

# COMPUTER SCIENCE

Grade: XI

## WEB TECHNOLOGY



## REFERENCE NOTE

### Unit Wise Important Questions for Computer Science XI

#### Unit 6 Web Technology

1. What is an HTML? List out any three advantages of HTML.
2. What is HTML element? What are the two types of HTML elements?
3. What are the essential document structure elements? Explain each of them in short.
4. What is ordered list? How is <OL> different from <UL>?
5. What is the difference between CELLSPACING and CELLPADDING?

## Unit 6- Web Technology



### 6.1 Introduction to Web Development

*Web Development is the practice of developing websites and web apps that live on the internet.* Web development is the work involved in developing a Web site for the Internet (World Wide Web) or an intranet (a private network).<sup>[1]</sup> Web development can range from developing a simple single static page of plain text to complex web applications, electronic businesses, and social network services. A more comprehensive list of tasks to which Web development commonly

refers, may include Web engineering, Web design, Web content development, client liaison, client-side/server-side scripting, Web server and network security configuration, and e-commerce development.

There are two broad divisions of web development – front-end development (also called client-side development) and back-end development (also called server-side development).

#### **Front-end development:**

Front end development refers to constructing what a user sees when they load a web application – the content, design and how you interact with it. This is done with three codes – HTML, CSS and JavaScript etc.

#### **Back End development:**

Back-end development controls what goes on behind the scenes of a web application. A back-end often uses a database to generate the front-end. Back-end scripts are written in many different coding languages and frameworks, such as PHP, ASP.NET, Perl, Java, Python etc.

#### **Full Stack Development:**

A full stack developers understand both front and back end strategies and process, which means that they are perfectly positioned to oversee the entire process. They are involved in designing both the front end and the back end.

### 6.2 Web Browsers and Search Engines

#### **Web Browsers**

Web Browser Web browser is the “window to the Web” for Internet users around the world. It is a program that enables a user to display and interact with text, images, sound and other information located on a web page of a web site on the World Wide Web. It enables a user to quickly and easily access information provided on the Web pages of the Web sites by traversing hyperlinks. The most popular web browsers that are used today are Mozilla Firefox, Google Chrome, Microsoft Internet Explorer, Apple Safari and the Opera browser.

#### **Website**

Web site is a collection of Web pages containing text, images, audio and videos. It is designed and developed for a wide variety of organizations in areas, such as education, business, research and e-commerce. It is under the control of a particular person or a group. It may include links to other sites in the form of hypertext,

highlighted or colored text that the user can click on with their mouse, instructing their computer to jump to the new site. Examples of some common Web sites are [www.yahoo.com](http://www.yahoo.com) and [www.google.com](http://www.google.com).

### **Uniform Resource Locator (URL)**

Uniform Resource Locator (URL) is an address that identifies the location of a Web page on the Internet. It helps in retrieval of Web pages from their original location. It contains the name of the Web protocol (http), followed by a colon, followed by two forward slashes, followed by a domain name, and ending with a final slash. The domain name is the Internet name of the computer that is serving the information. For example: <http://www.yahoo.com> is the URL for the Yahoo Web site.

### **Web page**

Web page (or web page) is a web document that is suitable for the World Wide Web and the web browser. These documents are written in HTML (hypertext markup language) and are translated by your Web browser. Web pages may be retrieved from a local computer or from a remote web server. Web pages are requested and served from web servers using Hypertext Transfer Protocol (HTTP).

### **Web Server**

Web Server Web server is a computer program (housed in a computer) that serves requested HTML pages or files. The Web server watches the Internet connection and waits for requests from the Web browser. When it receives a request, it finds the document, generates the information if needed and sends it back to the browser that requested it. Some of the most popular Web servers software are Internet Information Server (IIS) from Microsoft, FastTrack from Netscape and Intranet ware from Novell.

### **Homepage**

Homepage Home Page is the opening or main page of a website, intended chiefly to greet visitors and provide information about the site or its owner. The home page introduces the rest of the Website and provides links that lead to the other pages on the site. Many individuals, businesses and organizations on the World Wide Web are using home page.

### **Downloading and Uploading**

The process of transferring a copy of a file from a remote computer to the requesting computer is called downloading whereas the process of transferring a copy of a file from a local computer to a remote computer is called uploading.

### **WWW**

World Wide Web is the leading information-exchange service of the Internet. It was created by Tim Berners-Lee and his colleagues at CERN and introduced to the world in 1991. The Web gives users access to a vast array of documents that are connected to each other by means of hypertext or hyperlinks.

