOCTYPE html>
<html>
<body>
<ol type="i" start="5">
 <li>HTML</li>
 <li>Java</li>
 <li>JavaScript</li>
 <li>SQL</li>
</ol>
</body>
</html>
```

Output

v.Java
vi.JavaScript
vii.SQL

HTML Unordered List | HTML Bulleted List

There can be 4 types of bulleted list(by default= disc)

- disc
- circle
- square
- none

Example

```
ul type="square">
 <li>HTML</li>
 <li>Java</li>
 <li>JavaScript</li>
 <li>SQL</li>
</ul>
```

Output:

- ☐ HTML
- ☐ Java
- ☐ JavaScript
- ☐ SQL

X_____x

HTML Form

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.

HTML Form Syntax

1. **<form** action="server url" method="get|post"**>**
2. //input controls e.g. textfield, textarea, radiobutton, button
3. **</form>**

Tag	Description
<form>	It defines an HTML form to enter inputs by the used side.
<input>	It defines an input control.
<textarea>	It defines a multi-line input control.
<label>	It defines a label for an input element.
<fieldset>	It groups the 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.

Let's see the list of HTML 5 form tags.

Tag	Description
<datalist>	It specifies a list of pre-defined options for input control.
<keygen>	It defines a key-pair generator field for forms.
<output>	It defines the result of a calculation.

HTML <form> element

Syntax:

1. **<form>**
2. //Form elements
3. **</form>**

HTML <input> element

The HTML <input> element is fundamental form element. It is used to create form fields, to take input from user.The name attribute is optional, but it is required for the server side component such as JSP, ASP, PHP etc

Example:

```
<html>
<body>
<form action="https://www.xyz.com/html-form" target="blank" method="get">

Username: <input type="text" name="username" id="username">
<br>
<br>
Password: <input type="password" name="password" id="pass">
<br>
<br>
<input type="submit" value="Login">

</form>

</body>
```

Username: ddd

Password: ••

IOG IN

Other input type Example

```
<html>
<body>
<form action="https://www.javatpoint.com/html-form" target="blank" method="get">

Username: <input type="text" name="username" id="username" size="5" maxlength="5">
<br>
<br>
Password: <input type="password" name="password" id="pass">
<br>
<br>
Gender:
Male<input type="radio" name="gen">
FeMale<input type="radio" name="gen">
<!--if we not write name attribute in radio so browser consider it different input and it take both values of gender.--!>
<br>
<br>
Language Known:
C<input type="radio" name="gen">
C++<input type="radio" name="lang">
java<input type="radio" name="langu">
python<input type="radio" name="langua">
<br>
<br>
Subjects:
<select >
<option value="OS">OS</option>
<option value="OS">CD</option>
<option value="OS">Automata</option>
<option value="OS">DSA</option>
</select>
<br>
<br>

Hobbies:
Dancing <input type="checkbox" name="hob">
Singing <input type="checkbox" name="hob">
Sports <input type="checkbox" name="hob">
Writing <input type="checkbox" name="hob">

<br>
<br>
DOB:
<input type="date">
<br>
<br>
Mobile No.
<input type="text" pattern="[0-9]{10}" title="fill 10 digit mobile no.">
<br>
<br>
Upload Documents
<input type="file" multiple>
```

```
<br>
<br>
Describe about yourself:
<textarea  rows="4" cols="40">
</textarea>
<br>
<br>
<input type="submit" value="Login">

