

Internet Web Programming

Internet Communication (IWP)

Topic : Internet and its Applications

Internet : Internet is a network of computers in which many different types of computers are linked all over world. It is a network of networks to share a address or identify computers and common set of protocols for communication between two computers on the Internet.

TCP/IP protocol is used for communication between the networks. Therefore, internet is defined as network of networks that consist of private, public, academics, business and government networks of local to global scope linked by a broad array of electronic, wireless and optical networking technologies.

Applications of Internet

Internet carries many applications including social media, electronic mail, mobile applications, multiplayer, online games, file sharing and streaming, etc.

1) Communication : Computer users around the world extensively use the email service on internet to communicate with each other. Pictures, documents and other files are sent as email attachments. Emails can be send to multiple email addresses. Internet telephony is another common communications service made possible by the creation of the Internet.

2) Job search : Nowadays, many people search for their jobs online as it is quicker and there is

a large variety of job vacancies present. People can publish resume online for prospective job. Some of the web sites providing this service are naukri.com, monster.com, summerjob.com, etc.

- 3) Online shopping: The internet has also facilitated the introduction of a new market concept consisting of virtual shops. They provide information about products or services for sale through www servers. Using the internet services customers can submit specific product queries and request specific sales quotes. For example, amazon.com is a www based bookshop on internet where information on all types of international books can be found and books can be ordered online.
- 4) Stock market updates: You can sell or buy shares while sitting on computer through internet. Several websites like ndtrprofit.com, moneyperson provide information regarding investment.
- 5) Travel: One can use internet to gather information about various tourist place. It can be used for booking Holiday Tours, hotels, train, bus, flights and cabs. Some of the websites providing this service are goibibo.com, makemytrip.com, slcab.com.
- 6) Research: Research papers are present online which helps in the researcher doing a literature review.
- 7) Video Conferencing: It enables direct face-to-face communication across networks via web

cameras, microphones, and other communication tools. Video conferencing can enable individuals in distant locations to participate in meetings on short notice, with time and money savings. The technology is also used for telecommuting, in which employees work from home. When video conferencing is used in education, it is easier to have interactive communication between teacher to teacher, teacher to classroom or teacher classroom to classroom with students in different places.

8) E-commerce: E-commerce is the buying and selling of goods and services, or the transmitting of funds or data, over an electronic network, primarily the Internet. There business - to - business, business - to - consumer, consumer - to - consumer or consumer - to - business. Largest e-commerce companies in India are Flipkart, Snapdeal, Amazon India, Paytm.

9) Online Payments: The rising boom of online payments in India has given way to many new entrants in the industry such as Paytm, MobiKwik etc who are majorly wallet driven payment companies. This growth has been driven by rapid adoption led by the increasing use of smartphones, tablets.

10) Social networking: It is the use of internet-based social media programs to make connections with friends, family, classmates, customers and clients. It can be done for social purposes, business purposes or both. The programs show the associations between individuals and facilitate the acquisition of new contacts. Examples of social networking have included Facebook, LinkedIn, Classmates.com and Yelp.

Telnet

TELNET stands for TERMINAL NETWORK. It is a type of protocol that enables one computer to connect to local computer. It is used as a standard TCP/IP protocol for virtual terminal services which is given by ISO. Computer which starts connection known as local computer which is being connected to i.e. which accepts the connection known as remote computer. When the connection is established between local and remote computer.

During telnet operation whatever is being performed on the remote computer will be displayed by the local computer. Telnet operates on client/server principle. Local computer uses telnet client program and the remote computers uses telnet server program.

TELNET Commands: Commands of the telnet are identified by a prefix character, Interpret As command (IAC) which is having code 255. IAC is followed by command and option code. Basic format of the command is as shown in the following figure:

| IAC | Command code | Option code |
|-----|--------------|-------------|
|-----|--------------|-------------|

FTP

File Transfer Protocol

- FTP stands for File Transfer Protocol.
- It is a network protocol for transmitting the file between computers over TCP/IP connections.
- In FTP transaction, the end user computer is known as local computer and another computer is known as local remote hosts.
- Both the computer are connected via network to transfer files using FTP.
- Two communication are used between client and server:
 - i) command channel - It controls the conversation.
 - ii) Data channel - It is used to transmit file content.

Working of FTP:

- i) A user needs to logon to the FTP server.
- ii) Client initiate a conversation with a server when the user requests to download a file.
- iii) Using FTP, a client can upload, download, delete, rename, move and copy files on the server.

Uniform Resource Locator (URL) ? URL is the address of a resource, which can be a specific webpage or a file, on the internet. It is also known as web address when it is used with http. It was created in 1994 by Tim Berners-Lee. URL is a specific character string that is used to access data from the WWW. It is a type of URI (Uniform Resource Identifier).

Every URL contains the following information ?

Protocol : // Host : Port / Path

http://www.school.edu/file.html

- A scheme name or protocol.
- A colon, two slashes
- A host, normally called a domain name but sometimes as a literal IP address.
- A colon followed by a port number.
- Full path of the resource.