### **DNS**

Domain Name System (DNS Domain Name Servers (DNS) are the Internet's equivalent of a phone book. They maintain a directory of domain names and translate them to Internet Protocol (IP) addresses. This is necessary because, although domain names are easy for people to remember, computers or machines,

access websites based on IP addresses. Information from all the domain name servers across the Internet are gathered together and housed at the Central Registry. Host companies and Internet Service Providers interact with the Central Registry on a regular schedule to get updated DNS information. When you type in a web address, e.g., [www.jimsbikes.com](http://www.jimsbikes.com), your Internet Service Provider views the DNS associated with the domain name, translates it into a machine friendly IP address (for example 216.168.224.70 is the IP for [jimsbikes.com](http://jimsbikes.com)) and directs your Internet connection to the correct website.

## Search Engine

Search engine is a program that allows user to scan the contents of the Internet to find Web sites or specific information of interest to them. A user inputs a search term, and the search engine attempts to match this term to categories or keywords in its catalog of World Wide Web sites. The search engine then generates a list of sites that match the search criteria, ranked in order of relevance. Search engines help organize more than two billion pages of information on the World Wide Web and make them accessible to Internet users. A number of search engines are available on the Internet and sometimes they are called Web crawlers or Web spiders. Some of the popular search engines are: Google, HotBot, WebCrawler, Yahoo! and AltaVista.

## 6.3 Overview of Various Internet and Web Technology

### Introduction of Internet

*Internet is a network of networks. Millions of computer all over the world are connected through the internet. Computer users on the internet can contact with one another anywhere in the world. If a computer is connected to the internet, one can connect to millions of computers. It is very much similar to the telephone connection where one can talk with any person anywhere in the world.*

On the internet, a huge resource of information is accessible to people across the world. Information in every field starting from education, Science, Health, Medicine, History and Geography to business, news, etc. can be retrieved from the internet. One can also download programs and software packages from the internet.

The development of internet started when US Defense Department set up the ARPANET (Advanced Research Project Agency Network) to have a failure proof communication network for defense department of US.

### USES OF INTERNET

- **On-line communication:** Computer users around the world use the E-mail services to communicate with each other extensively.
- **Feedback about products:** Commercial organizations are also using the internet to gather information about the satisfaction of existing products and market opportunities of new products. This is usually accomplished by putting up an interactive survey application by the organization on a WWW site on the Internet.
- **Product promotion:** Several commercial organizations are effectively using the internet services for promoting their products by the use of different social networks.
- **Customer Support Service:** Many organizations are also using the internet to provide timely customer support.

- **On-line shopping:** The Internet has also facilitated the introduction of a new market concept, which consists of virtual shops. These shops remain open 24 hrs. all the year round and are accessible to make purchase all around the world.
- **On-line journals and magazines:** There are many WWW sites on the internet, which consists of an electronic version of many journals and magazines.
- **Real-time updates:** It helps to provide news and other happenings that may be on-going in different parts of the world but with the use of the internet, we come to know about the real-time updates in every field be it in business, sports, finance, politics, entertainment and others very easily. Many time the decisions are taken on the real-time updates that are happening in the various parts of the world and for this, the internet is very essential and helpful.
- **Research:** In order to do research, we need to go through hundreds of books as well as the references and that was one of the most difficult jobs to do earlier. Since, the internet came into life, everything is available in just a click. The user just has to search for the concerned topic and will get hundreds of references that may be beneficial for the research and since, the internet is here to make research activity easy and hence, public user can take a large amount benefit from the research work that have been done.
- **Education:** Education is one of the best things that the internet can provide. There are a number of books, reference books, online help centers, expert`s views and other study oriented material on the internet that can make the learning process very easier as well as a fun to learn.



Figure: Use of Internet in Education

- **Financial Transaction:** It is a term which is used when there is an exchange of money. With the use of internet in the financial transaction, the work has become a lot easier. Payments, Funds transfer, banking transactions can be done through on-line banking service.
- **Entertainment:** The Internet is also used for entertainment. Such as chatting with friends, sharing videos, watching movies, listening music, live telecast of sports and other events, playing games, etc.



Figure: Use of Internet in Entertainment

- **Job Search:** Using internet, searching job has become an easier task. There are an endless amount of websites on the internet that provided news about a vacancy in various post as required.



Use of Internet in Job search

- **Blogging:** There are many people who are very much interested in writing blogs and for them the internet is the best place. They can not only write blogs as per their wish but can also publicize their work so that their work reaches to most of the people and they get appreciated.

