

## **UNIT II: HTML**

2.1 Basics of HTML

2.2 formatting and fonts

2.3 commenting code

2.4 color

2.5 hyperlink

2.6 lists

2.7 tables

2.8 images

2.9 forms

2.10 XHTML, Meta tags

2.11 Character entities

2.12 frames and frame sets

2.13 Browser architecture and Web site structure.

2.14 Overview and features of HTML5

## 2.1 Basics of HTML

HTML stands for HyperText Markup Language. HTML is used to create web pages and web applications. We can create a static website by HTML only.

Every HTML document begins with an HTML document tag. Although this is not mandatory.

**The opening tag:** wrapped in angle brackets.

**The closing tag:** same as the opening tag, but with a forward slash before the element name.

### HTML Hierarchy

This hierarchical structure is called the DOM (Document Object Model), and it is used by the web browser to render the web page.

#### **<!DOCTYPE>**

The `<!DOCTYPE html>` declaration defines that this document is an HTML5 document

#### **<html> -**

This is root Tag of HTML Document. Encloses the entire HTML document, serving as the root element for all HTML content.

#### **<head>**

Contains header information about the webpage, including title, meta tags, and linked stylesheets. It is part of the document's structure but is not displayed on the webpage.

#### **<title>**

Used within the `<head>` section to define the title of the HTML document. It appears in the browser tab or window and provides a brief description of the webpage's content.

#### **<body>**

Encloses the visible content of the webpage, such as text, images, audio, videos, and links. All elements within this tag are displayed on the actual webpage when viewed in a browser.

## 2.2 formatting and fonts

HTML Formatting is a process of formatting text for better look and feel.

### 1. Bold Text

The HTML `<b>` element is a physical tag which display text in bold font, without any logical importance. If you write anything within `<b>.....</b>` element, is shown in bold letters.

```
<p> <b>Write Your First Paragraph in bold text.</b></p>
```

### 2. Italic Text

The HTML `<i>` element is physical element, which display the enclosed content in italic font, without any added importance. If you write anything within `<i>.....</i>` element, is shown in italic letters.

```
<p> <i>Write Your First Paragraph in italic text.</i></p>
```

The HTML `<em>` tag is a logical element, which will display the enclosed content in italic font, with added semantics importance.

```
<p><em>this is an important content</em>, which displayed in italic font. </p>
```

### 3. HTML Marked formatting

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

```
<h2> I want to put a <mark> Mark</mark> on your face</h2>
```

### 4. Underlined Text

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

```
<p> <u>COCSIT LATUR.</u></p>
```

### 5. Strike Text

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

```
<p> <strike>COCSIT LATUR</strike>.</p>
```

## 6. Superscript Text

If you put the content within `<sup>.....</sup>` element, is shown in superscript; means it is displayed half a character's height **above** the other characters.

```
<p>Hello <sup> Gopal.</sup></p>
```

## 7. Subscript Text

If you put the content within `<sub>.....</sub>` element, is shown in subscript; means it is displayed half a character's height **below** the other characters.

```
<p>Hello <sub> Gopal.</sub></p>
```

## 8. <strong>

If you put the content within `<strong>.....</strong>` element, is shown in important text

```
<p>Hello <strong>Gopal</strong></p>
```

## 9. <small>

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

```
<p>Hello <small> Gopal </small></p>
```

## 10. 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.

```
<p>Hello <big>Write the paragraph in larger font.</big></p>
```

## 2.3 commenting code

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.

You can add comments to your HTML source by using the following syntax:

```
<!-- Write your comments here -->
```

## 2.4 color

HTML colors are specified with predefined color names, or with RGB, HEX, HSL, RGBA, or HSLA values.

### Color Coding Methods

#### 1. Color Names

You can specify color names directly like green, blue or red.

You can specify direct a color name to set text or background color. W3C has listed 16 basic color names that will validate with an HTML validator but there are over 200 different color names supported by major browsers.

Black	Gray	Silver	White	Yellow	Lime	Aqua
Fuchsia	Red	Green	Blue	Purple	Maroon	Olive
Navy	Teal					

**2. Hex codes** – A six-digit code representing the amount of red, green, and blue that makes up the color.

A hexadecimal is a 6 digit representation of a color. The first two digits(RR) represent a red value, the next two are a green value(GG), and the last are the blue value(BB).

