Unit 2: Hyper Text Markup Language (HTML)

Origins and Evolution of HTML

- HTML is defined with the use of the Standard Generalized Markup Language (SGML), which is an International Standards Organization (ISO) standard notation for describing text-formatting languages.
- Original **intent** of HTML: General layout of documents that could be displayed by a wide variety of computers using different browsers.
- In late 1994, Tim Berners-Lee, developed the initial version of HTML.
- Other HTML Versions:

Version	Year (A.D.)
HTML 2.0	1995
HTML 3.2/ HTML 4.0	1997
HTML 4.0.1	1999
XHTML 1.0 (Just defined HTML 4.0.1 using XML instead of SGML; Developed standards: strict, transitional and Frameset)	2000
XHTML 1.1 (Modularized 1.0 and dropped frames)	2001
HTML5	2014

2.1HTML (Hyper Text Markup Language)

- HTML stands for Hyper Text Markup Language, which is the most widely used language on Web to develop web pages.
- HTML was created by Tim Berners-Lee in late 1991 but "HTML 2.0" was the first standard HTML specification which was published in 1995. HTML 4.01 was a major version of HTML and it was published in late 1999.
- Though HTML 4.01 version is widely used but currently we are having HTML-5 version which is an extension to HTML 4.01, and this version was published in 2012.
- HTML is the standard markup language for creating Web pages.
- HTML describes the structure of Web pages using markup
- HTML elements are the building blocks of HTML pages
- HTML elements are represented by tags
- HTML tags label pieces of content such as "heading", "paragraph", "table", and so on
- Browsers do not display the HTML tags, but use them to render the content of the page

2.2 Basic Structure of HTML

- In its simplest form, following is an example of HTML document:

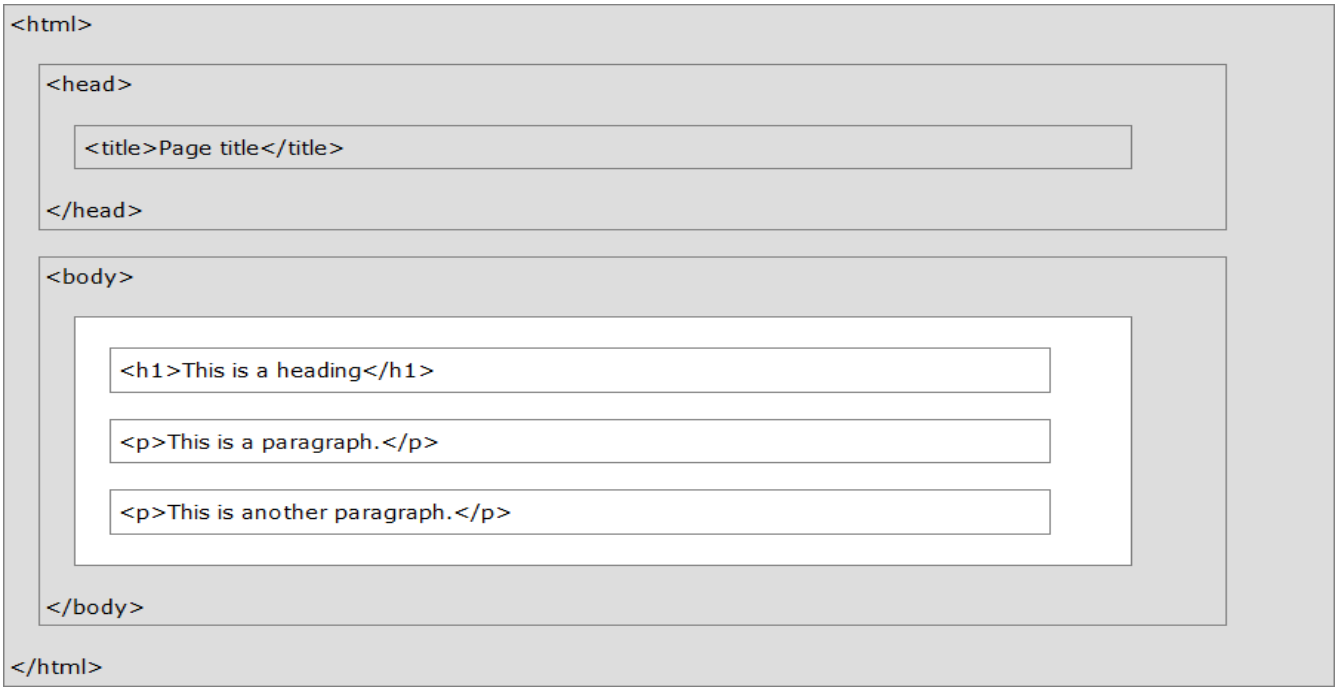
```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-
scale=1.0">
    <title>Document</title>
</head>
<body>
    <h1>My First Heading </h1>
    <p>My first paragraph. </p>
</body>
</html>
```

Where,

- The <!DOCTYPE html> declaration defines this document to be HTML5
- The <html> element is the root element of an HTML page
- The <head> element contains meta information about the document
- The <title> element specifies a title for the document
- The <body> element contains the visible page content
- The <h1> element defines a large heading
- The <p> element defines a paragraph

HTML Page Structure:

Below is a visualization of an HTML page structure:



2.3 BODY Attributes (Forecolor: TEXT and Background color: BGCOLOR, Background Image, Background Sound)

- The <body> tag in HTML defines the main content of an HTML document. It encloses all of the content displayed in the web browser when the page is loaded, including text, images, links, and other HTML elements.
- The <body> tag is a container element that surrounds all the content visible to the user in the web browser, including headings, paragraphs, lists, images, and other tags.
- <body> tag has some attributes that change the way the web pages look.

