

UNIT-1:

Introduction: Internet and Web - Introduction to web technologies.

HTML 5: Fundamentals of HTML - Working with text, Organizing text in HTML - Working with links and URLs - Creating tables - Working with images – colors - Canvas and Forms - Interactive elements and Working with Multimedia.

Fundamentals of HTML

Introduction

- HTML (in long, Hypertext Markup Language) is a markup language used to create Web pages.
- HTML is developed and maintained by World Wide Web (W3C) consortium.
- In **Hypertext** Markup Language (HTML), the term hyper signifies the navigation from one location to another in a non-linear fashion.
- HTML defines the content, i.e., the structure and layout of a Web page with the help of tags and attributes.
- An element includes start and end tags, with some content inside/within them, and attributes provide additional information (such as alignment of element on a Web page) about the elements.
- Example 1:

```

<!DOCTYPE HTML>

<html>
<head>
    <title>HTML Tutorial</title>
</head>
<body>

    <h1>HTML Tutorial</h1>
    <p>This is <i>tutorial</i> on <b>HTML</b>.</p>

</body>
</html>

```



➤ Example 2:

```

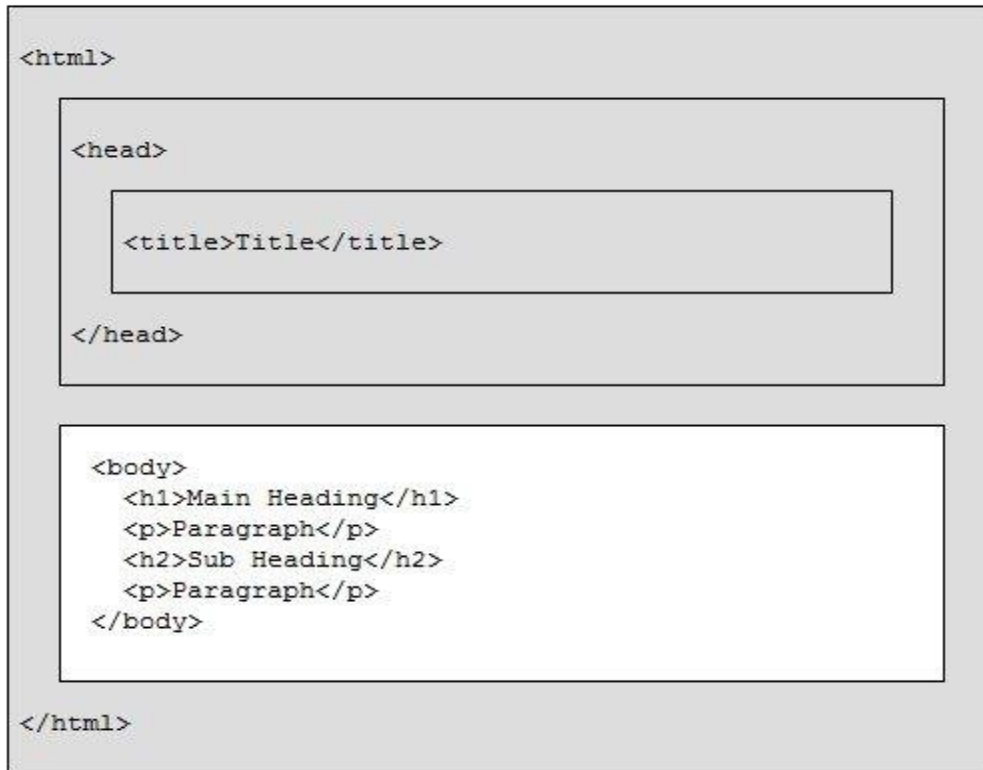
<!DOCTYPE HTML>
<html>
<head>
  <title>HTML Tutorial</title>
  <style>
    body{background-color:silver;}
    h1{color:green;}
    h2{color:blue;}
    p{color:red;}
  </style>
</head>
<body>

<h1>HTML Tutorial</h1>
<p>This is <i>tutorial</i> on <b>HTML</b>.</p>

</body>
</html>

```

HTML Document Structure



Basic Structure of an HTML Document

```

<!DOCTYPE html>
<html>
<head>
  <title>This is Page Title</title>
</head>
<body>

  <h1>This is Main Heading</h1>
  <p>This is a paragraph.</p>

</body>
</html>

```

- The **DOCTYPE** declaration defines the document type to be HTML
- The text between **<html>** and **</html>** describes an HTML document
- The text between **<head>** and **</head>** provides information about the HTML document
- The text between **<title>** and **</title>** provides a title for the HTML document
- The text between **<body>** and **</body>** describes the visible page content i.e. the content which is visible in the browser.
- The text between **<h1>** and **</h1>** describes the main heading

- The text between `<p>` and `</p>` describes a paragraph
- Type the HTML code
- After typing, save it as filename.htm or filename.html in computer.
- Now open saved HTML document in a web browser to watch output webpage.

HTML Data Types

- In HTML, a data type is explained as the type of data that is used in the content of an element or in the value of an attribute.
- Different data types classified under the following different specifications
 - Basic HTML data types - HTML Basic Data Types
 - Data types defined by Request for Comments (RFC) and Internet Assigned Numbers Authority (IANA) documentation - RFC & IANA
 - Data types defined by World Wide Web Consortium (W3C) Specifications - W3C

HTML Basic Data Types

- There are the following four basic data types in HTML :
 - character
 - text
 - name
 - number

Data Types defined by RFC and IANA Documentation

- RFC is a memorandum, describes the methods, behaviours, or research on the working of Internet.
- IANA is the entity that looks over the global IP address allocation, media types, and other Internet protocol related assignments.
- There are the following four basic data types :
 - Uniform Resource Identifier (URI)
 - Content type
 - Language code
 - Character set
- The **URI** refers to a set of characters used to identify or name a resource on the Internet.
- The **content type** (known as Media type or MIME) represents the type of the content used in an embedded or linked resource.
- For instance, the content type can be plain text or a jpeg image. It is not case sensitive. Its syntax is divided into two parts : top level and bottom level
 - Text/plain - Represents a plain text
 - Image/jpeg - Represents a compressed image file

- Audio/basis - Represents an audio file
 - Video/mpeg - Represents a transmitted compressed video file
 - Application/octet-stream - Represents a binary file
- **The language code** is used to represent the code of various literal languages, which are used to script the HTML document.
- It is not case sensitive and is written by using the lang attribute used in the HTML document.

```
<html lang="en">
...
...
...
</html>
```

- **The character set** is a set of standard characters taken from the several languages and scripts of the world, and are represented with the unique code points.
- Following are some examples of the character set:

- dollar symbol
- yen symbol
- lower case letters
- upper case letters
- delta
- omega
- exclamation mark
- quotation marks

Data Types defined by W3C Specifications

- W3C is an international community that develops standards to ensure long-term growth of the Web.
- W3C Specifies the following five additional data types for HTML :
- DateTime
 - Red Green Blue (RGB) triplet
 - Color names
 - Link types
 - Media type

HTML Tags / Elements

- Elements are the building blocks of HTML documents.
- HTML tags are element names surrounded by angle brackets:
 - <tagname>content goes here...</tagname>
- HTML tags normally come in pairs like <p> and </p>
- The first tag in a pair is the start tag, the second tag is the end tag
- The end tag is written like the start tag, but with a forward slash inserted before the tag name
- Elements are categorized into following types
 - HTML Root Tags
 - HTML Metadata Tags
 - HTML Section Tags
 - HTML Head and Heading Tags
 - HTML Flow Tags
 - HTML Phrasing Tags
 - HTML Embedded Tags
 - HTML Interactive Tags

HTML Root Tags

- HTML Root Tags represent the main or the starting tag that should be present in all the HTML documents.
- The HTML tag is the first tag that comes after the <!DOCTYPE> tag and within which other HTML tags are specified.
- This tag allows the browser to identify the document type.
- As the HTML tag is the root tag of the HTML document, so the following table provides the description of the attributes of the HTML tag:

Attribute	Value	Description
class	class-name	Specifies the class for an element in an HTML document
id	unique-id	Specifies a unique alphanumeric identifier for an element
lang	language-code	Specifies the base language used for an element
hidden	hidden	Hidden element are not displayed in the document
spellcheck	true, false	Specifies whether an element should be checked for spelling and grammar or not
style	style-definition	Specifies an inline style in the HTML document by using the <style> element
title	text	Specifies the title of an HTML document

HTML Metadata Tags

- The metadata tags are used to set the presentation or the behaviour of the remaining content of the document.
- Metadata tags can also be used to set a relationship of a document with other documents.
- You can use metadata tags to provide additional information about an HTML document.
- Following are the list of metadata tags :

- TITLE
- BASE
- LINK
- COMMAND
- META
- SCRIPT
- NOSCRIPT
- STYLE

- The TITLE tag contains the title of the HTML document that appears in the title bar of the Web browser.
- Each HEAD tag should contain a TITLE tag.
- The BASE tag is used to specify the default URL and the target for all the links in an HTML document. This tag appears within the HEAD tag of the document and should be used as the first tag in the HEAD tag.

```
<head>
    <base href="url" target="value"/>
</head>
```

- The LINK tag is used to link an HTML document to the other HTML documents. It also defines the relationship between the two different HTML documents. The LINK tag contains the href attribute to specify the destination URL of the link.

```
<link rel="stylesheet" type="text/css" href="style.css">
```

- The COMMAND tag is used to execute a command when an event is fired by a form control, such as radio button or checkbox.

```
<MENU label="Cars">
    <COMMAND type="radio" radiogroup="cars"
label="Lamborghini">
    <COMMAND type="radio" radiogroup="cars"
label="Ferrari">
</MENU>
```

- The SCRIPT tag is used to declare a script, such as JavaScript within an HTML document. This tag either contains scripting statements or pointer to an external script file through the src attribute.

```
<HEAD>
    <SCRIPT type="text/javascript">
```

```

                Script code here
            </SCRIPT>
        </HEAD>

```

- The NOSCRIPT tag is used to display the alternate content on the Web browser that either does not support JavaScript or has JavaScript disabled.
- The HTML STYLE tag is used to declare the style sheet within the HTML document. This tag specifies how the HTML tags are rendered in a browser.