A hexadecimal value can be taken from any graphics software like Adobe Photoshop, Paintshop Pro or MS Paint.

Each hexadecimal code will be preceded by a pound or hash sign #.

Ex. #000000 For Black and #FFFFFF for White Color.

### 3. RGB Values

This color value is specified using the `rgb( )` property. This property takes three values, one each for red, green, and blue. The value can be an integer between 0 and 255 or a percentage.

Ex. `rgb(0,0,0)` For Black and `rgb(255,255,255)` For White.

## 2.5 hyperlink

**HTML Links are connections from one web resource to another.**

A link has two ends, an anchor and a direction.

A hyperlink can be represented by an image or any other HTML element, not just text.

### External Links:

An external link is a type of hyperlink that directs users to a resource, such as a webpage, image, or document, located on a different website or domain.

Example: `<a href="http://cocsit.org.in">COCSIT LATUR</a>`

### Internal Links:

An internal link is a type of hyperlink whose target or destination is a resource, such as an image or document, on the same website or domain.

Example: `<a href="index.html">Home</a>`

### The Target Attribute in Links

The target attribute is used to specify the location where the linked document is opened.

Example:

`<a href="https://www.google.com" target="_blank">` for New Tab  
`<a href="https://www.google.com" target="_Self">` for Same Tab

## 2.6 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:

### Unordered List or Bulleted List (ul)

An unordered list is a collection of related items that have no special order or sequence. This list is created by using HTML <ul> tag. Each item in the list is marked with a bullet.

Ex.

```
<ul>
  <li>Ramesh</li>
  <li>Ganesh</li>
  <li>Mahesh</li>
  <li>Suresh</li>
</ul>
```

### Type Attribute

You can use type attribute for <ul> tag to specify the type of bullet you like. By default, it is a disc.

Ex.   <ul type = "square">  
      <ul type = "disc">  
      <ul type = "circle">

### Ordered List or Numbered List (ol)

If you are required to put your items in a numbered list instead of bulleted, then HTML ordered list will be used. This list is created by using <ol> tag.

The numbering starts at one and is incremented by one for each successive ordered list element tagged with <li>.

Ex.

```
<ol>
  <li>Ramesh</li><li>Ganesh</li>
  <li>Mahesh</li><li>Suresh</li>
</ol>
```

## Type Attribute

You can use type attribute for <ol> tag to specify the type of numbering you like. By default, it is a number.

<ol type = "1"> - Default-Case Numerals.

<ol type = "I"> - Upper-Case Numerals.

<ol type = "i"> - Lower-Case Numerals.

<ol type = "A"> - Upper-Case Letters.

<ol type = "a"> - Lower-Case Letters.

## Start Attribute

You can use start attribute for <ol> tag to specify the starting point of numbering you need.

Ex. <ol type = "1" start = "4">

## Description List or Definition List (dl)

HTML and XHTML supports a list style which is called definition lists where entries are listed like in a dictionary or encyclopedia. The definition list is the ideal way to present a glossary, list of terms, or other name/value list.

Definition List makes use of following three tags.

<dl> - Defines the start of the list

<dt> - A term

<dd> - Term definition

</dl> - Defines the end of the list

Ex.

<dl>

<dt><b>HTML</b></dt>

<dd>This stands for Hyper Text Markup Language</dd>

<dt><b>HTTP</b></dt>

<dd>This stands for Hyper Text Transfer Protocol</dd>

</dl>



## 2.7 tables

The HTML Table is an arrangement of data in rows and columns in tabular format. Tables are useful for various tasks such as presenting text information and numerical data. A table is a useful tool for quickly and easily finding connections between different types of data.

The HTML tables allow web authors to arrange data like text, images, links, other tables, etc. into rows and columns of cells.

We can create a table to display data in tabular form, using `<table>` element, with the help of `<tr>`, `<th>`, and `<td>` elements.

### Table Tags:

**<table>** - Defines the structure for organizing data in rows and columns within a web page.

**<caption>** - Provides a title or description for the entire table.

**<tr>** - Represents a row within an HTML table, containing individual cells.

**<th>** - Shows a table header cell that typically holds titles or headings.

**<td>** - Represents a standard data cell, holding content or data.

### Table Tag Attribute

#### Border attribute.

There are two ways to specify border for HTML tables.

By border attribute of table in HTML

By border property in CSS

You can use border attribute of table tag in HTML to specify border. But it is not recommended now.