Attribute	Description
bgcolor	This attribute is used to set the page's background color. It takes a color value in a named color (e.g., red) or a hexadecimal value (e.g., #ff0000).
background	The background attribute can also be used to control the background of an HTML element, specifically page body. We can specify an image to set background of our HTML.
text	This attribute is used to set the color of the text on the page. It takes a color value in either a named color or a hexadecimal value

Example 1:

```
<!DOCTYPE html>
<html>
<head>
    <title>HTML BODY Attributes</title>
</head>
<body text="green" bgcolor="#FFA500" >
    <h1 align="center"> HTML Body Attributes</h1>
    This is the body part of HTML Document
</body>
</html>
```

Example 2:

```
<!DOCTYPE html>
<html>
<head>
    <title>HTML BODY Attributes</title>
</head>
<body background="./Photo/a.jpg" text="green"
    <h1 align="center"> HTML Body Attributes</h1>
    This is the body part of HTML Document
</body>
</html>
```

2.4 HTML Elements

- An HTML element usually consists of a start tag and end tag, with the content inserted in between:
  <tagname>Content goes here...</tagname>
- The HTML element is everything from the start tag to the end tag:
- Eg. my first paragraph.

Start tag	Element content	End tag
<h1>	My First Heading	</h1>
	My first paragraph.	
 	Line Break	

2.5 HTML TAGS and Attributes

HTML Attributes:

- All HTML elements can have attributes
- Attributes provide additional information about an element
- Attributes are always specified in the start tag
- Attributes usually come in name/value pairs like: name="value"

Example 1: The href Attribute

- HTML links are defined with the <a> tag. The link address is specified in the href attribute:

Example

This is a link

Example 2: The src Attribute

HTML images are defined with the <img> tag.

The filename of the image source is specified in the src attribute:

Example

<img src="img_girl.jpg">

HTML Tags:

- HTML tags are keywords (tag name) surrounded by angle brackets.
- Ex. <tagname> Content </tagname>
- All tags come in pairs like and
- The first tag in pair is called start tag and the last tag is called end tag
- The end tag is written like the start tag but with a slash (/) before the tag.
- There are two types of tags in HTML that are used by the Website Designers:
  1. **Paired Tags (Opening and Closing Tags):** A tag is said to be a paired tag if the text is placed between a tag and its companion tag. In paired tags, the first tag is referred to as Opening Tag and the second tag is referred to as Closing Tag.

List of some paired tags in HTML:

Open Tag	Close Tag
<html>	</html>
<table>	</table>

<form>	</form>
<head>	</head>

2. **Unpaired Tags (Singular Tag):** An unpaired tag does not have a closing tag. Unpaired tags are also known as Singular or Stand-Alone Tags.

Some Unpaired Tags are:

Open Tag
<hr>
<meta>
<input>

2.6 Character formatting

HTML Headings (Heading Tags):

- HTML support six different levels of headings. The highest heading format is <h1> and lower-level heading is <h6>
- Headings are defined with the <h1> to <h6> tags.
- The styles appear in boldface and the size of the heading depends on the level chosen.
- <h1> defines the most important heading. <h6> defines the least important heading.
- Search engines use the headings to index the structure and content of your web pages.

Example:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <title>Heading</title>
</head>
<body>
    <h1>Heading 1</h1>
    <h2>Heading 2</h2>
    <h3>Heading 3</h3>
    <h4>Heading 4</h4>
    <h5>Heading 5</h5>
    <h6>Heading 6</h6>

</body>
</html>
```

Attributes of Heading Tag:

- Align: It helps to set the heading to center, left or right
- Ex. <h1 align="center">Heading 1</h1>

HTML Paragraphs:

- HTML paragraphs are defined with the tag
- . Each paragraph of text should go in between an opening and a closing tag as shown below in the example:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <title>paragraph </title>
</head>
<body>
    <p>First Paragraph</p>
    <p>second Paragraph</p>

</body>
</html>
```

Attributes of Paragraph Tag:

- Align: It helps to set the paragraph to center, left or right
- Ex. align="right">My First Paragraph

Line Break (BR):

- The <br> tag inserts a single line break.
- The <br> tag is useful for writing addresses or poems.
- The <br> tag is an empty tag which means that it has no end tag

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <title>Line Break</title>
</head>
<body>
    <h1>Kathmandu institute of Technology</h1>
    Tokha Road, Kathmandu<br>
    Phone No: 01-5159255 <br>
    Email:info@kit.edu.np

