# Hyper Text Markup Language

**HTML (Hyper Text markup language):** The language used to develop web page is called HTML and is interpreted by a browser.

**What is HTML?**

HTML is a language for describing web pages.

- HTML stands for **H**yper **T**ext **M**arkup **L**anguage
- HTML is not a programming language, it is a **markup language**
- A markup language is a set of **markup tags**
- HTML uses **markup tags** to describe web pages

**What is HTML Tags?**

HTML markup tags are usually called HTML tags

- HTML tags are keywords surrounded by **angle brackets** like <html>
- HTML tags normally **come in pairs** like  and 
- The first tag in a pair is the **start tag,** the second tag is the **end tag**
- Start and end tags are also called **opening tags** and **closing tags**

- HTML or **H**yper**T**ext **M**arkup **L**anguage is designed to specify the logical organization of a document, with important hypertext extensions.
- HTML instructions divide the text of a document into blocks called *elements*.
- These can be divided into two broad categories:
  - Those that define how the **BODY** of the document is to be displayed by the browser, and
  - Those that define information about the document, such as the **title** or relationships to other documents.
- The detailed rules for HTML (the names of the tags/elements, how they can be used) are defined using another language known as the SGML (**S**tandard **G**eneralized **M**arkup **L**anguage).
- HTML is a set of special codes that can be embedded in text to add formatting and linking information.
- HTML is the language interpreted by a Browser.
- The HTML file must have an extension "**.htm**" or "**.html**".
- Any text editor can be used to create HTML file.

**Versions of HTML**

**HTML 2.0**

- It set the standard for core HTML features based upon current practice in 1994.

**HTML 3.2**

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

**HTML 4.0**

- First released as a W3C Recommendation on 18 December 1997.
- A second release was issued on 24 April 1998 with changes limited to editorial corrections.
- This specification has now been superseded by HTML 4.01.

**HTML 4.01**

- HTML 4.01 is the current official standard.
- It includes support for most of the proprietary extensions, plus support for extra features (Internationalized documents, support for **C**ascading **S**tyle **S**heets, extra TABLE, FORM, and JavaScript enhancements), that are not universally supported.
- After this XHTML was released which stands for e**X**tensible **H**yper**T**ext **M**arkup **L**anguage.

**HTML 5.0**

- This is the new version of HTML with many exciting new features.

**HTML Tag:** Tags are instruction that is embedded directly into the text of the document. HTML tags begin with an ***open angle bracket*** (**<**) and end with a ***close angle bracket*** (**>**).

> **Paired tags:** A tag is said to be a paired tag if it, along with a *companion tag*, flanks the text with its companion text e.g. <B> tag is paired tag. The <B> tag with its companion tag </B> causes the text contained between them to be bold.. <B> is called opening tag and </B> is called closing tag. Also Known as **Container Tags**
>
> **Singular tag:** A stand-alone or singular tag does not have a companion tag. Eg <br> tag will insert a line break. This has no any companion tag. Known as **Empty Tags**

*Structure of HTML program:*

```
<html>
<head>
        <title></title>
</head>
<body>
…
…
</body>
</html>
```

The entire webpage is enclosed within **<HTML> tags** within these two tags, two distinct sections are created using the <HEAD> </HEAD> and <BODY> </BODY> tags.

- The text between ***<html>*** and ***</html>*** describes the web page
- Information placed in ***<head>*** *section* is essential to the inner working of the document and has nothing to do with the content of document.
- The information placed within the <HEAD> </HEAD> tags is not displayed in the browser.
- The information written within the <BODY> </BODY> is displayed in the browser (*Visible Page Content*). *Background color, text color, font size* can be specified as attributes of <BODY> tag.

**Example**

```
<html>
<body>

<h1>My First Heading</h1>

<p>My first paragraph.</p>

</body>
</html>
```

## Text Formatting:

**<P>:** used for paragraphs on encountering this tag, the browser moves onto a new line skipping one line between the previous line and the new line.
**<BR>:** line break start from a new line and not continue on the same line.

