COMP7.4.4 WEB TECHNOLOGY

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Course Objectives

- **The purpose of this course is to provide students with a basic understanding of web programming.**
- **It will focus on the client-side as well as server-side implementation of web applications.**

Course Outcomes:

At the end of the course, students should be able to:

1. Understand the basics of the internet and explore the different web technologies involved in web development.

2. Demonstrate the important HTML tags for designing static pages

and separate the design from content using Cascading Style sheet.

3. Design data using XML, perform validations and display in HTML format.

4. Understand the fundamentals of JavaScript and have the base to develop new technologies.

5. Ability to develop server side applications using PHP(MySQL).

Unit1

Introduction to Web Technologies:

- History of the Web, OSI Reference Model, Understanding Web System Architecture, understanding 3Tier Web Architecture, Layers in the TCP/IP Model, Web, Overview of HTTP,Using Cookies to Remember User Information, Exploring Web Technologies, Introduction to Web Services, About IIS,Services Supported by IIS 7, Installation of IIS 7, Administer Web Server Remotely, Creating Web Sites.

Unit1

HTML and JAVASCRIPT Programming HTML:

Introducing HTML Document structure, Creating Headings on a web page, Working with Links, creating a paragraph, working with images, working with tables, working with frames, Introduction to Forms and HTML Controls, Introducing JavaScript.

Unit2

- **Cascading Style Sheets** Coding CSS, Properties of Tags, Property Values, Other Style Properties, In-Line Style Properties, Embedded Style Sheets, Grouping, Inheritance, Class as Selector, ID as Selector, Contexual Selectors, Pseudo Classes and Pseudo-elements, Positioning, Backgrounds, Element Dimensions
- **Extensible Mark-Up Language (XML)** Introduction, HTML vs XML, Syntax of XML Document, XML Attributes, XML Validation, XML DTD, The Building Blocks of XML Documents, DTD Elements, DTD Attributes, DTD Entities, DTD Validations, XSL, XSL Transformation, XSL Namespaces, XML Schema

Unit3

Angular JS

- **Introducing AngularJS** Introducing AngularJS, What Is MVC (Model-ViewController), AngularJS Benefits, The AngularJS Philosophy, Starting Out with AngularJS , A Basic AngularJS Application ,Angular JS Hello World
- **Basic AngularJS Directives and Controllers** AngularJS Modules,Creating Our First Controller,Working with and Displaying Arrays,More Directives , Working with ng-repeat, ng-repeat Over an Object ,Helper Variables in ngrepeat , Track by ID , ng-repeat Across Multiple HTML Elements
- **Forms, Inputs, and Services** Working with ng-model,Working with Forms, Leverage Data-Binding and Models ,Form Validation and States ,Error Handling with Forms ,Displaying Error Messages ,Styling Forms and States ,Nested Forms with ng-form Other Form Controls: Textareas ,Checkboxes ,Radio Buttons ,Combo Boxes/Drop-Downs Java Server Pages (JSP) Introduction,Advantages of JSP, Developing first JSP, Components of JSP, Reading Request Information, Retrieving the Data posted, JSP Sessions, Cookies, Disabling Sessions.

Unit4

Introducing PHP Versions of PHP, Features of PHP, Advantages of PHP over other scripting languages, creating a PHP Script, running a PHP Script, Handling Errors in a PHP Script

Working with variables and constants Using variables, using constants, exploring datatypes in PHP, Exploring operators in PHP.

Controlling Program Flow Conditional Statements, Looping Statement, Break,Continueand Exit Statement

Working with Functions,Arrays,Files and Directories User-Defined Functions in PHP, Built-in functions in PHP, Recursive, Variable and call-back Functions, Introducing Arrays, Types of Arrays, Traversing Arrays using Loops and Array Iterators, Built-in Array Functions, Working with Files, Working with Directories

Working with Forms and Databases Introduction to Web Forms, working with the Tag and Form Elements, processing a Web Form, validating a Form, Using PHP and MySQL