### **Positive impacts of Internet**

The positive impacts of internet to the society, organization and individual are:

- Faster, cheaper and easier medium of communication.
- Information sharing and browsing.
- File transferring facility.
- Reach to the worldwide viewers.
- Effective, easier, faster and cheaper promotion of product or service.
- Better customer support and customer relationship management (CRM).
- Online services like banking, shopping, education, etc.
- E-mail communication for sending and receiving an electronic document.
- Enhanced collaboration between different organizations.
- Effective Supply Chain Management (SCM).
- Electronic payment system using credit /debit cards, ATM, online payment, electronic cheque, smart card, electronic purse, etc.
- Newsgroups for instant sharing of news and feedback system.
- Creation of new job opportunities related with the internet.
- Source for entertainment.
- Social networking for instant touch with friends and relatives.

### **Misuses of Internet / Negative impacts of Internet**

The negative impacts of internet to the society, organization and individual are:

- It is the most common medium for spreading malicious software like virus, worm, etc..
- It has increased piracy.
- Pornography (uploading, publishing, viewing sexual contents in the form of text, image, audio and video).
- Stealing, modifying or destructing data.
- Piracy of software, audio, video or other intellectual contents.
- Hacking of organizational system, website, database etc.
- It is also used to harass people by sending insulting comments, making vulgar cartoons, blackmailing, etc.
- Unemployment problem for the individuals not having knowledge about the Internet.
- It has increased digital divide.

### **INTRODUCTION OF E-MAIL**

Email or e-mail, electronic mail is a method of exchanging digital messages from an author to one or more persons. Email operates across the Internet or other computer networks. *Email is an electronic mail for sending, receiving and storing of our electronic messages.* Email has gained popularity with the spread of the Internet. Today, email is the preferred method of communication.



**Fig: E-mail**

It is one of the most frequently used features of the internet. Many people sign up for internet services so that they can send and receive e-mail messages. The internet is now the world's largest electronic mail system. More than 30 million people are directly connected to the internet and can send and receive electronic mails.

#### Uses of Email:

- Email enables individuals and groups to communicate with one another.
- Group of people can work on the same topic through email and generate one common document together.
- Through email, we can stay in touch with our family, relatives and friends who are away from us.
- It is the convenient way of sending job application, sending valuable documents, important images and videos.
- The use of email is essential in today's business culture for communication purpose. Businesses of all sizes, places and types can use email for multiple purposes effectively.
- It is the most efficient and certain way to communicate with management, colleagues, clients and vendors.
- Email is used when colleagues of the same or different departments need to send and receive information about projects.
- Clients and vendors use email to order products and services
- Employees can receive dates and times for meetings, conferences and mandatory training sessions via email.

#### ADVANTAGES OF E-MAIL

- **Fast:** It can relay our message to the recipient in a matter of minutes or seconds. Many systems also let us check to see if the receiver has seen our message or not.
- **Fun:** International electronic mail system enables us to find 'pen pals' all over the world.
- **Easy:** When we open our email box, we see a list of the message we have received. First, we read the message and then decide how to respond. We can reply to the message if we like or just delete if it requires no reply. We can save it or print it. We can even forward the message to the others.
- **Cheap:** We can send messages to others through email around the world cheaply in comparison to the charge we are paying for telephone services.
- **Flexible:** We can send a message to more than one person if we like.
- **Convenient:** Because it's written, we can compose and review our message before sending which helps in any inconvenience.
- **Word wide presence:** We can check our emails from any computer in the world while on vacation in other countries or from transportation vehicles, etc.

#### DISADVANTAGES OF E-MAIL

- **Threat of viruses:** Emails may carry viruses. These are small programs that harm your computer system. They can read out your email address book and send themselves to a number of people around the world.
- **Spam:** Having to deal with spam and spoofs is one of the worst avoidable time wasters online. Use some anti-spam software.
- **Misunderstandings:** Emails from people who don't take the time to read what they write before clicking 'send'. Time is wasted, either to clarify or, worse, acting on a misinterpretation of the message.

- No guarantee the mail will be read until the user logs on and checks their email.
- **Need of internet:** The recipient needs access to the Internet to receive email.

## 6.4 Content Management System (CMS)

Content Management System (CMS) is software that helps users create, manage, and modify content on a website without the need for specialized technical knowledge. It also provides version management and authoring workflow to keep large, global sites consistent. Content Management System is made up of two core parts. They are:

- a. A content management application (CMA) is the part that allows you to actually add and manage content on your site.
- b. A content delivery application (CDA) is the backend process that takes the content you input in the CMA, stores it properly, and makes it visible to your visitors.