#### Cell padding attribute.

The cellpadding attribute of HTML table tag is obsolete now. It is recommended to use CSS. So let's see the code of CSS.

#### Width attribute.

We can specify the HTML table width using the CSS width property. It can be specify in pixels or percentage.

Ex width: 100%;

## 2.8 images

Images can improve the design and the appearance of a web page.

### HTML Images Syntax

The HTML **<img>** tag is used to embed an image in a web page.

Images are not technically inserted into a web page; images are linked to web pages. The **<img>** tag creates a holding space for the referenced image.

The **<img>** tag is empty, it contains attributes only, and does not have a closing tag.

The **<img>** tag has two required attributes:

#### 1) src

It is a necessary attribute that describes the source or 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 server.

#### 2) alt

The alt attribute defines an alternate text for the image, if it can't be displayed. The value of the alt attribute describe the image in words. The alt attribute is considered good for SEO prospective.

#### 3) width

It is an optional attribute which is used to specify the width to display the image. It is not recommended now. You should apply CSS in place of width attribute.

#### 4) height

It h3 the height of the image. The HTML height attribute also supports iframe, image and object elements. It is not recommended now. You should apply CSS in place of height attribute.

Ex. ``

### How to get image from another directory/folder?

Ex. ``

## 2.9 forms

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

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

HTML forms are required if you want to collect some data from of the site visitor.

### Form Syntax

```
<form action="server url" method="get|post">  
</form>
```

### Form elements

#### Textbox

In an HTML form, we use the <input> tag by assigning type attribute value to text to input single line input.

To define type attribute is "text".

**Syntax:** <input type="text" />

#### TextArea

the text area is a multi-line text input control.

It contains an unlimited number of characters, the text renders in a fixed-width font, and the size of the text area is given by the <rows> and <cols> attributes.

To create a text area in the form use the <textarea> tag.

#### Syntax:

```
<textarea name="address">Address</textarea>
```

#### Email

The email field is new in HTML 5. It validates the text for correct email address. You must use @ and . in this field.

**Syntax:** <input type="email" id="email" name="email"/>

## Password

We can change the type value text to password to get the input password. The password is not visible to the user in password field control.

**Syntax:** `<input type="password" id="password" name="password"/>`

## Radio Button

The radio button is used to select one option from multiple options. If you use one name for all the radio buttons, only one radio button can be selected at a time.

The value attribute defines the unique value associated with each radio button.

**Syntax:** `<input type="radio" name="gender" value="0" />Male`  
`<input type="radio" name="gender" value="1" />Female`

## Checkbox

To create a checkbox in an HTML form, we use the `<input>` tag followed by the input type checkbox. It is a square box to tick to activate this. It used to choose more options at a time.

**Syntax:** `<input type="checkbox" name="marathi" value="marathi"/>Marathi.`

## Combobox

Combobox is used to create a drop-down menu in your form which contains multiple options. So, to create a Combobox in an HTML form, we use the `<select>` tag with `<option>` tag. It is also known as a drop-down menu.

**Syntax:** `<select name="city">`  
`<option value="lat">Latur</option>`  
`<option value="pun">Pune</option>`  
`<option value="mum">Mumbai</option>`  
`</select>`

## Submit button

`<input type="submit">` are used to add a submit button on web page. When user clicks on submit button, then form get submit to the server.

**Syntax:** `<input type="submit" value="submit">`

## **2.10 XHTML, Meta tags**

XHTML stands for EXtensible HyperText Markup Language. It is a cross between HTML and XML language.

XHTML is almost identical to HTML but it is stricter than HTML. XHTML is HTML defined as an XML application. It is supported by all major browsers.

XHTML 1.0 became a World Wide Web Consortium (W3C) Recommendation on January 26, 2000. XHTML 1.1 became a W3C Recommendation on May 31, 2001.

The standard known as XHTML5 is being developed as an XML adaptation of the HTML5 specification.

XHTML was developed to make HTML more extensible and increase interoperability with other data formats.

There are two main reasons behind the creation of XHTML:

It creates a stricter standard for making web pages, reducing incompatibilities between browsers. So it is compatible for all major browsers.

### **Advantages of XHTML**

XHTML reduce the loading time required by the browser to load an event which can result in overall speedy development.

It contains closing tags which is an advantage for beginners, and this also makes the code look clean and easy to reuse.