The URL of a web page is displayed above on the page in the address bar. A typical URL looks like this:

`http://www.javatpoint.com/full-form`

The above URL contains:

- protocol : `http`
- host or domain : `www.javatpoint.com`
- Path of resource : `/full-form`

A URL can be entered manually by typing it in the address bar of your web browser. If the URL does not contain a valid server, a browser may display a "Server not found" error and if the path in the URL is incorrect, the browser may display a "404 error". A URL does not contain spaces and uses forward slashes to represent different directories. So, dashes and underscores are used to separate the words of a web address.

Domain Name System (DNS)) DNS stands for Domain Name System. The internet world is completely based on IP address. To access any website you need to know its IP address which is a long numeric code and is not possible to remember. Now, here comes the role of DNS. A DNS is an

Internet service that translates a domain name into corresponding IP address. Domain name used here is alphabetic and can be easily remembered.

For example, www.example.com is a domain site. And with the help of DNS it will get translate into its IP address 198.105.232.4.

How DNS works?

DNS works with the help of DNS servers. When a user enters the domain name into the web browser, the request goes to the DNS server. The DNS server determines the IP address using a look-up table. Then it sends the requested information to user's web browser through proper servers.

Furthermore, a DNS system has its own network. If one DNS server does not know how to translate a particular domain name, it will ask another server, and so on, until they find out the correct IP address. A DNS server holds a list of all IP addressing along with its domain names, which can be retrieved when required.

Advantages:

- The messages are delivered to users with zero downtime.
- Automatically corrects the typos.
- In case of maintenance or downtime the requests are answered by the closest node through Anycast technology.

Features:

- DNS server gives a high performance and user interface. User interface has to handle a vast number of DNS.

- DNS has a distributed database.
- Additional records are also stored in DNS database.
- It contains number of record types to facilitate other applications. e.g. Mail Exchanger (MX) record.
- Any application which uses Internet to connect from two or more host to share some information relies on DNS.

World Wide Web (WWW) WWW is used to access Internet. All the resources and the users on the internet may access http. WWW basically a web which is a collection of website or web pages which are stored on web server and connected to local computer through the internet.

1. User can access the web content from anywhere all over the world through Internet.
2. User enters the URL of the web page in the address bar of web browser. Browser request the domain name server for the IP address corresponding to the given address in URL.
3. After receiving the IP address browser sends the request for web page to the web server using HTTP protocol.
4. The web server receives the request using HTTP and checks for the requested webpage. If the required page is found it turns it back to the web browser and close the HTTP connection. Now, web browser receives the web page, interprets it and displays the content of webpage in web browser window.

Web Browser: Web Browser is an application software that allows us to view and explore information on the web. User can request for any web page by just entering a URL in address bar. Web browser can show text, audio, video, animation and more. It is the responsibility of a web browser to interpret text and commands contained in the web page. Earlier the web browsers were text-based while nowadays graphical-based or voice-based web browsers are also available. Examples of web browsers are: Internet Explorer, Google chrome, Mozilla Firefox, Opera, Safari, sea monkey, R-melion, etc.

HTML

(HYPERTEXT MARKUP LANGUAGE)

- HTML stands for Hypertext Markup Language.
- HTML is the standard markup language for creating web pages.
- HTML describes the structure of a web page.
- HTML consists of a series of elements.
- HTML its elements tell the browser how to display the content.
- HTML elements label pieces of content such as "this is a heading", "this is a paragraph", "this is a link", etc.
- It is case-sensitive language.
- It divides into two sections: head section and body section.

For example!

?! DOCTYPE html >

`<html>` a root element of an HTML page

<head> <meta info about HTML page

<title> Page Title </title> element specifies title of HTML

</head> contains all visible contents
<body>

<body>
<h1> My first heading </h1> defines a large heading
<p> This is my first paragraph </p> defines a paragraph

< p > My first paragraph. < /p > defines a paragraph

2). body >

</html>

The Head Element

The `<head>` element is a container for metadata (data about data) and is placed between the `<html>` tag and the `<body>` tag.

Types of tags used in head element

There are seven types of tags/elements used in Head section:

1. <title> tag
 2. <style> tag
 3. <link> tag
 4. <meta> element
 5. <script> element
 6. <base> element
 7. <isIndex> tag

1) <title> tag: The <title> element defines the title of the document. It provides a title that may be used for engine results. For example,

```
<html>
<head>
<title> First Page </title>
</head>
<body>
    -- //content
    --

```

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

2) <style> element : It is used to define style information for a single HTML page. For example,

```
<html>
<head>
<title> First Page </title>
<style>
    h1 { color: red; }
    body { background-color: blue; }
</style> </head>
<body>
    -- //content
    --

```

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

3) <link> tag ? Link element defines the relationship between the current document and an external resource. It is used to link to the external style sheets.

