Web Development (102044505)

Credit – 4

Lecture – 3, Lab Hours – 2

Presented By:

Prof. Brijesh Patel

Reference Books

1. **Developing Web Applications, Ralph Moseley and M. T. Savaliya, Wiley-India**

2. HTML 5, Black Book, dreamtech Press

3. Learning PHP, MySQL, JavaScript, CSS & HTML5, 3rd Edition, Robin Nixon, O'Reilly

4. PHP: The Complete Reference by Steven Holzner, McGrawhill

5. Learning PHP, MySQL & JavaScript: With jQuery, CSS & HTML5 (Learning PHP, MYSQL, JavaScript, CSS & HTML5) 5th Edition by Robin Nixon.

6. Programming PHP: Creating Dynamic Web Pages by Kevin Tatroe.

Course Outline

Sr.	Contents
1	**Introduction to World Wide Web and Concepts of Web Designing** History of WWW, the legacy of internet, Browser architecture, Client Server Concept, Introduction to HTTP and HTTPS protocols, Website and Web Portals, examples of static and dynamic websites, types of servers and frameworks, Introduction to Servers like WAMP, XAMP. Fundamentals of Web Designing, understanding look and feel of a website from user's perspective, types of websites, User Interface and Experience, standard layouts, navigations, sitemaps.
2	**Introduction to HTML** Basics of HTML, structure of an HTML page, HTML tags, meta tags, HTML forms, frames, tables, buttons, user inputs. Introduction to HTML5, New features in HTML5 as compared to HTML, audio and video interfaces, headers and footers, articles, HTML Semantics.

Course Outline

3	**CSS Experience** CSS and User experience, Structure and Syntax of CSS, CSS properties: background, color, fonts, borders, positioning, animations, images, wild cards etc. Introduction to CSS 3.0, New features in CSS3 compared to CSS, Variables, CSS3 properties: opacity, reflections, gradients, transitions, transformations, animations, Rounded Corners, Web Fonts, Responsive web design and Media Query.
4	**Introduction to Client-Side Scripting** Introduction to JavaScript, architecture and execution, internal and external JavaScript, JavaScript entities: variables, functions, loops, conditions, arrays, objects, alerts etc. DOM architecture, built-in functions, validations and regular expressions, event handling and Objects in JavaScript, introduction to JSON.
5	**PHP Basics** Introduction to PHP, structure of a PHP page, PHP Syntax: Variables, loops, functions, conditions, arrays, strings and form processing, regular expressions, data, and time file uploads etc.

Course Outline

6	**PHP Advance** Exception Handling, Session and State management, Cookies, Session Variables, PHP and database connectivity, Database creation and data storage, Prepared Statements, Query execution and Result retrieval,
7	**Advanced Web Technologies:** Creating REST API using PHP, Introduction to AJAX & jQuery.

Contact hours per week			Course Credits	Examination Marks (Maximum / Passing)				
				Internal		External		Total
Lecture	Tutorial	Practical		Theory	J/V/P*	Theory	J/V/P*	
3	0	2	4	40 / 14	20 / 07	60/ 21	30/10	150 / 52

* **J**: Jury; **V**: Viva; **P**: Practical

Lab Contents

- **Demonstration of Web Browsers:** Different components, Checking SSL Certificates, Inspect Elements, Browser Console, view Source etc.