</body>
</html>
```

HTML Horizontal Rules (HR):

- The <hr> tag defines a thematic break in an HTML page, and is most often displayed as a horizontal rule.
- Horizontal lines are used to visually break up sections of a document. The <hr> tag creates a line from the current position in the document to the right margin and breaks the line accordingly.
- The <hr> element is used to separate content in an HTML page:

Attributes of HR Tag:

Attribute	Value	Description
align	left, right, center	It is used to specify the alignment of the horizontal rule.
noshade	noshade	It removes the default shading effect
Size	pixels	It is used to specify the height of the horizontal rule.
width	pixels	It specifies the width of the horizontal rule.

Example:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <title>Horizontal Rules</title>
</head>
<body>
    <p>paragraph 1.</p>
    <hr size="10" noshade>
    <p>paragraph 2.</p>
</body>
</html>
```

Comment in HTML:

- In HTML, a comment is a section of text that is not processed by the web browser. Comments are enclosed in <!-- --> tags. These tags tell the browser that the text inside them is a comment and should not be rendered on the front end.
- The comment tag is used to insert comments in the source code. Comments are not displayed in the browsers.
- You can use comments to explain your code, which can help you when you edit the source code at a later date. This is especially useful if you have a lot of code.
- Comments help you and others understand your code and increases code readability.
- Example:

```
<!DOCTYPE html>

<html lang="en">

<head> <!-- Document Header Starts -->
    <title>This is document title</title>
</head> <!-- Document Header Ends -->
<body>
    <p>Document content goes here </p>
</body>
</html>
```

2.6.6 Text formatting

- HTML uses elements like and for formatting output, like bold or italic text.
- Formatting elements were designed to display special types of text:
  - -Bold text
  - - Important text
  - - Italic text
  - - Emphasized text
  - <mark> - Marked text
  - <small> - Smaller text
  - <del> - Deleted text
  - <ins> - Inserted text
  - <sub> - Subscript text
  - <sup> - Superscript text

HTML and Elements:

- **The HTML element defines bold text, without any extra importance.**
  Ex. This text is bold
- The HTML element defines text with strong importance. The content inside is typically displayed in bold.
  Ex. This text is important!

HTML and Elements:

- The HTML element defines a part of text in an alternate voice or mood. The content inside is typically displayed in italic.
- The tag is often used to indicate a technical term, a phrase from another language, a thought, a ship name, etc.
- Ex. This text is italic
- The HTML element defines emphasized text. The content inside is typically displayed in italic.
- A screen reader will pronounce the words in with an emphasis, using verbal stress.
- Ex. This text is emphasized

HTML <small> Element:

- The HTML <small> element defines smaller text:
- <small>This is some smaller text.</small>

HTML <sub> Element:

- The HTML <sub> element defines subscript text. Subscript text appears half a character below the normal line, and is sometimes rendered in a smaller font. Subscript text can be used for chemical formulas, like H_2O:

- This is _{subscripted} text.

HTML <sup> Element:

- The HTML <sup> element defines superscript text. Superscript text appears half a character above the normal line, and is sometimes rendered in a smaller font. Superscript text can be used for footnotes, like WWW[1]
- This is ^{superscripted} text.

HTML Quotation and Citation Elements:

- The HTML <q> element defines a short quotation.
- Browsers usually insert quotation marks around the <q> element. Example
- WWF's goal is to: <q>Build a future where people live in harmony with nature.</q>

HTML <blockquote> for Quotations:

- The HTML <blockquote> element defines a section that is quoted from another source. Browsers usually indent <blockquote> elements.
- Example

  Here is a quote from WWF's website:

  <blockquote cite="http://www.worldwildlife.org/who/index.html"> For 50 years, WWF has been protecting the future of nature.

  The world's leading conservation organization, WWF works in 100 countries and is supported by

  1.2 million members in the United States and close to 5 million globally.

  </blockquote>

The HTML <pre> Element:

- The HTML <pre> element defines preformatted text.
- The text inside a <pre> element is displayed in a fixed-width font (usually Courier), and it preserves both spaces and line breaks:
- Example

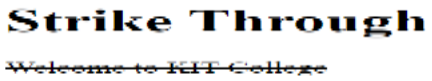
```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <title>Document</title>
</head>
<body>
    <pre>
    My Bonnie lies over the ocean.
    My Bonnie lies over the sea.
```

```
    My Bonnie lies over the ocean.
    Oh, bring back my Bonnie to me.
    </pre>
</body>
</html>
```

Strikethrough Tag

- Anything that appears within <strike>...</strike> element is displayed with strikethrough, which is a thin line through the text as shown below:
- Example:

```
<!DOCTYPE html>
<html>
<head>
    <title>Strike Text Example</title>
</head>
<body>
    <h1>Strike Through</h1>
    <strike> Welcome to KIT College</strike>
</body>
</html>
```



Character Entities :

Result	Description	Entity Name	Entity Number
	non-breaking space		
<	less than	&lt;	&#60;
>	greater than	&gt;	&#62;
&	Ampersand	&amp;	&#38;
¢	Cent	&cent;	&#162;
£	Pound	&pound;	&#163;
¥	Yen	&yen;	&#165;
€	Euro	&euro;	&#8364;
©	Copyright	&copy;	&#169;
®	registered trademark	&reg;	&#174;

2.7 FONT tag and Attributes

Font tag:

- The font tag is used to change the color, size, and style of a text and it was used in HTML4
- syntax: ……