</form>

</body>
```

Output

Username: Username

Password:

Gender: Male FeMale

Language Known: C C++ java python

Subjects: OS

Hobbies: Dancing Singing Sports Writing

DOB: dd-mm-yyyy

Mobile No.

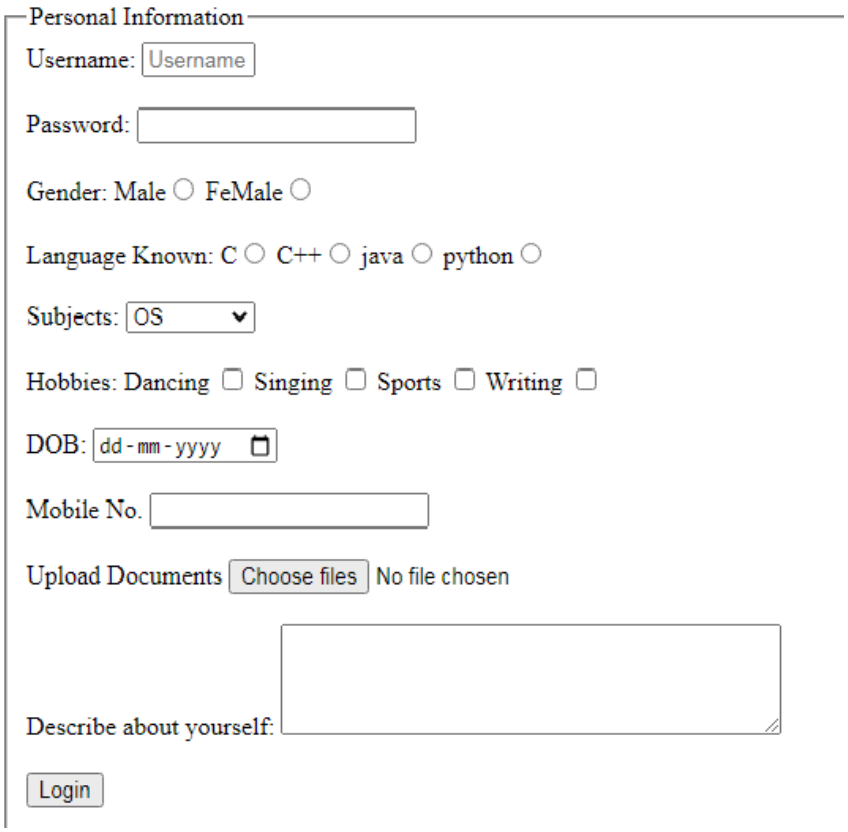
Upload Documents Choose files No file chosen

Describe about yourself:

Login

Fieldarea