- **Basic HTML Programming** - Creating Sample HTML pages using tags like, headers, paragraphs, alignments, divisions, lists etc. Create tables in HTML, Displaying Images in HTML

- **HTML Forms** - Basics of Form Development Practical: text fields, radios, buttons, checkboxes, Advanced Form Development Practical: Combo, Date, File Upload

- **CSS Programming** - Basics of CSS programming Practical: Class, Id, changing properties like color, size, background etc. , CSS 3 Programming Practical: shadow, orientation, transformation, gradient etc., Positioning practical in CSS: Absolute and relative positioning, Z-index

Lab Contents

- **JavaScript - Basic JS Practical**: script tags, alerts, documents, functions, arrays, loops, and conditions, Advanced JS Practical: Objects, DOM references: getElementById, InnerHTML etc

- **JavaScript and Event Listeners** - Listeners and JavaScript Practical: Mouse motion, movement, keyboard, Perform Regular Expressions and validation using JavaScript

- **PHP** - Write a PHP script to upload a file to server., Write a PHP script to get the value from one form and display it into other form., Write a PHP script for login authentication. Design an html form which takes username and password from user and validate against stored username and password in file.

Lab Contents

- **Write PHP script** for storing and retrieving user information from MySql table.
    1. Design an Html page which takes Name, Address, Email and phone from user. (registration.php)
    2. Store this data in MySQL database.
    3. Next page displays all user in html table using PHP (display.php)
- **Write a PHP program** to store page views count in SESSION, to increment the count on each refresh, and to show the count on web page.

- **Create REST API** using PHP to send the form data like username, email into the database and test that API.

Lab Contents

- **Mini Project (Part 1: Front End):** Develop a website for registration of newly admitted students.

  The site should contain following pages:

  1. Student Sign-up Page
  2. Student Login Page
  3. Forgot Password Page
  4. Student Registration Page
  5. Upload Documents Page
  6. Edit Current Profile Page

- **Mini Project (Part 2: Back End):** Develop Database connectivity along with CRUD operations for website developed in Part 1.

  The backend architecture should contain following tables:

  1. Student Login Table: Contains login credentials for student authentication
  2. Student Registration Table: Contains all the information provided by the student through the registration page
  3. Document Track Table: This table contains track of documents uploaded by the student.

Course Outcomes

Sr.	Course Outcome Statements	% Weightage
CO-1	**Understanding** the basics of Web Designing and usage of various tags along with appropriate styling	10
CO-2	**Designing** websites based on different themes, layouts, and functionalities.	25
CO-3	Enhancing UI/UX by **developing** web pages more adaptable to different mobile platforms.	25
CO-4	**Learn** how to use Server-side programming for **creating** dynamic web services along with customized requirements	15
CO-5	Connectivity with Databases and a**pplying** CRUD operations for information storage and retrieval.	10

Unit 1:

Introduction

Topics

- Basics of World Wide Web (WWW)
  - Web page, web site, web browser, web server
- HTTP Protocol
  - Request and Response
  - Feature of Web 2.0
- Client Server architecture
- Introduction to Web Server Installation and Configuration

Web page, web site, web browser, web server

- **Web page:** A Simple document with extension like .html or .htm or .php or phtml or .aspx etc.
- **Web site:** A collections of web pages, java script, CSS, images, flash files etc.
- **Web browser:** It is client side software, interprets the HTML code. A browser can only understand HTML code.
- **Web server:** A Collection of web sites along with database.

