According to New Revised Credit System Syllabus

SPPU

Third Year Degree Course In
COMPUTER ENGINEERING (Semester - II)

WEB TECHNOLOGY

SUBHASH B. TATALE
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NIRALI PRAKASHAN
ADVANCEMENT OF KNOWLEDGE

A TEXT BOOK OF

WEB TECHNOLOGY

FOR
SEMESTER – II

THIRD YEAR DEGREE COURSE IN COMPUTER ENGINEERING

Strictly According to New Revised Credit System Syllabus of Savitribai Phule Pune University
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Dedicated to …

Our Beloved Parents

…Authors

PREFACE

It gives us great pleasure to present the book **'Web Technology'** for the students of Third Year Degree Course in Computer Engineering of the Savitribai Phule Pune University. This book is strictly as per the **New Revised Credit System Syllabus 2015** Pattern with effect from the Academic Year 2017-18.

As per New Revised Examination Scheme which has been implemented from this academic year, In-semester assessment carries 30 marks over first three units and End Semester Examination carries 70 marks over entire syllabus out of which first three units will carry 20 marks and units 4, 5, 6 will carry 50 marks. The theory course will have 4 credits.

The book is written such that all the basic concepts are explained in simplified manner. It is presented in a more conceptual manner rather than mathematical, as required by the new examination system. It is our objective to keep the presentation systematic, consistent, intensive and clear through explanatory notes and figures.

Main feature of this book is, Complete Coverage of the New Credit System Syllabus with large number of Worked Solved Examples, Exercises, Model Question Papers of In Sem. and End Sem. Exams.

We are sure that this book will cater to all needs of students for this subject.

We also take this opportunity to express our sincere thanks to Shri. Dineshbhai Furia, Shri. Jignesh Furia, Mrs. Nirali Verma, Shri. M. P. Munde and entire team of Nirali Prakashan namely Mrs. Deepali Lachake (Co-ordinator), who really have taken keen interest and untiring efforts in publishing this text.

The advice and suggestions of our esteemed readers to improve the text are most welcomed, and will be highly appreciated.

Pune **Authors**

SYLLABUS

Unit-I : Web Development Process, Front End Tools **(07 hours)**

Introduction to web technology, internet and www, Web site planning and design issues, HTML: structure of html document , HTML elements: headings, paragraphs, line break, colors & fonts, links, frames, lists, tables, images and forms, Difference between HTML and HTML5. CSS: Introduction to Style Sheet, Inserting CSS in an HTML page, CSS selectors, XML: Introduction to XML, XML key component, Transforming XML into XSLT, DTD: Schema, elements, attributes, Introduction to JSON.

Unit-II : Client Side Technologies **(08 hours)**

JavaScript: Overview of JavaScript, using JS in an HTML (Embedded, External), Data types, Control Structures, Arrays, Functions and Scopes, Objects in JS, DOM: DOM levels, DOM Objects and their properties and methods, Manipulating DOM, JQuery: Introduction to JQuery, Loading JQuery, Selecting elements, changing styles, creating elements, appending elements, removing elements, handling events.

Unit-III : Server Side Technologies **(08 hours)**

Introduction to Server Side technology and TOMCAT, Servlet: Introduction to Servlet, need and advantages, Servlet Lifecycle, Creating and testing of sample Servlet, session management. JSP: Introduction to JSP, advantages of JSP over Servlet , elements of JSP page: directives, comments, scripting elements, actions and templates, JDBC Connectivity with JSP.

Unit-IV : Server Side Technologies **(07 hours)**

PHP: Introduction to PHP, Features, sample code, PHP script working, PHP syntax, conditions & Loops, Functions, String manipulation, Arrays & Functions, Form handling, Cookies & Sessions, using MySQL with PHP, WAP & WML, AJAX: Introduction, Working of AJAX, AJAX processing steps, coding AJAX script.

Unit-V : Client and Server Side Frameworks **(07 hours)**

Angular JS: Overview, MVC architecture, directives, expression, controllers, filters, tables, modules, forms, includes, views, scopes, services, dependency injection, custom directives, Internationalization, Introduction to NodeJS. Struts: Overview, architecture, configuration, actions, interceptors, result types, validations, localization, exception handling, annotations

Unit-VI : Web Services **(08 hours)**

Web Services: Overview, types of WS, difference between SOAP and REST, EJB: types of EJB, benefits, Architecture, EJB technology, JNDI lookup, Introduction to Content Management System(CMS) ,Wordpress / Joomala, Advanced Technology: Bootstrap, JSF, Spring.

CONTENTS

UNIT I

WEB DEVELOPMENT PROCESS, FRONT END TOOLS

1.1 INTRODUCTION

Web Technology is the method by which computers can communicate with each other through the use of different markup languages and multimedia packages. This unit helps us to understand the principles and methodologies of web based applications development process. Then we will discuss web development process, web site planning and design issues. Further we shall study need and applicability of Hyper Text Markup Language (HTML), Cascaded Style Sheet (CSS), XML, DTD and JSON. Also we will explain syntax and some examples of HTML, CSS, XML, DTD and JSON.

The term web technology defines asset of tools and technologies that have helped developers with the help of TAG (Command) in HTML to build more dynamic and interactive websites. The Internet is essentially a global network of computing resources. You can think of the Internet as a physical collection of a set of shared resources.