HTML Section Tags

- The SECTION tag is used to represent the generic section of an HTML document.
- It has the following tags.
 - NAV
 - ARTICLE
 - ASIDE
 - HEADER
 - FOOTER
 - ADDRESS
- The NAV tag is used to navigate from one HTML page to the another. This tag displays a group of links on a HTML document.
- The ARTICLE tag is used to represent a section that contains the information about an HTML page, such as its title and the date of its creation.
- The ASIDE tag allows us to create a section that is used to display information about the content of the other tags, such as time and date, current news, and weather report.
- The HEADER tag is used to provide the introductory content on an HTML page. The HEADER tag can contain headings, paragraphs, links, and other content.
- The FOOTER tag is used to represent the footer, which contains various types of information, such as links and copyright data related to a document or a section of the document.
- The ADDRESS tag is normally defined at the header or the footer of the HTML page and is used to display the contact information for a document, such as name of the document's owner, maintainers, e-mail address for feedback, postal address, and phone number.

HTML Head and Heading Tags

HTML Heading Tags

- The HTML Heading tags are used to create headlines of a text. HTML provides the following six levels of heading:
 - <H1>
 - <H2>
 - <H3>

- <H4>
 - <H5>
 - <H6>
- The first level heading i.e. <H1> is the most important heading, and the last level heading i.e. <H6> is the least important heading.

HTML Head Tag

- The HTML <HEAD> tag contains the metadata about the HTML document, which are not displayed by the browser, only used by the search engine to crawl information about the web page.
-

HTML Basic Tags

HTML Fonts

- The HTML font tag () is used to specify the font face, size, and color of the text in an HTML document.

HTML Set Font Size

- Set content font size using the size attribute. The range of accepted values is from 1(smallest) to 7(largest).
- The default size of a font is 3.
- Also use font-size in pixels and percentage.

HTML Set Text Font

- Set font face using face attribute but be aware that if the user viewing the page doesn't have the font installed, they will not be able to see it. Instead user will see the default font face applicable to the user's computer.
- You can also use font-family to set font of the text.

HTML Set Font Color

- Set any font color using color attribute.
- Specify the color that you want by either the color name or hexadecimal code or by using their rgb values.

Example:

```
<html>
<head>
<title>HTML Fonts Example</title>
```

```

</head>
<body>
<p style="font-size:80%">Using HTML Font (80%)</p>
<p style="font-size:12px">Using HTML Font (12px)</p>
<p style="font-size:1em">Using HTML Font (1em)</p>
<font face="Times New Roman", color="blue">Using HTML Font (Times
New Roman)<br />
<p style="font-family:'Courier New'; color:#ff0055;">Using HTML Font and
Hexadecimal represented color</p>
<p style="color:rgb(0, 190, 125);">Using HTML Font </p>
</body>
</html>

```

HTML Headings

- Use heading to give a topic, sub-topic, before writing some content in an HTML document.
- Headings are basically the main phrases of the documents.
- There are 6 levels of headings. The first level is defined with <h1> and the last level is defined with <h6>.

Example

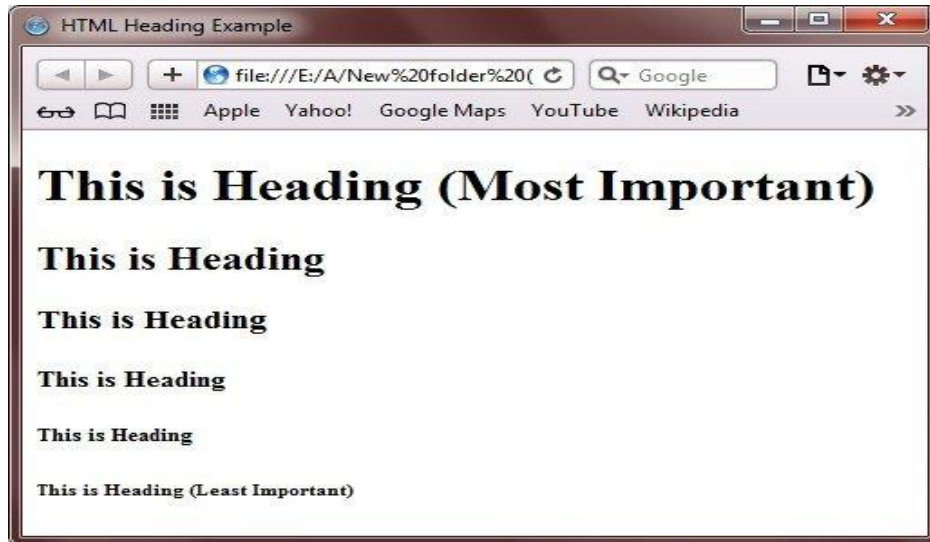
```

<html>
<head>
<title>HTML Heading Example</title>
</head>
<body>

<h1>This is Heading (Most Important)</h1>
<h2>This is Heading</h2>
<h3>This is Heading</h3>
<h4>This is Heading</h4>
<h5>This is Heading</h5>
<h6>This is Heading (Least Important)</h6>

</body>
</html>

```



HTML Character Entities

- Sometimes to include some special character, such > and < in the content of an HTML element.
- These characters are called as entities.
- HTML enables to include such symbols in the content of an element by using the various character entities.
- World Wide Web Consortium (W3C) calls the character entities as character encodings.
- There are some character, such as Greek and Chinese, which do not appear on the keyboard of the user.
- Therefore, you cannot write them directly from the keyboard. However, you can overcome form this problem by using the character entities in an HTML document.

Character Entities	Character Entity with Number	Character	Description
"	"	"	quotation mark
&	&	&	ampersand
<	<	<	less-than sign
>	>	>	greater-than sign
 	 		non-breaking space
©	©	©	copyright sign


```

</head>
<body>

<p>This is HTML Horizontal Line Example.
<hr size="5" color="red">
shows how to create a horizontal line on a web page.</p>

<p>This is <br>
HTML Line Break Example <br>
shows how to break the line <br>
using the BR element in HTML.</p>
</body>
</html>

```

Output:

This is HTML Horizontal Line Example.

shows how to create a horizontal line on a web page.

This is

HTML Line Break Example

shows how to break the line

using the BR element in HTML.

HTML Paragraphs

- The paragraph tag is a container tag, which means it has both the opening <p> and the closing </p> tags.
- P known as the paragraph element (P element) has to be inserted at the point from where we want to begin a new paragraph.
- Example;

```

<html>
<head>
    <title>HTML Paragraph Example</title>
</head>
<body>

<p>This is a paragraph</p>
<p>This is another paragraph</p>
<p>This is the third paragraph</p>
</body>
</html>

```

- Output:
 - This is a paragraph
 - This is another paragraph
 - This is the third paragraph

HTML Comments

- The comment tag is used to insert comments in the code of your document.
 - In HTML, anything written between the <!-- and --> tags is taken as a comment by the Web browser.
 - These comments are ignored by the Web browser and are not displayed on the HTML page.
 - Following is the syntax to add comments in your HTML documents:


```
<!-- Write comments here -->
```
 - Example:


```
<!-- this is also a comments -->
```
-

HTML Text Formatting

- HTML provides a number of tags such as HEAD and BODY to define the structure and appearance of a document.
- By default, the HTML document is stored in the plain text format, it means that it does not contain any type of formatting.
- To format the text in an HTML document, you need to use the various kinds of HTML tags.
- Formatting the text not only enhanced the visual appearance of the content but also improves the readability and comprehensibility.
- The content of a formatted document is presented in an organized manner, which allows readers to easily differentiate between various types of information.
- For instance, any important piece of information in an HTML document can be enclosed between B or I tags to make it appear in bold or italics respectively.
- Sometimes, you may need to highlight, mark or emphasize certain important or technical terms to differentiate them from the normal text content.