**Heading styles:** HTML supports 6 different levels of headings. The highest-level is <H1>. The size varies from ***<H1> to <H6>.***

Eg. <H3> ibirat.com </H3>

Output

# Heading 1
## Heading 2
### Heading 3
#### Heading 4
##### Heading 5
###### Heading 6

**<HR> tag:** This tag draws a horizontal line across the whole page, whenever specified. These attributes are:

- **Align:** Align the line on the browser screen which is by default, aligned to the center of the screen.
- **Align** = left / center / right
- **Size:** Changes the size of the rule.
- **Width:** Sets the width of the rule.

E.g. <HR align=left width=10 size =4>

**<I> tag:** This tag displays text in Italics.
E.g. <I> ibirat.com </I>

**<U> tag:** This tag displays text as underlined. And is used as <U>….</U>
E.g. <U> ibirat.com </U>

**<Center> tag:** This tag is used to center everything found between ….. tag like text, list, images, tables or any other page element.
E.g. <CENTER> welcome to ibirat.com </CENTER>

**<FONT> tag:** All text specified within the tags <FONT> and </FONT> will appear in the font, sizes and color as specified as attributes of the tag <FONT>. The attributes are:

- **FACE:** Sets the font to the specified font name.
- **SIZE:** Sets the size of the text and value is between 1 to 7.
- **Color:** Sets the color of the text.

E.g.
<FONT FACE= “Arial” size = 3 color = RED> Welcome to ibirat.com </FONT>

**SETTING BACKGROUND COLOR OF PAGE:**
BGCOLOR = “NAME OF THE COLOR”
OR
BGCOLOR = #**ff0000**
[Color in RGB format]

<BODY BGCOLOR ="RED">
…

```
</BODY>
```

## Lists Type:

**1. Unordered list (bullets):** An unordered list starts with the tag <UL> and ends with </UL>. Each list item starts with the tag <LI>. The attributes are specified within <UL> tag. Attributes:

**Type:** Specifies the type of the bullet.

- **Type=** Disc (solid round block) ***Default***
- **Type=** Square (solid square black bullet)
- **Type=** Circle

```
<UL type= circle>
        <LI>B.E computer </LI>
        <LI> B.E civil</LI>
        <LI> B.E Electronics & Computer</LI>
</UL>
```

Output

- B.E computer
- B.E civil
- B.E Electronics & Computer

**2. Ordered lists (Numbering):** An ordered list start with the tag <OL> and ends with </OL>. Each list item starts with tag <LI>. The attributes that can be specified within <LI> are:

- **Type:** Controls the numbering scheme.
- **Type=** "1"(count number 1,2….) ***Default***
- **Type=** "A" (give uppercase letters A, B,…)
- **Type=** "a" (give lowercase letters a,b,c….)
- **Type=** "I" (give uppercase Roman letter I,II,..)
- **Type=** "i" (give lowercase Roman letter i, ii…)

**Start:** Sets any numeric value.

```
<OL TYPE = "1" START = 5>
        <LI> APPLE</LI>
        <LI>BALL</LI>
        <LI> CAT</LI>
</OL>
```

Output

5. APPLE
6. BALL
7. CAT

**Definition List:** Definition list appears within tags <DL> and </DL>. It consists of two parts:
**Definition terms:** appears after tag <DT>
**Definition description**: appears after the tag <DD>

```
<DL>
        <DT> Microsoft excel</DT>
                <DD> A spread sheet program</DD>
        <DT> Microsoft word</DT>
                < DD> A word processing program</DD>
```

```
</DL>
```

Output

```
Microsoft excel
        A spread sheet program
Microsoft word
        A word processing program
```

**ADDING GRAPHICS TO HTML DOCUMENT:**

HTML allows static and animated images in an HTML page. It accepts picture file formats *.gif* and *.jpg*. Image can be inserted into a web page using the ***<IMG>*** tag, along with the name of the image file (*filename. gif* or *file name.jpg* or *file.jpeg*). The attributes of the tag <IMG> are:

- **Align=**TOP: indicates the text after the image to be written at the top, next to the image.
- **Align=** Middle: indicates the text after the image to be written at the middle, next to the image.
- **Align=** Bottom: indicates the text after the image to be written at the bottom, next to the image.