Eg : <link rel="stylesheet" href="style.css">

4) <meta> element: It is used to specify the character set, keywords, page description and author of the document.

The metadata will not be displayed on the page but are used by the browser, by search engines as keywords and other web services.

5) <script> element: It is used to define the client side java script. The <script> element either contains scripting statements, or it points to an external script file through the src attribute.

Common uses for Javascript are image manipulation, form validation, and dynamic changes of content.

6) <base> element: It specifies the base URL or target of all relative URLs in a page. There can only be one single base element in a document.

7) <is index>: The new versions of HTML does not use this tag.

Attributes: Provides additional information about HTML elements.

It always specified in the start tag.

Attributes usually come in "name" value pairs like : name="value"

Body Tags

The `<body>` tag defines the document's body. The `<body>` element contains all the contents of an HTML document, such as headings, paragraphs, images, hyperlinks, tables, lists, etc.

Eg

Tags used in body section

- 1) `<p>` tag: Defines the paragraph in web documents. It is paired tag. It is used to represents a paragraph text. The `paragraph` element acts as a container for the text between the start tag `<p>` and the end tag `</p>`.

Eg

```
<html>
  <head>
    <title> HTML p tag </title>
  </head>
  <body>
    <p> Here is define paragraph. </p>
    <p> Here is define another paragraph. </p>
  </body>
</html>
```

- 2) `` tag: The `` tag specifies bold text without any extra importance. It is also a paired tag (` -- `). It is non-case sensitive.

Eg

```
<body>
```

`<p>` This is normal text `-- ` and this is bold text ` </p>`

OR- <p> This is normal text </p>
 This is bold text

3) <i> tag ? The content inside the <i> tag
is typically displayed in italic. It
is paired tag.

eg:

<p> <i> This is italic tag </i> </p>

or <p> This is <i> italic tag </i> </p>

or <p> This is <i> italic and bold tag </i> </p>

or

<p> This is bold tag <i> italic tag </i> </p>

or

<p> This is bold tag <i> italic tag </i> </p>

4). Heading tags: HTML heading are defined
with the <h1> to <h6> tags.

<h1> defines the most important heading

<h6> defines the least important heading

These six heading tags are:

<h1> --- </h1> Heading 1

<h2> --- </h2> Heading 2

<h3> --- </h3> Heading 3

<h4> --- </h4> Heading 4

<h5> --- </h5> Heading 5

<h6> --- </h6> Heading 6

eg <h1> Heading 1 </h1>

<h2> Heading 2 </h2>

<h3> Heading 3 </h3>

<h4> Heading 4 </h4>

<h5> Heading 5 </h5>

<h6> Heading 6 </h6>

5) a tag: The a tag represented as underline tag. The content inside is typically displayed with an underline. It is paired tag.

Eg

```
<body>
<h1> The a element </h1>
<p> This is some <a> text </u>. </p>
</body>
```

6) center tag: The center tag is used to center-align text.

Eg <center> - - - </center>

7) br/ tag: br/ tag is used for break single line. br/ tag use for break the current line than after next text display on next line. br/ tag self-closing and does not support any specific attributes. It is unpaired tag.

Eg

```
<body>
<p> I am writing first line. <br/> I am still
write on first line. </p>
</body>
```

8) strike tag: The HTML strike tag gives text the appearance of a strikethrough which draws a horizontal line over the text. It is paired tag. (We can use tag or <s> instead).

Eg

<p> <strike> strikethrough text goes here </strike>
but not here </p>

O/P: strikethrough text goes here but not here.

attribute
9) <align> tag: The <align> attribute in HTML is used to specify the alignment of text content of the element. Attribute values?

- left: It sets the text left-align.
- right: It sets the text right-align.
- center: It sets the text center-align.

eg <body>

```
<p align = "left">Left align content </p>
<p align = "center">Center align content </p>
<p align = "right">Right align content </p>
</body>
```

10) <sup> tag: The <sup> tag defines superscript text. It appears half a character above the normal line, and is sometimes rendered in a smaller font, like x^2 , x^3 , www , etc.

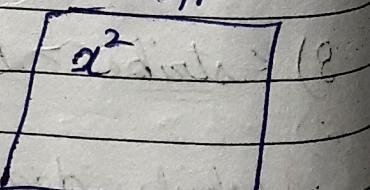
eg

```
<p> This text contains <sup></sup>
<p> This text contains <sup> superscript </sup>
text. </p>
```

or

<p> x ²

or



11) <sub> tag: The <sub> tag defines subscript text. It appears half a character below the normal line.

eg <p> H ₂ O

or H₂O

HTML List

10 Marks

HTML lists are used to specify lists of information. All lists may contain one or more list elements. There are three different types of HTML lists:-

1. Ordered List or Numbered List (ol)
2. Unordered List or Bulleted List (ul)
3. Description List or Definition List (dl)

1) Ordered List:

- In this, all the list items are marked with numbers by default.
- It starts with `` tag.
- Each list items are marked with.
- The list items start with `` tag.

e.g

```
<ol>
  <li> Aries </li>
  <li> Ordered List </li>
  <li> Numbered List </li>
</ol>
```

- | |
|------------------|
| 1. Aries |
| 2. Ordered List |
| 3. Numbered List |

There can be different types of numbered list:

- Numeric Values (1, 2, 3)
- Capital Roman Number (I, II, III)
- Small Roman Number (i, ii, iii, -)
- Capital Alphabet (A, B, C, - Z)
- Small Alphabet (a, b, c, - z)

Numeric order is the default type. Rest all the formats may be represented by using type attribute along with `` tag.