Attributes of Font Tag

Attribute	Value	Description
color	color	Specify the default color of all text within an HTML document.
face	font-family	Specify the default font face for the text in the document.
size	number	Specify the size of the text. Size can be between 1-7

Example:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>font</title>
</head>
<body>
    <h1> Font tag</h1>
    <font face="arial" size="10" color="red"> Welcome to KIT College</font><br>
    <font face="Monospace" size="10" color="green"> Welcome to KIT College</font><br>
    <font face="Courier" size="10" color="yellow"> Welcome to KIT College</font>
</body>
</html>
```

Output:

HTML <basefont> tag:

- HTML <basefont> tag was used to specify the default value of font-size, color, and font-family for all content written within an HTML document.
- It is included in head section of the HTML document
- syntax: <basefont color="blue" size="5" face="arial">
- Example:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>font</title>
    <!-- WARNING: The <basefont> tag has been removed in HTML5. Use CSS instead. -->
    <basefont face="Monospace" size="10" color="green">
</head>
<body>
   Welcome to KIT College
</body>
</html>
```

WARNING: The <basefont> tag has been removed in HTML5. Use CSS instead.

2.8 List Tags and Attributes

- List is the process of arranging things in an order.
- Types of list
  A. Unordered list
  B. Ordered list
  C. Defination list
  D. Nested list
- The most comman HTML lists are ordered and unorderd list

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>
```

Example 1: Write a HTML code to display the following lists

- Keyboard
- Mouse
- Scanner
- Track Ball
- Light pen

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <title>Document</title>
</head>
<body>
    <ul type="disc">
        <li>Keyboard</li>
        <li>Mouse</li>
        <li>Scanner </li>
        <li>Track Ball</li>
        <li>Light pen</li>
    </ul>
</body>
</html>
```

Example 2: Write a HTML code to display the following lists

- Keyboard
- Mouse
- Scanner
- Track Ball
- Light pen

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <title>Document</title>
</head>
<body>
    <ul type="square">
        <li>Keyboard</li>
        <li>Mouse</li>
        <li>Scanner </li>
        <li>Track Ball</li>
        <li>Light pen</li>
    </ul>
</body>
```

```
</html>
```

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

Example 1: Write a HTML code to display the following lists

A. Keyboard
B. Mouse
C. Scanner
D. Track Ball
E. Light pen

```
<!DOCTYPE html>
<html lang="en">
```

```
<head>
    <meta charset="UTF-8">
    <title>Document</title>
</head>
<body>
    <ol type="A">
        <li>Keyboard</li>
        <li>Mouse</li>
        <li>Scanner </li>
        <li>Track Ball</li>
        <li>Light pen</li>
    </ol>
</body>
</html>
```

Example 2: Write a HTML code to display the following lists

C. Keyboard
D. Mouse
E. Scanner
F. Track Ball
G. Light pen

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <title>Document</title>
</head>
<body>
    <ol type="A" start="3">
        <li>Keyboard</li>
        <li>Mouse</li>
        <li>Scanner </li>
        <li>Track Ball</li>
        <li>Light pen</li>
    </ol>
</body>
</html>
```

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

Example 1: Write a HTML code to display the following lists

Keyboard
    Keyboard is an input devices.
Printer
    Printer is an output Device.

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <title>Document</title>
</head>
<body>
 <dl>
    <dt>Keyboard</dt>
    <dd>Keyboard is an input devices.</dd>
    <dt>Printer</dt>
    <dd>Printer is an output Device.</dd>
 </dl>
</body>
</html>
```

D. Nested List

- List with in list is called nested list.
- Example 1: Write a HTML code to display the following lists

1. Tea
    - Black Tea
    - Milk Tea
    - Green Tea
2. Coffee
    - Black coffee
    - Milk coffee
3. Cold Drinks
    - Cocacola
    - Sprite
    - Dew

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <title>Document</title>
</head>
<body>
    <ol type="1">
        <li>Tea</li>
        <ul type="square">
            <li>Black Tea</li>
            <li>Milk Tea</li>
            <li>Green Tea</li>
        </ul>

        <li>Coffee</li>
        <ul type="circle">
            <li>Black coffee</li>
            <li>Milk coffee</li>
        </ul>

        <li>Cold Drinks</li>
        <ul type="disc">
            <li>Cocacola</li>
            <li>Sprite</li>
            <li>Dew</li>
        </ul>
    </ol>
</body>
</html>
```

2.9 Inserting IMAGES and OBJECTS

Image Tag <img>:

- 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.
- Syntax:

```
<img src="" alt="" width="" height="">
```

Attributes of <img> tag

src	Specifies the path to the image.
alt	Provides alternate text for the image, useful for informing users about the image and displaying in case of network issues.
height	Specifies the height of the image.
width	Specifies the width of the image.
align	align attribute is used to set the alignment of an image
border	Specifies the size of the border to place around the image

Example 1:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <title>Image Tag</title>
</head>
<body>
    <img src="anjan.jpg" alt="Anjan KC" width="128" height="128">
</body>
</html>
```

Example 2: Images in Another Folder

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <title>Image Tag</title>
</head>
<body>
    <img src="./Photo/fewalake.jpg" alt="Fewa Lake" width="900" height="450">
</body>
</html>
```

Object Tag:

- HTML <object> tag is used to embed multimedia files on webpage. The <object> tag can include multimedia files such as video, audio, image, PDF, Java Applets, or another page on your page.
- Syntax: <object data="" width="" height=""></object>

Attributes of object Tag

Attribute	Value	Description
data	URL	It specifies the address of the resource.
type	content_type	It determines the content type of the resource specified by data.
height	pixels	It defines the height of the object.
width	pixels	It determines the width of the object.
name	name	It defines the name for the object.