WWW and internet

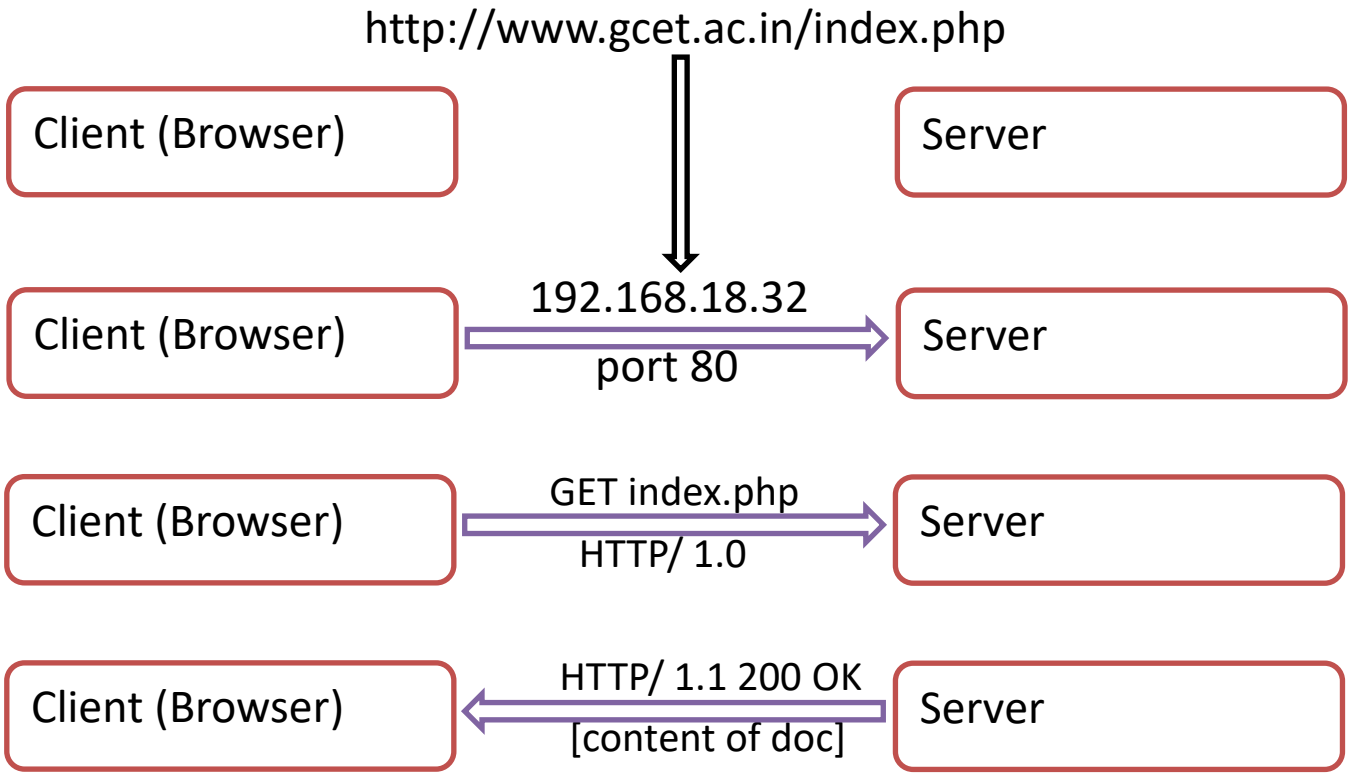
- **WWW: stands for World Wide Web**.
  - The World Wide Web is an information space where documents and other web resources are identified by Uniform Resource Locators (URLs), interlinked by hypertext links, and can be accessed via the Internet.
  - Comprises of files, folders & documents stored in various computers
- **Internet:**
  - The Internet is the global system of interconnected computer networks that use the Internet protocol suite (TCP/IP) to link devices worldwide.
  - It is a network of networks that consists of private, public, academic, business, and government networks of local to global scope, linked by a broad array of electronic, wireless, and optical networking technologies.
  - Comprises of Network of Computers, copper wires, fiber-optic cables & wireless networks

Protocol and Programs

- **Protocol:**
  - Set of rule that governs the communication.
  - An agreed-upon format for transmitting data between two devices.
  - Information that travels over the Internet does so via a variety of languages known as protocols.
- **Programs:**
  - A document with .php or .aspx or .jsp extension, executes on Server.

HTTP: Request and Response

- The main protocol used for communication between a browser and a we server is HTTP.



HTTP: Request and Response (cont…)

- The following HTTP commands originate from server to request a web page from server.