1) eg <ol type = "f">
 - - -
 - - -

1. - -

2. - -

2) <ol type = "I">
 - - -

1. - -

ii. - -

In this type, the list items are numbered with upper case roman numbers.

3) <ol type = "i">
 - - -

i. - -

ii. - -

The list items are numbered with lower case roman numbers.

4) <ol type = "A">
 - - -

A. - -

B. - -

The list items are numbered with upper case letters.

5) <ol type = "a">
 - - -

a. - -

b. - -

The list items are numbered with lower case letters.

2) Unordered List:

- All the list items are marked with bullets (by default (•))
- It is also known as bulleted list.
- It starts with `` tag
- List items start with the `` tag

Eg

```
<ul>
  <li> HTML </li>
  <li> Java </li>
  <li> SQL </li>
</ul>
```

We can use unordered list where we do not need to display items in any particular order. The `` tag is used for unordered list. There can be four types of bulleted list.

- 1 disc
- 2 circle
- 3 square
- 4 none

1) `<ul type = "disc">`

```
<li> HTML </li>
  <li> Java </li>
  <li> SQL </li>
</ul>
```

- HTML
- Java
- SQL

2) `<ul type = "circle">`

```
<li> HTML </li>
  <li> Java </li>
</ul>
```

- HTML
- Java

3) `<ul type="square">`
` HTML `
` Java `
``

- HTML
- Java

4) `<ul type="none">`
` HTML `
` Java `
``

- HTML
- Java

3) Description List: It is also known as definition list where entries are listed like a dictionary or encyclopedia. The definition list contains following three tags:

- i) `<dl>` tag defines the start of the list.
- ii) `<dt>` tag defines the term.
- iii) `<dd>` tag defines the term definition (description).

e.g. `<Body>`
~~~~ `<dl>`

`<dt> HTML </dt>`

`<dd> It is a programming language. </dd>`

`<dt> Java </dt>`

`<dd> It is Object Oriented language. </dd>`

`</dl>`

HTML Nested List:

A list within another list is termed as nested list. If you want a bullet list inside a numbered list then such type of list will be called as nested list.