It creates a standard that can be used on a variety of different devices without changes.

### **Disadvantages of XHTML**

Very few browsers use XHTML.

Case sensitive as every part of code should be in lowercase.

It is mandatory to write < DOCTYPE > declaration.

And all the tags must be closed in the necessary order.

## Meta tags

The <meta> tag defines metadata about an HTML document. Metadata is data (information) about data.

<meta> tags always go inside the <head> element, and are typically used to specify character set, page description, keywords, author of the document, and viewport settings.

Metadata will not be displayed on the page, but is machine parsable.

Metadata is used by browsers (how to display content or reload page), search engines (keywords), and other web services.

There is a method to let web designers take control over the viewport (the user's visible area of a web page), through the <meta> tag (See "Setting The Viewport" example below).

### Attributes

#### **Charset** - character\_set

Specifies the character encoding for the HTML document

Ex. <meta charset="UTF-8">

#### **Content** – text

Specifies the value associated with the http-equiv or name attribute

Ex. <meta name="keywords" content="HTML, CSS, JavaScript">

#### **http-equiv**- content-security-policy, content-type, default-style, refresh

Provides an HTTP header for the information/value of the content attribute

Ex. <meta http-equiv="refresh" content="30">

#### **Name** - application-name, author, description, generator, keywords, viewport.

Specifies a name for the metadata

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

## 2.11 Character entities

Character entities are used as a replacement of reserved characters in HTML. You can also replace characters that are not present on your keyboard by entities.

These characters are replaced because some characters are reserved in HTML. HTML entities provide a wide range of characters which can allow you to add icons, geometric shapes, mathematical operators, etc.

### How to use an entity:

You can use an entity in your HTML document by name or by a numerical character reference. Each entity starts with symbol ampersand (&) and ends with a semicolon (;).

### Syntax:

&entity\_name;

OR

&#entity\_number;

Result	Description	Entity Name	Entity Number
	non-breaking space	&nbsp;	160
<	less than	&lt;	60
>	greater than	&gt;	62
&	ampersand	&amp;	38
"	double quotation mark	&quot;	34
'	single quotation mark (apostrophe)	&apos;	39
¢	cent	&cent;	162
£	pound	&pound;	163
¥	yen	&yen;	165
€	Euro	&euro;	8364
©	copyright	&copy;	169
®	registered trademark	&reg;	174

## 2.12 frameset and frame

Frames are used to divide the web browser window into multiple sections where each section can be loaded separately. A frameset tag is the collection of frames in the browser window.

Creating Frames: Instead of using body tag, use frameset tag in HTML to use frames in web browser. But this Tag is deprecated in HTML 5.

To define the horizontal frames use row attribute of frame tag in HTML document and to define the vertical frames use col attribute of frame tag in HTML document.

### Attributes of Frameset tag:

**cols:** The cols attribute is used to create vertical frames in web browser. This attribute is basically used to define the no of columns and its size inside the frameset tag.

The size or width of the column is set in the frameset in the following ways:

Use absolute value in pixel

Example:

```
<frameset cols = "300, 400, 300">
```

Use percentage value

Example:

```
<frameset cols = "30%, 40%, 30 %">
```

Use wild card values:

Example:

```
<frameset cols = "30%, *, 30 %">
```

**rows:** The rows attribute is used to create horizontal frames in web browser. This attribute is used to define no of rows and its size inside the frameset tag.

The size of rows or height of each row use the following ways:

Use absolute value in pixel

Example:

```
<frameset rows = "300, 400, 300">
```

Use percentage value

**border:** This attribute of frameset tag defines the width of border of each frames in pixels. Zero value is used for no border.

Example:

```
<frameset border="4" frameset>
```



## Attributes of Frame Tag:

**name:** This attribute is used to give names to the frame. It differentiates one frame from another. It is also used to indicate which frame a document should be loaded into.

Example:

```
<frame name = "top" src = "C:/Users/dharam/Desktop/attr1.png" />
<frame name = "main" src = "C:/Users/dharam/Desktop/gradient3.png" />
<frame name = "bottom" src = "C:/Users/dharam/Desktop/col_last.png" />
```

**src:** This attribute in the frame tag is basically used to define the source file that should be loaded into the frame. The value of src can be any url.

Example:

```
<frame name = "left" src = "/html/left.htm" />
```

**marginwidth:** This attribute in the frame tag is used to specify the width of the spaces in pixels between the border and contents of the left and right frames.