GET /index.php HTTP/1.0

- Server Responds with:

HTTP/ 1.1 200 OK

- Code which can be responded by server:
  - 200: OK
  - 404: Not Found
  - 401: Unauthorized
  - 500: Internal Server Error
  - 501: Not Implemented

HTTPS

- **HTTPS** is an **abbreviation** of **Hypertext Transfer Protocol Secure**.
- It is a secure extension or version of HTTP.
- This protocol is mainly used for providing **security** to the data sent between a website and the web browser. It is widely used on the internet and used for secure communications. This protocol uses the 443 port number for communicating the data.
- This protocol is also called HTTP over SSL because the HTTPS communication protocols are encrypted using the SSL (Secure Socket Layer).
- By default, it is supported by various web browsers.
- Those websites which need login credentials should use the HTTPS protocol for sending the data.
- It allows users to create a secured encrypted connection and helps them to protect their information from being stolen.

Difference between HTTP and HTTPS

HTTP	HTTPS
1. It is an abbreviation of Hypertext Transfer Protocol	1. It is an abbreviation of Hypertext Transfer Protocol Secure.
2. This protocol operates at the application layer.	2. This protocol operates at the transport layer.
3. The data which is transferred in HTTP is plain text.	3. The data which is transferred in HTTPS is encrypted, i.e., ciphertext.
4. By default, this protocol operates on port number 80.	4. By default, this protocol operates on port number 443.
5. The URL (Uniform Resource Locator) of HTTP start with http://	5. The URL (Uniform Resource Locator) of HTTPS start with https://
6. This protocol does not need any certificate.	6. But, this protocol requires an SSL (Secure Socket Layer) certificate.
7. Encryption technique is absent in HTTP.	7. Encryption technique is available or present in HTTPS.
8. The speed of HTTP is fast as compared to HTTPS.	8. The speed of HTTPS is slow as compared to HTTP.
9. It is un-secure.	9. It is highly secure.
10. Examples of HTTP websites are Educational Sites, Internet Forums, etc.	10. Examples of HTTPS websites are shopping websites, banking websites, etc.

Web Site

- Website is a **collection** of **related** web **pages** that may contain text, images, audio, and video, etc.
- The first page of a website is called a home page. Each website has a specific internet address (URL) that you need to enter in your browser to access a website.

- A website is **hosted** on **one or more servers** and can be accessed by visiting its homepage using a computer network. A website is managed by its owner that can be an individual, company, or organization.

- The **first website** was introduced on **6 August 1991**. It was developed by Tim **Berners-Lee** at CERN (European Council for Nuclear Research). As of January 2018, there were around 1.7 billion websites on the internet.

Web Portal

What is Web Portal?

- This might come as a confusion, but **Web Portal** is a specially designed website that provides information catered from various sources such as emails, online forums, and search engines on one platform, uniformly.

- It is a personalized and customized library that helps in the navigation and personalization of notifications that provide well-integrated information from diverse sources with advanced features such as task management, collaboration, business intelligence, etc

Web Portal

The difference between a Website and a Web portal

- Websites and web portals thus can be differentiated in different aspects, **firstly** websites are majorly focused on driving traffic while web portals are for limiting the traffic. Whereas the **web portals require users to log in** while websites are open to being visited by any individual.

- Thus, on differentiating it based on its uses, a **web portal is creating and attracting a specific audience experience**, **controlling users' functionality** on your page, multiple source integrations to provide uniform information, and other user management and permitting features.