```

eg <html>
    <head>
        <title> Nested list </title>
    </head>
    <body>
        <p> List of Indian states with their capital </p>
        <ol>
            <li> Delhi
                <ul>
                    <li> New Delhi </li>
                </ul>
            </li>
            <li> Haryana
                <ul>
                    <li> Chandigarh </li>
                </ul>
            </li>
        </ol>
        </body>
    </html>

```

list of Indian states
with their capital

| |
|---------------|
| 1. Delhi |
| 2. New Delhi |
| 3. Haryana |
| 4. Chandigarh |

=> Start attribute? It is used with tag to specify from where to start the list items.

eg <ol type = "a" start = "d">

<ol type = "i" start = "ii">

=> Reversed attribute? This is used to display the list items in descending order/reversed.

eg <ol type = "i" reversed>

<ol type = "a" reversed>

HTML <marquee> tag:

HTML <marquee> tag is used for scrolling piece of text or image displayed either horizontally across or vertically down your web site page depending on the settings.

Attribute: direction

Values: Left, Right, Up, Down

By default direction is right to left.

eg <html>

<head>

<title> HTML marquee tag </title>

</head>

<body>

<marquee> This is marquee tag </marquee>

</body>

</html>

eg <body>

<marquee> This is marquee tag </marquee>

<marquee direction = "up">

The direction of text will be from bottom to top.

</marquee>

<marquee direction = "down">

The direction of text will be from top to bottom.

</marquee>

<marquee direction = "left">

The direction of text will be right to left.

</marquee>

<marquee direction = "right">

The direction of text will be from left to right.

</marquee>

</body>

HTML comments

Comment is the piece of code which is ignored by any web browser. Comments help the programmer to understand the code and increased its readability.

Syntax:

<!-- Write your comments here -->

e.g. <p> This is a paragraph. </p>

<!--<p> This is another paragraph </p>-->

<p> This is a paragraph too.

</p>

Font tag: This is used to add style (face), size, color to the text written on the web page.

It has three attributes: face, size and color.

- Range of font size is 1 to 7.
- By default size is 3.

e.g. Hello

font face:

B.Tech(CSE)

• font color: ``
B.Tech (CSE) 6th semester
``

Eg `<html>`
`<head>`
`<title> Font tag </title>`
`</head>`
`<body>`
`<h2> Example of font tag </h2>`
`<p> Normal text without font styling </p>`
`<p>`
``
Text with normal size and default face
``
`</p>`

`<p>` ``
Text with increased size and default face
` </p>`

`<p>` ``
Text with changing face
` </p>`

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

`` tag! As same as bold tag
` Hello `

`
` tag: The `
` tag defines a thematic break
in an HTML page.

The `<hr>` element is most often displayed as a horizontal rule that is used to separate content in an HTML page. It is an unpaired tag.

Eg `<body>`

`<p> This is some text. </p>`

`<hr>`

`<p> This is also some text. </p>`

`</body>`

Output

This is some text

This is also some text.

HTML Tables format

HTML Tables allow web developers to arrange data into rows and columns. Like text, images, links etc.

- The `<table>` tag defines an HTML Table.
- An HTML Table consists of one `<table>` element and one or more `<tr>`, `<th>`, and `<td>` elements.
- The `<tr>` element defines a table row.
- The `<th>` element defines a table header.
- The `<td>` element defines a table cell.

Eg `<html>`

`<head> <title> HTML Table </title>`

`</head>`

<body>

<table>

<tr> <th> Sr No. </th>
<th> Name </th>
<th> Roll no. </th>

</tr>

<tr>

<td> 1 </td>

<td> ABC </td>

<td> 123 </td>

</tr>

<tr>

<td> 2 </td>

<td> XYZ </td>

<td> 140 </td>

</tr>

</table>

</body>

</html>

Output

| SrNo | Name | RollNo. |
|------|------|---------|
| 1 | ABC | 123 |
| 2 | XYZ | 140 |

In Bold

Table

Table Attributes

- 1) align? Alignment of the table. It can be one of the following values? left, center, right.

e.g

<table align = "left">

<table align = "right">

<table align = "center">

- 2) bgcolor? Background color of the table.

e.g <table bgcolor = "Red">

3) border: size of the frame surrounding table (in pixels)
eg <table border="10">

4) width: width of the table.

<table width="300"> <table style="width: 100%">

5) height: height of the table

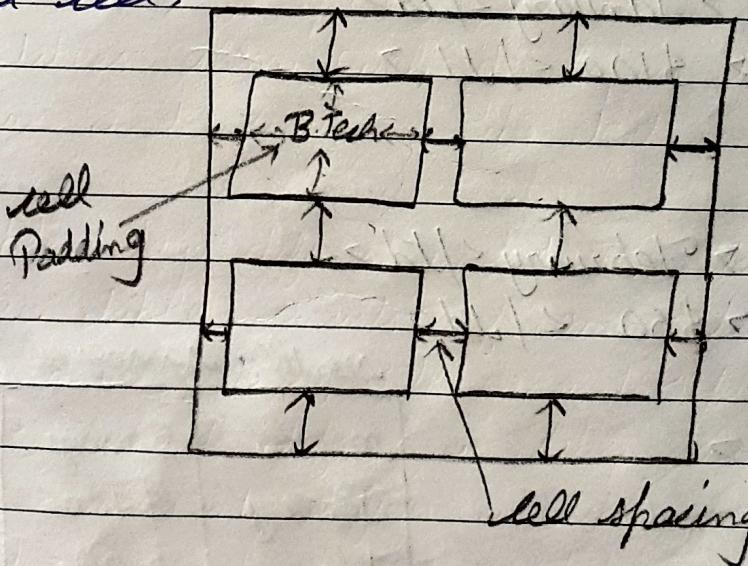
<table height="500"> <table style="height: 200%">

6) border color & background color.

7) cell spacing? This attribute are used to adjust the white space in the table cells. The cell spacing attribute defines space between table cells.

8) cell padding? Cellpadding attribute represents the distance between cell borders and content within a cell.

eg



<table cellpadding="50">

<table cellspacing="10">

<table cellpadding="50" cellspacing="10">

⇒ <caption>: The <caption> tag defines a table caption. The <caption> tag must be inserted immediately after the <table> tag.

e.g

