Unit-1

Introduction to HTML, Web and Internet

Introduction to Internet - WWW

- Internet is a global communication system that links together thousands of individual networks.
- It allows exchange of information between two or more computers on a network. Thus internet helps in transfer of messages through mail, chat, video & audio conference, etc.
- It has become mandatory for day-to-day activities: bills payment, online shopping and surfing, tutoring, working, communicating with peers, etc.

Introduction to Internet - WWW

- Basics of Computer Networks
  - Computer network is an interconnection between two or more hosts/computers. Different types of networks include Local Area Network (LAN), Wide Area Network (WAN), etc.
- Internet Architecture
  - Internet is called the network of networks. It is a global communication system that links together thousands of individual networks.
  - Internet architecture is a meta-network, which refers to a congregation of thousands of distinct networks interacting with a common protocol

Introduction to Internet - WWW

- Services on Internet
  - Internet acts as a carrier for numerous diverse services, each with its own distinctive features and purposes.
- Communication on Internet
  - communication can happens through the Internet by using Email, Internet Relay Chat, Video Conference etc.
- Web Browsing Software
  - "World Wide Web" or simple "Web" is the name given to all the resources of internet. The special software or application program with which you can access web is called "Web Browser".

Introduction to Internet - WWW

- Configuring Web Browser
  - Search Engine is an application that allows you to search for content on the web. It displays multiple web pages based on the content or a word you have typed.
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  - Search Engine is an application that allows you to search for content on the web. It displays multiple web pages based on the content or a word you have typed.

Introduction to Internet - WWW

- Accessing Web Browser
  - There are several ways to access a web page like using URLs, hyperlinks, using navigating tools, search engine, etc.

Understanding URL

- Every document on the Web has a unique address.
- This address is known as **U**niform **R**esource **L**ocator (URL).
- Several HTML/XHTML tags include a URL attribute value, including hyperlinks, inline images, and forms.
- All of them use the same syntax to specify the location of a web resource, regardless of the type or content of that resource. That's why it is known a Uniform Resource Locator.

Understanding URL

- URL Elements
  - A URL is made of up several parts, each of which offers information to the web browser to help find the page. It is easier to learn the parts of a URL, if you look at the example URL given below.
  - There are three key parts: the scheme, the host address, and the file path.

http://www.tutorialspoint.com/index.htm

Understanding URL

- The Scheme
- The scheme identifies the type of protocol and URL you are linking to and therefore, how the resource should be retrieved.
- For example, most web browsers use Hypertext Transfer Protocol (HTTP) to pass information to communicate with the web servers and this is the reason a URL **starts with http://.**
- There are other schemes available and you can use either of them based on your requirement:

Understanding URL

- **http://**
  - Hypertext Transfer Protocol (HTTP) is used to request pages from Web servers and send them back from Web servers to browsers.
- **https://**
  - Secure Hypertext Transfer Protocol (HTTPS) encrypts the data sent between the browser and the Web server using a digital certificate.
- **ftp://**
  - File Transfer Protocol is another method for transferring files on the Web. While HTTP is a lot more popular for viewing Web sites because of its integration with browsers, FTP is still commonly used protocol to transfer large files across the Web and to upload source files to your Web server.
- **file://**
  - Used to indicate that a file is on the local hard disk or a shared directory on a LAN.

Understanding URL

- The Host Address
  - The host address is where a website can be found, either the IP address (four sets of numbers between 0 and 255, for example 68.178.157.132) or more commonly the domain name for a site such as www.tutorialspoint.com.
  - Note that "www" is not actually part of the domain name although it is often used in the host address.

Understanding URL

- The File Path
  - The filepath always begins with a forward slash character, and may consist of one or more directory or folder names.
  - Each directory name is separated by forward slash characters and the filepath may end with a filename at the end.
  - Here index.htm is the filename which is available in html directory:

https://www.tutorialspoint.com/html/index.htm

Understanding URL

- Other Parts of the URL
  - Using credentials is a way of specifying a username and password for a password-protected part of a site.
  - The credentials come before the host address, and they are separated from the host address by an @ sign.
  - Note how the username is separated from the password by a colon.
  - The following URL shows the username *admin* and the password *admin123*:

https://admin:admin123@tutorialspoint.com/admin/index.htm

- Using the above URL, you can authenticate administrator and if provided ID and Password are correct then administrator will have access on index.htm file available in admin directory.