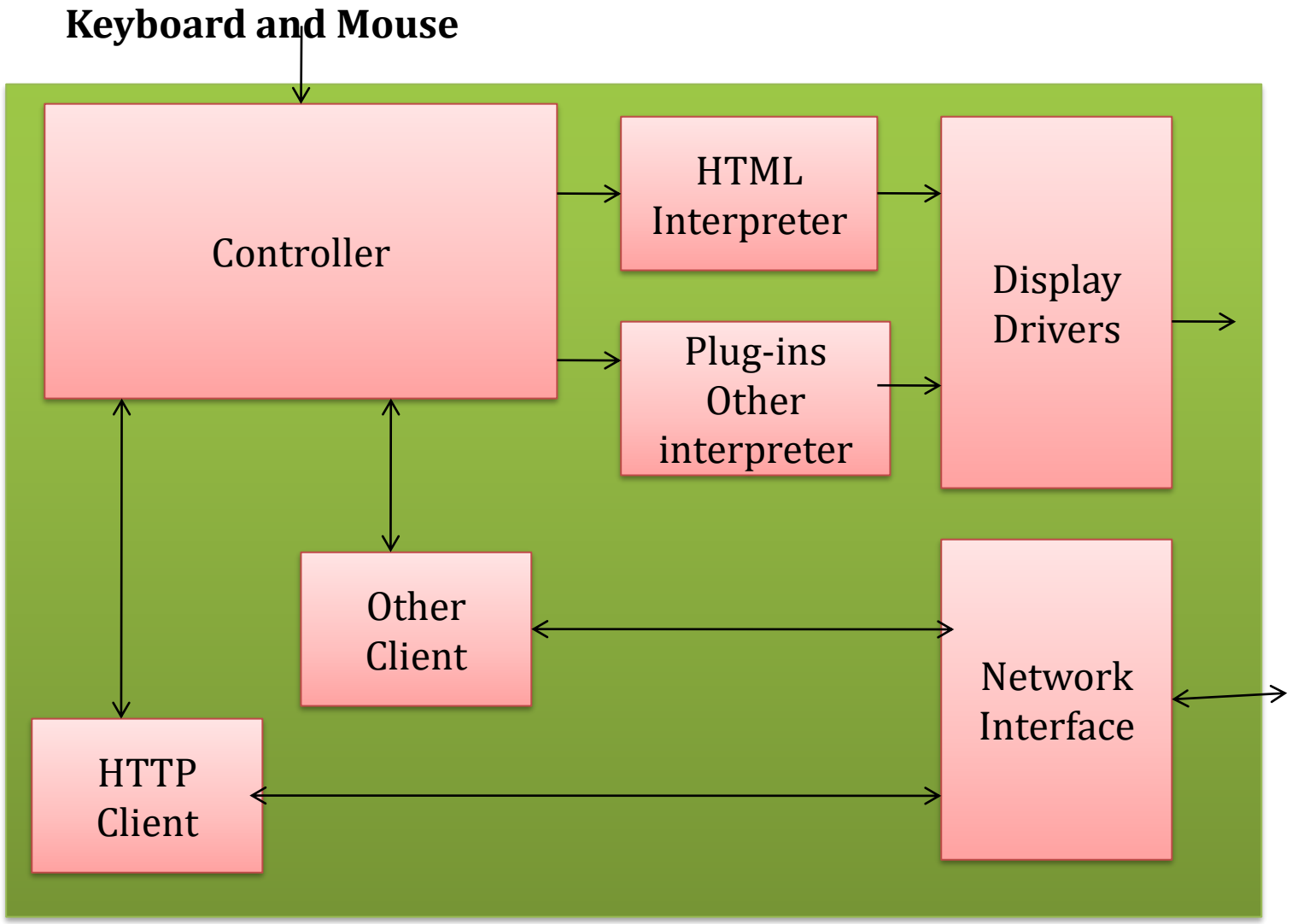
The Web Browser

- The primary purpose of a web browser is to bring information resources to the user **("retrieval" or "fetching")**, allow them to view the information **("display", "rendering")**, and then access other information **("navigation", "following links").**

User interface:

- ***Back*** and ***forward*** buttons to go back to the previous resource and forward respectively.
- A ***refresh*** or ***reload*** button to reload the current resource.
- A ***stop*** button to cancel loading the resource. In some browsers, the stop button is merged with the reload button.
- A ***home*** button to return to the user's home page.
- An ***address bar*** to input the Uniform Resource Identifier (URI) of the desired resource and display it.
- A ***search bar*** to input terms into a search engine. In some browsers, the search bar is merged with the address bar.
- A ***status bar*** to display progress in loading the resource and also the URI of links when the cursor hovers over them.

