HTML

- **Hypertext Markup Language (HTML)** is the standard **markup language** for creating web pages and web applications.
- XHTML stands for **EXtensible HyperText Markup Language**. XHTML is almost identical to HTML.
- **HTML elements** are the building blocks of HTML pages.
- HTML elements are represented by **HTML tags**.
- HTML tags are element names surrounded by angle brackets (<tag>)

```
<tagname>content goes here...</tagname>
```

- HTML tags normally come in pairs like and
- The first tag in a pair is the start tag (opening tag), the second tag is the end tag (closing tag).
- The end tag has a forward slash inserted before the tag name.
- Browsers do not display the HTML tags, but use them to interpret the content of the page.
- A few tags are called **non-container tags (empty tags)**, because they don't contain any content.
- Non-container tags end in />. Example:
 ,for line break.
- The basic XHTML/HTML documents contains three parts:
  - DOCTYPE: It is used to declare a DTD (Document Type Definition).
  - head: The head section is used to declare the title and other attributes.
  - body: The body tag contains the content of web pages. It consists many tags.
- A simple html document is:

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
<html>
        <head>
                <title>Simple html document</title>
        </head>
        <body>
                <h1>heading element</h1>
                <p>paragraph element</p>
        </body>
 </html>
```

  - The text between the <head> tag and the </head> tag is header information. Header information is not displayed in the browser window.
  - The text between the <body> tags is the text that will be displayed in your browser.

[HTML comment: <!-- comment here -->]

Tag attributes

- Attributes can **provide additional information** about the HTML elements on your page.
- Attributes always come in name/value pairs like this: name="value".
- Attributes are always added to the start tag of an HTML element.
- Attribute values should always be enclosed in quotes.
- Example: <body bgcolor="red">

- Common attributes that every html tag can have are:
  - **id**: specifies a unique id for an HTML element. The id value can be used by CSS and JavaScript to perform certain tasks for a unique element with the specified id value.
  - **class:** class attribute is used to define equal styles for elements with the same class name.
  - **name**: specifies the name of html tag which is sent to the server to be recognized and get the value.

Basic HTML tags

1. Head tags

a. The **<title>** tag adds title to a web page.

b. The **<meta>** tag defines information about an XHTML document.

- This information is usually referred to as metadata.
- The metadata information is used by the search engines to determine what the document is about.
- Metadata will not be displayed on the page.
- Metadata is always passed as name/value pairs. Meta elements are typically used to specify page description, keywords, author of the document, last modified, and other metadata.
- The metadata can be used by browsers (how to display content or reload page), search engines (keywords), or other web services.
- Example:
  - <meta name="keywords" content="HTML, CSS, XML, XHTML, JavaScript" /> (Defines keyword for search engines)
  - <meta name="description" content="Free Web tutorials on HTML and CSS"/> (provides a description of your web page)
  - <meta name="author" content="John Doe"/> (defines the author of the web page)
  - <meta name="viewport" content="width=device-width, initial-scale=1.0" /> (to change page width according to device width)

c. **<style>,<link>** etc.

2. Basic text markup

a. **Heading tag** (<hl></hl>,<h2></h2>, <h3></h3>,<h4></h4>, <h5></h5>,<h6></h6>)
The heading tags display text in sizes ranging from the largest, h1, to the smallest, h6.

b. **Paragraph tag** ( ) : Defines a paragraph.

c. **Line breaks** (
): It inserts a line break.

d. **<pre> </pre> tag:** The <pre> tag defines preformatted text. Text in a <pre> element is displayed in a fixed-width font and it preserves both spaces and line breaks.

e. **Block quotation :** All of the text within the <blockquote> and </blockquote> tags is set off from the regular document text, usually with indented left and right margins and sometimes in italicized typeface. **(<blockquote></blockquote>)**

f. **Font style and sizes:**

- The HTML **** tag defines bold text, without any extra importance.
- The HTML **** tag defines strong text, with added semantic "strong" (importance).
- The HTML **** tag defines italic text.

- The HTML **** element defines **emphasize**d text, with added semantic importance. *(<b> and <i> defines bold and italic text, but and means that the text is "important".).*
- The **<sub>** element defines subscripted text.
- The **<sup>** element defines superscripted text.
- The **<del> or <strike>** element is used to strike through the text marking the part as deleted.
- The **<ins> or <u>** element is used to underline a text marking the part as inserted or added.

g. **Horizontal rules (<hr />)**: It creates a line to separate content of a web page.

3. Character Entities

Result	Description	Entity Name	Entity Number
	non-breaking space		
<	less than	<	<
>	greater than	>	>
&	Ampersand	&	&
¢	Cent	¢	¢
£	Pound	£	£
¥	Yen	¥	¥
€	Euro	€	€
©	Copyright	©	©
®	registered trademark	®	®

4. IMAGES

The most common methods of representing images are the Graphic Interchange Format (GIF)and the Joint Photographic Experts Group (JPEG)format and PNG (Portable Network Graphics).

- The <img /> tag defines an image in an HTML page.
- The <img /> tag has a must required attribute: src , which specifies the URL of the image.
- Example: ****
- Commonly used attributes for <img> tag are:

Attributes	Definition
src	specifies the URL of the image.
alt	Specifies an alternate text for an image
height	Adjust height of the image (in pixels)
width	Adjust width of the image (in pixels)

Example:

****

5. Hypertext Links

- The <a> tag defines a hyperlink, which is used to link from one page to another or link to another section on the same page.
- The most important attribute of the <a> element is the **href** (hypertext reference) attribute, which indicates the link's destination.
- The anchor tag that specifies a link is called the **source** of that link. The document whose address is specified in a link is called the **target** of that link.
- **Visit google**
- Uses a 'target' attribute to specify where to open the link (in the same tab or in another). Target=" _blank" will open the page in another tab/window.
- **Visit google**
- To open the linked page when you click on an image (clickable image):
  - ** **

- **Targets within document**
  - The target element can include an id attribute, which can then be used to identify it in an href attribute.
  - Example: <h4 id = "footerhead"> Footer Details </h4>

  If the target is in the same document as the link, the target is specified in the href attribute value by preceding the id value with a pound sign (#).

   Go to footer details

6. LISTS

A. Unordered list

- An unordered list is a collection of items where the order of appearance is not important (e.g., a bulleted list).
- The <ul> tag, which is a block tag, creates an unordered list.
- Each item in a list is specified with an <li> tag (li is an acronym for list item).
- Example:

```
<ul>
 <li>Java</li>
 <li>C</li>
 <li>C++</li>
 <li>WT</li>
</ul>
```

- Attributes used:
  - type="*value*"

    It defines the style of list item marker. The value can be **circle, square** and **disc** .
  - Example:

```
<ul type="square">
 <li>Java</li>
 <li>C</li>
 <li>C++</li>
```

```
  <li>WT</li>
</ul>
```

B. Ordered list

- An ordered list is a collection of items that are numbered(default:1,2,3...).
- Lists in which the order of items is important.
- The <ol> tag, which is a block tag, creates an ordered list.
- Each item in a list is specified with an <li> tag (li is an acronym for list item).
- Example:

```
<ol>
  <li>Java</li>
  <li>C</li>
  <li>C++</li>
  <li>WT</li>
</ol>
```

- Attributes used:
  - type="*value*"
    It defines the numbering style. The value can be **1,A,a,I,i**.
  - start="*value*"
    It defines the start value of numbers/letters.
  - Example:

```
<ol type="A" start="3">
  <li>Java</li>
  <li>C</li>
  <li>C++</li>
  <li>WT</li>
</ol>
```

C. Java
D. C
E. C++
F. WT

Figure 3:output

C. Definition list

- Definition lists are used to specify lists of terms and their definitions.
- The <dl> tag defines the definition list, the <dt> tag defines the definition term, and the <dd> tag describes each term definition.
- Example:

```
<dl>
  <dt>Coffee</dt>
  <dd>A black hot drink</dd>
  <dt>Milk</dt>
  <dd>A white cold drink</dd>
</dl>
```

Definition list

Coffee
    A black hot drink
Milk
    A white cold drink

Figure 4:output

D. Nested list example

7. Tables

- A table is a matrix of cells composed of rows and columns.
- A table is specified as the content of the block tag <table>.
- The line around the outside of the whole table is called the border.
- A displayed table is preceded by a title, given as the content of a <caption> tag.
- Each row of a table is specified with a row tag, <tr>. Within each row, the row label is specified by the table heading tag, <th> or with a table data tag, <td>.
- The **border** attribute is the most common attribute for the <table> tag.
    - The values can be : border="border" or border="1" or border="2" etc.
- Example:

```
<table border="1">
        <caption>Students Marks</caption>
            <tr>
                <th>S.N</th>
                <th>Name</th>
                <th>Marks</th>
            </tr>
            <tr>
                <td>1</td>
                <td>Ram</td>
                <td>45</td>
            <tr>
                <td>1</td>
                <td>Sita</td>
                <td>46</td>
            </tr>
</table>
```

- **rowspan and colspan attributes** (of <th> or <td> tag)
    - The colspan attribute defines the number of columns a cell should span (or merge) horizontally.
    - The rowspan attribute specifies the number of rows a cell should span vertically.

- **align and valign attributes**
  - The placement of the content within a table cell can be specified with the align and valign attributes in the <tr>, <th>, and <td> tags.
  - The align attribute has the possible values **left, right,** and **center**.
  - The default alignment for th cells is center; for td cells, it is left.
  - The valign attribute of the <th> and <td> tags have the possible values **top** and **bottom**. (*The valign attribute is not supported in HTML5)

- **cellpadding and cellspacing attributes** (of <table> tag)
  - The cellpadding attribute is used to specify the spacing between the content of a cell and the inner walls of the cell.
  - The cellspacing attribute is used to specify the distance between cells in a table.

Example:

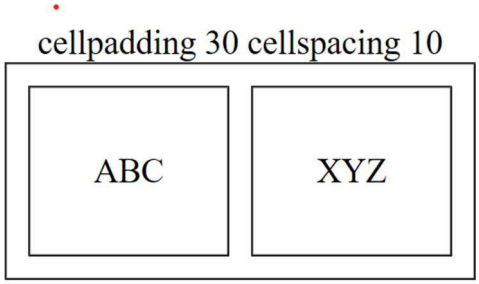
```
<table border="1">
        <tr>
                <th rowspan="2"> Item</th>
                <th colspan="2">Year 2019</th>
        </tr>
        <tr>
                <th>Cost price</th>
                <th>Selling price</th>
        </tr>
        <tr>
                <th> T.V</th>
                <td>30,000</th>
                <td>35,000</th>
        </tr>
        <tr>
                <th> Laptop</th>
                <td align="center">60,000</th>
                <td align="right">65,000</th>
        </tr>
        <tr>
                <th colspan="2">Total</th>
                <td>100000</td>
  </table>
```

Item	Year 2019	
	Cost price	Selling price
T.V	30,000	35,000
Laptop	60,000	65,000
Total		100000

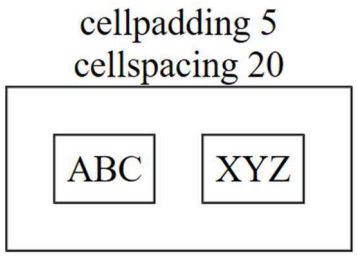
Figure 5:Output

Example:

```
<table border="border" cellspacing="10" cellpadding="30">
        <caption> cellpadding 30 cellspacing 10</caption>
                <tr>
                        <td >ABC</td>
                        <td>XYZ</td>
                 </tr>
   </table>
```




```
<table border="border" cellspacing="20" cellpadding="5">
        <caption> cellpadding 5 cellspacing 20</caption>
                <tr>
                        <td>ABC</td>
                        <td>XYZ</td>
                </tr>
</table>
```



- **Table with {thead, tbody, tfoot, th} Tags**
  - **thead** is used to enclose a group of rows in a table as a header.
  - **tfoot** is used to enclose a group of rows in a table as a footer, such as last row for summary.
  - **tbody** is for main body of the table.

```
<table border="1">
<thead>
<tr>
<th>cats</th>
<th>dogs</th>
</tr>
</thead>

<tbody>
<tr>
<td>7</td>
<td>6</td>
</tr>
</tbody>

<tfoot>
<tr>
<th colspan="2">Cats win!</th>
</tr>
</tfoot>

</table>
```

cats	dogs
7	6
Cats win!	

8. Forms

- The HTML <form> element defines a form that is used to collect user input.
- Form elements are different types of input elements, like text fields, checkboxes, radio buttons, submit buttons etc.
- All of the controls of a form appear in the content of a **<form> tag** (a type of block tag)
- The commonly used attributes of <form> tag are:
  - **action**: specifies the URL of the application on the Web server that is to be called when the user clicks the Submit button.
  - **target**: Specifies the target window or frame where the result of the script will be displayed. It takes values like _blank, _self etc.
  - **method**: specifies one of the two techniques, **get** (default value) or **post**, used to pass the form data to the server.
  - **enctype**: to specify how the browser encodes the data before it sends it to the server.
    - **enctype=" mutipart/form-data" –** This is used when you want to upload binary data in the form of files like image, word file etc.
- Basic syntax:

```
<form action = "submitform.php" method = "GET|POST" target="_blank">
        <!--form elements like input, textarea etc.-->
</form>
```

HTML Form controls/ Form elements

1. <input> element

- Many of the commonly used controls are specified with the inline tag <input>.
- The <input> element can be displayed in several ways, depending on the **type** attribute.
- <input> tag is used for text,password,email,checkboxes,radio buttons, submit button, reset button etc.
- Common attributes of <input> tag are:
  - **type:** it specifies the type of input control .
    - example: for text field type="text" & type="email" for email field.
  - **name:** specifies the name of <input> tag which is sent to the server to be recognized and get the value.
  - **id:** to use with CSS or JavaScript.

❖ **Input type text**

- <input type="text" name="username" />
- Other attributes:
  - value: used to provide an initial value inside the control.
  - size: specifies the width of input control in terms of characters.
  - maxlength: specifies the maximum number of characters a user can enter into the text box.
  - placeholder: specifies a short hint that describes the expected value of an input field.

❖ **Input type password**

- <input type="password" name="userpass" />
- Other attributes: same as in input type text.

❖ **Input type email**

- <input type="email" name="useremail" />

- The input value is automatically validated to ensure it is a properly formatted e-mail address.

❖ **Input type submit**
- defines a button for submitting form data to a form-handler.
- <input type="submit" value="submit" />

❖ **Input type reset**
- defines a reset button that will reset all form values to their default values
- <input type="reset" value="Reset" />

❖ **Input type button**
- Defines a clickable button.
- <input type="button" value="click me" />

(**the submit & reset buttons are called action buttons**)

❖ **RADIO Buttons**
- The <input type="radio"> defines a radio button.
- Radio buttons are normally presented in radio groups (a collection of radio buttons describing a set of related options).
- Only one radio button in a group can be selected at a time.
- the value of name attribute must be same within a radio buttons group.
- Example:

```
<input type="radio" name="gender" value="male" checked> Male

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

<input type="radio" name="gender" value="other"> Other
```

❖ **Check Boxes**
- Checkboxes let a user select ZERO or MORE options of a limited number of choices.
- Example:

```
<input type=”checkbox” name=”subjects” value=”WT” /> Web Technology

<input type=”checkbox” name=”subjects” value=”C” /> C Programming

<input type=”checkbox” name=”subjects” value=”java” /> JAVA
```

- The value of name attribute should be same for a group of checkboxes.
- checked=”checked” ,attribute is used to select a default option.

2. <select> tag

- The <select> element is used to create a drop-down list/menu.
- Each of the items in a menu is specified with an **<option> tag**, nested in the select element.
- The content of an <option> tag is the value of the menu item.
- The <option> tag can include the **selected** attribute, which specifies that the item is preselected. (selected="selected").
- Example:

```
<select name="country">
  <option value="Nep" >Nepal</option>
  <option value="Pak">Pakistan</option>
  <option value="Ind">India</option>
</select>
```

Figure 6: default appearance

Figure 7: after clicking dropdown

❖ Other attributes used:
  - multiple :to select multiple values from dropdown
  - size="*integer value*" : Defines the number of visible options in a drop-down list. (<select size="2">)

3. <textarea> tag

- The <textarea> tag defines a multi-line text input control.
- The attributes **rows** (for height) **& cols** (for width) is used to define the size of text area.
- Example:

```
<textarea rows="4" cols="50">
</textarea>
```

- Other attributes used:

maxlength	*number*	Specifies the maximum number of characters allowed in the text area
name	*text*	Specifies a name for a text area
placeholder	*text*	Specifies a short hint that describes the expected value of a text area
readonly	readonly	Specifies that a text area should be read-only

9. Frames

- HTML frames are used to divide your browser window into multiple sections where each section can load a separate HTML document.
- A collection of frames in the browser window is known as a frameset.

- The number of frames and their layout in the browser window are specified with the <frameset> tag.
- A document has either a frameset or a body but cannot have both.
- The rows attribute of <frameset> tag defines horizontal frames and cols attribute defines vertical frames.
- Each frame is indicated by <frame> tag and it defines which HTML document shall open into the frame.
- **rows & cols attribute** (of <frameset> tag)**:**
    - The height of each rows and the width of columns is set in following ways**:**
        - Use absolute value in pixel
            - <frameset cols = "300, 400, 300"> or <frameset rows = "300, 400, 300">
        - Use percentage value
            - <frameset cols = "30%, 40%, 30%"> or <frameset rows = "30%, 40%, 30%">
        - Use wild card values
            - <frameset cols = "30%, *"> or <frameset rows = "30%, *">
- **Attributes of <frame> tag**
    - **src:** to define the source file url that should be loaded into the frame.
    - **name:** used to give names to the frame. It is also used to indicate which frame a document should loaded into.

```
<frameset rows="40%,*">
        <frame src="test.html">
        <frameset cols="500,100,*">
                <frame src="test.html">
                <frame src="test.html">
                <frame src="test.html">
        </frameset>
</frameset>
```

✓ ***Iframes***

- The <iframe> tag specifies an inline frame.
- An inline frame is used to embed another document within the current HTML document.

```
<iframe src="https://www.google.com"></iframe>
```

- Attributes used:
    - src: Specifies the address of the document to embed in the <iframe>
    - height & width : specifies height and width of iframe in pixels.

Difference between HTML and XHTML

- In HTML, we can have the empty or open tags means it is not required to end the tag e.g. . In XHTML, the tags should be closed or self closed, if opened. for e.g.   or
- In HTML, While defining the attributes it is not necessary to mention quotes. For e.g. <option selected>. In XHTML, while defining the attributes it is mandatory to mention quotes. For e.g. <option selected=”Selected”>.
- In HTML, the values of attributes are not so important. For e.g. <input type=”radiobutton” selected>. In XHTML, the values of attributes are important. For e.g. <input type=”radiobutton” selected=”selected”>.

- ❖ In HTML, there are no strict rules on writng the structure of elements for e.g.   Hello world . In XHTML, there are strict rules on writing structureof elements For e.g. Hello world .
- ❖ In HTML, the tags and attributes can be described in lower case or upper case. In XHTML, the tags and attributes can be described in lower case only.
- ❖ In HTML, one root element is not mandatory. In XHTML, the documents should have one root element.
- ❖ In HTML, XML declaration is not necessary. In XHTML, it is based on the set of rules of XML.

✓ **Image map**

- An image-map is an image with clickable areas.
- The <map> tag is used to define a client-side image-map.
- The name attribute of the <map> element is associated with the <img>'s usemap attribute and creates a relationship between the image and the map.
- The <map> element contains a number of <area> elements, that defines the clickable areas in the image map.
  Example:

```
<img src="planets.gif" usemap="#planetmap">

<map name="planetmap">
  <area shape="rect" coords="0,0,82,126" href="sun.htm" >
  <area shape="circle" coords="90,58,3" href="mercur.htm" >
  <area shape="circle" coords="124,58,8" href="venus.htm">
</map>
```

✓ **mailto link**

- Mailto link is a type of HTML link that activates the default mail client on the computer for sending an e-mail.
- If you have Microsoft Outlook, for example as your default mail client, pressing a mailto link will open a new mail window.
- Example:

  Send mail

  With subject and body:
  Email Us

 Send mail

✓ Block element vs Inline element

- A block-level element always starts on a new line and takes up the full width of a page, from left to right.
- It has a line break before and after the element.
- Example: ,<h1>..<h6>,<table>,<ol>,<ul>, etc.

- An inline element does not cause a line break (start on a new line) and does not take up the full width of a page.

- Example: <a>,<img>,<b>, etc.

✓ ** and **
- By default, a is a block-level-element and a is an inline element.
- Both are used as content wrappers.
- is often used as a container for some text(usually single word/a line of text).
- The element can be used to style parts of the text.
- The element is often used as a container for other HTML elements.
- The element can be used to style blocks of content.

✓ **Logical and Physical tags**
- Logical tags are designed to describe (to the browser) the enclosed text's meaning.
- For example: By placing text in between you are telling the browser that the text has some greater importance.
  Other examples: ,,<cite> etc.

- Physical tags are used to indicate exactly how specific characters are to be formatted.
- Examples: <b>,<i>,<sub>,<sup>,<u> etc.