```
<form>
<fieldset>
<legend> Personal Information</legend>
</fieldset>
</form>
```



Label

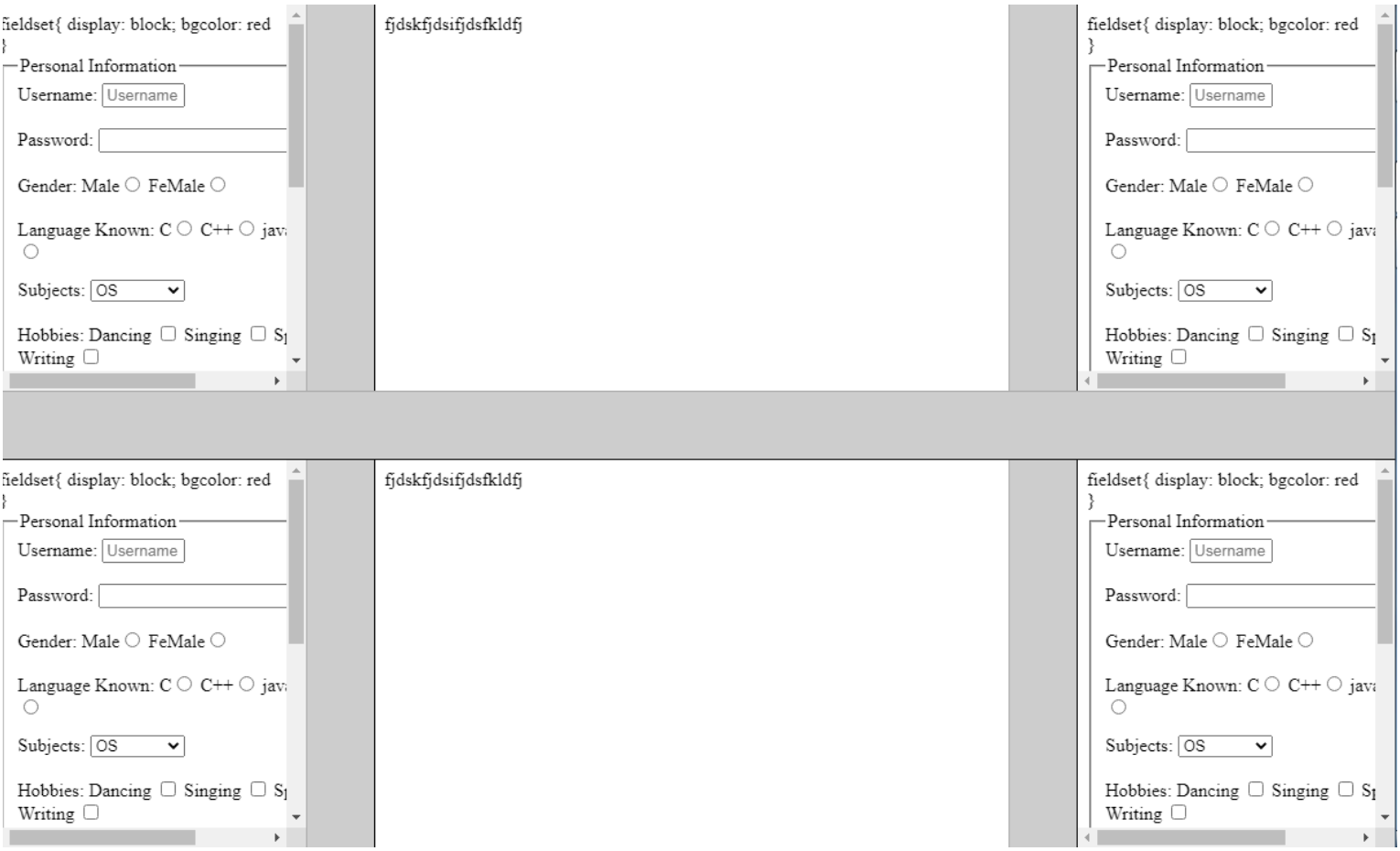
<label for="username">Username: </label>

From this when we move curser to the username and click their its text field select automatically

Frame and frameset

```
<html>
<head>
   <title>Frame tag</title>
</head>
  <frameset cols="25%,50%,25%">
    <frame src="frame1.html" >
    <frame src="frame2.html">
    <frame src="frame3.html">
  </frameset>
</html>
```

Output



HTML <meta> tag

HTML <meta> tag is used to represent the metadata about the HTML document. It specifies page description, keywords, copyright, language, author of the documents, etc.

1. **<meta** charset="utf-8"**>**

It defines the character encoding. The value of charset is "utf-8"(in HTML5 bydefault) which means it will support to display any language.

Basically UTF8 contain all 10,000 characters which support all languages but the previous version of HTML contain ISO-8859-8 which support only 256 character. Which only able to support english language.not others.

2. **<meta** name="keywords" content="HTML, CSS, JavaScript, Tutorials"**>**

It specifies the list of keyword which is used by search engines.

3. **<meta** name="description" content="HTML Notes"**>**

It defines the website description which is useful to provide relevant search performed by search engines.

4. `<meta name="author" content="senam">`

It specifies the author of the page. It is useful to extract author information by Content management system automatically.

5. `<meta name="refresh" content="50">`

It specifies to provide instruction to the browser to automatically refresh the content after every 50sec (or any given time).

6. `<meta http-equiv="refresh" content="5; url=https://www.javatpoint.com/html-tags-list">`

In the above example we have set a URL with content so it will automatically redirect to the given page after the provided time.

7. `<meta name="viewport" content="width=device-width, initial-scale=1.0">`

It specifies the viewport to control the page dimension and scaling so that our website looks good on all devices. If this tag is present, it indicates that this page is mobile device support.1.0 means this is 100 % of screen and this is the standard for mobile devices, if we zoom it by increasing scaling so it take more space.
We can practical it by check inspect and their mobile version.

Example