HTML Text Formatting Tags

- HTML provide a set of tags to change the appearance of the text by applying various formatting features, such as bold, italics, subscript, and superscript.
- These HTML tags are used with starting and ending tags.
- Generally, HTML formatting tags are divided into the following two categories:
 - Text Formatting with Physical Style Tags
 - Text Formatting with Logical Style Tags

Text Formatting with Physical Style Tags

- HTML uses physical style tags to change the appearance of text.
- If you want your text to appear in a particular style such as bold or italics etc., you must use physical style tags.

- For example to ensure that text appear in small font, then you must enclose it between starting and ending tags of the SMALL tag.

HTML Physical Style Tags List

- The table given below list and describes Physical style tags used to format the text in an HTML document:

Tag	Description
	Displays the text in bold
<I>	Displays the text in italics
<SMALL>	Displays the text in small font size
<SUB>	Displays the text as subscript
<SUP>	Displays the text as superscript

Example:

```
<html>
<head>
  <title>HTML Formatting Example</title>
</head>
<body>
<h1>Text Formatting with physical Style</h1>
<p>This is <b> Bold </b> Text. </p>
<p>This is <i> Italic </i> Text. </p>
<p>This is <small>small</small> Text.</p>
<p>This is <sub>subscripted</sub> text.</p>
<p>This is <sup>superscripted</sup> text.</p>
</body>
</html>
```

Output:

Text Formatting with physical Style

This is **Bold** Text.

This is *Italic* Text.

This is small Text.

This is _{subscripted} text.

This is ^{superscripted} text.

Text Formatting with Logical Style Tags

- In HTML, the logical style tags specify that the enclosed text has a specific meaning, context, or usage.

- For example, the ABBR tag conveys to the Web browser that the text enclosed inside this tag is an abbreviation.
- The browser change the appearance of the text depending upon the meaning of the tags.
- The advantage of using the logical style tags is that the meaning related to the tag is more precisely conveyed to the users

HTML Logical Style Tags List

- The table given below list and describes all logical style tags used to format the text in an HTML document:

Tag	Description
<ABBR>	Displays the abbreviation on the Web page
<CODE>	Refers to the program code
<SAMP>	Displays the sample program output on the Web page
<KBD>	Refers to the keyboard keys
	Emphasized text
	Emphasized text by increasing boldness
<DFN>	Displays new terms on the Web page
<Q>	Displays the short quotations on the Web page
<BLOCKQUOTE>	Displays the long quotations on the Web page
<INS>	Displays the inserted text
	Displays the deleted text
<VAR>	Represent a variable
<BDO>	Changes the direction of text

- Example:

```

<html>
<head>
  <title>HTML Formatting Example</title>
</head>
<body>

```



```
<h1 style="background-color:violet;color:rgp(255,0,0);">Text Formatting with Logical Style</h1>
```

```
<p>This is <mark>mark</mark> Text.</p>
<p>This is <del>deleted</del> Text.</p>
<p>This is <strong>Strong</strong> Text.</p>
<p>This is <em>Emphasized</em> Text.</p>
<p>This is <kbd>Keyboard</kbd> Text.</p>
<p>This is <q>Quote</q> Text.</p>
<p>This is <ins>Inserted</ins> Text.</p>
<p>This is <abbr title="HyperText Markup Lnaguage">HTML</abbr>
Text.</p>
</body>
</html>
```

Organizing Text

- In a Web page, the content is organized into the different formats, such as layers, paragraphs, lines, tables, and divisions.
- Organizing text refers to the proper placement of all the HTML tags and their content in a Web page.
- By default, a Web browser wraps text in a Web page and displays the enclosed text in a single block by avoiding the line and paragraph breaks. Now, if the content of a page is not separated by any line or paragraph breaks, it becomes very tedious for the readers to understand the given information.
- If text in the Web page is not arranged then the readers will find difficulty in reading the desired information.
- To overcome this problem, you can arrange the text in different ways, such as paragraphs, lines, and tables.
- HTML provides a number of tags to arrange text into paragraphs and tables. For instance, you can display the text on the Web page as paragraphs by using the P tag, or display a horizontal line in a Web page representing a break in the text.
- HTML also allows you to change to format of a specific text using the SPAN tag.

HTML Arranging Text

- HTML allows to arrange the text into different formats and styles, such as paragraphs, layers, and tables.
- By default, the Web browser displays all the text of an HTML page as a single paragraph.

- For example, the <P> tags is used to arrange the text in multiple paragraphs and the
 tags allows you to continue text from the next line.
- There are the following tasks are involved in arranging the text of a Web page :
 - Allowing word breaks
 - Defining the preformatted text
 - Defining the DIV tag
 - Defining the SPAN tag
 - Formatting the text in tables
 - Defining the Ruby (captioned) text

➤ **Allowing Word Breaks**

- HTML provides the WBR tag to insert word breaks between the words or paragraphs in an HTML document.
- However, if a break is required between the words, then you can use the WBR tag.

- Example

```
<html>
<head>
    <title>HTML Organizing Text</title>
</head>
<body>
<p>This is <wbr> Word break Tag</wbr>
</body>
</html>
```

➤ **Defining the Preformatted Text**

- The <pre> tag defines preformatted text.
- In HTML, the preformatted tag, <PRE> instructs the browser that the enclosed text is a formatted text and should not be formatted again.
- This tag is commonly used when the formatting of the content is predefined, such as code snippets and poems.

- Example

```
html>
<head>
    <title>HTML Organizing Text</title>
</head>
<body>
<h3>Preformatted Text</h3>
<pre style="font-family:courier;color:red;font-size:20px;">
    This is an
    Example of Pre
    Formatted Text
```

```

</pre>
</body>
</html>

```

➤ HTML DIV tag

- The <div> tag defines a division or a section in an HTML document.
- The division (DIV) tag is used to divide the Web page into different divisions or sections like (text, images, header, footer, navigation bar, etc).
- The DIV tag basically works as a container for the other HTML tags.
- Group the HTML tags in sections and apply Cascading Style Sheet (CSS) on them.
- The DIV tag is a block level tag and cannot be used inside the P tag.
- DIV tag is used to divide the Web page into different sections.

- Example

```

<html>
<head>
    <title>HTML Organizing Text</title>
</head>
<body>
<div style="background-color:lightblue">
    <h3>This is a heading in a div element</h3>
    <p>This is some text in a div element.</p>
</div>
</body>
</html>

```

➤ HTML SPAN tag

- The SPAN tag is used to change to style of the text enclosed within the tag using the style attribute.
- The SPAN tag provides the additional formatting capabilities to the HTML tags and is used with the style sheets to set presentational attributes that define the style of the content.

- Example

```

<html>
<head>
    <title>HTML Organizing Text</title>
</head>
<body>
<p>This is an example of <span style="color:blue;font-weight:bold">
Span </span> Tag.</p>
</body>
</html>

```

- **Formatting Text in Tables**
 - HTML provides the TABLE tag for arranging the text in a tabular format, i.e. in rows and columns.
 - The TABLE tag is used along with the TH, TR, and TD tags.
 - The TH tag is used to define the header of a table column. The TR tag is used to specify the content of the table rows.
 - TD tag is used to specify the content of a table cell. Set the width and the height of the table columns and rows using the style attribute in the TABLE tag.
 - Using the style attribute, you can also define the borders for the table, font style for the table content, and the font size for the table.
 - Specify the table caption, which indicates the content of the table, by using the CAPTION tag
- **HTML Ruby (Captioned) Text**
 - Define the caption for your text using the RUBY tag in Web page.
 - This tag is used to specify ruby annotations that provide reading or pronunciation guide of a particular language, such as Chinese and Japanese.
 - A ruby is a part of an annotation pair in which a piece of text (known as ruby text) is associated with another set of text (known as ruby base).
 - Ruby annotations are frequently used in many Asian countries, such as Japan and China to provide the pronunciation guide in various kinds of publications, including school books and magazines. The RUBY tag contains the following tags :
 - **RP** - Contains parenthesis
 - **RT** - Acts as the container for the ruby text
 - These tags are used to provide a structural association between the ruby text and ruby base. Structural association refers to various ways in which the ruby text and ruby base can be connected with each other.
 - In the RUBY tag, the text appearing before the RT tag is called the base text. Whereas the text appearing after the RT tag is called the notation.
- **HTML Displaying Lists**
 - HTML allows you to display the information in the form of lists.
 - These information in these lists may be presented in an ordered and sequential manner or in an unordered and random manner.

