## 1.4 HTML

HTML stands for Hyper Text Markup Language. It allows us to organize text, graphics, audio, and video on a web page.

> *HTML is a formatting language used to define the appearance and contents of a web page.*

- The word **Hypertext** refers to the text which acts as a link.The word **markup** refers to the symbols that are used to define structure of the text. The markup symbols tells the browser how to display the text and are often called tags.The word **Language** refers to the syntax that is similar to any other language.

- HTML was created by Tim Berners-Lee at CERN.

### 1.2.1 HTML Tags

> *Tag is a command that tells the web browser how to display the text, audio, graphics or video on a web page.*

Tags are indicated with pair of angle brackets.They start with a less than (<) character and end with a greater than (>) character.The tag name is specified between the angle brackets.Most of the tags usually occur in pair: the start tag and the closing tag.The start tag is simply the tag name is enclosed in angle bracket whereas the closing tag is specified including

a forward slash (/).Some tags are the empty i.e. they don't have the closing tag.Tags are not case sensitive.

The starting and closing tag name must be the same. For example <b> hello </i> is invalid as both are different.If the angle brackets are not specified (<>) for a tag, the browser will treat the tag name as a simple text.The tag can also have attributes to provide additional information about the tag to the browser.

➢ **Basic Tags**

| Tag | Description |
|---|---|
| <html></html> | Specifies the document as a web page |
| <head></head> | Specifies the descriptive information about the web documents. |
| <title></title> | Specifies the title of the web page. |
| <body></body | Specifies the body of a web document. |
| <!DOCTYPE> | Defines the document type |
| <h1> to <h6> | Defines HTML headings |
| <p> | Defines a paragraph |
| <br> | Inserts a single line break |
| <hr> | Defines a thematic change in the content |
| <!--...--> | Defines a comment |

**Basic HTML tags**

| | Output: |
|---|---|
| *<!DOCTYPE html>* <br> *<html>* <br> *<body>* <br> *<h1>My First Heading</h1>* <br> *<p>My first paragraph.</p>* <br> *</body>* <br> *</html>* | **My First Heading** <br><br> My first paragraph. |

➢ **Formatting Tags**

| Tag | Description |
| --- | --- |
| <b></b> | Specifies the text as bold. |
| <em></em> | It is a phrase text. It specifies the emphasized text |
| <strong></strong> | It is a phrase tag. It specifies an important text |
| <i></i> | The content of italic tag is displayed in italic. |
| <sub></sub> | Specifies the subscripted text |
| <sup></sup> | Defines the superscripted text. |
| <ins></ins> | Specifies the inserted text |
| <del></del> | Specifies the deleted text. |
| <mark></mark> | Specifies the marked text. |
| <acronym> | Not supported in HTML5. Use <abbr> instead. Defines an acronym |
| <abbr> | Defines an abbreviation or an acronym |
| <address> | Defines contact information for the author/owner of a document / article |
| <bdi> | Isolates a part of text that might be formatted in a different direction from other text outside it |
| <bdo> | Overrides the current text direction |
| <big> | Not supported in HTML5. Use CSS instead. Defines big text |
| <blockquote> | Defines a section that is quoted from another source |
| <center> | Not supported in HTML5. Use CSS instead. Defines centered text |
| <cite> | Defines the title of a work |
| <code> | Defines a piece of computer code |
| <dfn> | Represents the defining instance of a term |
| <font> | Not supported in HTML5. Use CSS instead. Defines font, color, and size for text |
| <kbd> | Defines keyboard input |

| <mark> | Defines marked/highlighted text |
|---|---|
| <meter> | Defines a scalar measurement within a known range (a gauge) |
| <pre> | Defines preformatted text |
| <progress> | Represents the progress of a task |
| <q> | Defines a short quotation |
| <rp> | Defines what to show in browsers that do not support ruby annotations |
| <rt> | Defines an explanation/pronunciation of characters (for East Asian typography) |
| <ruby> | Defines a ruby annotation (for East Asian typography) |
| <s> | Defines text that is no longer correct |
| <samp> | Defines sample output from a computer program |
| <small> | Defines smaller text |
| <strike> | Not supported in HTML5. Use <del> instead. Defines strikethrough text |
| <time> | Defines a date/time |
| <tt> | Not supported in HTML5. Use CSS instead. Defines teletype text |
| <u> | Defines text that should be stylistically different from normal text |
| <var> | Defines a variable |
| <wbr> | Defines a possible line-break |