```
<!DOCTYPE html>
<html>
<head>
  <meta charset="utf-8">
  <meta name="keywords" content="HTML, CSS, JavaScript, Tutorials">
  <meta name="description" content="Free Online tutorials">
  <meta name="author" content="senam">
  <meta http-equiv="refresh" content="5; url=https://anywebpage..com/html-tags-list">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
</head>
<body>
<h2>Example of Meta tag</h2>
<p>This example shows the use of meta tag within an HTML document</p>
</body>
</html>
```

Web Browser Architecture

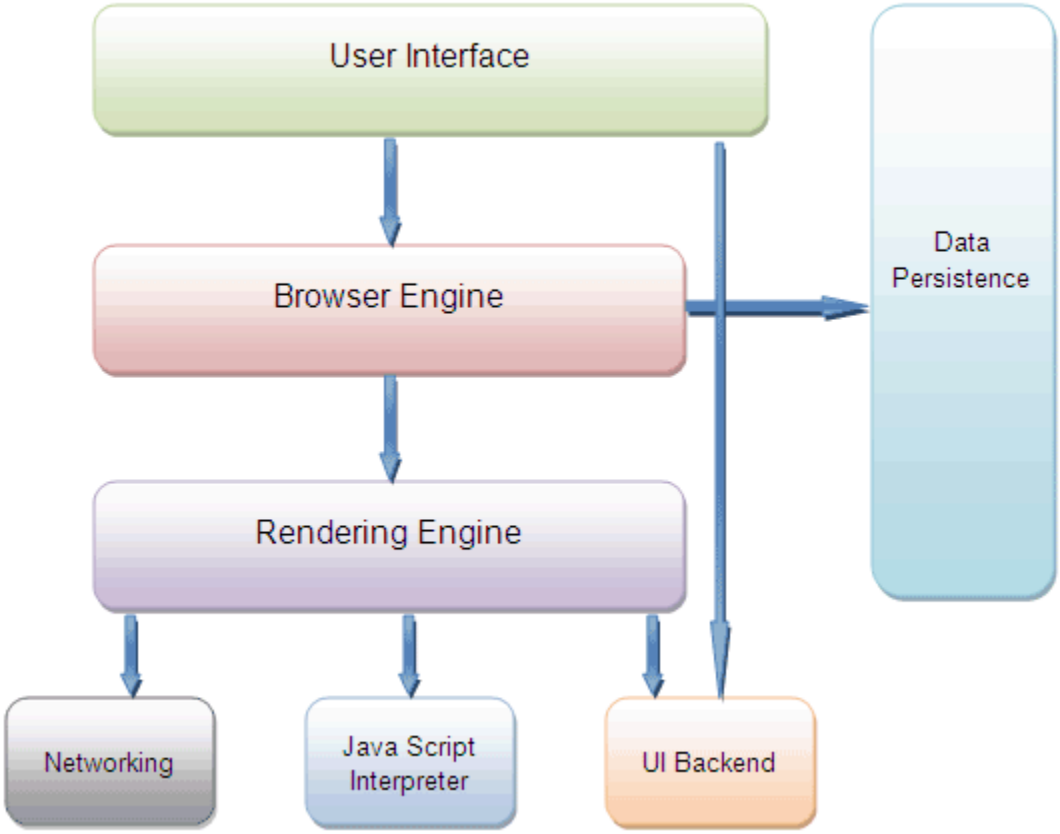
World Wide Web is the full form of WWW that is a network connecting all resources and users using Hypertext Transfer Protocol. There is an exchange of information between the devices on the internet becoming an interactive multimedia platform. The Internet is how the web transfers information and thus they are two separate concepts. The world wide web is a network while the internet is means by which it works to practice all sorts of features.
You are always requesting websites using the internet on the web. The web needs web browsers to open that are software applications allowing users to interact with content and data on the website. Firefox, Internet Explorer, Google Chrome, etc are the commonly used web browsers across the globe.
Many times the content on a website will have a hyperlink to another web page of the same website or of another one. Web browsers format HTML information for all sorts of content. A web page is a document on the websites that are stored on the server.

It is the place where users find all the information, a collection of web pages with the same link make up a website. Each of these pages has a Uniform Resource Locator (URL).

Evolution of web browser
1990. Concept of Web Browser Invented.
1993web browser Mosaic invented.
Internet Explorer by Microsoft came out in 1995
Opera came out in 1996
Netscape's Mozilla foundation led to the introduction of the Firefox browser in 1998
Chrome which accounts for the majority of the users in the world came out in 2008

How the World Wide Web Works?

The Architecture and how the different components work together



User Interface:

This is the user interface for the browser. It includes the Address Bar, back button, Bookmarking options, Refresh button, etc.

The browser's user interface is not specified in any formal specification, but comes from practices shaped over decades of experience (and browsers copying each other).

As a result, all browsers have UIs that are extremely similar to each other.

The Browser Engine:

The browser engine marshals actions between the browser's user interface and the browser's rendering engine.

When you type in a new website and press the enter key, the browser UI will tell the browser engine, which will then communicate with the rendering engine.

The Rendering Engine:

The rendering engine is responsible for displaying the requested content.

The rendering engine will start by getting the contents of the requested document from the networking layer.

It takes in the HTML code and parses it to create the DOM (Document Object Model) tree.

The rendering engine will then parse the CSS to build the CSSOM (CSS Object Model). It's like the DOM, but for the CSS rather than the HTML.

While the CSS is being parsed and the CSSOM is being created, the browser is downloading other assets through the Network Layer like JavaScript files.

The rendering engine communicates with the JavaScript engine to execute the JavaScript code and manipulate the DOM and CSSOM.

The rendering engine then takes the DOM and the CSSOM and combines them to create the Render tree.

The rendering engine then uses the UI backend for laying out the website on the screen and finally painting the pixels on the screen.

The entire process that the rendering engine goes through is called the Critical Rendering Path.

Examples of rendering engine include:

• Safari - WebKit Rendering Engine

• Chrome - Blink Rendering Engine (Blink is a fork of WebKit)

• FireFox - Gecko Rendering Engine

Here's a more detailed look at the flow for WebKit

Networking Layer

The Networking Layer is responsible for making network calls to fetch resources.

It imposes the right connection limits, formats requests, deals with proxies, caching, and much more.

You can read more about the Networking Layer here.

JavaScript Engine