The Web Browser



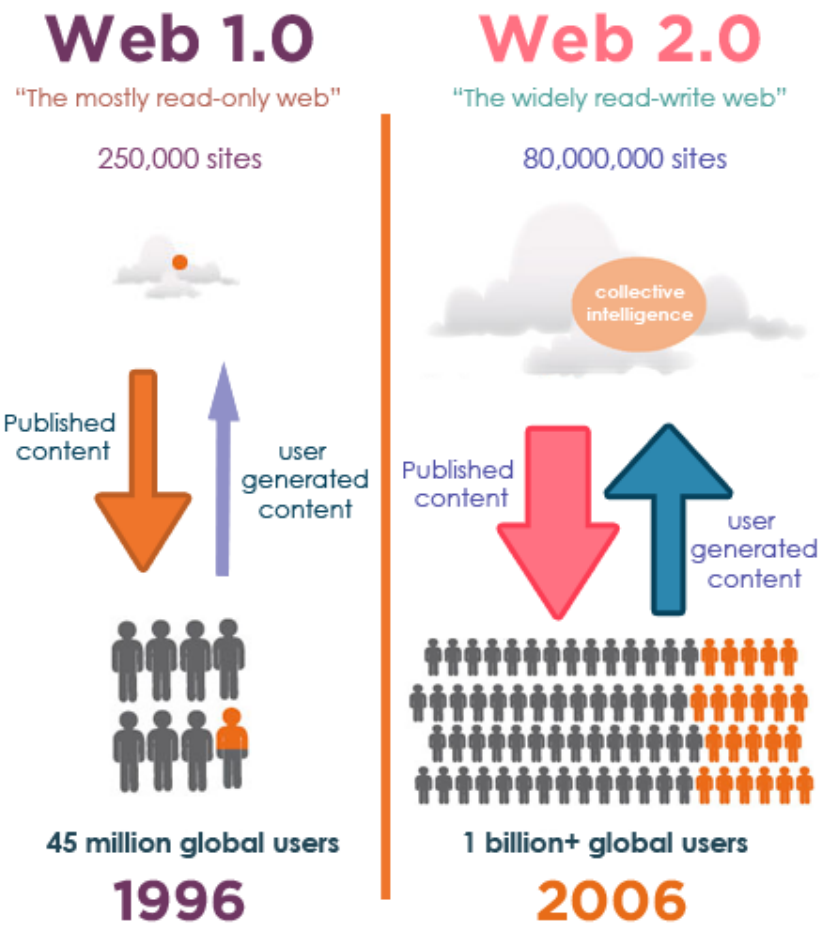
Feature of Web 2.0

- When it comes to defining web 2.0. the term means such internet applications which allow sharing and collaboration opportunities to people and help them to express themselves online.

- It’s a simply improved version of the first worldwide web, characterized specifically by the change from static to dynamic or user-generated content and also the growth of social media.

- The concept behind Web 2.0 refers to rich web applications, web-oriented architecture, and social web. It refer to changes in the ways web pages are designed and used by the users, without any change in any technical specifications.

Feature of Web 2.0



https://www.znetlive.com/blog/web-2-0/

Feature of Web 2.0

- What are the examples of Web 2.0 applications?
  - Web 2.0 examples include hosted services (Google Maps), Web applications (Google Docs, Flickr), Video sharing sites (YouTube), wikis (MediaWiki), blogs (WordPress), social networking (Facebook), folksonomies (Delicious), Microblogging (Twitter), podcasting (Podcast Alley) & content hosting

- the major difference between web 1.0 and web 2.0 is that web 2.0 websites enable users to create, share, collaborate and communicate their work with others, without any need of any web design or publishing skills. These capabilities were not present in Web 1.0 environment. services and many more.