- **Align = Left / Center / Right**
- **Border:** Specifies the size of the border of image.
- **Width:** Specifies the width of the image.
- **Height:** Specifies the width of the image.
- **Hspace:** indicates the amount of space to the left and right of the screen.
- **Vspace:** amount of the space to the top and bottom of the image.
- **Alt:** Displays the text incase the browser each unable to display the image specified in the SRC attribute.

```
<IMG width = 400 height = 50 Border= 0 Hspace=0 SRC= “Image.gif” align = center>
```

```
<HTML>
<HEAD><TITLE> …….</TITLE></HEAD>
<BODY>
    <B> Inserting Image</B>
    <CENTER>
        <I> Image without using attributes</I>
        <Image SRC =”image1.gif”>
        <BR>
        <I>Image using attributes</I>
        <IMG BORDER=3 HEIGHT=200 WIDTH=200 SRC=’’image1/computer.gif’ alt = “image”>
    </CENTER>
</BODY>
</HTML>
```

# TABLES:

A table is a two dimensional matrix consisting of rows and columns. All table related tags are included between the <table> and </table> tags. Each row of a table is described between the <TR> …. </TR> tags and column between <TD> …..</TD> tags.

***Rows can be of two types.***

### 1. Header rows:

It is defined using **<TH> </TH>** tags. The content of a table header row is automatically centered and appear in boldface.

### 2. Data rows:

Data cell placed in the horizontal plane creates a data row. Data cell hold data that must be displayed in the table. It is defined using **<TR> </TR>** tags. Attributes included in the **<TABLE>** tag are:

- **Align:** Indicates horizontal alignment. It can be set to ***left, center or right***.
- **Valign:** Indicates vertical alignment. It can be set to ***top, middle or bottom***.
- **Width:** Sets the width to a specific no. of pixels. If width is not specified , the data cell adjusted based on cell data value.
- **Border:** Indicates the border thickness of the table.
- **Cellpadding:** Specifies the distance between the data in a cell and the boundaries of the cell.
- **Cellspacing:** Controls the spacing between adjacent cells.
- **Colspan:** This attributes is used inside <TH> or <TD> tag. This attribute is useful when one row of the table needs to be a certain number of columns wide.
- **Rowspan:** This attribute is useful when one column needs certain no. of rows.

### Caption Tag:

Table heading are called captions. It is written as **<caption></caption>**. This paired tag appears within the <table> </table> tags. Its attributes are:

**Align**: bottom /top →Place the caption below /top the table.

**Example: Table Program using width and border**

```
<html>
<head>
        <title>The table attributes</title>
</head>
<body>
<center>
<table border=1 width=50%>
<caption align=bottom><b>personal information </b></caption>
<tr>
        <th>name</th>
        <th>age</th>
</tr>
 <tr align=center>
        <td> ram </td>
       <td>25</td>
</tr>
<tr align=center>
        <td>shyam</td>
        <td>24</td>
</tr>
</table>
</center>
```

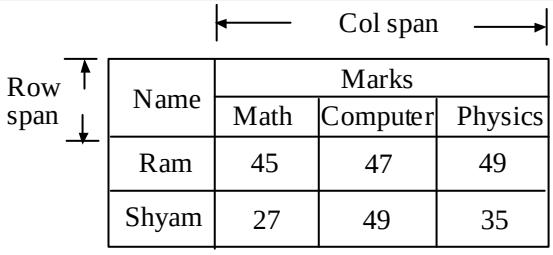
```
</body>
</html>
```

Output

| Name | age |
|---|---|
| ram | 25 |
| Shyam | 24 |

**personal information**

**Program Using Row span & Cols pan**




Mark Sheet

```
<html>
<head>
<title>Table Example Using Rowspan & Colspan</title>
</head>
<body>
<center>
<table border=1 width=50%>
<caption align=bottom><b>Mark Sheet</b></caption>
<tr>
   <th rowspan="2">Name</th>
   <th colspan="3">Marks</th>
</tr>
<tr align=center>
   <td>Math</td>
   <td>Computer</td>
   <td>Physics</td>
</tr>
<tr align=center>
   <td> Ram </td>
   <td>45</td>
   <td>47</td>
   <td>49</td>
</tr>
<tr align=center>
        <td>Shyam</td>
        <td>27</td>
        <td>49</td>
        <td>35</td>
</tr>
</table>
</center>
```

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

# LINKING DOCUMENTS

## Links:

HTML allows linking to other html documents as well as images. Clicking on a section of text or on image in one web page will open an entire web page or an image. The text or an image that provides such linkages is called *hypertext, a hyperlink or a hotspot.*

The browser distinguishes hyperlinks from normal text. Every hyperlink,

- Appears blue in color (by default but can be changed by html program).
- The hyperlink text/image is underlined.
- When the mouse is placed over it, the mouse cursor changes to the shape of a hand.

