

B.C.A. SCIENCE : SEMESTER-IV

INTRODUCTION TO WEB TECHNOLOGY



ANIKET NAGANE
BHUPESH TAUNK
PRASHANT JAWALKAR

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Text Book Of

INTRODUCTION TO WEB TECHNOLOGY

For

B.C.A. Science : Semester - IV

As Per New Syllabus

Aniket Nagane

M.Sc. (Computer Science), NET
Assistant Professor Computer Science Department
MIT Group of Institutions
MAEER's Arts, Commerce and Science College
Alandi, Pune

Bhupesh Taunk

M.Sc. (Computer Science)
Lecturer, Computer Science Department
Fergusson College, Pune

Prashant Jawalkar

M.E. (IT)
Assistant Professor, Computer Engineering Department
JSPM's Bhivarabai Sawant Institute of
Technology & Research (BSIOTR)
Wagholi, Pune

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Preface...

We take an opportunity to present this book entitled as "**Introduction to Web Technology**" to the students of **B.C.A. Science, Semester-IV** as per the New Syllabus, June 2017-2018.

The book covers theory of Introduction of Web Technologies, Advance HTML Tags, JavaScript, Arrays in PHP and Function in PHP.

A special words of thank to Shri. Dineshbhai Furia, Mr. Jignesh Furia for showing full faith in us to write this text book. We also thank to Mr. Amar Salunkhe and Mr. Akbar Shaikh of M/s Nirali Prakashan for their excellent co-operation.

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Although every care has been taken to check mistakes and misprints, any errors, omission and suggestions from teachers and students for the improvement of this text book shall be most welcome.

Authors



Syllabus...

1. Introduction to Web Technologies

(07 L)

- 1.1 Introduction to Web Technologies
- 1.2 How the Website Works?
- 1.3 Clients- Servers and Communication
- 1.4 Client and Server Scripting Languages
- 1.5 Internet-Basic, Internet Protocols (HTTP, FTP, IP)
- 1.6 World Wide Web (WWW)
- 1.7 HTTP Request Message, HTTP Response Message
- 1.8 Types of Websites (Static and Dynamic Websites)

2. Advance HTML Tags

(12 L)

- 2.1 HTML Tags
- 2.2 Embedding Audio and Video
- 2.3 Introduction to Elements of HTML
- 2.4 Working with Text
- 2.5 Working with Lists, Tables and Frames
- 2.6 Working with Hyperlinks, Images and Multimedia
- 2.7 Working with Forms and Controls
- 2.8 Concept of CSS, Types of CSS
- 2.9 Creating Style Sheet

3. JavaScript

(12 L)

- 3.1 Introduction to Client Side Scripting
- 3.2 Introduction to JavaScript
- 3.3 Identifier and Operator, Control Structure
- 3.4 Using Functions
- 3.5 Event Handling in Java Scripts
- 3.6 Document Object Model (DOM)
- 3.7 DOM Objects (Window, Navigator, History, Location)
- 3.8 Predefined Functions, Math and String Functions
- 3.9 Array in Java Scripts
- 3.10 Event Handling in Java Script
- 3.11 Sufficient Examples to be Covered

4. Arrays in PHP

(10 L)

- 4.1 Indexed vs Associative Arrays
- 4.2 Identifying Elements of an Array
- 4.3 Storing Data in Arrays
- 4.4 Multidimensional Arrays

- 4.5 Extracting Multiple Values
- 4.6 Converting between Arrays and Variables
- 4.7 Traversing Arrays
- 4.8 Sorting
- 4.9 Action on Entire Arrays
- 4.10 Using Arrays

5. Function in PHP

(07 L)

- 5.1 Defining and Calling a Function
- 5.2 Default Parameters, Variable Parameters, Missing Parameters
Variable Function, Anonymous Function



Contents...