Understanding URL

- You can use a telnet URL to connect to a server as follows :

telnet://user:password@tutorialspoint.com:port/

  - Another important information is Web Server *Port Number*.
  - By default HTTP Server runs on port number 80.
  - But if you are running a server on any other port number then it can be porvided as follows, assuming server is running on port 8080:

https://www.tutorialspoint.com:8080/index.htm

Understanding URL

- *Fragment identifiers* can be used after a filename to indicate a specific part of the page that a browser should go immediately.
- Following is an example to reach to the top of page **html_text_links.htm.**

  https://www.tutorialspoint.com/html/html_text_links.htm#top
- You can pass some information to the server using URL. When you use a form on a webpage, such as a search form or an online order form, the browser can append the information you supply to the URL to pass information from your browser to the server as follows

https://www.tutorialspoint.com/bin/search.cgi?searchTerm=HTML

- Here, **searchTerm=HTML** is passed to the server where search.cgi script is used to parse this passed information and take further action.

Understanding URL

- Absolute and Relative URLs
- You may address a URL in one of the following two ways:
- **Absolute** − An absolute URL is the complete address of a resource.
- For example

http://www.tutorialspoint.com/html/html_text_links.htm

- **Relative** − A relative URL indicates where the resource is in relation to the current page. Given URL is added with the <base> element to form a complete URL.
- For example **/html/html_text_links.htm**

Introduction to HTML

- **HTML** stands for **Hyper Text Markup Language**, which is the most widely used language on Web to develop web pages.
- **HTML** was created by Berners-Lee in late 1991 but "HTML 2.0" was the first standard HTML specification which was published in 1995.
- HTML 4.01 was a major version of HTML and it was published in late 1999.
- Though HTML 4.01 version is widely used but currently we are having HTML-5 version which is an extension to HTML 4.01, and this version was published in 2012.

Introduction to HTML

Year	Version
1989	Tim Berners-Lee invented www
1991	Tim Berners-Lee invented HTML
1993	Dave Raggett drafted HTML+
1995	HTML Working Group defined HTML 2.0
1997	W3C Recommendation: HTML 3.2
1999	W3C Recommendation: HTML 4.01
2000	W3C Recommendation: XHTML 1.0
2008	WHATWG HTML5 First Public Draft
2012	WHATWG HTML5 Living Standard
2014	W3C Recommendation: HTML5
2016	W3C Candidate Recommendation: HTML 5.1
2017	W3C Recommendation: HTML5.1 2nd Edition
2017	W3C Recommendation: HTML5.2

Introduction to HTML

- HTML stands for **H**yper**t**ext **M**arkup **L**anguage, and it is the most widely used language to write Web Pages.
- **Hypertext** refers to the way in which Web pages (HTML documents) are linked together. Thus, the link available on a webpage is called Hypertext.
- As its name suggests, HTML is a **Markup Language** which means you use HTML to simply "mark-up" a text document with tags that tell a Web browser how to structure it to display.
- Originally, HTML was developed with the intent of defining the structure of documents like headings, paragraphs, lists, and so forth to facilitate the sharing of scientific information between researchers.
- Now, HTML is being widely used to format web pages with the help of different tags available in HTML language.

Introduction to HTML

- Why to Learn HTML?
  - Originally, **HTML** was developed with the intent of defining the structure of documents like headings, paragraphs, lists, and so forth to facilitate the sharing of scientific information between researchers.
  - Now, HTML is being widely used to format web pages with the help of different tags available in HTML language.
  - **HTML** is a MUST for students and working professionals to become a great Software Engineer specially when they are working in Web Development Domain.

Introduction to HTML

- **Some of the key advantages of learning HTML:**
  - **Create Web site -** You can create a website or customize an existing web template if you know HTML well.
  - **Become a web designer -** If you want to start a carrer as a professional web designer, HTML and CSS designing is a must skill.
  - **Understand web -** If you want to optimize your website, to boost its speed and performance, it is good to know HTML to yield best results.
  - **Learn other languages -** Once you understands the basic of HTML then other related technologies like javascript, php, or angular are become easier to understand.