Tag	Description
-----	-------------

OL	used to display the list of information in an ordered of sequence
UL	used to display the information in an unordered list
LI	defines a list item
DL	allows you to include the description of the items in the UL or OL lists
DT	defines the term in a description list
DD	defines the description in a description list

HTML Lists

- HTML list helps us to display the information in the form of lists.
- There are the following three forms a list can be:
 - Ordered Lists
 - Unordered Lists
 - Description Lists

HTML Ordered List

- HTML ordered list starts with the tag and each items starts with the tag.
- HTML Ordered List Type Attributes

Type	Description
type="1"	The list items will be numbered with numbers (default)
type="a"	The list items will be numbered with lowercase letters
type="A"	The list items will be numbered with uppercase letters
type="i"	The list items will be numbered with lowercase roman numbers
type="I"	The list items will be numbered with uppercase roman numbers

- Example:


```
<!DOCTYPE html>
<html>
<head>
  <title>HTML List Example</title>
</head>
<body bgcolor="aqua" >
  <font color="red">
```

```

<ol type="1">
  <li>html</li>
  <li>list</li>
</ol>
<ol type="A">
  <li>html</li>
  <li>list</li>
</ol>
<ol type="a">
  <li>html</li>
  <li>list</li>
</ol>
<ol type="I">
  <li>html</li>
  <li>list</li>
</ol>
<ol type="i">
  <li>html</li>
  <li>list</li>
</ol>
</font>
</body>
</html>

```

➤ Output:

```

1.  html
2.  list
A.  html
B.  list
a.  html
b.  list
I.html
II.list
i.html
ii.list

```

HTML Unordered List

- HTML unordered list starts with the tag and each items starts with the tag.
- HTML Unordered Lists Style Type Attributes

Style	Description
circle	The list items will be marked with circles

disc	The list items will be marked with bullets (default)
square	The list items will be marked with squares

- Using style attribute to add the circle square and disc bullets.

Style	Description
list-style-type:circle	The list items will be marked with circles
list-style-type:disc	The list items will be marked with bullets (default)
list-style-type:square	The list items will be marked with squares
list-style-type:none	The list items will not be marked

- Example:

```

<!DOCTYPE html>
<html>
<head>
  <title>HTML List Example</title>
</head>
<body bgcolor="green" >
<font color="red"><b>
<ul type="circle">
  <li>html</li>
  <li>list</li>
</ul>
<ul type="disc">
  <li>html</li>
  <li>list</li>
</ul>
<ul type="square">
  <li>html</li>
  <li>list</li>
</ul>
<ul style="list-style-type:circle;">
  <li>html</li>
  <li>list</li>
</ul>
<ul style="list-style-type:none;">

```

```

        <li>html</li>
        <li>list</li>
    </ul>
</b>
</font>
</body>
</html>

```

➤ Output:

- **html**
- **list**
- **html**
- **list**
- **html**
- **list**
- **html**
- **list**
- html**
- list**

HTML Description Lists

- A description list, is a list of terms, with a description of each term.
- The <DL> tag defines a description list, the <DT> tag defines the term (name), and the <DD> tag defines the data (description).
- Example:

```

<!DOCTYPE html>
<html>
<head>
    <title>HTML List Example</title>
</head>
<body bgcolor="black">
<font color="red">
<b>

<dl>
    <dt>HTML</dt>
        <dd>Hyper Text Markup Language</dd>
    <dt>XML</dt>
        <dd>Extensible Markup Language</dd>
    <dt>PHP</dt>
        <dd>Hypertext PreProcessor</dd>

</dl>

```



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

- Output:

```
HTML      Hyper Text Markup Language
XML      Extensible Markup Language
PHP      Hypertext PreProcessor
```

HTML Nested Lists

- Nest one list to another, also called as nested list.
- Example

```
<!DOCTYPE html>
<html>
<head>
  <title>HTML List Example</title>
</head>
<body>
<ul>
  <li>html
  <ul>
    <li>list
    <ul>
      <li>list tutorial</li>
      <li>list example</li>
    </ul>
    </li>
    <li>list tag
    <ul>
      <li>list tag tutorial</li>
      <li>list tag examples</li>
    </ul>
    </li>
  </ul>
</li>
</ul>

</body>
</html>
```

- Output:
 - html
 - list
 - list tutorial
 - list example
 - list tag
 - list tag tutorial
 - list tag examples

HTML Working with Links and URLs

- In HTML, hypertext refers to a point of references for detailed text on the same or different Web pages.
- Hyperlink is an underlined word or phrase or can also be an image or icon that contains a specific address of a Web page.
- The address is provided in the hyperlink in the form of the Uniform Resource Locator (URL), which is a unique address allotted to every Web page. With the help of URL, you can navigate to the specific Web page.
- Example: This e-mail address is provided on a Web page in the form of hyperlink. When a user selects that hyperlink, a new mail message window automatically appears on the screen.
- It has
 - HTML Links
 - HTML URLs

HTML Links

- A hyperlink interconnects the current Web page with the other Web pages available on the Internet.
- In HTML, you can create a hyperlink by using the anchor element (A).
- The hyperlink redirects the user to the another HTML page, image, or file.
- The A element uses the href attribute to specify the target resource or document that you want to open when the user clicks the hyperlink.
- The term href stands for Hypertext Reference. The href attribute sets the URL of the target resource.
- In HTML, links are defined with the <a> tag. For example,


```
<A href="formatted.html">Formatted Text</A>
```
- If you click on the hypertext of Formatted Text, then you will redirect to the html file of formatted.

HTML Link Example

```
<!DOCTYPE html>
<html>
```

```

<body>
<A href="formattext.html">Formatted Text</A>
</body>
</html>

```

HTML Link - The target Attribute

- The A element uses the target attribute to specify a window where you want to open a document when a hyperlink is clicked.
- For instance, you can open a document in the same window or in another window just by using the target attribute.

HTML Link target Attribute Values

The table given below describes values for target attribute.

Value	Description
_blank	Opens the linked document in a new unnamed window
_self	Opens the linked document in the current window (this is default value)
_top	Opens the linked document in the topmost window
framename	Opens the linked document in a named frame

Example

Following example will open the linked document in a new browser window or in a new tab:

```

<!DOCTYPE html>
<html>
<body>
<a href="formattext.html" target="_blank">Click Here</a>
</body>
</html>

```

HTML Link - The id Attribute

- The A element uses the id attribute to create a fragment identifier within a document.
- A fragment identifier specifies a particular location within a document.
- You can navigate different locations within a document just by using the id attribute.
- The id attribute can be used to create bookmarks inside HTML documents.

Example

```

<!DOCTYPE html>
<html>
<body>
<a id="top"> Top of the page
<h1>Hello
<h1>Hello

```

```

<h1>Hello
<h1>Hello
<h1>Hello
<a href="#top"> Go to Top of the Page</a>
</body>
</html>

```

HTML Image Link

You can also use any image as a link in HTML. Here is an example demonstrates how to provide image link in HTML:

```

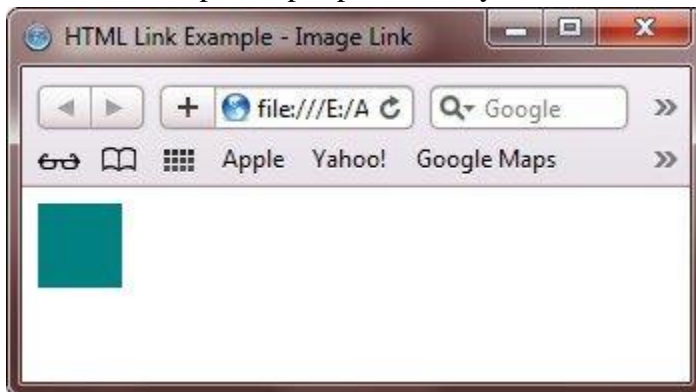
<!DOCTYPE html>
<html>
<head>
    <title>HTML Link Example - Image Link</title>
</head>
<body>

<a href="http://www.gmail.com" >
    
</a>

</body>
</html>

```

Here is the sample output produced by the above HTML image link example code:



HTML Links Colors

- When you place your mouse cursor over a link, then you will watch the following two things will happen normally:
 - the arrow of the mouse will turn into a little hand
 - the color of the link element will change

Link	Appearance
------	------------

unvisited link	underline and blue
visited link	underline and purple
active link	underline and red

Change Link Style in HTML

Here is an example shows how to change the defaults of the link, using CSS

```
<!DOCTYPE html>
```

```
<html>
```

```
<head>
```

```
  <title>HTML Links Example - Link Color</title>
```

```
  <style>
```

```
    a:link
```

```
    {
```

```
      color:black;
```

```
      background-color:transparent;
```

```
      text-decoration:none;
```

```
    }
```

```
    a:visited
```

```
    {
```

```
      color:black;
```

```
      background-color:transparent;
```

```
      text-decoration:none;
```

```
    }
```

```
    a:hover
```

```
    {
```

```
      color:red;
```

```
      background-color:transparent;
```

```
      text-decoration:underline;
```

```
    }
```

```
    a:active
```

```
    {
```

```
      color:red;
```

```
      background-color:transparent;
```

```
      text-decoration:underline;
```

```
    }
```

```
  </style>
```

```
</head>
```

```
<body>
```

```
<a href="http://w3schools.com" target="_blank">This is a link</a>
```

```
</body>
```

```
</html>
```

HTML LINK Tag

- HTML provide the LINK tag to link a Web page with an external resource or document, such as a Cascading Style Sheet (CSS) file or an Extensible Markup Language (XML) file.
- The **rel** attribute of the LINK tag is used to create relation with the other resources.
- This attributes takes different values that specify which resource is to be linked with the Web page.
- For example, the stylesheet value specifies that the page is linked with a stylesheet file.
- Here is an example of the LINK tag:

```
<body>
  <link rel="stylesheet" href="mystylesheet.css">
</body>
```

HTML URLS

- A URL refers to a unique address the identifies each Web page on the World Wide Web (WWW).
- A common way to access a website is to enter its URL in the address bar of a Web browser.
- The URL of a website enables you to access files, such as image files and program files, within the website.