1. Introduction to Web Technologies	1.1 – 1.26
2. Advance HTML Tags	2.1 – 2.78
3. JavaScript	3.1 – 3.50
4. Arrays in PHP	4.1 – 4.52
5. Function in PHP	5.1 – 5.10
❖ Practicals	P.1 – P.76



Introduction to Web Technologies

Contents...

- 1.1 Introduction
- 1.2 How the Website Works?
- 1.3 Clients-servers and Communication
- 1.4 Scripting Languages
 - 1.4.1 Client-side Scripting and Languages
 - 1.4.2 Server-side Scripting and Languages
- 1.5 Internet
 - 1.5.1 Basics of Internet
 - 1.5.2 Internet Protocols
 - 1.5.2.1 HTTP
 - 1.5.2.2 FTP
 - 1.5.2.3 IP
- 1.6 WWW
- 1.7 HTTP Request and Response Messages
- 1.8 Types of Websites
 - 1.8.1 Static Websites
 - 1.8.2 Dynamic Websites
 - ❖ Summary
 - ❖ Practice Questions

Objectives...

After reading this chapter you will be able,

- To understand Basic Concepts of Web Technologies
- To learn Basics of Internet
- To study Internet Protocols (HTTP, FTP and IP)
- To learn WWW, Website and Types of Websites (Static and Dynamic)

1.1 INTRODUCTION

- In the current information age, the Web (World Wide Web and Internet) plays an important role in connecting people, sharing relevant content and enabling us to conduct our daily activities with remarkable ease and simple.
- In view of the widespread use of the Web for almost everything that we need for our comfortable day-to-day living, more and more demands are being placed on the technology.
- The methods by which computers communicate with each other through the use of markup languages like HTML, XML etc., and multimedia packages like text, audio, video, graphics etc. is known as web technology.

- Web technology relates to the interface between web servers and their clients. It includes mark-up languages, programming languages, standards for document identification and display the document.
- The advantages of web technologies are, it offers convenience (available 24 hours a day, 7 days a week), easy and a high speed of communication in the world (globe) with free of cost.
- In the web technology, weaknesses in a computer network could be exploited, important information could be stolen or destroyed and malware could infect the various network systems. For this reason, network security is very important issue that must be considered when using web technology.
- Web technologies contains:
 1. **Markup Languages [HTML (HyperText Markup Language)** is the primary markup language that is used for Web pages. HTML tells the browser what to display on a page. **CSS (Cascading Style Sheets)** provide the ability to change the appearance of text such as fonts, colors, spacing on Web pages. **XML (eXtensible Markup Language)** similar to HTML, XML is a markup language designed for the Internet. However, unlike HTML, which was designed to define formatting of Web pages].
 2. **Programming Languages and Technologies [VBScript** is an interpreted scripting language that is a subset of Microsoft Visual Basic. **PHP** is an interpreted scripting language that is used as an alternative to ASP on Unix-based servers. PHP is commonly used to access databases and provide server-side form and e-commerce processing. **C#** pronounced "see sharp" is a compiled, object-oriented programming language that is commonly used for Web applications that leverage the Microsoft .NET Framework. **Visual Basic .NET** is the next generation of the Visual Basic programming language used for developing ASP.NET web applications. **Java** is a compiled object-oriented programming language that was designed for use on the Internet. In 1995, Sun Microsystems designed the Java programming language and introduced it to Web developers as a way to include animation and dynamic elements in Web pages. **ASP (Active Server Pages)** is a server-side scripting technology that we can use to create dynamic Web pages. ASP code is generally embedded in the HTML within a page, and HTML pages that contain ASP have an .asp file name extension. **ASP.NET** is the next generation of server-side processing for ASP programming].