**Formatting tags**

| | |
|---|---|
| *<html>* | An example of **Bold Text** |
| *<p>An example of <b>Bold Text</b></p>* | An example of *Emphasized Text* |
| *<p>An example of <em>Emphasized Text</em></p>* | An example of **Strong Text** |
| *<p>An example of <strong>Strong Text</strong></p>* | An example of *Italic Text* |
| *<p>An example of <i>Italic Text</i></p>* | An example of superscripted Text |
| *<p>An exampleof<sup>superscripted Text</sup></p>* | An example of subscripted Text |
| *<p>An example of <sub>subscripted Text</sub></p>* | An example of ~~struckthrough Text~~ |
| *<p>An example of <del>struckthrough Text</del></p>* | An example of Computer Code |
| *<p>An example of <code>Computer Code* | |

| | |
|---|---|
| *Text</code></p>*<br>*</html>* | Text |

➢ **Table Tags**

| Tag | Description |
|---|---|
| <table></table> | Specifies a table. |
| <tr></tr> | Specifies a row in the table. |
| <th></th> | Specifies header cell in the table. |
| <td></td> | Specifies the data in an cell of the table. |
| <caption></caption> | Specifies the table caption. |
| <colgroup></colgroup> | Specifies a group of columns in a table for formatting. |
| <thead> | Groups the header content in a table |
| <tbody> | Groups the body content in a table |
| <tfoot> | Groups the footer content in a table |
| <col> | Specifies column properties for each column within a <colgroup> element |

## Table tag

| | |
|---|---|
| *<html><table border="1"><tr>*<br>*<td><b>Column 1</b></td>*<br>*<td><b>Column 2</b></td>*<br>*<td><b>Column 3</b></td></tr>*<br>*<tr><td rowspan="2">Row 1 Cell 1</td>*<br>*<td>Row 1 Cell 2</td>*<br>*<td>Row 1 Cell 3</td></tr>*<br>*<tr><td>Row 2 Cell 2</td>*<br>*<td>Row 2 Cell 3</td></tr>*<br>*<tr><td    colspan="3">Row    3    Cell 1</td></tr>*<br>*</table></html>* | Column 1 Column 2 Column 3<br>Row 1 Cell 1 Row 1 Cell 2 Row 1 Cell 3<br>Row 2 Cell 2 Row 2 Cell 3<br>Row 3 Cell 1 |

➢ **List tags**

| Tag | Description |
| --- | --- |
| <ul></ul> | Specifies an unordered list. |
| <ol></ol> | Specifies an ordered list. |
| <li></li> | Specifies a list item. |
| <dl></dl> | Specifies a description list. |
| <dt></dt> | Specifies the term in a description list. |
| <dd></dd> | Specifies description of term in a description list. |
| <dir> | Not supported in HTML5. Use <ul>instead.Defines a directory list. |
| <menu> | Defines a list/menu of commands |
| <menuitem> | Defines a command/menu item that the user can invoke from a popup menu. |

**List tags**

| | |
| --- | --- |
| *<html>* | 1. Arabic Number |
| *<ol type="1" value="1">* | 2. Arabic Number |
| *<li>Arabic Number</li>* | a. Lower Alphabet |
| *<li>Arabic Number</li></ol>* | b. Lower Alphabet |
| *<ol type="a" value="1">* | A. Upper Alphabet |
| *<li>Lower Alphabet</li>* | B. Upper Alphabet |
| *<li>Lower Alphabet</li></ol>* | i. Lower Roman numeral |
| *<ol type="A" value="1">* | ii. Lower Roman numeral |
| *<li>Upper Alphabet</li>* | I. Upper Roman numeral |
| *<li>Upper Alphabet</li></ol>* | II.Upper Roman numeral |
| *<ol type="i" value="1">* | |
| *<li>Lower Roman numeral</li>* | |
| *<li>Lower Roman numeral</li></ol>* | |
| *<ol type="I" value="1">* | |
| *<li>Upper Romannumeral</li>* | |
| *<li>Upper Romannumeral</li>* | |
| *</ol></html>* | |