The JavaScript Engine is used to parse and execute JavaScript code on the DOM or CSSOM. The JavaScript code is provided by the web server, or it can be provided by the web browser (browser extensions or features of the browser like automatic ad-blocking).

Early browsers used JavaScript interpreters, but modern JavaScript engines use Just-In-Time compilation for improved performance.

Examples of JavaScript Engine include

• Chrome - V8 JavaScript Engine

• Safari - JavaScriptCore

• FireFox - SpiderMonkey Engine

UI Backend:

This layer is responsible for drawing the basic widgets like select or input boxes and windows. Underneath it uses operating system UI methods.

The rendering engine uses the UI backend layer during the layout and painting stages to display the web page on the browser.

Data Storage:

The browser needs to save data locally (cookies, cache, etc.) so the Data Storage component handles this part.

Modern browsers also support storage mechanisms like localStorage, IndexedDB, and FileSystem. This is a great article on all the options for browser-side storage.

Html5

HTML5 is the fifth and current version of HTML. It has improved the markup available for documents and has introduced application programming interfaces (API) and a Document Object Model (DOM).

- It has introduced new multimedia features that support audio and video controls by using <audio> and <video> tags.

- There are new graphics elements including vector graphics and tags.
- Enrich semantic content by including <header> <footer>, <article>, <section> and <figure> are added.
- Drag and Drop- The user can grab an object and drag it further dropping it in a new location.
- Geo-location services- It helps to locate the geographical location of a client.
- Web storage facility which provides web application methods to store data on a web browser.
- Uses the SQL database to store data offline.
- Allows drawing various shapes like triangle, rectangle, circle, etc.
- Capable of handling incorrect syntax.
- Easy DOCTYPE declaration i.e. <!doctype html>
- Easy character encoding i.e. <meta charset="UTF-8″>

List of HTML 5 Tags

HTML Deprecated Tag: Complete list of deprecated tags are given below:

TAGS	DESCRIPTION	Alternate Tags
applet tag	Specify an applet	object tag
basefont tag	Specify a basefont	font style sheets
center tag	Use to specify a centered Text	text-align:center
dir tag	Specify a directory list	ul tag
embed tag	Embed an application to HTML document	object tag
font tag	Used to specify font text, size and color	font-family, font-size, color
isindex tag	Specify a single-line input field	form tag
menu tag	Specify a menu list	ul tag
plaintext tag	Specify a plaintext	pre tag

s tag	Specify a strike through text	text-decoration
strike tag	Specify a strike through text	text-decoration
u tag	Specify underlined text	text-decoration
xmp tag	Specify preformatted text	pre tag

Removed elements from HTML 5: There are many elements which are depreciated from HTML 5 are listed below:

Removed Elements	**Use Instead Elements**
<acronym>	<abbr>
<applet>	<object>
<basefont>	CSS

<big>	CSS
	CSS
<dir>	
<font>	CSS
<frame>	
<frameset>	
<noframes>	
<isindex>	
<strike>	CSS, <s> or <del>
<tt>	CSS

New Added Elements in HTML 5:

- **<article>:** The <article> tag is used to represent an article. More specifically, the content within the <article> tag is independent from the other content of the site (even though it can be related).

- **<aside>:** The <aside> tag is used to describe the main object of the web page in a shorter way like a highlighter. It basically identifies the content that is related to the primary content of the web page but does not constitute the main intent of the primary page. The <aside> tag contains mainly author information, links, related content and so on.

- **<figcaption>:** The <figcaption> tag in HTML is used to set a caption to the figure element in a document.

- **<figure>:** The <figure> tag in HTML is used to add self-contained content like illustrations, diagrams, photos or codes listing in a document. It is related to main flow, but it can be used in any position of a document and the figure goes with the flow of the document and if it is removed it should not affect the flow of the document.

- **<header>:** It contains the section heading as well as other content, such as a navigation links, table of contents, etc.