Links are crated in a web page by using the ***<A> </A>*** tags. Any things written between the *<A> </A>* tags becomes a hyperlink/hotspot. The document to be navigated needs to be specified. By using *HREF* attribute of the <A> tag the next web page or image can be specified.

**Syntax:**

```
<A href = “filename.htm”>Text</A>
```

Hyperlinks can be of two types.

**1. External Document References.**
**2. Internal Document References.**

## External document references:

**E.g. < A href = “http://pu.ibirat.com/”> iBiratPUSL </A>**

Here iBiratPUSL becomes a hyperlink & links to another document, ***http://pu.ibirat.com***

**E.g. < A href = “details.htm”> File Name</A>**

This is present in the current working directory. If the file is not present in the current directory, a relative or absolute path can be specified.

**Anchors:**

By default a hyperlink takes users to the beginning of the new web page. It might be necessary to jump to a particular location within the new web page. To enable a jump to a specific location on a web page, anchors can be set up. Anchors target hyperlink a specific location point on a web page. It is summarized in two steps.

**Step: 1**

Mark the location to be jumped to.

**Syntax:**

```
<A Name = “location_name”>
```

E.g.

```
< A name= “Point1”>
```

Here, location to be jumped is point1.

**Step: 2**

While jumping to a specific web page & a specific location on the web page, we require page name along with the name of the location to be jumped on that page.
Syntax:

```
<A href = “file_name.htm# location_name”>
```

E.g.

```
<A href = “details.htm#point1”> iBirat </A>
```

## Internal Document references:

This is used when a jump is required to a different location in the same document. To perform the link we again follow two steps. First identify a location with a name & then jump to that location using the name.
Syntax:

```
< A Name = “location_name”>
<A href = “#location_name”> ……. </A>
```

Here the absence of filename.htm before the #symbol indicates a jump is required within the same document.
E.g.

```
<A name= “point1”>
<A href = “#point1”>iBirat </A>
```

*Examples:* Hyper linking to a HTML file.

```
<html>
<head>
        <title>Hyperlink </title>
</head>
<body bgcolor = "grey">
<center>
<H1> iBiratPUSL Student Library</H1>
<br>
<img width = 400 height = 50 src = "college.gif">
</center>
<HR>
<H4> PU provides the following courses for undergraduate program :</H4>
<UL>
        <LI> <a href = "Computer.htm"> B.E computer </a></LI>
        <LI> <a href = "Electronics.htm">B.E Electronics & Comm. </a></LI>
        <LI> <a href = "civil.htm">B.E civil </a></LI>
        <LI> <a href = "BCA.htm"> BCA </a></LI>
        <LI> <a href = "Architecture.htm"> B.Arch </a></LI>
</UL>
<a href="moreinfo.htm">click for more details!</a>
</body>
</html>
```

## Image as Hyperlinks:

An image can be made a hotspot by enclosing an <IMG> tag within <A> </A> tags. The <IMG> tag places the image on the screen, & because the <IMG> tag is enclosed within the <A> </A> tags , becomes a hotspot.
Syntax:

```
<a href ="filename.htm"><img src = "imgname.gif"> </a>
```

Here the picture image name acts as hotspot and navigates to a file *filename.htm*.

# Image Maps:

When a hyperlink is created on an image, clicking on any part of the image will lead to opening of the document specified in the <a href …> tag. In order to link multiple documents to the same image, the image is divided into multiple sections and allows lining of each section to a different document.

This technique is called image maps. Image maps can be created and applied to an image so that specific portion of image can be linked to a different file/image. Creating an image map is in two-step process.