HTML URL Parts

- A URL consists of three parts described in the table given below:

Name	Description
Protocol	Transfers a resource over the Web
Domain name	Refers to the machine hosting the resource
Path name	Specifies the path of the resource

- Example

```
<html>
<head>
  <title>HTML Link Example - Image Link</title>
</head>
<body>
```

```
<a href="http://www.gmail.com" > Open Gmail Account</a>
</body></html>
```

Structuring the URL

- A resource available on the Web, such as HTML documents, images, video files, and programs, has an address that is enclosed by a URL.
- All URLs contain a scheme, domain name, port, path, filename, and hierarchical description that specify the location of a file on the Internet.
- Here is the syntax of the general URL:
`scheme://host.domain:port/path/file_name?query_string#anchor`

The parameters in the preceding syntax are described in the following table:

Name	Description
Scheme	Refers to a protocol that is used to access the file resource. It specifies the type of the Internet service, such as Hypertext Transfer Protocol (http), File Transfer Protocol (ftp), and file. The most commonly used type is http
Host	Specifies the domain host. The default domain host for http is www
Domain	Specifies the Internet domain name, such as google.com or codescracker.com.
Port	Refers to the port number that connects that connects a client browser to a server. The default port number for http is 80
Path	Specifies a path (sub directory) for the server.
file_name	Specifies a document, information, or program. Every Web site has the default file name, index.html

query_string	Contains the data to be passed to the Web applications. The general structure is ?parameter1=value1&parameter2=value2 ...
Anchor	Specifies a particular location on a Web page. For example, http://www.google.com/articles/listing#top provides the address of the beginning of the listing section of the page.

HTML TABLES

- An HTML table is defined with the <table> tag.
- <td> element to define a table data
- <th> element to define a table heading
- Each table row is defined with the <tr> tag.
- <caption> element to define a table caption
- Use the CSS border property to define a border
- Use the CSS padding property to add padding to cells
- Use the CSS text-align property to align cell text
- Use the CSS border-spacing property to set the spacing between cells
- Use the colspan attribute to make a cell span many columns
- Use the rowspan attribute to make a cell span many rows
- <td> elements are the data containers of the table. They can contain all sorts of HTML elements; text, images, lists, other tables, etc.
- <colgroup> Specifies a group of one or more columns in a table for formatting
- <thead> Groups the header content in a table
- <tbody> Groups the body content in a table
- <tfoot> Groups the footer content in a table
- The <tbody> element is used in conjunction with the <thead> and <tfoot> elements to specify each part of a table

Adding, headings, Rows and datas

- <th> is used to insert the headings in table
- <tr> is used to create a new row in a table.
- <td> is used to insert the datas in a cell

Adding a Border

- If you do not specify a border for the table, it will be displayed without borders.
- A border is set using the CSS border property
- to define borders for both the table and the table cells
- Example

```
table, th, td
{
    border: 1px solid black;
}
```


Adding Cell Padding

- Cell padding specifies the space between the cell content and its borders.
- Example

```
th, td {
    padding: 15px;
}
```

Align Headings and datas

- By default, table headings are bold and centered.
- To left-align the table headings, use the CSS text-align property:
- Example

```
th {
    text-align: left;
}
```

Adding Border Spacing

- Border spacing specifies the space between the cells.
- To set the border spacing for a table, use the CSS border-spacing property:
- Example

```
table {
    border-spacing: 5px;
}
```

Row span and column span

- To make a cell span more than one column, use the colspan attribute:
- To make a cell span more than one row, use the rowspan attribute
- **colspan** attribute to merge two or more columns into a single column.
- use **rowspan** to merge two or more rows.
-
- Example

```
<table style="width:100%">
  <tr>
    <th>Name</th>
    <th colspan="2">Telephone</th>
  </tr>
  <tr>
    <td>Bill Gates</td>
    <td>55577854</td>
    <td>55577855</td>
  </tr>
</table>
```

Adding a Caption

- To add a caption to a table, use the <caption> tag:
- Example

```
<table style="width:100%">
  <caption>Monthly savings</caption>
```

- Example

```
<table>
  <thead>
```

```

<tr>
  <th>Month</th>
  <th>Savings</th>
</tr>
</thead>
<tbody>
  <tr>
    <td>January</td>
    <td>$100</td>
  </tr>
  <tr>
    <td>February</td>
    <td>$80</td>
  </tr>
</tbody>
<tfoot>
  <tr>
    <td>Sum</td>
    <td>$180</td>
  </tr>
</tfoot>
</table>

```

➤ Example:

```

<html>

<head>
  <title>HTML Table Colspan/Rowspan</title>
</head>

<body>
  <table border = "1">
    <tr>
      <th>Column 1</th>
      <th>Column 2</th>
      <th>Column 3</th>
    </tr>
    <tr>
      <td rowspan = "2">Row 1 Cell 1</td>
      <td>Row 1 Cell 2</td>
      <td>Row 1 Cell 3</td>
    </tr>
    <tr>
      <td>Row 2 Cell 2</td>

```

```

        <td>Row 2 Cell 3</td>
    </tr>
    <tr>
        <td colspan = "3">Row 3 Cell 1</td>
    </tr>
</table>
</body>
</html>

```

HTML Working with Images Colors and Canvas

Introduction

- A website provides information in the two forms, namely text and images.
- Information presented in the form of images is easier to retain for users in comparison to the information written in plain text.
- HTML provides a tag named which is used to add or insert images in a Web page.
- Use images in various forms, such as a logo, a diagram or an icon and also apply an images as a background of a Web page or website.
- In addition to images, you can use different colors in the content of your website to change its appearance.
- This can be done by using one of the following three ways:
 - color names
 - Hexadecimal (Hex) value
 - Red Green Blue (RGB) value
- HTML also provides <CANVAS> tag.
- This tag allows you to make your images more appealing by changing their brightness and contrast.
- You can also draw 2D shapes and graphs on a Web page by using the CANVAS tag.

HTML Images

Insert Image in Web page

- HTML allows you to insert an image in a Web page with the help of the tag.
- This tag uses several attributes, such as src, id, lang, dir, and alt.
- The src attribute provides the information about the path of the image file to the Web browser.
- If your image and HTML files are stored in the same folder, then there is no need to specify the full path of the image file in the src attribute.
- If your image and HTML files are in different folders, you have to specify the full path of the image file in the src attribute of the IMG tag

Syntax to Insert Image in a Web page

- Here is the syntax to insert an image in a Web page:

```

```

Attributes of the IMG tag

The following table describes the attributes of the IMG tag :

Attribute	Description
id	Assigns a unique identifier to a tag.
class	Assigns a single name or a set of class names to a tag.
style	Applies inline CSS style on individual tags in an HTML file. This attribute is optional
src	Specifies the URL or the location of the image. This attribute is mandatory
alt	Specifies the alternate text to be used, if the Web browser cannot render the image.
height	Specifies the height of the image. This attribute is optional
width	Specifies the width of the image. This attribute is optional
usemap	Associates a tag with an image map. This attribute is optional

HTML alt Attribute

- The alt attribute specifies an alternate text for the image, if it cannot be displayed

```

```

HTML Image Size - Width and Height

- Use the style attribute to specify the width and height of an image
- The values are specified in pixels

```
<html>
<head>
  <title>HTML Image Example</title>
</head>
<body>
  
</body>
</html>
```

- Output



- Alternatively, you can use width and height attributes.

```

```

HTML Image Floating

- Example

```
<html>
<head>
  <title>HTML Image Example - Image Float</title>
</head>
<body>
  
</body>
</html>
```

- Output



HTML Image Formats

- Some of the commonly used image formats are:
 - **GIF** - used to create illustrations, such as logos or cartoons
 - **JPEG** - used to generate complex images, such as photographs
 - **PNG** - used with the images that have more number of colors
- GIF and JPEG are supported by all the Web browser whereas, PNG is supported by some of the Web browsers.

The GIF Image Format

- Converting an image to an GIF format is safe, as no data is lost at all time of conversion.

- There are the following two types of GIF images:
 - **GIF87** - Does not support the image transparency and animation
 - **GIF89a** - Supports image transparency and animation
- Both types of GIF images support 256 colors and have the .gif file extension

The JPEG Image Format

- JPEG supports unlimited number of colors and has the .jpeg or .jpg extension.
- JPEG uses a complex compression algorithm, known as the JPEG algorithm.
- Exchangeable Image File Format (EXIF) and Joint Photographic Experts Group (JFIF) are the most commonly used standards of JPEG.