```
<html>
  <head>
    <title> Example of caption </title>
  </head>
  <body>
    <h1> The caption tag </h1>
    <table>
      <caption> Monthly savings </caption>
      <tr>
        <th> Month </th>
        <th> Savings </th>
      </tr>
      <tr>
        <td> January </td>
        <td> $100 </td>
      </tr>
      <tr>
        <td> February </td>
        <td> $50 </td>
      </tr>
    </table>
  </body>
</html>
```

| Month | Savings |
|----------|---------|
| January | \$100 |
| February | \$50 |

9) rowspan: Rowspan attribute is used to merge two or more rows.

e.g. `<td rowspan="2"> 1 </td>`

10) colspan: Colspan attribute is use if we want to merge two or more columns into a single column.

e.g. `<td colspan="3"> 2 </td>`.

Rowspan
e.g. `<table>
<tr>
<th> Name </th>
<td> Jill </td>
</tr>
<tr>`

| | |
|-------|----------|
| Name | Jill |
| Phone | 555-1234 |
| Phone | 555-8745 |

`<th rowspan="2"> Phone </th>
<td> 555-1234 </td>
</tr>
<tr>
<td> 555-8745 </td>
</tr>
</table>`

| | |
|-------|----------|
| Name | Jill |
| Phone | 555-1234 |
| Phone | 555-8745 |

e.g. Colspan <body>

`<table>`

`<tr>`

`<th colspan="2"> Name </th>`

`<th> Age </th>`

`</tr>`

`<tr>`

`<td> Jill </td>`

| Name | Name | Age |
|------|---------|-----|
| Jill | Smith | 43 |
| Eve | Jackson | 57 |

```
<td> Smith </td>
<td> 43 </td>
</tr>
<tr>
<td> Eric </td>
<td> Jackson </td>
<td> 57 </td>
</tr>
</table>
</body>
```

| Name | Age |
|--------------|-----|
| Jill Smith | 43 |
| Eric Jackson | 57 |

HTML Images

The HTML `` tag is used to embed an image in a web page.

Images are not technically inserted into a web page; images are linked to web pages.

- The `` tag creates a holding space for the referenced image.
- The `` tag is empty, it contains attributes only, and doesn't have a closing tag, means it is an paired tag.

The `` tag has two required attributes

- 1) `src` - specifies the path to the image.
- 2) `alt` - specifies an alternate text for the image

Syntax: ``

Example: `<html>`

`<head> <title> HTML IMAGES </title>`

`</head>`

`<body>`

`<p> The alt attribute should reflect the image content </p>`

`<img src = "img-chania.jpg" alt = "Flowers in Chania".
width = "460" height = "345" >`

`</body>`

`</html>`

Path? A file path describes the location of a file in a web site's folder structure.

Two types of path: 1) Absolute path
2) Relative path.

File paths are used when linking to external files, like:

- Web pages
- Images
- Style sheets
- Java Scripts

Absolute file paths: An absolute file path is the full URL to a file.

eg: ``

Relative file paths: A relative file path points to a file relative to the current page.

eg ``

Hyperlinking in HTML

Hyperlinking in HTML refers to the link of one page to another.

You can click on a link and jump to another page/document. When you move the mouse over a link, the mouse arrow will turn into a little hand.

The anchor tag is used to define hyperlink i.e `<a>`.

eg ` link text `

The attribute of the `<a>` tag is the `<href>` attribute which indicates the link's destination. The link text is the part that will be visible to the reader. Clicking on the text, will send the reader to the next or specified URL address.

eg <html>
<body>
 <ch1> HTML Links </ch1>
 <fi>
 Visit w3schools.com! </fi>
</body>
</html>

HTML Forms

HTML forms are required, when you want to collect some data from the site visitor. For example, during user registration you would like to collect information such as name, email address, etc.

A form will take input from the site visitors and then will post it to a back-end application such as CGI, ASP, Script, etc. The back-end application will perform required processing on the passed data based on defined business logic inside the application.

⇒ There are various form elements available like text fields, textarea fields, drop down menus, radio buttons, checkboxes, etc.

HTML <form> tag is used to create an HTML form and it has following syntax:

<form>

</form>

HTML Form Controls

There are different types of form controls that you can use to collect data using HTML form.

- 1) Text Input Controls
- 2) Checkboxes Controls
- 3) Radio Box Controls
- 4) Select Box/Dropdown Controls
- 5) File Select Boxes
- 6) Hidden Controls
- 7) Clickable Buttons
- 8) Submit and Reset Buttons

HTML form tags

<form> ? It defines an HTML form to enter inputs by the user side.

<input> ? It defines an input control.

<textarea> ? It defines a multi-line input control.

<label> ? It defines a label for an input element.

<select> ? It defines a group of drop-down list.

<option> ? It defines an option in a drop-down list.

<button> ? It defines a clickable button.

- 1) Text Input Controls ? There are three types of text input used in forms:

i) Single-line text input controls ? This control is used for items that requires only one line of user I/P, such as search boxes or names. They are created

Rising HTML `<input>` tag.

eg. `<body>`

`<form>`

First name : `<input type = "text" name = "Name" />`

`
`

Last name : `<input type = "text" name = "lastNam" />`

`</form>`

`</body>`

Attributes

`type` :- Indicates the type of IIP control and for text input control it will be set to text.

`name` :- Used to give a name to the control which is sent to the server to be recognise and get the value.

`value` :- This can be used to provide an initial value inside the control.

`size` :- Allows to specify the width of the text-input control in terms of characters.

`maxlength` :- Allows to specify the maximum number of characters a user can enter into the text box.

ii) Password input controls :- This is also a single-line text input but it masks/hide the characters as soon as a user enters it. They are also created using HTML `<input>` tag but type attribute is set to password.

eg. `<form>`

User ID : `<input type = "text" name = "user_id" />`

Password : `<input type = "password" name = "pass" />`

`</form>`

iii) Multi-line Text Input Controls: This is used when the user is required to give details that may be longer than a single sentence. This is created by using HTML `<textarea>` tag.

eg `<form>`

`Description?
`

`<textarea rows="5" cols="50" name="description">`

`Enter description here --`

`</textarea>`

`</form>`

2) Checkboxes Control: Checkboxes are used when more than one option is required to be selected. They are also created by using HTML `<input>` tag where type attribute is set to `checkbox`.

eg:

`<form>`

`<input type="checkbox" name="maths" value="maths" checked="checked" /> Maths`

`<input type="checkbox" name="physics" value="on" checked="checked" /> Physics`

`</form>`

- `checked` is set to `checked` if you want to select it by default.

3) Radio Buttons Control: Radio buttons are used when out of many options, just one option is required to be selected. They are also created using HTML `<input>` tag where type attribute is set to `radio`.

Eg 1

<form>

<input type = "radio" name = "subject" value = "Maths"> Maths
<input type = "radio" name = "subject" value = "Physics"> Physics

</form>

- 4) Select Box / Control / Drop-down List? A select box provides option to list down various options in the form of drop-down list, from where a user can select one or more options.

Eg: <form>

<select name = "dropdown">
 <option value = "Maths" selected> Maths </option>
 <option value = "Physics"> Physics </option>
</select>

</form>

- 5) Multiple attribute? If set to multiple then allows a user to select multiple items from the menu.

- 5) File Upload Box? If you want to allow a user to upload a file to your web site, you will need to use a file upload box, also known as a file select box. This is also created using the <input> element but type attribute is set to "file".

Eg <form>

<input type = "file" name = "fileupload" accept = "image/*">
</form>

6) Button Controls: There are various ways in HTML to create clickable buttons. You can also create a clickable button using `<input>` tag by setting its `type` attribute to `button`.

The `type` attribute can take the following values:

1. `submit`: This creates a button that automatically submits a form.
2. `reset`: This creates a button that automatically resets form controls to their initial values.
3. `button`: This creates a button that is used to trigger a client-side script when the user clicks that button.
4. `image`: This creates a clickable button, but we can use an image as background of button.

eg

