Web Technology Note (UNITE 1-3)

WWW: The World Wide Web is a hypermedia system. It has largely achieved the goal of Tim Berners-Lee, its British inventor. Tim Berners- Lee invented the World Wide Web in October 1994

It is a system of interlinked hypertext documents accessed via the Internet.

The World Wide Web, or simply Web, is a way of accessing information over the medium of the Internet. It is an information- sharing model that is built on top of the Internet. The Web uses the HTTP protocol, only one of the languages spoken over the Internet, to transmit data. Web services, which use HTTP to allow applications to communicate in order to exchange business logic, use the Web to share information. The web also utilizes browsers, such as Internet Explorer or Firefox, to access Web documents called Web pages that are linked to each other via hyperlinks. Web documents also contain graphics, sounds, text and video.

WEB PAGE: A web page is a document commonly written in Hyper Text Markup Language (HTML) that is accessible through the Internet network using a browser. A web page is accessed by entering a URL address and may contain text, graphics, and hyperlinks to other web pages and files.

WEB SITE: A connected group of pages on the World Wide Web regarded as a single entity, usually maintained by one person or organization and devoted to a single topic or several closely related topics.

URI: Uniform Resource Identifier (URI) is a string of characters used to identify the name of a resource. Such identification enables interaction with representations of the resource over a network, typically the World Wide Web, using specific protocols.

URL: Web browsers request pages from web servers by using a URL.

The URL is the address of a web page, like: www.texassifal.com This provides

location and protocol which is http part.

WEB SERVER: Web servers are computers that deliver (serves) Web pages. Every Web server has an IP address and possibly a domain name. A Web server is a program that uses HTTP (Hypertext Transfer Protocol) to serve the files and form pages to users, it responses to their requests, which are forwarded by their computers' HTTP clients. Dedicated computers and appliances may be referred to as Web servers as well.

Web client: It typically refers to the Web browser in the user's machine.

Web Browser: Browsers are software programs that allow you to search and view the many different kinds of information that's available on the World Wide Web. The information could be web sites, video or audio information.

SMTP: Simple Mail Transfer Protocol (SMTP), a protocol for sending e-mail messages between servers. Most e- mail systems that send mail over the Internet use SMTP to send messages from one server to another; the messages can then be retrieved with an e-mail client using either POP or IMAP. In addition, SMTP is generally used to send messages from a mail client to a mail server. This is why you need to specify both the POP or IMAP

(Internet Message Access Protocol**)** server and the SMTP server when you configure your e-mail application. SMTP by default uses TCP port.

POP: Post Office Protocol (POP) is an application-layer Internet standard protocol used by local e-mail clients to retrieve e-mail from a remote server over a TCP/IP connection.

Introduction to HTML

HTML is a language for describing web pages. It is not a programming language. A markup language specifies the layout and style of a document. The browser does not display the HTML tags, but uses the tags to interpret the content of the page.

- HTML stands for Hyper Text Markup Language
- A markup language is a set of markup tags
- The tags describe document content
- HTML documents contain HTML tags and plain text
- HTML documents are also called web pages

HTML Tags

- HTML tags are keywords (tag names) surrounded by angular brackets like <html>
- HTML tags normally come in pairs like and
- The first tag in a pair is the start tag, the second tag is the end tag
- The end tag is written like the start tag, with a forward slash before the tag name
- Start and end tags are also called opening tags and closing tags

HTML Images <img> Tag and the Src Attribute

Syntax for defining an image: <img src="*url*" alt="*some_text*">

HTML Tables:

Tag	Description
<table>	Defines a table
<th>	Defines a header cell in a table
<tr>	Defines a row in a table
<td>	Defines a cell in a table
<thead>	Groups the header content in a table
<tbody>	Groups the body content in a table

HTML Lists:

The most common HTML lists are ordered and unordered lists:

List properties:

 - An unordered list. This will list items using plain bullets.
 - An ordered list. This will use different schemes of numbers to list your items.

```
<html>
<head>
<title>HTML Unordered List</title>
</head>
<body>
  <ul type="square">
  <li>Beetroot</li>
  <li>Ginger</li>
  <li>Potato</li>
  <li>Radish</li>
  </ul>
</body>
</html>
```

This will produce following result:

- Beetroot
- Ginger
- Potato
- Radish

HTML Ordered Lists

If you are required to put your items in a numbered list instead of bulleted then HTML ordered list will be used.