➢ **Frames**

Frames help us to divide the browser's window into multiple rectangular regions. Each region contains separate html web page and each of them work independently. A set of frames in the entire browser is known as frameset. It tells the browser how to divide browser window into frames and the web pages that each has to load.

| Tag | Description |
|---|---|
| <frameset></frameset> | It is replacement of the <body> tag. It doesn't contain the tags that are normally used in <body> element; instead it contains the <frame> element used to add each frame. |
| <frame></frame> | Specifies the content of different frames in a web page. |

**Advantages of Frames**

❖ Frame provides technical sophisticated appearance to the web site.

❖ It facilitates to reduce downloading time and improves the usability of the website.

❖ Frames generally include navigation link, header or footers, which help user to find and navigate to required information.

❖ It separates content of website from navigation elements, which is useful for website maintenance and content modification.

**Disadvantages of Frames**

❖ The web developer must be track of more HTML documents linked with main frame.

❖ It is difficult to print the entire page, which is developed using frame.

**Frame tags**

| | |
|---|---|
| <html><head> <title>Frameset page</title></head> <frameset cols = "25%, *"><noframes> <body>Browser doesn't support frames. Therefore, this is the noframe version of the site.</body></noframes> <frame src ="/html/frame_example_left.html" /> |  |

| | |
|---|---|
| <frame src="/html/frame_example_right.html" /><br><br></frameset></html>Leftframe.html<html><br><br><body style="background-color:green"><br><br><p>This is the left frame (frame_example_left.html).</p></body></html><br><br>Rightframe.html<br><br><html><body style="background-color:yellow"><br><br><p>This is the right frame (frame_example_right.html).</p></body></html> | |

> **Forms**

Forms are used to input the values. These values are sent to the server for processing. Forms uses input elements such as text fields, check boxes, radio buttons, lists, submit buttons etc. to enter the data into it.

| Tag | Description |
|---|---|
| <form></form> | It is used to create HTML form. |
| <input></input> | Specifies the input field. |
| <textarea></textarea> | Specifies a text area control that allows to enter multi-line text. |
| <label></label> | Specifies the label for an input element. |
| <button> | Defines a clickable button |
| <select> | Defines a drop-down list |
| <optgroup> | Defines a group of related options in a drop-down list |
| <option> | Defines an option in a drop-down list |
| <fieldset> | Groups related elements in a form |
| <legend> | Defines a caption for a <fieldset> element |
| <datalist> | Specifies a list of pre-defined options for input controls. |

| <keygen> | Defines a key-pair generator field (for forms) |
| --- | --- |
| <output> | Defines the result of a calculation |

**Form tags**

| | Your Details |
| --- | --- |
| *<form    action="/html/tags/html_form_tag_action.cfm" method="get"><fieldset>* <br><br> *<legend>Your Details</legend>* <br><br> *<div>* <br><br> *<label for="first_name">First Name:</label><br>* <br><br> *<input    type="text    name="first_name"    value="" maxlength="100" /><br></div>* <br><br> *<div>* <br><br> *<label for="lunch">Lunch:</label><br>* <br><br> *<input type="radio" name="lunch" value="Meals" /> meals* <br><br> *<input   type="radio"   name="lunch"   value="Tiffin" />tiffin</div>* <br><br> *<div>* <br><br> *<label for="drinks">Drinks:</label><br>* <br><br> *<input type="checkbox" name="drinks" value="fresh juice" /> fresh juice* <br><br> *<input type="checkbox" name="drinks" value="tea" /> tea</div>* <br><br> *<div>* <br><br> *<label for="city">Preferred City:</label><br>* <br><br> *<select name="city">* <br><br> *<option value ="Coimbatore">coimbatore</option>* <br><br> *<option value ="Chennai">chennai</option>* <br><br> *</select></div>* <br><br> *<div>* | First Name: <br><br> Lunch: <br> ◯ meals ◯ tiffin <br> Drinks: <br> ☐ fresh juice ☐ tea <br> Preferred City: <br> coimbatore ▼ <br> Comments: <br><br> Submit |

```
<label for="comments">Comments:</label><br>
<textarea            rows="3"            cols="20"
name="comments"></textarea></div>
<div>
<input type="submit" value="Submit" /></div>
</fieldset></form>
```