The PNG Image Format

- The PNG image format has all the features of GIF.
- PNG uses a lossless compression algorithm and supports and unlimited number of colors.
- The lossless compression algorithm prevents any loss that occurs while compressing an image.

HTML Image Example

- Here is a simple example of inserting an image on a web page:

```
<html>
<body>

</body>
</html>
```

HTML Color

- In HTML, you can specify the colors for the text and background of a Web page to make it more attractive and appealing.
- Apply colors in a Web page with the help of
 - Color names
 - Hex values
 - RGB configuration
 - Web-safe colors

HTML Color Names

- Use a color in a Web page by simply specifying its name.
- There are only 16 colors that can be specified by their names.
- For example, you need to design a Web page, in which you want to display the text in red color.

```
<html>
<body style="color:red;">
<h1>Welcome to the web page</h1>
</body></html>
```

HTML Color Hex Values

- The Hex values, also referred as hexadecimal numbers, are 6 digits or three bytes number that start with the # sign.
- The three bytes present in every hexadecimal number represent the following :
 - **Byte 1** - Represents the red color
 - **Byte 2** - Represents the green color
 - **Byte 3** - Represents the blue color
- Each byte contains some numbers from 00 to 99 and alphabets from AA to FF in hexadecimal notation.
- The Hex values are defined through the combination of values assigned to red, green, and blue colors.
- When you use a Hex value to apply a color in an image, you can use numerals as well as alphabets.
- In Hex value, 0 represents the darkest color that is black and F represents the lightest color that is white.
- For example, the hexadecimal number for black is #000000. The first two digits (00) represent the amount of red color. The second two digits (00) represent the amount of green color, and the last two digits (00) represent the amount of blue color.
- Example

```
<html>
<body style="color:#ff8099">
<h1>Hello World</h1>
</body></html>
```

HTML Color RGB Values

- The process of displaying colors by using the different combinations of red, green, and blue is known as the RGB configuration.
- In the RGB configuration, the value of each color (red, green, and blue) ranges from 0 to 255 in decimal.
- The color specified by 255, 0, 0 represents the red color because its first dial contains the value 255 that represents the red color, while the second dial representing the green color and the third dial representing the blue colors contains 0.
- Color specified by 0, 255, 0 represents the green color, and the color specified by 0, 0, 255 represents the blue color. 0, 0, 0 represents black color 255, 255, 255 represents the white color.
- Example

```
<html>
<body style="color:rgb(0,255,0)">
<h1>Hello World</h1>
</body></html>
```

HTML Color Names and their RGB Values

The following table provides information about the names of color and their RGB values.

Color Name	RGB Value
Black	rgb(0, 0, 0)
Silver	rgb(192, 192, 192)
Gray	rgb(128, 128, 128)
White	rgb(255, 255, 255)
Maroon	rgb(128, 0, 0)
Red	rgb(255, 0, 0)

HTML Canvas

- The HTML <canvas> element is used to draw graphics on a web page.
- The <CANVAS> tag of HTML used to display 2D shapes and graphics on the Web page.
- This tag allows you to use graphs, games, and other visuals in the Web page via Javascript.
- use the CANVAS tag to apply various transformations, such as rotate and blur on an image.
- The attributes of the CANVAS tag are height and width, which specify the height and width of the canvas.

```
<CANVAS id="canvas" width="50" height="100">
</CANVAS>
```

HTML Canvas Example

```
<html>
  <head>
    <title>Canvas in HTML</title>
  </head>
  <body>
    <canvas id="mycanvas" width="200" height="100" style="border:1px solid
    blue;"> </canvas>
    <script>
      var c = document.getElementById("mycanvas");
      var ctx = c.getContext("2d");
      ctx.font = "30px Arial";
      ctx.fillText("Hello World",10,50);
```



```

        ctx.strokeText("Hello World",10,90);
    </script>
</body>
</html>

```

- Another attribute of the CANVAS tag that is the id attribute, which is used to specify a unique name to the tag.
- The id attribute of the CANVAS tag is used with the JavaScript code to display graphics on the Web page.

HTML Forms

- A form is an area of a Web page that allows the users to provide their information in a variety of ways, such as by entering the text field or by selecting one or more available options from the provided list.
- Website uses a registration or login form to collect the user information and submits the information to the server for further processing.
- These types of forms provides the medium of interaction between a website and its users on the Internet.
- HTML enables you to add a form in a Web page by using the <FORM> tag.
- After adding the form on the Web page, you can add various controls, such as buttons and text fields, on the form by using a variety of tags.
- Some examples of these elements are INPUT, BUTTON, TEXTAREA, and DATALIST.
- Some of the tags are in form
 - Form Tags
 - Input Tags
 - Button Tags
 - Multiple-Choice Tags
 - Select Tag
 - Option Tag
 - Optgroup Tag
 - Textarea and Label Tags
 - Fieldset and Legend Tags
 - Datalist Tag

- Form Submitting
- enctype Attribute
- action Attribute
- Method Attribute
- Get Method
- Post Method

Working with Input element

- <Input> tag is used to display the text boxes on a form.
- These fields are used to provide input from the users.
- Using the <Input> tag ,add the following fields on a form
 - Text field
 - Password field
 - Hidden field
 - Checkbox field
 - Radio button field
 - Submit button field
 - Reset button field

Text Field

- Add a text field on a form using type attribute of the <input> by specifying the value of the type attribute to text.
- Syntax:

```
<input type="text" name="Name of the text box" size="number" maxlength="number" value="Display default value" >
```
- Example:

```
<input type="text" name="code" size="30" maxlength="2">
```
- Name attribute specify the name for the text field.
- Maxlength attribute mention the fixed length of the textbox
- Size attribute set the size of the textbox.
- Value attribute set the default value of the text field.

Password field

- It is used to secure the text entered in the field.
- Add the password field in a form by setting the type attribute of the input element to be password.

- Syntax:

```
<input type="password" name="Name of the password box" size="number"
maxlength="number" value="Display default value" >
```
- Example:

```
<input type="password" name="pass" size="12" maxlength="5">
```
- The characters entered in the password field are dots.
- Name attribute specify the name for the password field.
- Maxlength attribute mention the maximum length of the password box
- Size attribute set the size of the password field.
- Value attribute set the default value of the password field.

Hidden Field

- Browser does not display the hidden field.
- Syntax:

```
<input type="hidden" name="Name of the hidden box" value="Display default value" >
```
- Example:

```
<input type="hidden" name="country" value="codescracker.com">
```
- Name attribute specify the name for the hidden field.
- Value attribute set the default value of the hidden field

Checkbox Field

- Check box allows to select one or more items from the list of items.
- Add the checkbox field on a webpage by specify the type attribute of the input element to checkbox.
- Syntax:

```
<input type="checkbox" name="Name of the check box" value="Display default value" >
```
- Example:

```
<input type="checkbox" name="option1" value="Eng"> English
<input type="checkbox" name="option2" value="Hin"> Hindi
<input type="checkbox" name="option3" value="Tel"> Telugu
```

Radio Button Field

- It is used to select an option from the given list.
- Syntax:

```
<input type="radio" name="Name of the radio button" value="Display the default value" >
```
- Example:

```
<input type="radio" name="option" value="eee" >EEE
```

```
<input type="radio" name="option" value="ece" > ECE
<input type="radio" name="option" value="cse" checked> CSE
```

Submit Button field

- It is used to submit the details entered in a form to the server.
- Syntax:

```
<input type="submit" name="Name of the submit button" value="Display the default value" >
```

- Example:


```
<input type="submit" name="sub" value="Click Me! ">
```

Reset Button field

- Reset button is used to reset the values of all the fields of a form.
- Syntax:

```
<input type="reset" name="Name of the reset button" value="Display the default value" >
```

- Example:


```
<input type="Reset" name="res" value="Clear ">
```

Select and option Elements

- <Select> element is used to provide information to the users that have multiple options to select.
- <Select> element contains the <option> element to display the list of items.
- It is used to create drop-down list
- Syntax:

```
<select>
<option value="value of the option">value1
<option value="value of the option">value2
-----
</select>
```

- Example:

```
<select>
  <option value="10">2010</option>
  <option value="11">2011</option>
  <option value="12">2012</option>
  <option value="13">2013</option>
  <option value="14">2014</option>
  <option value="15">2015</option>
</select>
```

Optgroup Element

- It is used to group the list of options and display in the drop down list.

- Syntax:

```
<select>
  <optgroup label="labelname1">
    <option value="value of the option">value1
    <option value="value of the option">value2
  </optgroup>
  <optgroup label="labelname2">
    <option value="value of the option">value1
    <option value="value of the option">value2
  </optgroup>
</select>
```

- Example:

```
<select>
  <optgroup label="UG">
    <option value="btech">B.Tech</option>
    <option value="be">BE</option>
    <option value="barch">B.Arch</option>
  </optgroup>
  <optgroup label="PG">
    <option value="mtech">M.Tech</option>
    <option value="me">ME</option>
    <option value="march">M.Arch</option>
  </optgroup>
</select>
```

Textarea element

- It is used to display a textfield.