```
<form>
  <input type = "submit" name = "submit" value = "Submit" />
  <input type = "reset" name = "reset" value = "Reset" />
  <input type = "button" name = "OK" value = "OK" />
  <input type = "image" name = "imagebutton" src = "logo.png" />
```

7) Hidden Form Controls: Hidden form controls are used to hide data inside the page which later on can be pushed to the server. This control hides inside the `code` node and does not appear on the actual page.

eg `<form>`

```
  <p> This is page 10 </p>
```

```
  <input type = "hidden" name = "pagename" value = "10" />
  <input type = "submit" name = "submit" value = "Submit" />
```

```
</form>
```

HTML Frames

HTML frames are used to divide your browser window into multiple sections where each section can load a separate HTML document.

A collection of frames in the browser window is known as frameset. The window is divided into frames in a similar way the tables are organized into rows and columns.

Creating frames ? To use frames on a page we use <frameset> tag instead of <body> tag. The <frameset> tag defines, how to divide the window into frames. The rows attribute of <frameset> tag defines horizontal frames and cols attribute defines vertical frames. Each frame is indicated by <frame> tag and it defines which HTML document shall open into the frame.

e.g. <html>

for horizontal
<head><title>HTML frames </title></head>
<frameset rows = "10%, 80%, 10%">
 <frame name = "top" src = "/html/top-frame.htm"/>
 <frame name = "main" src = "/html/main-frame.htm"/>
 <frame name = "bottom" src = "/html/bottom-frame.htm"/>

<noframes>

<body>Your browser does not support frames.</body>

</noframes>

</frameset>

</html>

For vertically / cols

html >

<head> <title> Frames </title> </head>

<frameset cols = "25%, 50%, 25%">

<frame name = "left" src = "/html/top-frame.htm"/>

<frame name = "center" src = "/html/main-frame.htm"/>

<frame name = "right" src = "/html/bottom-frame.htm"/>

</frames>

<body> Your browser does not support frames </body>

</frames>

</frameset>

</html>

The <frameset> Tag Attributes

1) cols: Specify how many columns are contained in the frameset and size of each column. We can specify the width of each column in one of the four ways?

a) Absolute values in pixels i.e "100, 500, 100".

b) A percentage of browser window cols = "10%, 80%, 10%".

c) Using a wildcard symbol.

d) A relative width of the browser window.

2) rows: This attribute works just like the cols attribute and takes the same values, but it is used to specify the rows in the frameset.

3) border: This attribute specifies the width of the border of each frame in pixels. Eg border = "5"

- 4) frameborder: This attribute specifies whether a border should be displayed between frames. This attribute takes value either 1 (yes) or 0 (no). e.g. `frameborder = "0"`.
- 5) framespacing: This attribute specifies the amount of space between frames in a frameset. This can take any integer value. For example, `framespacing = "10"` means there should be 10 pixels space between each frames.

The < frame > tag Attributes

- 1) src: This attribute is used to give the file name that should be loaded in the frame. Its value can be any URL.
- 2) name: This attribute allows you to give a name to a frame. It is used to indicate which frame a document should be loaded into.
- 3) frameborder: This attribute specifies whether or not the borders of that frame are shown; it overrides the value given in the frameborder attribute on the <frameset> tag.
- 4) marginwidth: This attribute allows you to specify the width of the space between left and right of the frame's borders and the frame's content. The value is given in pixels. e.g. `marginwidth = "10"`.

5) marginheight) This attribute allows you to specify the height of the space between the top and bottom of the frame's border and its contents. The value is given in pixels. e.g:
`marginheight = "10".`

CSS

Cascading Style Sheet

CSS is used to control the style of a web document in a simple and easy way.

CSS is used to set the style in web pages that contain HTML elements. It sets the background color, font-size, font-family, etc properties of elements on a web page.

There are three types of CSS which are given below:

- In-line CSS
- Internal or Embedded CSS
- External CSS

Inline CSS) In-line CSS contains the CSS property in the body section attached which element is known as inline CSS. This kind of style is specified within an HTML tag using the `style` attribute.

e.g `<html>`

`<head>`

`<title> Inline CSS </title>`

`</head>`