> **Images**

| Tag | Description |
|---|---|
| <img> | Defines an image |
| <map> | Defines a client-side image-map |
| <area> | Defines an area inside an image-map |
| <canvas> | Used to draw graphics, on the fly, via scripting (usually JavaScript) |
| <figcaption> | Defines a caption for a <figure> element |
| <figure> | Specifies self-contained content |

> **Audio /Video**

| Tag | Description |
|---|---|
| <audio> | Defines sound content |
| <source> | Defines multiple media resources for media elements (<video> and <audio>) |
| <track> | Defines text tracks for media elements (<video> and <audio>) |
| <video> | Defines a video or movie |

> **Links**

| Tag | Description |
|---|---|
| <a> | Defines a hyperlink |
| <link> | Defines the relationship between a document and an external resource (most used to link to style sheets) |
| <nav> | Defines navigation links |

> **Styles and Semantics**

| Tag | Description |
|-----|-------------|
| <style> | Defines style information for a document |
| <div> | Defines a section in a document |
| <span> | Defines a section in a document |
| <header> | Defines a header for a document or section |
| <hgroup> | Defines a group of headings |
| <footer> | Defines a footer for a document or section |
| <main> | Specifies the main content of a document |
| <section> | Defines a section in a document |
| <article> | Defines an article |
| <aside> | Defines content aside from the page content |
| <details> | Defines additional details that the user can view or hide |
| <dialog> | Defines a dialog box or window |
| <summary> | Defines a visible heading for a <details> element |

> **Meta information**

| Tag | Description |
|-----|-------------|
| <head> | Defines information about the document |
| <meta> | Defines metadata about an HTML document |
| <base> | Specifies the base URL/target for all relative URLs in a document |
| <basefont> | Not supported in HTML5. Use CSS instead. Specifies a default color, size, and font for all text in a document |

> **Programming**

| Tag | Description |
|-----|-------------|
| <script> | Defines a client-side script |

| | |
|---|---|
| <noscript> | Defines an alternate content for users that do not support client-side scripts |
| <applet> | Not supported in HTML5. Use <object> instead. Defines an embedded applet |
| <embed> | Defines a container for an external (non-HTML) application |
| <object> | Defines an embedded object |
| <param> | Defines a parameter for an object |

**Drag and Drop**

Drag and Drop is a very interactive and user-friendly concept which makes it easier to move an object to a different location by grabbing it. This allows the user to click and hold the mouse button over an element, drag it to another location, and release the mouse button to drop the element there. In HTML 5 Drag and Drop are much easier to code and any element in it is draggable.

| Tag | Description |
|---|---|
| ondragstart | Calls a function, drag(event), that specifies what data to be dragged |
| ondragenter | To determine whether or not the drop target is to accept the drop. If the drop is to be accepted, then this event has to be canceled |
| ondragleave | Occurs when the mouse leaves an element before a valid drop target while the drag is ocurring |
| ondragover | Specifies where the dragged data can be dropped |
| Ondrop | Specifies where the drop was occurred at the end of the drag operation |
| ondragend | Occurs when the user has finished dragging an element |

**XHTML**

XHTML stands for **Extensible Hyper Text Markup Language**. It is the next step in the evolution of the internet. The XHTML 1.0 is the first document type in the XHTML family.

XHTML is almost identical to HTML 4.01 with only few differences. XHTML was developed by W3C to help web developers make the transition from HTML to XML. By migrating to XHTML today, web developers can enter the XML world with all of its benefits.

XHTML has stricter syntax rules in comparison to HTML. XHTML gives you a more consistent, well-structured format so that the webpages can be easily parsed and processed by present and future web browsers.