Introduction to HTML

```
<!DOCTYPE html>
<html>
  <head>
    <title>This is document title</title>
  </head>
  <body>
    <h1>This is a heading</h1>
    <p>Hello World!</p>
  </body>
</html>
```

Introduction to HTML

- **Applications of HTML**
- **Web pages development** - HTML is used to create pages which are rendered over the web. Almost every page of web is having html tags in it to render its details in browser.
- **Internet Navigation** - HTML provides tags which are used to navigate from one page to another and is heavily used in internet navigation.
- **Responsive UI** - HTML pages now-a-days works well on all platform, mobile, tabs, desktop or laptops owing to responsive design strategy.
- **Offline support** - HTML pages once loaded can be made available offline on the machine without any need of internet.
- **Game development-** HTML5 has native support for rich experience and is now useful in gaming developent arena as well.

Structure of an HTML Document

- An HTML document has two main parts: the **head** and the **body**. But firstly every HTML document should start by declaring that it is an HTML document.
- These tags are of the form:
  - <html>Should appear at the beginning of your document.
  - </html>Should appear at the end of your document.

HTML Tags

- This leads us nicely on to say more about [X]HTML tags. All formatting tags (or elements) are of the general form:
- <tag_on>Switches the tag sequence on. For example, to **bold** some text add a at the beginning of the text.
- </tag_off>Switches the tag sequence off. The tag_on and tag_off tags are the same except the off tag has an / character in front of it.
- For example, to switch off the bolding add a character sequence at the end of the text that is to be given the attribute of bolding.

HTML Tags

- HTML Tags
- As told earlier, HTML is a markup language and makes use of various tags to format the content. These tags are enclosed within angle braces **<Tag Name>**. Except few tags, most of the tags have their corresponding closing tags. For example, **<html>** has its closing tag **</html>** and **<body>** tag has its closing tag **</body>** tag etc.

HTML Tags

- **<!DOCTYPE...>**
  - This tag defines the document type and HTML version.
- **<html>**
  - This tag encloses the complete HTML document and mainly comprises of document header which is represented by <head>...</head> and document body which is represented by <body>...</body> tags.
- **<head>**
  - This tag represents the document's header which can keep other HTML tags like <title>, <link> etc.

HTML Tags

- **<title>**
  - The <title> tag is used inside the <head> tag to mention the document title.
- **<body>**
  - This tag represents the document's body which keeps other HTML tags like <h1>, , <p> etc.
- **<h1>**
  - This tag represents the heading.
- **<p>**
  - This tag represents a paragraph.

HTML Tags

- **DOCTYPE TAG**
- The HTML !DOCTYPE tag is the very first thing that every compliant web document should have.
- It's purpose is to inform the browser the type of document it's about to process.
- In HTML5, the !DOCTYPE declaration remains only for legacy reasons pertaining processing modes in browsers.
- The Document Type Declaration (DTD) is unique for each version of HTML and must be written exactly as it is, to be of some use.
- For this reason, it's better if you just copy and paste the code for the declararion you're about to use.

HTML Tags

- Below is a list of DTDs for all the versions of HTML (XHTML included), and others like SVG and MathML. But remember that, as of today, there's no need to use any other declaration than the one for HTML5, as this is, by far, the preferred version (unless you're working on a very particular project).
- **HTML5**
- <!DOCTYPE html>
- **XHTML 1.1**
- <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.1//EN" "http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd">

Introduction to Web Technologies

- **HTML (Hyper Text Mark-up Language)** is the glue which holds together every internet site.
- You construct a foundation, like building a home. HTML is the base. HTML is an open source speech (i.e. not possessed by anybody), which is not difficult to learn, and needs no more elaborate (or expensive!)) Packs to begin with it.
- All you will need is something to sort with, for example, Windows Notepad, and also a great deal of patience and time.
- HTML functions on a ‘label’ system, in which the material is effected by every label.
- It is although confined alone. Like your house’s base, HTML is strong enough to help many types of languages.