Exploring cookies and sessions Working with cookies, Working with sessions

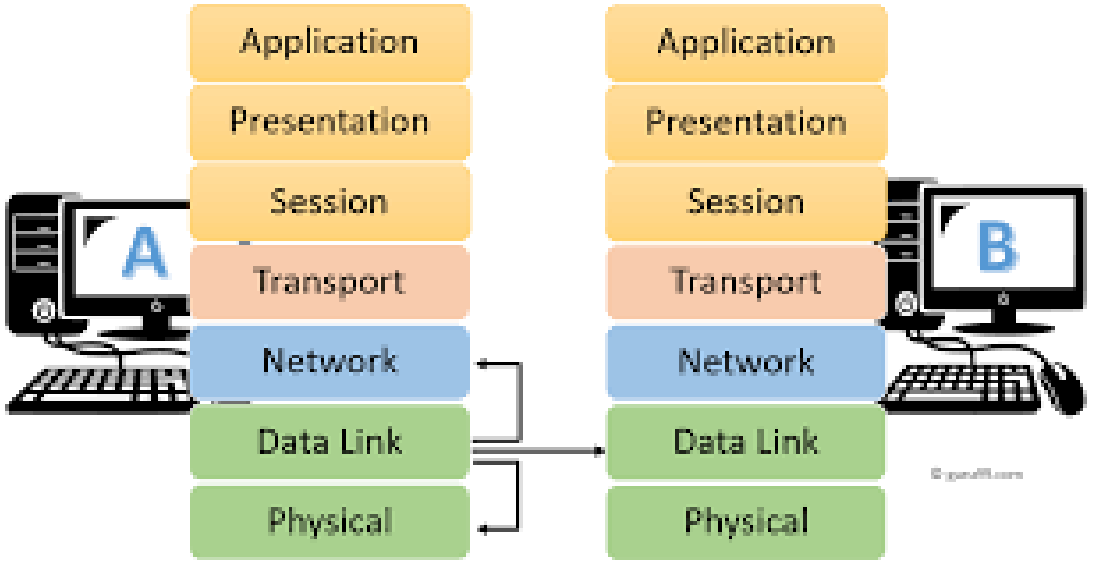
Recommended Readings

- Web Technology: A Developer's Perspective by N. P. Gopalan and J. Akhilandeswari, PHI ,Second Edition,ISBN:978-81-203-5006-9 2.
- **Web Technologies Black Book by Kogent Learning Solutions, dreamtechpress,ISBN: 9788177228496 3.**
- AngularJS: Up and Running By ShyamSeshadri and Brad Green ,First Edition, Shroff Publishers and Distributors,ISBN: 978-1-491-90194-6

OSI Reference Model

OSI (Open Systems Interconnection) is a reference model for how applications communicate over a network.

OSI Reference Model



OSI Reference Model

The main functions of each of the layers are as follows:

- **Physical Layer**: Its function is to transmit individual **bits** from one node to another over a physical medium.
- **Data Link Layer**: It is responsible for the reliable transfer of data **frames** from one node to another connected by the physical layer.
- **Network Layer**: It manages the delivery of individual data **packets** from source to destination through appropriate addressing and routing.
- **Transport Layer**: It is responsible for delivery of the entire message from the source host to destination host.
- **Session Layer**: It establishes sessions between users and offers services like dialog control and synchronization.
- **Presentation Layer**: It monitors syntax and semantics of transmitted information through translation, compression, and encryption.
- **Application Layer**: It provides high-level APIs (application program interface) to the users.

TCP/IP Model

- TCP is Transmission Control Protocol/ IP is Internet Protocol.

Only 4 layers:

1 Application Layer

2 Transport Layer

3 Internet Layer

4 Link Layer (network)

TCP/IP Model:Layer 4-The Application Layer

- Higher-level protocols such as: TELNET, FTP, SMTP, DNS, HTTP, POP3
- These are the protocols that are used by applications like MS internet explorer, Google Chrome, MS outlook, Skype, etc.
- This layer is essentially the same as the OSI Model layer 7

TCP/IP Model:Layer 3 The Transport Layer (TCP / UDP)

- This layer implements layers 4, 5, and 6 of the OSI model (session, presentation, and transport)
- Handles full messages (long documents, multimedia, etc.)
- OSI layer 6 (encryption, compression, data representation) is used in analysis
- The most used protocols are: TCP, UDP
- Usually implemented at the operating system kernel (Unix and Windows)

TCP/IP Model:Layer 2 The Internet Layer (IP)

- Connectionless internetwork layer (IP Protocol)
- Packet-switching: blocks of data constrained to a fixed size
- permitting hosts to send packets into any network and have them travel independently to the destination, potentially on a different network.
- Implemented at the operating system, at routers hardware, gateways, bridges, etc.
- A computer can act sometimes as a router or a gateway, so the operating system includes special modules to handle network operations
- Major interface: SEND_IP_PACKET, RECEIVE_IP_PACKET

TCP/IP Model:Layer 1 Link/network Layer (Ethernet/wireless)

- Almost everything below the internet layer is not defined in the TCP/IP reference model
- The network layer essentially performs the functions of the OSI physical and data link layers
- Usually implemented by network device drivers: Ethernet, Ring or Star card drivers (with the help of the device drivers)

OSI and TCP/IP Reference Models

	OSI	TCP/IP
7	Application	Application
6	Presentation	Transport
5	Session	
4	Transport	
3	Network	Internet
2	Link	Link/Network
1	Physical	

Next Lecture: Exploring Web Technologies

- Html –Hmtl5
- CSS –CSS3
- XML - SOAP
- JavaScript - AJAX
- Angular JS -Jquery
- JSP - ASP
- PHP – Mysql ?

Questions?