1.2 HOW THE WEBSITE WORKS?

- A web site is a set of related (linked through hypertext links) web pages, published by an organization or individual.
- The World Wide Web (WWW) consists of files called web pages or pages, which contain information and links to resources throughout the Internet.
- A web page is an electronic document written in a computer language called HTML (HyperText Markup Language). These web pages are linked together through a system of connections (called hypertext links or hyperlinks or links), which enable the user to jump from one web page to another by clicking on a link.
- Web pages are also known as HTML documents. A website is defined as, "a collection of related web pages".
- Web pages and sites can be stored on the hard drive of a local computer or a Web server on the Internet. A Web browser is a program that displays the Web pages it retrieves.
- Popular browsers include Microsoft Internet Explorer, Google Chrome, Netscape Navigator, Mozilla, and Konqueror, Opera and so on.
- A website can be also defined as, "an organized linked collection of web pages stored on an internet server and read using a web browser".

- Websites have many purposes such as a website can be informational, function as a retail store, or host social networking websites (where people can exchange ideas and thoughts), personal website, government websites etc.
- **Types of Web Sites:**
 1. A **portal Web site** offers a variety of Internet services from a single location.
 2. A **business/marketing Web site** promotes or sells products or services.
 3. A **blog** is an informal Web site consisting of time-stamped articles, or posts, in a diary or journal format, usually listed in reverse chronological order.
 4. An **online social network**, or **social networking Web site**, encourages members to share their thoughts, interests, ideas, stories, photos, music, and videos with other registered users.
 5. An **educational Web site** offers avenues for teaching and learning.
 6. An **entertainment Web site** offers an interactive and engaging environment for entertainment.
 7. An **advocacy Web site** describes a cause, opinion, or idea.
 8. A **Web application**, or **Web app**, is a Web site that allows users to access and interact with software through a Web browser on any computer connected to the Internet.

Working of the Website:

- A user/client send requests using web browser to site's web server through the Internet. The server sends all of data for the website back through the Internet to the computer and user.
- The Web is known as a client-server system. User's computer is the client and the remote computers that store electronic files (webpages, information) are the servers.
- The Web physically consists of, personal computer (at which user sit to see the web), a Web browser (a software installed on the PC which helps to browse the Web), an Internet connection (provided by an ISP and connects to the Internet to reach to any Web site), a Web server (the computer on which a website is hosted), Routers and Switches (are the combination of software and hardware who take the request and pass to appropriate Web server).

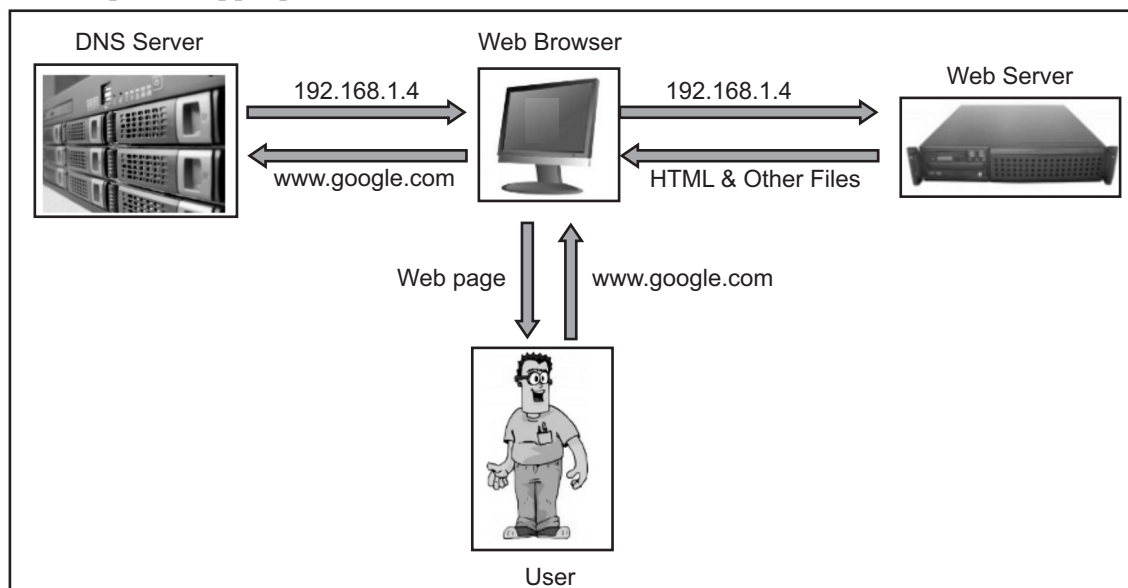


Fig. 1.1: Basic Working of a Website

- The steps for working of a website are explained below:

Step 1 : When the user, enter something like google.com the request goes to one of many special computers on the Internet known as Domain Name Servers (DNS). All these requests are routed through various routers and switches.

Step 2 : The domain name servers keep tables of machine names and their IP addresses, so when user type in google.com it gets translated into a number, which identifies the computers that serve the google website to him/her.

Step 3 : When user want to view any page on the Web, he/she must initiate the activity by requesting a page using his/her browser. The browser asks a domain name server to translate the domain name he/she requested into an IP address. The browser then sends a request to that server for the page he/she want, using a standard called HyperText Transfer Protocol (HTTP).

Step 4 : The server should constantly be connected to the Internet, ready to serve pages to visitors. When it receives a request, it looks for the requested document and returns it to the Web browser. When a request is made, the server usually logs the client's IP address, the document requested, and the date and time it was requested. This information varies server to server. An average Web page actually requires the Web browser to request more than one file from the Web server and not just the HTML/XHTML page, but also any images, style sheets, and other resources used in the web page. Each of these files including the main page needs a URL to identify each item.

Step 5 : Then each item is sent by the Web server to the Web browser and Web browser collects all this information and displays them in the form of Web page.

Structure of the Web site:

- The typical structure of a website can be understood from Fig. 1.2.

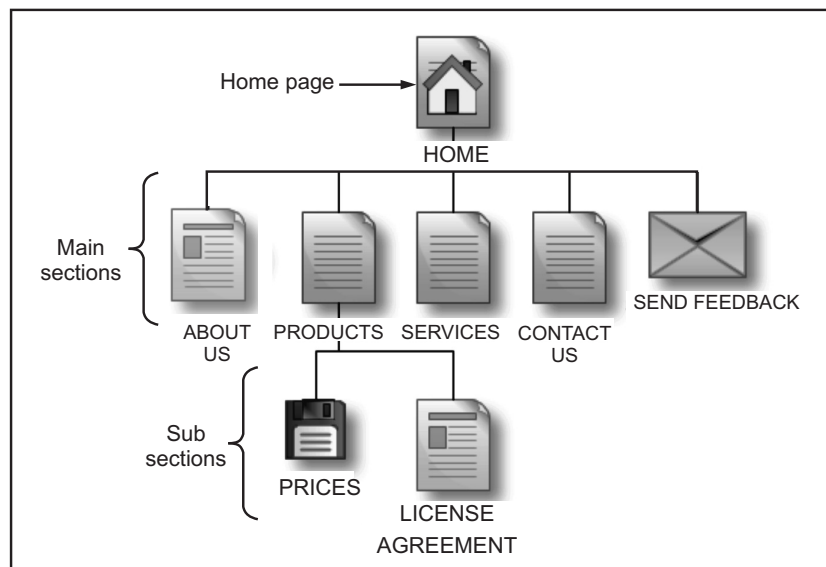


Fig. 1.2: Structure of a Website

- As can be seen from the Fig. 1.2, there are various links in the home page, each link directing to pages (main sections) that describe one particular area that are named as ABOU US, products etc., links to other pages (sub-sections) are also provided from the linked pages.

Advantages of Websites:

- A lot of information can be accessed using websites with faster speed.
- Once, a website has been established, it reduces cost.
- A website is available 24×7 environment i.e., 24 hours of a week, 365 days in a year.
- A website provides global reach because it reaches across geographic boundaries.

Disadvantages of Websites:

- Websites must be kept up to date.
- There is no control who views the website and therefore care (security) must be taken about the information that is placed on it.