- Syntax:

```
<textarea rows="number" cols="number"></textarea>
```

- Example:

```
<textarea rows="6" cols="30"></textarea>
```

Fieldset and legend Element

- <Fieldset> element is used to group related controls in a single box

- <legend> element provides the caption for that box

- Syntax

```
<fieldset>
  <legend>Title</legend>
</fieldset>
```

➤ Example

```
<fieldset>
  <legend>Login Window</legend>
  <p>Enter UserName: <input type="text" name="uname" size="20"
  maxlength="5">
  <p>Enter Password: <input type="password" name="passw" size="20"
  maxlength="5">
</fieldset>
```

DATALIST Tag

- The DATALIST tag is used to display the list of the predefined options that the user may want to select as input.
- This tag enables the auto complete feature on the forms. This means that when a user start typing in a text box, a list of predefined words is dropped down to choose.
- The DATALIST tag is used with the INPUT tag, in which the list attribute is specified.
- The OPTION tag used as the child tag of the DATALIST tag is used to specify the list of the options that are to be displayed.
- Example

```
<INPUT type="text" list="name">
<DATALIST id="name">
  <OPTION value="Richard">
  <OPTION value="John">
  <OPTION value="Tony">
</DATALIST>
```

- We have specified the same value for the list attribute of the INPUT tag and the id attribute of the DATALIST tag.
- We have also defined the OPTION tags and specified their value attributes as the options to be displayed.

Submit Form

- After the information in a form is entered by a user, the user clicks the submit button to send the information contained in the form to the server for processing.
- The whole process of transmission of the information from browser to the server is performed by the enctype, action, and method attributes of the FORM tag.

- The enctype attribute encodes the information from the form before transmitting it from the browser to the server.
- The action attribute specifies the URL of the program that handles the information contained in the form
- The method attribute specifies how the information is transmitted from the browser to the server.

Enctype Attribute

- The enctype attribute is used to encode the information in the form before sending it to the server so that the information is not corrupted during the transmission.
- The encoding is performed by the browser.
- the enctype attribute is used to specify the format of the form's content at the time of submission.
- Three types of encoding process are application/x-www-form-urlencoded, multipart/form-data, and text/plain.

The application/x-www-form-urlencoded Encoding

- The application/x-www-form-urlencoded encoding acts as a default type of encoding for the browser.
- In this encoding, the browser converts a space into a a plus sign (+), a non-alphanumeric character into a percent sign (%) followed by two hexadecimal digits that are ASCII code of character, and line breaks into CR/LF pairs (%0D%0A).
- Example

Username=richjones&password=rich23&name=richard&address=Sydney,+Australia

The multipart/form-data Encoding

- The multipart/form-data encoding is used only when the method attribute of the form is set to post.
- In this type of encoding, the controls in the form are segregated in several parts.
- Example

```
-----1234567897987
Content-Disposition: form-data; name="username"

richjones
-----1234567897987
Content-Disposition: form-data; name="password"

rich23
-----1234567897987
Content-Disposition: form-data; name="name"
```

- This type is preferred only when the form contains one or more file selection control. Let's consider an example where the form contains a file selection control named thefile

The text/plain Encoding

- The text/plain encoding is used when the browser does not have access to the server that contains the form-handling program.
- In this case, the information from the form is sent through an e-mail and the action attribute is set to a mailto URL.
- In this type of encoding, each control is written in a single line, with name and value separated by an equal to sign (=).
- Space is denoted by space and line break is denoted by CR/LF pairs (%0D%0A).
- Example

```
username=richjones
password=rich23
name=richard
address=Sydney, Australia
```

Form action Attribute

- The action attribute of the FORM tag provides the URL of the program (which is in the server) that receives the information from the form and processes it.
- The action attribute is used to specify the address of the server to send the content of the form.

```
<FORM action="http://codescracker.com/cgi-bin/update">
```

- Example

```
<!DOCTYPE HTML>
<html>
<head>
  <title>HTML form action Attribute Example</title>
</head>
<body>
  <form action="action.asp" method="get" enctype="text/plain">
    First Name: <input type="text" name="first_name" /><br />
    Last Name: <input type="text" name="last_name" /><br />
    <input type="submit" value="Submit" />
  </form>
</body>
</html>
```


method Attribute

- The method attribute specifies the method by which the information in the form is sent to the server for processing.
- There are the two acceptable values for the method attribute are get and post.
- The get method sends the information by adding it in the URL of the Web page.
- This method is used when the data is small and there is no issue for securing it.
- Post method first connects to the server and then sends the data. This method is more secure than the get method.

Get Method

- The get method is the default method for browsers to submit the information.
- In the case of get method, the browser connects to the server, which processes the form and sends the information in a single transmission step.
- The get method is commonly used for the transmission of short information.
- The browser appends the data to the form's action URL, separated by a question mark.
- Example

```
<FORM method=get action="http://codescracker.com/cgi-bin/update">
```

HTML Post Method

- The post method is more appropriate than the get method for the transmission of large amount of information.
- In the case of post method, the browser sends the information in two steps.
- In the first step, browser contacts to the form-processing program as specified in the form's action URL
- In the second step, the browser sends the information to the server.
- Example

```
<FORM method=post action="http://codescracker.com/cgi-bin/update">
```

HTML Interactive Web Tags

- Interactivity is the process of presenting the information on the Web page and allowing the users to communicate with that Web page.
- An interactive Web page allows a user to easily perform the tasks related to the content of the Web page, such as retrieving the details of an article or executing commands using the radio buttons or check boxes.
- You can display the content on a Web page by using the different elements that help the users to interact with the Web page.

- For instance, if your Web page contains an article, then you can display the name of the author, publishing the date, and summary of the article using the DETAILS and SUMMARY tags.
- You can also display a menu on your Web page by using the MENU tag, which provides a list of options to the users, such as Home, About Us, and Contact.
- Sometime, you need to display keyboard shortcut keys in the content of your Web page for the users, the KBD tag proves to be very beneficial as it changes the font style of the shortcut keys.
 - Details and Summary Tags
 - Menu Tag
 - Command Tag
 - KBD Tag
 - Time Tag

DETAILS and SUMMARY Tags

- The DETAILS tag is used to display the additional details about a document, such as publishing date of the document or the name of the author.
- SUMMARY tag is used to provide the summary or the caption of the current document.
- It can also be used in the conjunction with the SUMMARY tag to create a header that can expand or collapse according to the requirement.
- The open attribute of the DETAILS tag is used to specify the details of the document that are displayed to the users. The absence of the open attribute hides the details from the users.
- **Example**

```
<DETAILS>
<SUMMARY>This section contains the summary of the document</SUMMARY>
</DETAILS>
```

COMMAND and MENU Tags

- <menu> defines a list or menu of commands on a webpage.
- The COMMAND tag is introduced in HTML5 and is used to define the command button, such as radio button, check box, or button.
- You can use the COMMAND tag in conjunction with the MENU tag.
- The COMMAND tag can also be used without the MENU tag, but only for specifying the keyboard shortcuts.

Attributes of COMMAND tag

Attribute	Description
checked	Defines the selection of the command in case of radio button and checkbox
disabled	Disables the command
icon	Specifies the location of the graphical image that represents the command
label	Shows the name of the command to the user

radiogroup	Specifies the name of the group if the command type radio is defined
type	Defines the type of the command, such as command (default), checkbox, and radio

➤ **Example**

```
<MENU>
  <COMMAND type="command">Execute</COMMAND>
</MENU>
```

KBD Tag

- The KBD tag is used to display the keyboard input text in a Web page.
- The KBD tag can also be used to identify the other inputs, such as voice commands.
- When you use the KBD tag, you need to define the keyboard input text between its starting and ending tags.
- The Web browser changes the font of the text to Courier New.
- Example

```
<P>To open the Task Manager, press <KBD>CTRL</KBD> +
  <KBD>ALT</KBD> + <KBD>DELETE</KBD>.</P>
```

- In the above example, CTRL+ALT+DELETE are the keys of the keyboard, which displayed in the Courier New font on the Web browser.

TIME Tag

- The TIME tag is newly introduced in HTML5 and is used to define the date and/or time on a Web page.
- The TIME tag displays the time in 24-hour clock format and the date in the proleptic Gregorian calendar format.
- The TIME tag provides the datetime attribute, which is used to specify the valid date and time.

Attributes of TIME Tag

Attribute	Description
datetime	Specifies the date and/or time
pubdate	Specifies the publishing date and time of a document

- Example

```
<p><TIME datetime="2020-01-01">Wednesday</TIME>.</P>
```

- pubdate attribute is more useful when the TIME tag is defined inside the ARTICLE tag.

HTML Multimedia

- The term media refers to various means of communicating and disseminating information, such as text, images, graphics, audio, video, and animation. All these mediums of communication are collectively termed as multimedia.
- In other words, the term multimedia encompasses all means of communication, from a single magazine containing text and images to an advance application containing audio, video, and graphics.