Example:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <title>Object Tag</title>
</head>
<body>
    <object data="./Photo/fewalake.jpg" width="250px" height="250px"></object>
</body>
</html>
```

2.10. MARQUEE tag and attributes

- The <marquee> tag in HTML is used to create scrolling text or images on a webpage.
- It can scroll horizontally from left to right or right to left, and vertically from top to bottom or bottom to top. It includes attributes like direction to specify whether the content moves left, right, up, or down.
- The HTML <marquee> tag also supports the following additional attributes

Attributes	Values	Description
behavior	scroll, slide, alternate	It facilitates user to set the behavior of the marquee to one of the three different types: scroll, slide and alternate.
bgcolor	Color Name	Define the background color of the marquee.
direction	Top, Down, Left, Right	Define the direction of scrolling the content
loop	Number	Specifies how many times content moves. The default value is infinite.
height	px or %	Define the height of marquee
width	px or %	Define the width of marquee
hspace	px	Specify horizontal space around marquee
vspace	px	Specify vertical space around marquee

Example:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <title>Document</title>
</head>
<body>
    <marquee behavior="scroll" direction="down" bgcolor="red">
       Welcome to KIT College
    </marquee>
</body>
</html>
```

2.11. HYPERLINK and Anchor Tag

- Links in HTML are one of the most important elements that enable navigation and connectivity within a website. They are used to create hyperlinks that connect one webpage to another or to external sources such as documents, images, and video.
- A webpage can contain various links that take us directly to other pages and even specific parts of a given page. These links are known as hyperlinks.
- Hyperlinks allow visitors to navigate between Web sites by clicking on words, phrases, and images. Thus, we can create hyperlinks using text or images available on a webpage.

- A link is specified using HTML tag <a>. This tag is called anchor tag and anything between the opening <a> tag and the closing tag becomes part of the link and a user can click that part to reach to the linked document.
- Following is the simple syntax to use <a> tag.

```
<a href="Document URL" ... attributes-list>Link Text</a>
```

- By default, links will appear as follows in all browsers:
  - An unvisited link is underlined and blue
  - A visited link is underlined and purple
  - An active link is underlined and red

Attributes of Anchor Tag:

Attributes	Value	Description
href	URL	Specifies the URL of the page the link goes to
target	_blank _parent _self _top	Specifies where to open the linked document
name	specific location	The name attribute of the anchor tag can be used to enable users to "jump" to a specific point on a page. This is especially useful with large pages or subdivisions

- The target attribute specifies where to open the linked document. The target attribute can have one of the following values:

  _blank - Opens the linked document in a new window or tab

  _parent - Opens the linked document in the parent frame

  _self - Opens the linked document in the same window/tab as it was clicked (this is default)

  _top - Opens the linked document in the full body of the window

- This example will open the linked document in a new browser window/tab:
- Example: KIT College

Types of Links:

1. **Internal Links:**
   - ❖ Internal hyperlinks are used to link to another section or element within the same webpage.
   - ❖ An internal link is used in html page to navigate properly in the webpage.
   - ❖ If we want to go to any specific location in the same page by clicking on a link, we can create an internal link in the webpage. <a> tag is used for link creation in html page.
   - ❖ Syntax

Step 1:

 my link starts here
This is the place where we will reach on click.

Step2:

Step MyLink

Here "href" contain the location name where the link will navigate us when we click on "MyLink". The location is given a name for reference and the name contain "#" at the time of creating link.

Example:

```
<! DOCTYPE html>
    <html>
    <head>
        <title> Internal link example </title>
    </head>

    <body>
        <p>Welcome to my web-page. This is an example of internal link
creation in html web-page.</p><br>
        <a name="HTML"> Introduction to Html </a>
        <p> Html is hyper text mark-up language.</p><br><br>
        <a name="CSS"> Introduction to CSS </a>
        <p> Cascading Style Sheet is used for styling the web
pages</p><br><br>
        <a href="#HTML"> html</a><br>
        <a href="#CSS"> css</a>
    </body>

    </html>
```

2. **External Link**
   - ❖ The html Hyperlink that links to another website or web page is called external link.
   - ❖ External hyperlinks are used to link to resources outside of the current webpage.
   - ❖ Example:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>External Link</title>
</head>
<body>
    <h1> External Hyper link </h1>
    <a href="home.html" target="_blank"> Heme Page</a>
    <a href="aboutus.html" target="_blank"> About Us</a>
    <a href="contact.html" target="_blank"> Contact</a>
    <a href="https://www.kit.edu.np/" target="_blank">Kit College</a>
</body>
</html>
```

Local Links/ Relative Link:

- ❖ A local link (link to the same web site) is specified with a relative URL (without http://www).
- ❖ A relative link is a link that specifies the path to the linked resource relative to the current location.
- ❖ Relative links are often used for internal links within a website.
- ❖ They are considered "local" because they are relative to the current document or the root of the website
- ❖ Example
  Home

Global Links/ Absolute Link:

- ❖ A global (or absolute) link specifies the absolute location of a resource.
- ❖ These always begin with a protocol (typically http or https), followed by the website domain and optionally the path from the base of the domain to the specific resource.
- ❖ If we don't include the path component then it will default to the main page for the domain.

- Example