Advantages of Web Technology:

- The main advantage of web technology is that it provides a high speed of communication in the computer world.
- For raising business potential web technology supports different companies by reducing the costs.

Disadvantages of Web Technology:

- Web technology is basically related with network issues. This means it is necessary for someone to have specific skills to solve network issues, which costs money. In addition to that, the existence of a network provides the opportunity for an attack on the computer system.
- The various network systems could get affected by malware and some important information could be stolen or destroyed.
- For this reason, network security must be considered when using web technology.

Following are the different web technologies used:

• HTML	• XHTML	• CSS	• XML
• JavaScript	• VBSCRIPT	• DOM	• DHTML
• AJAX	• WMLScript	• SQL	• ASP
• ADO	• Java applets	• Java servlets	• Java Server Page
• PHP	• .NET	• SMIL	• FLASH

1.2 INTERNET

- Alternative name to internet is either the **net** or **web.**
- The internet is also considered as Superhighway for transmitting information**.**
- It is the largest network in the world that connects hundreds of thousands of individual networks all over the world. Internet moves your ideas and information from one place to another place.

Fig. 1.1: Internet topology

(A) How to Access the Internet ?

- The Internet utilizes the TCP/IP protocol and is accessed using a computer modem, broadband network that is connected through an ISP (Internet Service Provider).
- An Internet Service Provider (ISP) is an organization which provides services for accessing and using an internet.
- In the case of broadband, many computers use Wi-Fi to connect to router that is connected to the ISP.
- Many of the institutes, schools and businesses have direct access to the Internet using special high-speed communication lines and equipment.
- Students and employees can access through the organization's Local Area Networks (LAN) or through their own personal computers.
- As the Internet contains billions of web pages created by different companies from around the world the search engine is used for finding information on the Internet.

(B) Uses of the Internet:

- Files, pictures, songs, and video can be shared by downloading (receiving) and uploading (sending).
- Send e-mail messages.
- The Internet is also used for communicating with others through social networks, online games, forums, chat, e-mails etc.

- Participate in discussion groups, such as mailing lists and newsgroups.
- Surfing the web.
- To make life more convenient internet also provides thousands of services. For example, many financial Companies offer online banking that enables a user to manipulate and view their account online.

1.3 WORLD WIDE WEB

- The **World Wide Web** (**WWW** or **the Web**) is storage for information where documents and other different web resources are located by Uniform Resource Locator (URLs) via the Internet.
- The **Web (World Wide Web)** consists of information organized into web pages containing text and graphic images.
- It contains hypertext links or highlighted keywords and images that lead to related information.
- A collection of linked web pages that has a common theme or focus is called a **website**.
- Web pages initially text documents formatted with Hyper Text Markup Language (HTML).
- Web pages may also contain images, video, audio and different number of software components. Multiple web pages with a common theme, a common domain name or both, makes a website.

(A) How to Access the Web?

- A web browser is a special software program that enables you to view web pages on your computer. Browsers connect computers to the Internet and allow people to "surf the web" that is to get the required information.
- For example web browsers are used to connect you to remote computers, open and transfer files, display text and images.
- Examples of Web browser: Netscape Navigator (Navigator) and Internet Explorer.

(B) Client/Server Structure of the Web:

- Web is a collection of files that reside on computers called Web servers that are located all over the world and are connected to each other through the Internet.
- Your computer becomes a Web client in a worldwide client/server network, when you use internet connection to become part of the web.
- A Web browser is the software that you run on your computer to make it work as a web client.

1.4 WEBSITE PLANNING AND DESIGN ISSUES

(A) What is a Web Site ?

- A website is an address (location) on the World Wide Web that contains your web pages. Basically, a website is personal online communications connection to the rest of the world. It is a collection of related web pages, including multimedia data; Websites are identified with a common domain name.
- The website may be accessible through an internet protocol, or by using local area network. By specifying a uniform resource locator that is URL, websites can be accessed. So in technical words you can say a webpage is a single HTML document and website is a collection of related web pages.

(B) The Design Process of Website:

- Designing a good website requires more than just putting together a few pages. Designing for the web requires the relevant content of a brochure or magazine, the colorful look of high-quality print, and the attention-grabbing impact of television advertising.
- Plus it should offer a valuable product and information, be updated frequently and stay current with changing technology.
- Layout of web pages is a very important aspect that you need to consider a design process of web development. Difficult navigation, hard to locate information on page, visually unappealing are some reasons which make layout as poor layout.

Following steps are needed to consider while building a website

1. **Get a Domain Name:** This is your personal/private address on the Web.
2. **Find a Web Hosting Service**: location where your website will reside.
3. **Design, Build and Upload Your Website:** The process of building website

Five step process for effective website design:

1. Analyse	2. Organise	3. Develop	4. Implement	5. Maintain
➢ Information/ content ➢ Target Audience	➢ Navigation ➢ Content ➢ Page layout ➢ Page design	➢ Web page layout ➢ Site layout ➢ Web page construction ➢ Graphics techniques	➢ User Interaction ➢ FTP ➢ Fine Tune	➢ Marketing ➢ Optimisation

- Initially decide the main aim of your website that is purpose of creating website.
- Your website may either promote your ideas, advertise your company or product, displaying give or sell information etc.
- So in this case the site is meant to be informative.

Web Technology

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