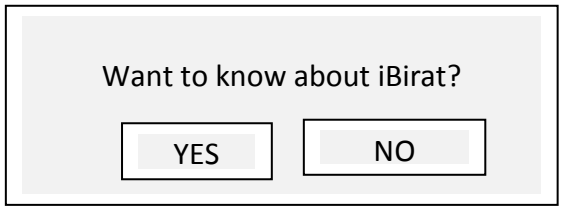
**Step: 1**
Create an image map i.e. divide the image into various areas. This is done using the <MAP></MAP> tags.

Syntax:

```
<MAP NAME = “map name”>
```

Within the <MAP> </MAP> tags the <AREA> tag is specified. This tag defines specified. This tag defines specific region and take the attributes:

- **Shape:** The shape of a region can be rect, circle, polygon, default.
- **Coords:** Defines the coordinates to different shapes.
  - **Rectangle** - four coordinates x1,y1,x2,y2.
  - **Circle** - three coordinates centerx, centery, radius.
  - **Poygon** - three or more pairs of coordinates.
  - **Default** - no coordinate is specified.
- **Href:** Takes the name of the .htm file that is linked to the particular area on the image.




Here clicking on yes will display information about iBirat and NO could lead back to a start page. Area on the image displays the buttons ‘yes’ and ‘No’ need to be mapped to two different HTML files. ***The areas are in x1, y1, x2, y2 coordinates.***

Eg.

```
<MAP name= "PU_map">
        <Area Shape = "rect" Coords= "52, 65, 122, 83" href "ibirat.htm">
        <Area Shape= "rect" Coords = "148, 65, 217, 89" href ="no.htm">
</MAP>
```

**Step: 2**

Deals with applying the image to the particular image. For this, the <IMG> the takes an attribute called USEMAP that takes the name of the image map as value. This value is preceded with #sign.

Syntax:

<img Usemap= “#map_name”>
E.g. <img src = "PU.gif" usemap="#PU_map">

## Frames

The HTML tags that divides a browser screen into two or more HTML recognizable unique regions is the <Frameset></Frameset> tags. Each unique region is called a frame. Each frame can be loaded with a different document and hence, allow multiple HTML documents to be seen concurrently. The <Frameset> & </Frameset> tags are embedded into the HTML document. These tags require one of the following two attributes.

**ROWS:** This attributes is used to divide the screen into multiple rows. Depending on the required size of each row value can be no. of pixels expressed as percentage on the screen resolution. The symbol *, indicating the remaining space.

**Cols:** This attribute is used to divide the screen into multiple columns. Depending on the required size of each column value can be no. of pixels expressed as percentage on the screen resolution. The symbol *, indicating the remaining space.

E.g.,

```
<frameset rows = “33%, 33%, 33%>      - Divide the browser screen into 3 equal horizontal sections.
        ….
        <frameset cols = “50%, 50%”>   - Splits the 1st horizontal section into 2 equal vertical sections.
        …
        </frameset>
        <frameset cols = “50%, 50%”>   -Splits the 2nd horizontal sections into 2 equal vertical sections.
        …
        </frameset>
</frameset>
```

### <Frame> Tag:

Once the browser screen is divided into rows and columns, each unique section can be loaded with different HTML documents. This is achieved by using the <Frame>tag. It consist the following attributes.

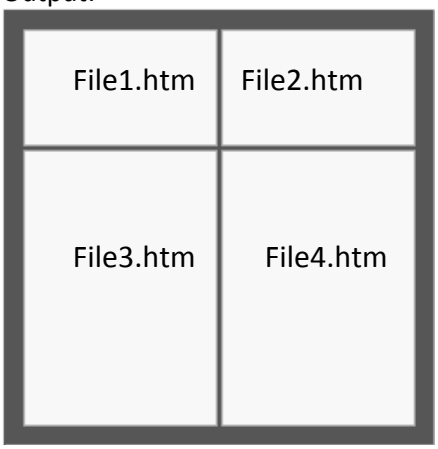
- **Src** = “url” →indicates URL of the document to be loaded into the frame.
- **Margin height** = “n” →Specifies the amount of white space to be left at the top and bottom of the frame.
- **Margin width** = “n” → Specifies the amount of white space to be left along the sides of the frame.
- **Name:** “name” → gives unique name to the frame so it can be targeted by other documents.
- **Noresize** – Disables the frames resizing capability.
- **Scrolling** -- Controls the appearance of horizontal and vertical scrollbars in a frame. This takes values yes/No/Auto.