Example:

```
<frame marginwidth="20">
```

**marginheight:** This attribute in the frame tag is used to specify the height of the spaces in pixels between the border and contents of the top and bottom frames.

Example:

```
<frame marginheight="20">
```

**scrollbar:** To control the appearance of the scrollbar in a frame, use the scrollbar attribute in the frame tag. This is basically used to control the appearance of the scrollbar. The value of this attribute can be yes, no, or auto. Where the value no denotes that there will be no appearance of the scrollbar.

Example:

```
<frame scrollbar="no">
```

```
<frameset cols = "30%, 40%, 30%">
  <frame name = "top" src =
    "C:/Users/dharam/Desktop/attr1.png" />
  <frame name = "main" src =
    "C:/Users/dharam/Desktop/gradient3.png" />
  <frame name = "bottom" src =
    "C:/Users/dharam/Desktop/col_last.png" />
</frameset>
```

## 2.13 Browser architecture and Web site structure.

Web Browser is a highly advanced application software that helps surf the internet.

Browser architecture is designed to provide a faster, more secure, and more feature-rich platform that helps users interact easily with the internet.

The browser architecture is broadly divided into **seven parts**.

### **The user interface:**

It allows personalization, as every individual has different interests. Each browser can have a different user interface and features.

### **Browser Engine:**

The browser engine is responsible for coordinating web content that is fetched from the server and user interactions. It keeps a note of which button is clicked, which URL is asked to parse, and how the web content will be processed and displayed on the browser.

### **Rendering Engine:**

The rendering engine, interprets and renders web content. In most browsers, both the browser engine and the rendering engine work together in order to provide better results to the user.

### **Networking Layer:**

This layer handles the communication part. When the user enters or clicks on a URL, the network layer initiates an HTTP request to the web server to load the requested web page. It also manages fetching resources from HTML files, images, stylesheets, and more

**JavaScript Engine:** The JavaScript Engine is the core component of browser architecture, with the ability to manipulate web content and introduce dynamic behavior in web pages.

**Data Storage:** A large part of the browser goes into storing various types of data, which include not only user preferences, browsing history, passwords, and other regular data updates as well (address, name, and contact).

**UI backend:** The UI backend provides dynamic and interactive behavior on the web page and enhances the overall functionality and performance of the browser.

## **Web site structure**

Webpages can and will look pretty different from one another, but they all tend to share similar standard components

### **header:**

Usually a big strip across the top with a big heading, logo, and perhaps a tagline. This usually stays the same from one webpage to another.

### **navigation bar:**

Links to the site's main sections; usually represented by menu buttons, links, or tabs.

### **main content:**

A big area in the center that contains most of the unique content of a given webpage

### **sidebar:**

Some peripheral info, links, quotes, ads, etc. Usually, this is contextual to what is contained in the main content

### **footer:**

A strip across the bottom of the page that generally contains fine print, copyright notices, or contact info.

## 2.14 Overview and features of HTML5

HTML5 is the next major revision of the HTML standard superseding HTML 4.01, XHTML 1.0, and XHTML 1.1. HTML5 is a standard for structuring and presenting content on the World Wide Web.

HTML5 is a cooperation between the World Wide Web Consortium (W3C) and the Web Hypertext Application Technology Working Group (WHATWG).

The new standard incorporates features like video playback and drag-and-drop that have been previously dependent on third-party browser plug-ins such as Adobe Flash, Microsoft Silverlight, and Google Gears.

### features of HTML5

**Forms 2.0** – Improvements to HTML web forms where new attributes have been introduced for <input> tag.

**Persistent Local Storage** – To achieve without resorting to third-party plugins.

**WebSocket** – A next-generation bidirectional communication technology for web applications.

### Multimedia Support

Native support for audio and video elements (<audio> and <video>), eliminating the need for third-party plugins like Flash.

<canvas> element for drawing graphics and animations directly in the browser.

### Improved Accessibility

Introduction of landmark roles and ARIA (Accessible Rich Internet Applications) attributes to enhance web accessibility.

**CSS3 Integration** - Integration with CSS3 for styling and layout, allowing more sophisticated and responsive designs.

**Geolocation** – Now visitors can choose to share their physical location with your web application.

**Drag and drop** – Drag and drop the items from one location to another location on the same webpage.

**The End**