- **<footer>:** The <footer> tag in HTML is used to define a footer of HTML document. This section contains the footer information (author information, copyright information, carriers etc.). The footer tag is used within body tag. The <footer> tag is new in the HTML 5. The footer elements require a start tag as well as an end tag.

- **<main>:** Delineates the main content of the body of a document or web app.

- **<mark>:** The <mark> tag in HTML is used to define the marked text. It is used to highlight the part of the text in the paragraph.

- **<nav>:** The <nav> tag is used to declaring the navigational section in HTML documents. Websites typically have sections dedicated to navigational links, which enables user to navigate the site. These links can be placed inside a nav tag.

- **<section>:** It demarcates a thematic grouping of content.

- **<details>:** The <details> tag is used for the content/information which is initially hidden but could be displayed if the user wishes to see it. This tag is used to create interactive widget which user can open or close it. The content of details tag is visible when open the set attributes.

- **<summary>:** The <summary> tag in HTML is used to define a summary for the <details> element. The <summary> element is used along with the <details> element and provides a summary visible to the user. When the summary is clicked by the user, the content placed inside the <details> element becomes visible which was previously hidden. The

<summary> tag was added in HTML 5. The <summary> tag requires both starting and ending tag.

- **<time>:** The <time> tag is used to display the human-readable data/time. It can also be used to encode dates and times in a machine-readable form. The main advantage for users is that they can offer to add birthday reminders or scheduled events in their calendars and search engines can produce smarter search results.

- **<bdi>:** The <bdi> tag refers to the Bi-Directional Isolation. It differentiates a text from other text that may be formatted in different direction. This tag is used when a user generated text with an unknown direction.

- **<wbr>:** The <wbr> tag in HTML stands for word break opportunity and is used to define the position within the text which is treated as a line break by the browser. It is mostly used when the used word is too long and there are chances that the browser may break lines at the wrong place for fitting the text.

- **<datalist>:** The <datalist> tag is used to provide autocomplete feature in the HTML files. It can be used with input tag, so that users can easily fill the data in the forms using select the data.

- **<keygen>:** The <keygen> tag in HTML is used to specify a key-pair generator field in a form. The purpose of <keygen> element is to provide a secure way to authenticate users. When a form is submitted then two keys are generated, private key and public key. The private key stored locally, and the public key is sent to the server. The public key is used to generate client certificate to authenticate user in future.

- **<output>:** The <output> tag in HTML is used to represent the result of a calculation performed by the client-side script such as JavaScript.

- **<progress>:** It is used to represent the progress of a task. It also defines how much work is done and how much is left to download a task. It is not used to represent the disk space or relevant query.

- **<svg>:** It is the Scalable Vector Graphics.

- **<canvas>:** The <canvas> tag in HTML is used to draw graphics on web page using JavaScript. It can be used to draw paths, boxes, texts, gradient and adding images. By default, it does not contain border and text.

- **<audio>:** It defines the music or audio content.

- **<embed>:** Defines containers for external applications (usually a video player).

- **<source>:** It defines the sources for <video> and <audio>.

- **<track>:** It defines the tracks for <video> and <audio>.

- **<video>:** It defines the video content.

Article Tag

The **<article>** tag is one of the new sectioning element in HTML5. The HTML **<article>** tag is used to represent an article. More specifically, the content within the <article> tag is independent of the other content of the site (even though it can be related).

In other words, The article element represents a component of a page that consists of self-contained composition in a document, page, or site. For Ex. in syndication.

A potential source for Article Element are:

- A magazine/newspaper article
- A blog entry
- A forum post
- A user-submitted a comment

Example