```
<a href="https://www.kit.edu.np/" target="_blank">Kit College</a>

<a href="https://www.kit.edu.np/diploma-in-computer-engineering/" target="_blank"> Computer
</a>
```

HTML Links - Image as Link:

- An image can be used to create a link to a specified URL. When the viewer clicks on the link, it redirects them to another page
- It is common to use images as links:
- Example

```
<a href="https://www.kit.edu.np/" target="_blank">
    <img src="./Photo/kit banner.png" alt="KIT College" width="900px" height="200px">
</a>
```

2.12 TABLE Tag

- 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>
```

Attributes of Table:

- Align: alignment to left, right or center
- Width: set width to specific number of pixels
- Border: set border around table
- Caption: caption is used inside <table></table> to give table heading. It has align attribute to appear heading either top or bottom of the 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:

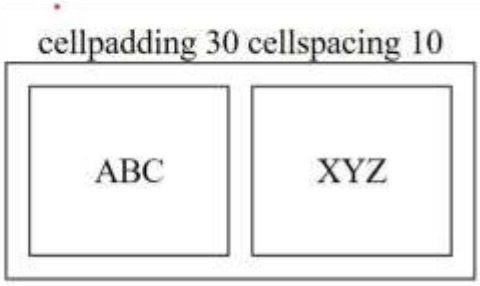
```
<table border="border" cellspacing="20" cellpadding="5">
        <caption> cellpadding 5 cellspacing 20</caption>
                <tr>
                        <td>ABC</td>
                        <td>XYZ</td>
                </tr>
</table>
```

cellpadding 5
cellspacing 20

ABC XYZ

Example:

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



Example 1: Write a HTML code to display the following table

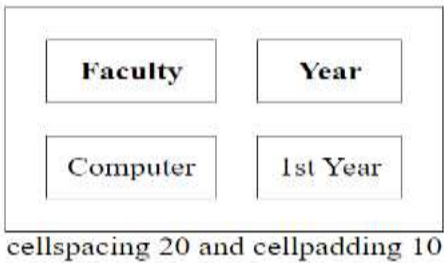
Name	Address	Phone No
Hari Gautam	Lalitpur	1234
Ram	Bhaktpur	2334534
Sita	Kavre	464563435

Table 1: Student Details

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <title>Document</title>
</head>
<body>
    <table border="5" width="50%">
        <caption align="bottom"> Table 1: Student Details</caption>
        <tr>
            <th>Name</th>
            <th>Address</th>
            <th>Phone No</th>
        </tr>
        <tr align="center">
            <td >Hari Gautam </td>
            <td>Lalitpur</td>
            <td>1234</td>
        </tr>
        <tr align="center">
            <td > Ram</td>
            <td>Bhaktpur</td>
            <td>2334534</td>
```

```
        </tr>
        <tr align="center">
            <td > Sita </td>
            <td>Kavre</td>
            <td>464563435</td>
        </tr>
    </table>
</body>
</html>
```

Example 2: Write HTML code for the following table




```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Document</title>
</head>
<body>
    <table border="border" cellspacing="20" cellpadding="10">
        <caption align="bottom"> cellspacing 20 and cellpadding 10</caption>
        <tr>
            <th>Faculty</th>
            <th>Year</th>
        </tr>
        <tr>
            <td> Computer</td>
            <td>1st Year</td>
        </tr>

    </table>
</body>
</html>
```

Example 3: Write HTML code for the following table

Name	Marks		
	C++ Programming	WEb Technology	C Programming
Ram	50	75	78
Hari	65	55	58
Gita	70	45	95

Subject Marks

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Table</title>
</head>
<body>
    <table border="5" width="50%">
        <caption align="bottom">
            <b> Subject Marks</b>
        </caption>
        <tr align="center">
            <th rowspan="2"> Name</th>
            <th colspan="3">Marks</th>
        </tr>
        <tr>
            <th>C++ Programming</th>
            <th>WEb Technology</th>
            <th>C Programming</th>
        </tr>
        <tr align="center">
            <td>Ram</td>
            <td>50</td>
            <td>75</td>
            <td>78</td>
        </tr>
        <tr align="center">
            <td>Hari</td>
            <td>65</td>
            <td>55</td>
            <td>58</td>
        </tr>
        <tr align="center">
            <td>Gita</td>
```

```
            <td>70</td>
            <td>45</td>
            <td>95</td>
        </tr>
    </table>
</body>
</html>
```

3.(a) Write HTML code to design a table which must look similar to the one provided: (included in draft) (2076) [8 marks]

S.N	Name	Subject				Remark
		WPT		C++		
1	Samikshya	65	25	68	24	pass
2	Manisha	73	20	71	18	pass