1.3 CLIENTS-SERVERS AND COMMUNICATION

- The Internet is all about various computers communicating with each other. The prevailing model of the Internet is client-server model.

Computer Communication:

- Communication is the activity of exchanging or imparting (sending or receiving) information using some medium.
- Computer communications describes a process in which two or more computers or devices transfer (send and receive) data, instructions, and information over transmission media via a communications device(s).
- A communications device is hardware capable of transferring items from computers and devices to transmission media and vice versa.
- Examples of communications devices are modems, switches, wireless access points, and routers.
- As shown in Fig, 1.3, some communications involve cables and wires others are sent wirelessly through the air.
- Wired communications often use some form of telephone wiring, coaxial cable, or fiber-optic cables to send communications signals.

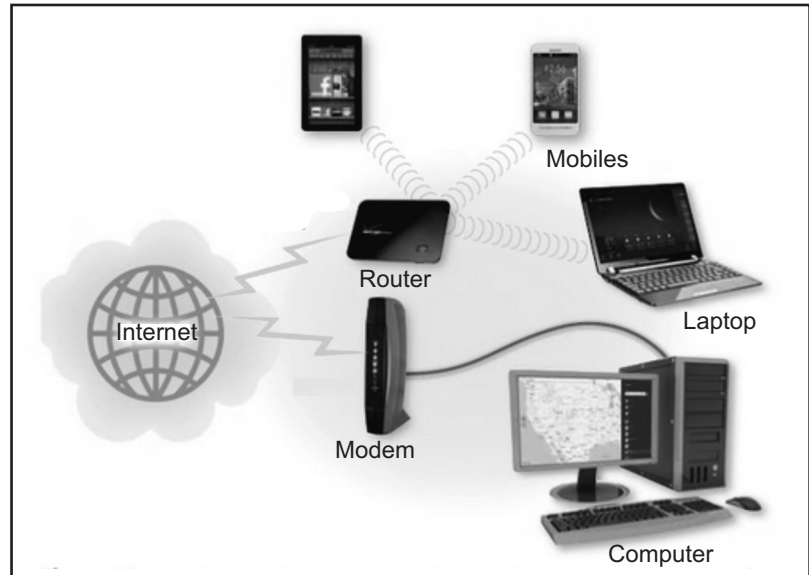


Fig. 1.3: Modems, Routers etc. are examples of Communication Devices that enable communications between computers/mobile devices and the Internet

- Wireless communications, which sends signals through the air or space. Examples of wireless communications technologies include Wi-Fi, Bluetooth and so on.
- Web technology is the development of the mechanism that allows two or more computer devices to communicate over a network. For instance, in a typical office setting, a number of computers plus additional devices such as printers may be interconnected via a network, allowing for quick and convenient transmission of information.

Client-Servers/Client-Server Model for the Web:

- The main components in any Internet-based communication or transaction are the Web browser (client) and the Web server (server).
- The individual workstations/computers in the network which are capable of sending the request to the web server are called as client.
- The individual workstation/computer in the network, may be with higher capabilities than the client, which serves the request of client by delivering/providing/responding requested information/data/software are called as servers.
- The HyperText Transfer Protocol (HTTP) is used for the communication between the browser and the server. This is of a request-response form. That is, the browser sends an HTTP request, then the server sends an HTTP response, and the communication between them ends.

- The software that runs at the client computer is called as client program. This software configures the computer to act as a client.
- Similarly the software that runs on the server computer is called as server program. It configures a computer to act as a server.
- Fig. 1.4 shows client-server model for the web.