```
<!DOCTYPE html>
<html>
<body>
        <article
                <img
                src=
"https://media.geeksforgeeks.org/wp-content/cdn-uploads/20190710102234/download3.png"
                alt=""
                width="300"
                height="250" />
        <h1>GeeksforGeeks</h1>


<p>
                Sandeep Jain(FOUNDER) An IIT Roorkee alumnus and
                founder of GeeksforGeeks. Apart from GeeksforGeeks,
                he has worked with DE Shaw and Co. as a software
                developer and JIIT Noida as an assistant professor.
        </p>
```

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

Output

Nav Tag

The <nav> tag is used for declaring the navigational section in HTML documents. Websites typically have sections dedicated to navigational links, which enables users to navigate the site. Basically use to navigate to another page of website. It is different from <a tag> because <a> tag only refer some content of articles.

Example

```
html>

<body>
    <h1>Nav Tag</h1>
    <!-- nav tag starts -->
    <nav>
        <a href="https://google.com" target="blank">Home</a> |
        <a href="google.com">Interview</a> |
```

```
        <a href="#">Languages</a> |
        <a href="#">Data Structure</a> |
        <a href="#">Algorithm</a>
    </nav>
    <!-- nav tag ends -->
</body>

</html>
```

Output

HTML nav Tag

Home | Interview | Languages | Data Structure | Algorithm

Audio tag

Since the release of HTML5, audios can be added to webpages using the “audio” tag. Previously, audios could be only played on web pages using web plugins like Flash. The “audio” tag is an inline element that is used to embed sound files into a web page.

Syntax:

```
<audio>
  <source src="sample.mp3" type="audio/mpeg">
</audio>
```

Attributes: The various attributes that can be used with the “audio” tag are listed below:

- **Controls:** Designates what controls to display with the audio player.
- **Autoplay:** Designates that the audio file will play immediately after it loads controls.
- **Loop:** Designates that the audio file should continuously repeat.
- **src:** Designates the URL of the audio file.
- **muted:** Designates that the audio file should be muted.

Example

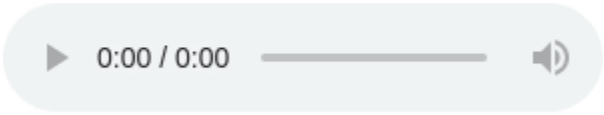
```
<!DOCTYPE html>
<html>
<body>
<p>Audio Sample</p>
        <audio controls autoplay>
```

```
        <source src="test.mp3" type="audio/mp3">
    </audio>

</body>
</html>
```

Output

Audio Sample



HTML <area> tag

Description:

The <area> tag defines the clickable areas or active areas inside the image-map which are associated with the hyperlinks. If you click on those areas then it will perform some action such as open a new image, new URL, etc. This tag is always used with <map> element.

Inside an image map different areas can be hyperlinked to various locations using multiple <area> elements in a single <map> element.

The <area> element is defined with (required) attributes shape and coords. The shape attribute specifies the shape of the area such as rectangle, circle, square, and polygon. The coords attribute defines the coordinates of areas inside the image.

```
<html>
<body>
<img src=" Graphic era.jpg"
usemap="#col">
<map name="col">
<area shape="circle"
coords="90,40,80,30" title="my col"
href=" new.html">

</map>
</body>

</html>
```

New.html

```
<html>
<body>
<img src=" images.jpg" >
</body>
</html>
```

Iframe tag

The iframe in HTML stands for **Inline Frame**. The ” iframe ” tag defines a rectangular region within the document in which the browser can display a separate document, including scrollbars and borders. An inline frame is used to embed another document within the current HTML document. The HTML iframe name attribute is used to specify a reference for an <Iframe> element.
In this we do not need to omit body tag as in fameset and if we want several frames so we can use multiple iframe tags.

Syntax:

```
<iframe src="URL" title="description"></iframe>
```

HTML5 <meter> Tag

It is used to define the scale for measurement in a well-defined range and also supports a fractional value. It is also known as a gauge. It is used in Disk use, relevance query result, etc.

Syntax:

```
<meter attributes...> </meter>
```

Attributes: This tag contains many attributes which are listed below:

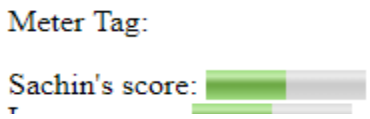
- **form:** It defines one or more forms that meter tag belongs too.
- **max:** It is used to specify the maximum value of a range.
- **min:** It is used to specify the minimum value of a range.
- **high:** It is used to specify the range considered to be a high value.
- **low:** It is used to specify the range value that is considered to be low.
- **Optimum:** It is used to specify the optimum value for the range.
- **value:** It is used to specify the required or actual value of the range

Example:

```
<!DOCTYPE html>
<html>
        <body>
                <h1>GeeksforGeeks</h1>
<p>Meter Tag:</p>
                Sachin's score:
                <meter value="2" min="0" max="5" low="2" high="8" optimum="7">
                5 out of 10
                </meter>

                <br>
                Laxma score:
                <meter value="0.5">
                50% from 100%
                </meter>
        </body>
</html>
```

OUTPUT



HTML 5 <progress> Tag

It is used to represent the progress of a task. It is also defined how much work is done and how much is left to download a thing. It is not used to represent the disk space or relevant query.

Syntax:

```
<progress attributes...> </progress>
```

Attributes: The <progress> tag consists of two attributes which are listed below:

- max: It represents the total work is to be done for completing a task.
- value: It represents the amount of work is already completed.