**Advantages of XHTML**

❖ XHTML documents are XML conforming as they are readily viewed, edited, and validated with standard XML tools.

❖ XHTML documents can be written to operate better than they did before in existing browsers as well as in new browsers.

❖ XHTML documents can utilize applications such as scripts and applets that rely upon either the HTML Document Object Model or the XML Document Object Model.

**Migration from HTML to XHTML**

➢ **DOCTYPE Declaration**

All XHTML documents must have a DOCTYPE declaration at the start.

**Example:**

<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"

"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">

➢ **Case sensitivity**

XHTML is case sensitive markup language. All the XHTML tags and attributes need to be written in lower case only.

- <!-- This is invalid in XHTML -->

- <A Href="/xhtml/xhtml_abc.html">XHTML </A>

- <!-- Correct XHTML way of writing this is as follows -->

- <ahref="/xhtml/xhtml_abc.html">XHTML</a>: In the example, Href and anchor tag A are having characters which are not in lower case, so it is incorrect.

➢ **Closing tags**

Each and every XHTML tag should have an equivalent closing tag, even empty elements should also have closing tags.

- <!-- This is valid in XHTML -->

- <p>This paragraph is not written according to XHTML syntax.</p>

- <!-- This is also valid now -->

- <imgsrc="/images/xhtml.gif" />

## ➢ Attribute quotes

All the values of XHTML attributes must be quoted. Otherwise, the XHTML document is assumed as an invalid document.

<!-- Correct XHTML way of writing this is as follows -->

<imgsrc="/images/xhtml.gif" width="250" height="50" />

## ➢ Attribute minimization

XHTML does not allow attribute minimization. It means attribute and its values must be explicitly stated.

<!-- Correct XHTML way of writing this is as follows -->

<option selected="selected">

| HTML style | XHTML style | HTML style | XHTML style |
|------------|-------------|------------|-------------|
| compact | compact="compact" | ismap | ismap="ismap" |
| Checked | checked="checked" | nohref | nohref="nohref" |
| Declare | declare="declare" | noshade | noshade="noshade" |
| readonly | readonly="readonly" | nowrap | nowrap="nowrap" |
| disabled | disabled="disabled" | multiple | multiple="multiple" |
| Selected | selected="selected" | noresize | noresize="noresize" |
| Defer | defer="defer" | | |

## ➢ The id attribute

The id attribute replaces the name attribute. Instead of using name="name", XHTML prefers to use id="id".

<!-- Correct XHTML way of writing this is as follows -->

<imgsrc="/images/xhtml.gif" id="xhtml_logo" />

## ➢ The language attribute

The language attribute of the script tag is deprecated.

<!-- Correct XHTML way of writing this is as follows -->

<script type="text/JavaScript">

document.write("Hello XHTML!");</script>

> **Nested tags**

All the XHTML tags must be nested properly otherwise the document will be assumed as an incorrect XHTML document.

<!-- Correct XHTML way of writing this is as follows -->

<b><i>This text is bold and italic</i></b>

> **Element prohibitions**

The following elements are not allowed to have any other element inside them. This prohibition applies to all depths of nesting, i.e. it includes all the descendant elements.

| Element | Prohibition |
|---------|-------------|
| <a> | Must not contain other <a> elements. |
| <pre> | Must not contain the <img>, <object>, <big>, <small>, <sub>, or <sup> elements. |
| <button> | Must not contain the <input>, <select>, <textarea>, <label>, <button>, <form>, <fieldset>, <iframe> or <isindex> elements. |
| <label> | Must not contain other <label> elements. |
| <form> | Must not contain other <form> elements. |

**Differences between HTML and XHTML**

| HTML | XHTML |
|------|-------|
| HTML or Hyper Text Markup Language is the main markup language for creating web pages and other information that can be displayed in a web browser. | HTML (Extensible HyperText Markup Language) is a family of XML markup languages that mirror or extend versions of the widely used Hypertext Markup Language (HTML), the language in which web pages are written. |
| It has document file format. | It is a mark- up language. |