Some of the popular CMS platforms providers are Drupal, Joomla, Squarespace and WordPress. The main features of Content Management System are:

- a. The main features of modern CMS is easy-to-use content editor.
- b. Indexing, search and retrieval features index all data for easy access through search functions and allow users to search by attributes such as publication dates, keywords or author.
- c. Format management facilitates turn scanned paper documents and legacy electronic documents into HTML or PDF documents.
- d. Revision features allow content to be updated and edited after initial publication. Revision control also tracks any changes made to files by individuals.
- e. Publishing functionality allows individuals to use a template or a set of templates approved by the organization, as well as wizards and other tools to create or modify content.

## 6.5 HTML: The Language of the web

### INTRODUCTION

HTML (Hyper Text Markup Language) is text markup language used to create HTML documents (Web Pages) for The Internet. HTML is a set of logical codes or tags (markup) that are used to define the Web browser how to present the information in the Web page.

It can be applied and embedded in the text to add formatting, linking that constitute the appearance of the Web documents and the information. It is interpreted by the Web browser. The Web browser is software that runs on the Web client (user computer) and it interprets HTML tags to display the contents of the Web page.



Fig. HTML



HTML is platform independent language. It is not a programming language like C, C++, java and BASIC.

Basically, it is a set of markup tags that tells the browser how to display the Web page content.

Some popular markup languages are DHTML, SGML (Standard Generalized Markup Language), XHTML (Extended HTML), XML (Extensible Markup Language), etc.

Tim Berners Lee developed HTML in 1990, at CERN (Conseil Europeenne pour la Recherche Nucleaire ), the European Particle Physics Laboratory in Geneva, Switzerland.

There are different versions of HTML; these are HTML, HTML+, HTML 1.0, HTML 2.0, HTML 3.2, HTML 4.01 (It has accessibility of Cascading Style sheet, and Multimedia) and now HTML 5.0 (It has accessibility of local storage and offline database).

### **Uses of HTML**

1. It is used for basic layout creating or designing the Web page.
2. Without HTML, the World Wide Web will not exist.
3. It allows embedding text, image, multimedia (audio / video) and links to other documents and the Web pages.
4. It provides a means to create structured document by using paragraph, character formatting, links and lists.
5. It can embed scripts such as CSS, JavaScript, which affect the behavior and design of the Web page.

### **Advantages of using HTML**

1. It is highly flexible and user-friendly.
2. It is an open technology that supports almost all the Web browser and platforms like MS-Windows, Macintosh, UNIS, etc.
3. It is efficient and reliable. You can create the Web page in order to advertise and promote products and services.
4. It is easily understandable and does not require long time training.
5. It provides search engine compatible to the Web sites.

### **Disadvantages of using HTML**

1. It is complex to design attractive Web page only using HTML. So, other languages are used for additional programming.
2. It is difficult to develop a complete Web Site by using only HTML. Web development tools like Dreamweaver, Foundation are used.
3. It cannot be used to develop a dynamic Web page.
4. There is no any complete acceptable standard of HTML.
5. There are many incompatibilities of HTML.

### **HTML Tags**

HTML is made up of different tags and attributes. The tag is an HTML command that shows the layout or displays the desired output of a whole or part of the Web page. HTML tag is bound by angular brackets ( < > ) that always opens with a < (less than ) sign and closes with a > (greater than) sign. It controls the

appearance, layout and flow of the Web page. A tag contains three parts: element (identification of tag), attribute and value.

**The basic structure of tag is: `<body> .....</body>`**

Here, is `<BODY>` the beginning tag and `</BODY>` is the ending tag.

HTML tags can be of two types:

1. Paired Tags
2. Singular Tags

### 1. Paired Tags

It is also called container tag. A tag is said to a paired tag if it along with a companion tag or closing tag appears at the end. For example, the tag is paired tag. The tag with its closing tag is used to rendered in Bold Text. In paired tag, first tag is called the opening tag and the second tag is called the closing tag.

### 2. Singular Tags

The second type of tag is the singular tag, which is also known as a stand-alone tag or empty tag. The stand-alone tag does not have companion tag or closing tag.

For example: Other singular tags are:

Tags	Description
<code>&lt;BR&gt;</code>	Insert a link break
<code>&lt;HR&gt;</code>	Defines a horizontal rule
<code>&lt;!--&gt;</code>	Defines a comment

### Basic Structure of HTML Document

The HTML document is mainly divided into two sections. They are: Head section and Body section.

#### Here's the example of basic structure of HTML

```
<HTML>
<HEAD> <TITLE> Document Title </TITLE> </HEAD>
<BODY>
This is the Body of the Webpage.
</BODY>
</HTML>
```



Fig: basic structure of HTML