Mark Sheet

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Document</title>
</head>
<body>
    <table border="border" width="50%">
        <caption align="bottom"> Mark Sheet</caption>
        <tr>
            <th rowspan="2"> S.N</th>
            <th rowspan="2"> Name</th>
            <th colspan="4"> Subject</th>
            <th>Remark</th>
        </tr>
        <tr>
            <th colspan="2">WPT</th>
            <th colspan="2">C++</th>
            <th></th>
        </tr>
        <tr align="center">
            <td>1</td>
            <td>Samikshya</td>
            <td>65</td>
```

```
            <td>25</td>
            <td>68</td>
            <td>24</td>
            <td>pass</td>
        </tr>
        <tr align="center">
            <td>2</td>
            <td>Manisha</td>
            <td>73</td>
            <td>20</td>
            <td>71</td>
            <td>18</td>
            <td>pass</td>
        </tr>
    </table>
</body>
</html>
```

3.(a) Write HTML code to design a table which must look similar to the one provided: (included in draft) (2078) [8 marks]

Seminar			
Day/Time	Schedule		Topic
	Begin	End	
Sunday	8:00 am	2:00 pm	Introduction to HTML
Monday	8:00 am	11:00 am	Validity:DTD
Tuesday	10:00 am	2:00 pm	X Path
Wednesday	2:00 pm	5:00 pm	CSS
Thursday	12:00 pm	5:00 pm	XML
Friday	10:00 pm	3:00 pm	Presentation

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Document</title>
</head>
<body>
    <table border="border" width="50%">
        <tr>
            <th colspan="4">Seminar</th>
```

```
        </tr>
        <tr>
            <th rowspan="2"> Day/Time</th>
            <th colspan="2">Schedule</th>
            <th rowspan="2">Topic</th>
        </tr>
        <tr>
            <th>Begin</th>
            <th> End</th>
        </tr>
        <tr>
            <td>Sunday</td>
            <td>8:00 am</td>
            <td>2:00 pm</td>
            <td>Introduction to HTML</td>
        </tr>
        <tr>
            <td>Monday</td>
            <td>8:00 am</td>
            <td>11:00 am</td>
            <td>Validity:DTD</td>
        </tr>
        <tr>
            <td>Tuesday</td>
            <td>10:00 am</td>
            <td>2:00 pm</td>
            <td>X Path</td>
        </tr>
        <tr>
            <td>Wednesday</td>
            <td>2:00 pm</td>
            <td>5:00 pm</td>
            <td>CSS</td>
        </tr>
        <tr>
            <td>Thursday</td>
            <td>12:00 pm</td>
            <td>5:00 pm</td>
            <td> XML</td>
        </tr>
        <tr>
            <td>Friday</td>
            <td>10:00 pm</td>
            <td>3:00 pm</td>
            <td>Presentation</td>
```

```
        </tr>
    </table>
</body>
</html>
```

FORM:

- 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 valu 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 us d 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>
```

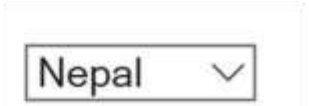


Figure 6: default appearance

Figur wn

- ❖ 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

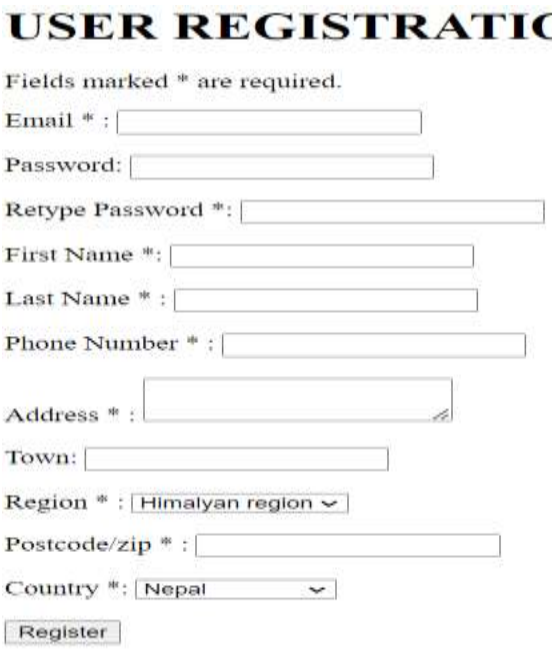
- The <textarea> tag defines a multi-line text input control.
- The attributes **rows** (for height) **& cols** (for width) is used to define the size of text area.
- Example:

```
<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

Example 1: 5(a) Write HTML code for the following form (2078) [10 marks)