Eg.

```
<html>
<head>
<title>New Page 1</title>
</head>
<frameset rows = "30%,*">
```

```
        <frameset cols = "50%,50%">
                <frame src = "file1.htm">
                <frame src= "file2.htm">
        </frameset>
        <frameset cols = "50%,50%">
                <frame src = "file3.htm">
                <frame src = "file4.htm">
        </frameset>
</frameset>
</html>
```

Output:




**Targeting Named Frames:**

Whenever a hyperlink, which loads a document in a frame, is created, the file referenced in the hyperlink will be opened and will replace the current document that is in the frame. This is done by using the Name attribute of the <frame> </Frame> tags. The Name takes one parameter, which is its frame name.

The attributes, via which the frame name is specified is the TARGET attribute. TARGET = “filename”. & the attribute via which the HTML file name is specified is the HREF attribute which is a part of <A> </A> tag & is given by

```
<A href = “index.htm” TAEGET = “main”> click here</A>
```

**Eg. Frame identification:**

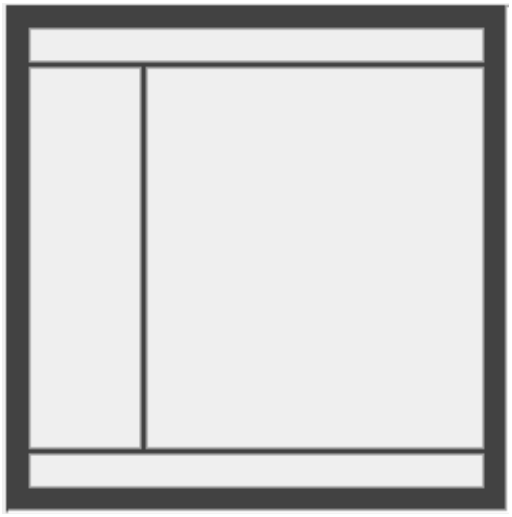
```
<Frameset cols = 30%, 70%>
        <Frame name = “part”>
        <frame name = “main”>
</frame>
```

**Hyperlink Specification:**

```
<A href = “index.htm” Target = “main”> click here </A>
```

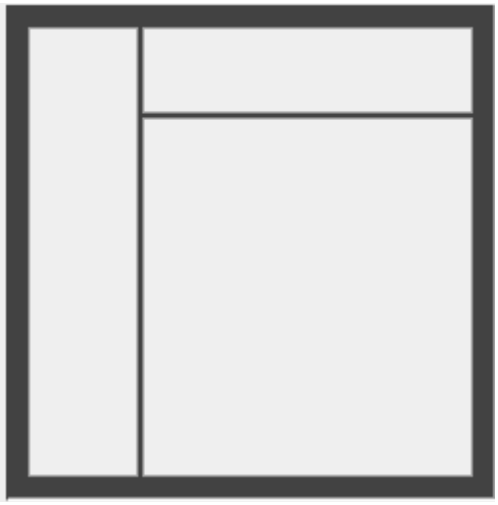
Here an index.htm is loaded into the frame named “main” when the hyperlink “click here” is clicked.

Example: 2



```
<html>
<head>
<title>New Page 2</title>
</head>
<frameset rows="64,*,64">
	<frame name="top" scrolling="no" noresize target="contents">
	<frameset cols="150,*">
		<frame name="contents" target="main">
		<frame name="main">
	</frameset>
	<frame name="bottom" scrolling="no" noresize target="contents">
	<noframes>
	<body>
	<p>This page uses frames, but your browser doesn't support them.</p>
	</body>
	</noframes>
</frameset>
</html>
```

Example : 3



```
<html>
<head>
<title>New Page 1</title>
</head>
<frameset cols="150,*">
	<frame name="left" scrolling="no" noresize target="rtop">
	<frameset rows="20%,*">
		<frame name="rtop" target="rbottom">
		<frame name="rbottom">
	</frameset>
	<noframes>
	<body>

	<p>This page uses frames, but your browser doesn't support them.</p>

	</body>
	</noframes>
</frameset>
</html>
```