Example

```
<html>
<head>
<title>HTML Ordered List</title>
</head>
<body>
<ol>
<li>Beetroot</li>
<li>Ginger</li>
<li>Potato</li>
<li>Radish</li>
</ol>
</body>
</html>
```

This will produce following result:

1. Beetroot
2. Ginger
3. Potato
4. Radish

HTML Forms:

HTML forms are used to pass data to a server. An HTML form can contain input elements like text fields, checkboxes, radio-buttons, submit buttons and more.

A form has two duties: to collect information from the user and to send that information to a separate web page for processing. For example, whenever you submit personal information to a web, you are using a form. Or whenever you type the keyword into your search engine, you are using a form. Forms are the heart and soul of the World wide web.

HTML Forms - The Input Element

Attribute value	Description
Text	A text field
Password	A password text field where each keystroke appears as an *
Button	A new button other than submit and reset button
Checkbox	A checkbox
Radio	A radio button
Reset	A reset button
Submit	A submit button
Select	A selection list
TextArea	A multiline text entry field

Creating Forms:

A form is created using a <form> tag

<form method=POST action="page.php">

Method:

The method tag can be set either GET or POST

GET: GET is used to request data from a specified resource. With this method, the form data will be encoded in a URL. It is composed of the name of the page or script to be loaded

POST: POST method sends the data captured by form element back to the web server as a separate bit stream of data. When there is a large amount of data to be send back to the web server, this method is used.

Action:

The action tag specifies what page will process the information entered by the user. The server side program that process this data can be written in any scripting language that web server understand.

Cascading Style Sheet (CSS)

CSS was first proposed by **Hakon Wium Lie** on October 10, 1994. At the time, Lie was working with Tim Berners-Lee (father of Html) at CERN. The European Organization for Nuclear Research is known as CERN. Hakon wium lie is known as father of css.

CSS was proposed in 1994 as a web styling language, to solve some of the problems of Html 4.

There were other styling languages proposed at this time, such as Style Sheets for Html and JSSS but CSS won.

Include properties in CSS2

CSS level 2 specification was developed by the W3C and published as a recommendation in May 1998. CSS 2 includes a number of new capabilities like below;

- ✓ **absolute**
- ✓ **relative**
- ✓ **fixed**
- ✓ **positioning**
- ✓ **z-index**
- ✓ **concept of media type**
- ✓ **bidirectional text**
- ✓ **new font properties such as shadows**.

CSS3 was started in 1998 but it has never been completed. Some parts are still being developed and some components work on some browsers. It published in June 1999. CSS 3 is divided into several separate documents called "modules". Each module adds new capabilities or extends features defined in CSS 2.

Function of CSS:

CSS is the language for describing the presentation of Web pages, including colors, layout, and fonts. It allows one to adapt the presentation to different types of devices, such as large screens, small screens, or printers.

CSS is independent of HTML and can be used with any XML-based markup language. The separation of HTML from CSS makes it easier to maintain sites, share style sheets across pages, and modify pages to different environments.

Types of CSS (Cascading Style Sheet)

Cascading Style Sheet (CSS) is used to set the style in web pages that contain HTML elements.

There are three types of CSS which are given below:

- ✓ Inline CSS
- ✓ Internal or Embedded CSS
- ✓ External CSS

Inline CSS: Inline CSS contains the CSS property in the body section attached with element is known as inline CSS.

```
<html>
   <head>
      <title>Inline</title>
   </head>
   <body><p style = "color:#009900; font-size:50px;
            font-style:italic; text-align:center;">

                        Welcome page
      </p>

   </body>
</html>
```

Internal or Embedded CSS: This can be used when a single HTML document must be styled uniquely. The CSS rule set should be within the HTML file in the head section,

```
<html>
   <head>
      <title>Internal CSS</title>
      <style>
         .main {
            text-align:center;
         }
         .info {
            color:#009900;
            font-size:50px;
            font-weight:bold;
         }
         .sec {
            font-style:bold;
            font-size:20px;
         }
      </style>
   </head>
   <body>
      <div class = "main">
         <div class ="info">Hi How are you</div>

         <div class ="sec">
            A computer science portal for students
         </div>
      </div>
   </body>
</html>
```

External CSS: External CSS contains separate CSS file which contains only style property with the help of tag attributes.

```
body {
   background-color:powderblue;
}
.main {
   text-align:center;
}
.info {
   color:#009900;
   font-size:50px;
   font-weight:bold;
}
#sec {
   font-style:bold;
   font-size:20px;
}
```

- ✓ **link** tag is used to link the external style sheet with the html webpage.
- ✓ **href** attribute is used to specify the location of the external style sheet file.

```
<html>
   <head>
      <link rel="stylesheet" href="file.css"/>
   </head>

   <body>
      <div class = "main">
         <div class ="info">WELCOME</div>
         <div id ="sec">
            A computer science portal for students
         </div>
      </div>
   </body>
</html>
```

Bootstrap:

Bootstrap is a front-end framework used to create modern websites and web apps. It's open-source and free to use, it helps to create UI elements such as buttons and forms. It also supports JavaScript extensions.