Ans:

```
<!DOCTYPE html>
<html lang="en">

<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>User Registration Form</title>
</head>

<body>
    <h1>USER REGISTRATION</h1>
    <p>Fields marked * are required.</p>
    <form action="/register" method="post">
        <label htm ="email">Email * :</label>
        <input type="email" id="email" name="email" required>
        <br><br>
        <label for="password">Password:</label>
        <input type="password" id="password" name="password" required>
        <br><br>
        <label for="retype_password">Retype Password *:</label>
        <input type="password" id="retype_password" name="retype_password"
required>
        <br><br>
        <label for="first_name">First Name *:</label>
```

```
        <input type="text" id="first_name" name="first_name" required>
        <br><br>
        <label for="last_name">Last Name * :</label>
        <input type="text" id="last_name" name="last_name" required>
        <br><br>
        <label for="phone_number">Phone Number * :</label>
        <input type="number" id="phone_number" name="phone_number" required>
        <br><br>
        <label for="address">Address * :</label>
        <textarea id="address" name="address" required></textarea>
        <br><br>
        <label for="town">Town:</label>
        <input type="text" id="town" name="town">
        <br><br>
        <label for="region">Region * :</label>
        <select id="region" name="region" required>
            <option disabled="true"> Select Region</option>
            <option value="Hr">Himalyan region</option>
            <option value="Hi">Hilly region</option>
            <option value="Tr">Terai region</option>
        </select>
        <br><br>
        <label for="postcode">Postcode/zip * :</label>
        <input type="number" id="postcode" name="postcode" required>
        <br><br>
        <label for="country">Country *:</label>
        <select id="country" name="country" required>
            <option  disabled="true"> Select Country</option>
            <option value="Nep">Nepal</option>
            <option value="Ind">India</option>
            <option value="Pak">Pakistan</option>
            <option value="chi">China</option>
        </select>
        <br><br>
        <button type="submit">Register</button>
    </form>
</body>

</html>
```

Example 2: Write HTML code for the following form

Ans.

```
<Html>
<head>
    <title>
        Registration Form
    </title>
</head>
<body bgcolor="Lightskyblue">
    <br>
    <br>
    <form>
        <label for="firstName"> First Name:</label>
        <input type="text" id="firstName" name="firstName" placeholder="Enter
Your First Name"/> <br> <br>
        <label for="middleName"> Middle Name: </label>
        <input type="text" id="middleName" name="middleName" placeholder="Enter
Your Middle Name"/> <br> <br>
        <label for="lastName"> Last Name: </label>
        <input type="text" id="lastName" name="lastName" placeholder="Enter
Your Last Name"/> <br> <br>

        <label for="course"> Course :</label>
        <select id="course">
```

```
            <option value="Course" disabled="true"> Select Course</option>
            <option value="BCA">BCA</option>
            <option value="BBA">BBA</option>
            <option value="B.Tech">B.Tech</option>
            <option value="MBA">MBA</option>
            <option value="MCA">MCA</option>
            <option value="M.Tech">M.Tech</option>
        </select><br><br>

        <label for="gender"> Gender :</label><br>
        <input type="radio" name="male" /> Male <br>
        <input type="radio" name="female" /> Female <br>
        <input type="radio" name="other" /> Other
        <br> <br>

        <label for="number">  Phone : </label>
        <input type="text" name="country code" value="+977" size="3" />
        <input type="number" id="number" name="phone" size="10" /> <br> <br>

        <label for="address"> Address</label>
        <br>
        <textarea cols="35" rows="5" name="address" id="address"></textarea>
        <br> <br>
        <label for="email">Email:</label>
        <input type="email" id="email" name="email"placeholder="Enter Your
Email Address"/> <br>
        <br> <br>

        <label for="pass">Password:</label>
        <input type="Password" id="pass" name="pass" placeholder="Enter Your
Password"> <br>
        <br> <br>
        <label for="repass">Re-type password:</label>
        <input type="Password" id="repass" name="repass"> <br> <br>
       <button type="submit">Submit</button>
    </form>
</body>

</html>
```

2.13 FRAME and FRAMESET Tags

- 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 th ir 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%, *">

HTML Frames:

- The browser display window can be used to display more than one document at a time.
- The window can be divided into rectangular areas, each of which is a frame.
- Each frame is capable of displaying its own document.
- Frames can be used for a number of different display situations.
- Due to various reasons, use of frames was discouraged in XHTML 1.1, but currently xframes and iframes are used to develop a new form of Frames.
- The content of frame is specified with <frame> tag, which can appear only in the content of frameset element.
- **Attributes of <frame> tag**
  - Src: Specifies the URL of the document to show in a frame
  - Name: Specifies the name of a frame
  - Margin height: Specifies the top and bottom margins of a frame
  - Margin width: Specifies the left and right margins of a frame
  - Scrolling (yes, no, auto): Specifies whether or not to display scrollbars in a frame
  - Noresize: Specifies that a frame is not resizable

Example 1:

a.html
b.html
c.html

```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>frameset</title>
    </head>
    <frameset rows="30%,30%,30%">
        <frame name="heading" src="a.html" />
        <frame name="structure" src="b.html" />
        <frame name="heading" src="c.html" />
    </frameset>
</html>
```

Example 2:

<table>
<tr><td colspan="2">a.html</td></tr>
<tr><td>b.html</td><td>c.html</td></tr>
</table>

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Frameset</title>
</head>
<frameset rows="50%,*">
    <frame src="a.html"/>
    <frameset cols="50%,*"">
        <frame src="b.html"/>
        <frame src="c.html"/>
    </frameset>
</frameset>
</html>
```

Example 3:

<table>
<tr><td rowspan="2">a.html</td><td>b.html</td></tr>
<tr><td>c.html</td></tr>
</table>

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Frameset</title>
</head>
<frameset cols="50%,*">
    <frame src="a.html" noresize="auto"/>
    <frameset rows="50%,*">
    <frame src="b.html" noresize="noresize"/>
    <frame src="c.html" noresize="noresize"/>
    </frameset>
</frameset>
</html>
```

✓ *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">.

4

- 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.