```
<body> <h1 style="color: blue;"> A Blue heading </h1>
<p style="color: red; font-size: 20px; font-style: italic;
text-align: center;"> GreekForGreeks </p>
</body>
</html>
```

2) Internal or Embedded CSS: This can be used when a single HTML document must be styled uniquely. This CSS rule set should be within the HTML file in the head section i.e. CSS is embedded within the HTML file. (Used for e.g. - single HTML page)

```
eg <html>
  <head>
    <style>
      body {background-color: powderblue;}
      h1 {color: blue;}
      p {color: red;}
    </style>
  </head>
  <body>
    <h1> This is a heading </h1>
    <p> This is a paragraph. </p>
  </body>
</html>
```

3) External CSS: An external style sheet is used to define the style for many HTML pages. To use an external style sheet, add a link to it in the `<head>` section of each HTML page.

eg <html>

</html>

```
<head> <link rel="stylesheet" href="style.css">
</head>
<body>
  <h1> This is a heading </h1>
  <p> This is a paragraph. </p>
</body>
</html>
```

What are style sheet and why these are useful/valuable?

A style sheet is a file or form that defines the layout of a document. When you fill in a style sheet, you specify such parameters as the page size, margins, and fonts.

Style sheets are useful because you can use the same style sheet for many documents.

Java Script

HTML to define the content of web pages.

CSS to specify the layout of web pages.

Java Script to program the behavior of web pages

Java Script is an object-based scripting language which is lightweight and cross platform.

It is not a compiled language. The Java Script translator is responsible for translating the Java Script code for the web browser.

- ⇒ It is case sensitive
- Java Script is very easy to implement because it is integrated with HTML.

Hello World Using JS.

```
<html>
```

```
<body>
```

```
<script language = "javascript" type = "text/javascript">
```

```
<!--
```

```
document.write ("Hello World!")
```

```
-->
```

```
</script>
```

```
</body>
```

```
</html>
```

Client-Side Java Script

It means that a web page need not be a static HTML, but can include programs that interact with the user, control the browser, and dynamically create HTML content.

The JS code is executed when the user submits the form and only if all the entries are valid, they would be submitted to the web server. JS can be used to trap user-initiated events such as button clicks, link navigation, and other actions that the user initiates explicitly or implicitly.

Client-Side JS is an extended version of JS that enables the enhancement and manipulation of web pages and client browser. In a browser environment, your code will have access to things provided only by the browser, like the document object for the current page, the window, functions like alert that pop up a message. The main tasks of CSJS are validating input, animations, manipulating, applying styles, some calculations are done when you don't want the page to refresh so often.

Server-Side Java Script

SSJS is an extended version of JS that enables back-end access to databases, file systems and servers. SSJS, is JS code running over a server local resources, it's just like C# or Java.

but the syntax is based on JS. A good example of this is Node.js, with Node.js you write JS to program on the server side and that code can be seen as normal C#, C or any other server side language code. Moreover, with server-side code, you can still send javascript to the client-side, but there is a great difference b/w both because the client side code is restricted to the client machine resource in terms of computing power and permissions, while ^{with} the server side you can access your server hard disk without any problem.

Client Side

It is very easy to implement because it

is build on

HTML, CSS & JS

which are

simple language

and easy to learn

so it is

very easy to implement

and it is

fast to run

so it is

very fast

so it is

very fast