Basically, Software engineers use Bootstrap for a number of different reasons. It is easy to set up and master, it has a lot of components, a good grid system, styling for many HTML elements

It is great for creating layouts. its responsive to conform to different devices. It can be ensured consistency, eliminate cross-browser issues, and so on.

WEB APLICATION:

Most modern web applications are a collection of both **static** and **dynamic** web pages.

A static website contains simple HTML pages and supporting files hosted on a web server. When a site visitor requests a static page by clicking a link, the web server sends the page directly to the web browser without modifying the final contents.

A dynamic page displays different content for different users while retaining the same layout and design. Such pages, usually written in PHP, JAVA or ASP.NET, take more time to load than simple static pages.

Dynamic pages usually contain application programs for different services and require server-side resources like databases. A database allows the page creator to separate the website's design from the content to be displayed to users. Once they upload content into the database, it is retrieved by the website in response to a user request.

Difference between Static and Dynamic Web Pages:

Static Page	Dynamic Page
In static web pages, Pages will remain same until someone changes it manually.	In dynamic web pages, Content of pages are different for different visitors.
Static Web Pages are simple in terms with less complexity.	Dynamic web pages are complicated.
In static web pages, Information changes rarely.	In dynamic web page, Information changes frequently.
Static Web Page takes less time for loading than dynamic web page.	Dynamic web page takes more time for loading.
In Static Web Pages, database is not used.	In dynamic web pages, database is used.
Static web pages are written in languages such as: HTML, JavaScript, CSS, etc.	Dynamic web pages are written in languages such as: PHP, JAVA, ASP, ASP.NET, etc.
Static web pages require less work and cost in designing.	Dynamic web pages require comparatively more work and cost in designing them.

A **web server** stores and delivers the content for a website such as text, images, video, and application data. The most common type of client is a web browser program, which requests data from your website when a user clicks on a link or downloads a document on a page displayed in the browser.

A web server communicates with a web browser using the Hypertext Transfer Protocol (HTTP). The content of most web pages is encoded in Hypertext Markup Language (HTML). To deliver dynamic content, most web servers support server-side scripting languages to encode business logic into the communication. Commonly supported languages include Active Server Pages (ASP.Net), PHP, Python, and Java and so on.

Web Site VS Web Server: Web site and Web server are different: A Web site consists of a collection of Web pages associated with a particular hostname. A Web server is a program to satisfy client requests for Web resources.

Types of Web Servers:

1. Apache Web Server
2. IIS Server
3. Xampp Server
4. WAMP Server

Apache Web Server:

Introduction: Apache Web server is the most commonly used http server today. About 80% of all websites and Intranets use Apache web server to deliver their content to requesting Browsers.

Server-side programming languages such as PHP, asp.net, Python, Java and many others

Apache, an open-source Web server created by American software developer Robert McCool. Apache was released in 1995 and quickly gained a majority hold on the Web server market. Apache provides servers for Internet giants such as Google and Wikimedia projects such as Wikipedia.

In the early 21st century, Apache servers deployed more than 50 percent of the Internet's content.

As a Web server, Apache is responsible for accepting directory (HTTP) requests from Internet users and sending them their desired information in the form of files and Web pages. Much of the Web's software and code is designed to work along with Apache's features. Programmers working on Web applications typically make use of a home version of Apache to preview and test code. Apache also has a safe and secure file-sharing feature, allowing users to put files into the root directory of their Apache software and share them with other users. The Apache server's impact on the open-source software community is partly explained by the unique license through which software from the Apache Software Foundation is distributed.

Apache was originally known as the NCSA HTTPd Web server and was written by McCool when he was an undergraduate at the National Center for Supercomputing Applications (NCSA) at the University of Illinois at Urbana-Champaign. Apache is maintained and developed by a large community of volunteers and developers from the Apache Software Foundation, as well as by contributions from users worldwide. **[UNIT 1-3 ONLY]**

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