Introduction to Web Technologies

- **JavaScript :** JavaScript is a dynamic computer programming language. It is lightweight and most commonly used as a part of web pages, whose implementations allow client-side script to interact with the user and make dynamic pages.
- It is an interpreted programming language with object-oriented capabilities.
- JavaScript was first known as **LiveScript,** but Netscape changed its name to JavaScript, possibly because of the excitement being generated by Java.
- Its first appearance in Netscape 2.0 in 1995 with the name **LiveScript**.
- The general-purpose core of the language has been embedded in Netscape, Internet Explorer, and other web browsers.
- The ECMA-262 Specification defined a standard version of the core JavaScript language.
  - JavaScript is a lightweight, interpreted programming language.
  - Designed for creating network-centric applications.
  - Complementary to and integrated with Java.
  - Complementary to and integrated with HTML.
  - Open and cross-platform

Introduction to Web Technologies

- **CSS : C**ascading **S**tyle **S**heets, fondly referred to as CSS, is a simple design language intended to simplify the process of making web pages presentable.
- CSS handles the look and feel part of a web page. Using CSS, you can control the color of the text, the style of fonts, the spacing between paragraphs, how columns are sized and laid out, what background images or colors are used, layout designs, variations in display for different devices and screen sizes as well as a variety of other effects.
- CSS is easy to learn and understand but it provides powerful control over the presentation of an HTML document.
- Most commonly, CSS is combined with the markup languages HTML or XHTML.

Introduction to Web Technologies

- **XML** stands for **E**xtensible **M**arkup **L**anguage. It is a text-based markup language derived from Standard Generalized Markup Language (SGML).
- XML tags identify the data and are used to store and organize the data, rather than specifying how to display it like HTML tags, which are used to display the data.
- XML is not going to replace HTML in the near future, but it introduces new possibilities by adopting many successful features of HTML.
- There are three important characteristics of XML
  - **XML is extensible** − XML allows you to create your own self-descriptive tags, or language, that suits your application.
  - **XML carries the data, does not present it** − XML allows you to store the data irrespective of how it will be presented.
  - **XML is a public standard** − XML was developed by an organization called the World Wide Web Consortium (W3C) and is available as an open standard.

Introduction to Web Technologies

- **XHTML**
- XHTML stands for E**X**tensible **H**yper**T**ext **M**arkup **L**anguage. It is the next step in the evolution of the internet. The XHTML 1.0 is the first document type in the XHTML family.
- XHTML is almost identical to HTML 4.01 with only few differences. This is a cleaner and stricter version of HTML 4.01. If you already know HTML, then you need to give little attention to learn this latest version of HTML.
- XHTML was developed by World Wide Web Consortium (W3C) to help web developers make the transition from HTML to XML. By migrating to XHTML today, web developers can enter the XML world with all of its benefits, while still remaining confident in the backward and future compatibility of the content.

Introduction to Web Technologies

- **AJAX**
- AJAX is a web development technique for creating interactive web applications. If you know JavaScript, HTML, CSS, and XML, then you need to spend just one hour to start with AJAX.
- AJAX is Based on Open Standards
- AJAX is based on the following open standards −
- Browser-based presentation using HTML and Cascading Style Sheets (CSS).
- Data is stored in XML format and fetched from the server.
- Behind-the-scenes data fetches using XMLHttpRequest objects in the browser.
- JavaScript to make everything happen.

Introduction to Web Technologies

- **ASP.NET** is a web development platform, which provides a programming model, a comprehensive software infrastructure and various services required to build up robust web applications for PC, as well as mobile devices.
- ASP.NET is a part of Microsoft .Net platform.
- ASP.NET applications are compiled codes, written using the extensible and reusable components or objects present in .Net framework.
- These codes can use the entire hierarchy of classes in .Net framework.
- The ASP.NET application codes can be written in any of the following languages:
  - C#, Visual Basic.Net, Jscript, J#
- ASP.NET is used to produce interactive, data-driven web applications over the internet. It consists of a large number of controls such as text boxes, buttons, and labels for assembling, configuring, and manipulating code to create HTML pages.

Introduction to Web Technologies

- PHP started out as a small open source project that evolved as more and more people found out how useful it was. Rasmus Lerdorf unleashed the first version of PHP way back in 1994.
- PHP is a recursive acronym for "PHP: Hypertext Preprocessor".
- PHP is a server side scripting language that is embedded in HTML. It is used to manage dynamic content, databases, session tracking, even build entire e-commerce sites.
- PHP supports a large number of major protocols such as POP3, IMAP, and LDAP. PHP4 added support for Java and distributed object architectures (COM and CORBA), making n-tier development a possibility for the first time.

Introduction to Web Technologies

- **Web services** are open standard (XML, SOAP, HTTP, etc.) based web applications that interact with other web applications for the purpose of exchanging data. Web services can convert your existing applications into web applications.