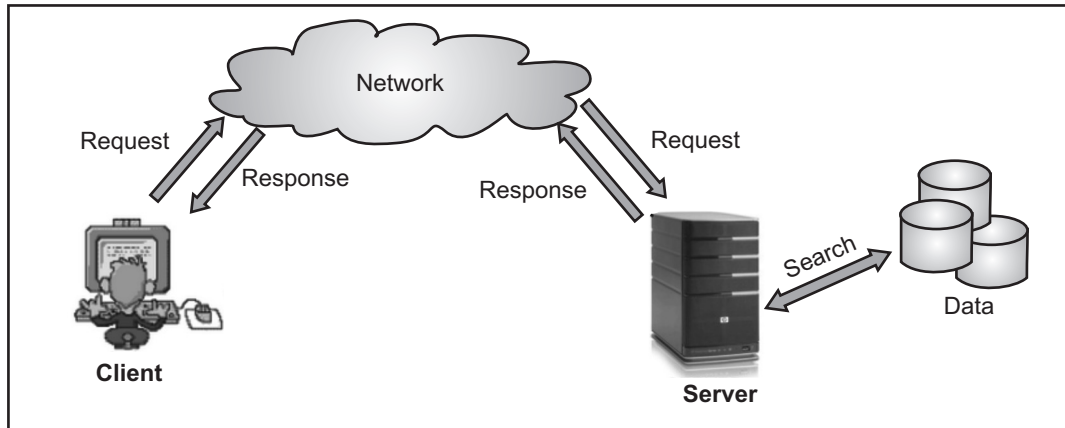


Fig. 1.4: Client-server Model for the Web

1.4 SCRIPTING LANGUAGES

- Script means, list of actions for the something to perform. A script is a series of commands or a program or sequence of instructions within a file that is capable of being executed without being compiled.
- A script that is interpreted by the web server is called as a **server-side script**. A server-side script is an instruction set that is processed by the server and which generates HTML. This resulting HTML is sent as part of the HTTP response to the browser.
- A script that is interpreted by the browser is called as a **client-side script**. A client-side script is also an instruction set, but it is not processed by the web server. Instead, it is sent to the browser (as part of the HTTP response) and is processed by the browser, the result is then displayed by the browser on the monitor.

- Fig. 1.5 shows process of the server-side and client-side scripts.

- Scripting languages are like programming languages that allow to write programs in form of script. These scripts are interpreted and not compiled and executed line by line.

- Scripting language is used to create dynamic web pages.

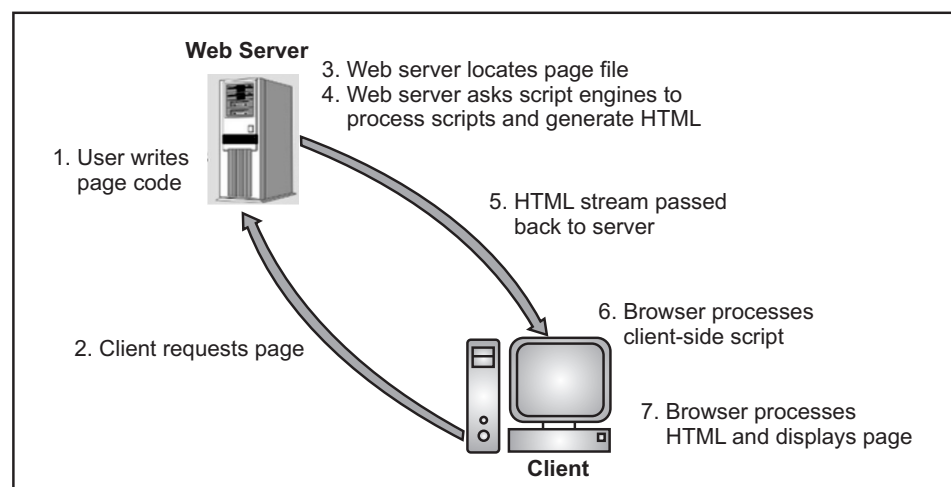


Fig. 1.5: Running of Server-side and Client-side Scripts

- There are two types of scripting languages namely, Server-side scripting and Client-side scripting.

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Publisher : Nirali Prakashan

Author : Aniket Nagane,
Bhupesh Taunk, Prashant
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