- A combination of video and audio files can also be used in websites to gain popularity in terms of viewership or provide information and entertainment to the users.
- HTML helps you to add multimedia files on your website by providing various multimedia tags. These tags include AUDIO, VIDEO, EMBED, and OBJECT.
- The AUDIO tag is used to display the audio file on the Web page, whereas the VIDEO tag is used to display the video files on the Web page.
- The EMBED and OBJECT tags display the multimedia files on a Web page as well as embed the files from other websites.

Multimedia Tags

- HTML5 has introduced two new multimedia tags, AUDIO and VIDEO, for displaying the audio and video streams on a Web page.
- The src attribute is used to specify the multimedia file to play it on the Web page.
- The AUDIO tag of HTML5 supports only three audio file formats i.e. .ogg, .mp3, .wav
- VIDEO tag to display a video file on the Web page. The VIDEO tag supports the .mov and .mp4 file formats.

➤ Attributes of AUDIO Tag

Attribute	Description
autoplay	Plays the audio file as soon as the Web page loads
controls	Displays the controls on the Web page, such as play and pause buttons
loop	Replays the audio file
preload	Specifies whether the audio file is preloaded on the Web page or not
src	Provides the location of the audio file to play

➤ Attributes of VIDEO Tag

Attribute	Description
audio	Controls the default state of the video's audio channel
autoplay	Plays the audio file as soon as the Web page loads
controls	Displays the controls on a Web page, such as play and pause buttons
height	Specifies the height of the VIDEO tag
loop	Replays the video file
preload	Specifies whether the video file is preloaded on the Web page or not
poster	Provides an image to be displayed when the video file is not available
src	Provides the location of the video file to play
width	Specifies the width of the VIDEO tag

- <SOURCE> tag within the opening and the closing tags of the VIDEO tag to provide the source of the video file.

```
<VIDEO src="video.ogv" autoplay="true" loop="3" controls>
</VIDEO>
```

- In the above code snippet, we have defined a video.ogv file in the src attribute. We have also set the autoplay attribute to true, which implies that the video file start playing as soon as the Web page loads. the loop attribute is set to 3, which implies that the video file will be played three times. In addition, the controls attribute displays the controls on the video player.

HTML Audio and Video

HTML Audio

- An audio file is used to store audio data on various data, such as a computer system, mp3 players, and mobile phones.
- To store an audio data, you need to convert it into a digital format.
- The process of converting audio data into a digital file is called **encoding** of the raw audio data.
- It involves taking samples of audio data and storing them in a compressed format to reduce the file size.
- An audio player decodes these compressed sample files to make the audio waves audible.
- The process of converting a digital file into the audio data is known as **decoding**
- A codec is performs the encoding and decoding of the raw audio data.

List of Commonly Used Audio File Formats

Format	File Extension	Description
MIDI	.mid .midi	MIDI (Musical Instrument Digital Interface). Main format for all electronic music devices like synthesizers and PC sound cards.
WMA	.wma	WMA (Windows Media Audio). Developed by Microsoft. Commonly used in music players.
RealAudio	.rm .ram	RealAudio. Developed by Real Media to allow streaming of audio with low bandwidths.
WAV	.wav	WAV. Developed by IBM and Microsoft. Plays well on Windows, Macintosh, and Linux operating systems. Supported by HTML5
AAC	.aac	AAC (Advanced Audio Coding). Developed by Apple as the default format for iTunes. Plays well on Apple computers, but not in web browsers
MP3	.mp3	MP3 files are actually the sound part of MPEG files. MP3 is the most popular format for music players. Combines good compression (small files) with high quality. Supported by all browsers
Ogg	.ogg	Ogg. Developed by the Xiph.Org Foundation. Supported by HTML5
MP4	.mp4	MP4 is a video format, but can also be used for audio.

<audio> tag

- To play an audio file in HTML, use the <audio> tag.
- The controls attribute adds audio controls, like play, pause, and volume.
-
- Example

```
<audio controls>
  <source src="songs.ogg" type="audio/ogg">
  <source src="songs.mp3" type="audio/mpeg">
</audio>
```

HTML Video

- A video file is a collection of images that is displayed in a sequence representing scenes in motion.
- video files are also encoded or decoded using the various video codecs, such as DivX and QuickTime.

List of Commonly Used Video File Formats

Format	File	Description
MPEG	.mpg .mpeg	MPEG. Developed by the Moving Pictures Expert Group. The first popular video format on the web. Used to be supported by all browsers, but it is not supported in HTML5 (See MP4)
MPEG-4 or MP4	.mp4	MP4. Developed by the Moving Pictures Expert Group. Based on QuickTime. Commonly used in newer video cameras and TV hardware. Supported by all HTML5 browsers. Recommended by YouTube
AVI	.avi	AVI (Audio Video Interleave). Developed by Microsoft. Commonly used in video cameras and TV hardware. Plays well on Windows computers, but not in web browsers
QuickTime	.mov	QuickTime. Developed by Apple. Commonly used in video cameras and TV hardware. Plays well on Apple computers, but not in web browsers. (See MP4)
Flash	.swf .flv	Flash. Developed by Macromedia. Often requires an extra component (plugin) to play in web browsers
RealVideo	.rm .ram	RealVideo. Developed by Real Media to allow video streaming with low bandwidths. It is still used for online video and Internet TV, but does not play in web browsers
WMV	.wmv	WMV (Windows Media Video). Developed by Microsoft. Commonly used in video cameras and TV hardware. Plays well on Windows computers, but not in web browsers
WebM	.webm	WebM. Developed by the web giants, Mozilla, Opera, Adobe, and Google.

		Supported by HTML5
Ogg	.ogg	Theora Ogg. Developed by the Xiph.Org Foundation. Supported by HTML5

HTML <video> tag

- To show a video in HTML, use the <video> tag.
- The controls attribute adds video controls, like play, pause, and volume.
- To start a video automatically use the autoplay attribute.
- include width and height attributes. If height and width are not set, the browser does not know the size of the video.

```
<video width="320" height="240" controls>
<source src="song.mp4" type="video/mp4">
<source src="song.ogg" type="video/ogg">
</video>
```

Embed Multimedia

- add Multimedia on the web like sound, music, videos, movies, and animations.
- Multimedia comes in many different formats.
- Web pages often contains multimedia tags of different types and formats.
- Different types and formats are supported, and some formats requires extra helper programs (plug-ins) to work.

EMBED Tag

- HTML allows you to embed plug-ins in a Web page using the EMBED tag.
- This tag lets you embed multimedia in a Web page and play it while opening the page.
- The EMBED tag uses the three mandatory attributes, namely src, height, and width.
- Example


```
<EMBED src="Music.mp3" width=600 height=100></EMBED>
```
- In the above example, we have defined the src attribute to specify the source multimedia file to be played while the Web page loads in the browser.
- We have also defined the height and width attributes to specify the height and width of the embedded multimedia component in the page, respectively.

Attributes of EMBED Tag

Attribute	Description
height	Specifies the height of the embedded component
hspace	Sets the horizontal padding around the tag
type	Specifies the Multipurpose Internet Mail Extension (MIME) type for the components
width	Sets the width of the embedded component in the page

HTML OBJECT Tag

- HTML uses the OBJECT tag to include objects, such as images, audios, videos, Java applets, ActiveX controls, Portable Document Format (PDF), and Flash objects, in a Web page.
- The OBJECT tag allows you to specify the code that can be used to display or manipulate that data.

Attributes of OBJECT Tag

Attribute	Description
data	Specifies the URL of the object's data
form	Specifies one or more forms to which the object belongs
height	Specifies the height of the object in pixels
name	Specifies the object's name
type	Specifies the MIME type for the component
usemap	Specifies the URL
width	Sets the width of the embedded components in the page

- The OBJECT tag initializes the object by passing the parameters to the object, which can be done using the PARAM tag.
- In HTML, you can use the PARAM tag to define parameters or variables for an OBJECT tag.
- An OBJECT tag can contains multiple PARAM tags, as shown in the following code snippet.
- Example

```
<OBJECT data="movie.avi" type="video/quicktime" id="video" width="200"
height="100">
  <PARAM name="BorderStyle" value="1" />
  <PARAM name="autoplay value=true />
</OBJECT>
```

Attributes of PARAM Tag

Attribute	Description
name	Specifies the name of the parameter
value	Specifies the value of the parameter

FIGURE and FIGCAPTION Tags

- The FIGURE tag is newly introduced in HTML5 and is used to group or annotate various diagrams, images, illustrations, and code snippets.
- You can define various tags, such as IMG, CODE, and PRE, inside the FIGURE tag.

- The FIGCAPTION tag is used inside the FIGURE tag to provide the caption of the content.
- Example

```
<FIGURE>  
  <FIGCAPTION>Listing 1: Showing the alert box</FIGCAPTION>  
  <PRE><CODE>alert('Hello World!');</CODE></PRE>  
</FIGURE>
```

In the above example, we have defined the FIGURE tag, which contains the FIGCAPTION tag to display the figure caption on a Web page. In addition, we have also defined the PRE and the CODE tags to display the code in the predefined formatting.