Feature of Web 2.0

Web 1.0	Web 2.0
Double Click	Google AdSence
Ofoto	Flickr
Akamai	BitTorrent
mp3.com	Napster
Britannica Online	Wikipedia
Personal websites	Blogging
Evite	upcoming.org and EVDB
Domain name speculation	Search Engine Optimization
Page views	Cost per click
Screen Scraping	Web Services
Publishing	Participation
Content Management Systems	Wikis
Directories (taxonomy)	Tagging ("folksonmy")
Stickiness	Syndication

Feature of Web 2.0

- **Advantages of Web 2.0:**
  1. Available at any time, any place.
  2. Variety of media.
  3. Ease of usage.
  4. Learners can actively be involved in knowledge building.
  5. Can create dynamic learning communities.
  6. Everybody is the author and the editor, every edit that has been made can be tracked.
  7. User-friendly.
  8. Updates in the wiki are immediate and it offers more sources for researchers.
  9. It provides real-time discussion.

Client Server architecture

- A client–server architecture (Figure) divides an application into two parts, ‘client’ and ‘server’. Such an application is implemented on a computer network, which connects the client to the server. The server part of that architecture provides the central functionality: i.e., any number of clients can connect to the server and request that it performs a task. The server accepts these requests, performs the required task and returns any results to the client, as appropriate.

An introduction to web applications architecture: 1.1 Client–server architecture - OpenLearn - Open University - TT284_1

Client Server architecture

Client Server Application vs Web Application

- An application that runs on the client side and accesses the remote server for information is called a **client/server application** whereas an application that runs entirely on a web browser is known as a **web application**.
- The client server always makes requests to the remote server to get some information. The user interaction with the server is always through a user interface or application on the client side. The user interaction in a web application is through a web browser.
- A client server application can be platform specific as well as cross platform depending on the programming language used. A web application is platform independent because they require only a web browser. The **cross platform** language makes an application look native to the platform or the operation system of the client.

Client Server architecture

Client Server Application vs Web Application

- The client/server application is always installed on the client's computer unlike a web application. Web applications can run on the browsers directly and hence do not require any installation. A client server application uses a **two-tier architecture** whereas a web application uses **multi-tier architecture** which consists of; user client, middle tier, and application server. A web application uses a single-user system unlike a client server application which uses two users: client and server.

- A web application is hosted in a browser-controlled environment, or it is often programmed in a language that supports the browser. JavaScript is the most widely used browser-supported language. In client/server applications, the server machine is a host that runs single or multiple-server programs sharing their resources with clients. A client always requests from a server information or content without sharing any of its resources.

Client Server architecture

Client Server Application vs Web Application

- In a client/server application, it is difficult to test scripting errors whereas in web applications it is easy to test scripting errors. Specific types of clients used in a client/server model are web browsers, email clients, and online chat clients. The types of servers used are: web servers, ftp servers, application servers, data base servers, name servers, file servers, mail servers, terminal and print servers.

- In a client/server model, the server often gets overloaded as the number of simultaneous client requests increases. In a web application, this problem is ruled out as a compatible web browser is all that is needed to get the web application working. Some of the examples of web applications include: Yahoo mail, Gmail, WebOffice, Google Apps, Microsoft Office Live, WebEx, etc.

Web Design

Topics

- Concepts of effective web design
- Web design issues including
  - Browser, Bandwidth and Cache, Display resolution
  - Look and Feel of the Website
  - Page Layout and linking
  - User centric design
  - Sitemap
- Planning and publishing website
- Designing effective navigation

Concepts of effective web design

- Websites are designed for personal information, business organization, education institutes, government departments, online marketing and selling, banking, entertainment, online booking and more.

- Website are depend on environment like browser and operating system.

Concepts of effective web design

- Planning of websites includes Objective and goal, audience characteristics, contents, prototyping, and taking necessary steps to implementing and publish web site.

- All these factors are very important in designing a successful website.

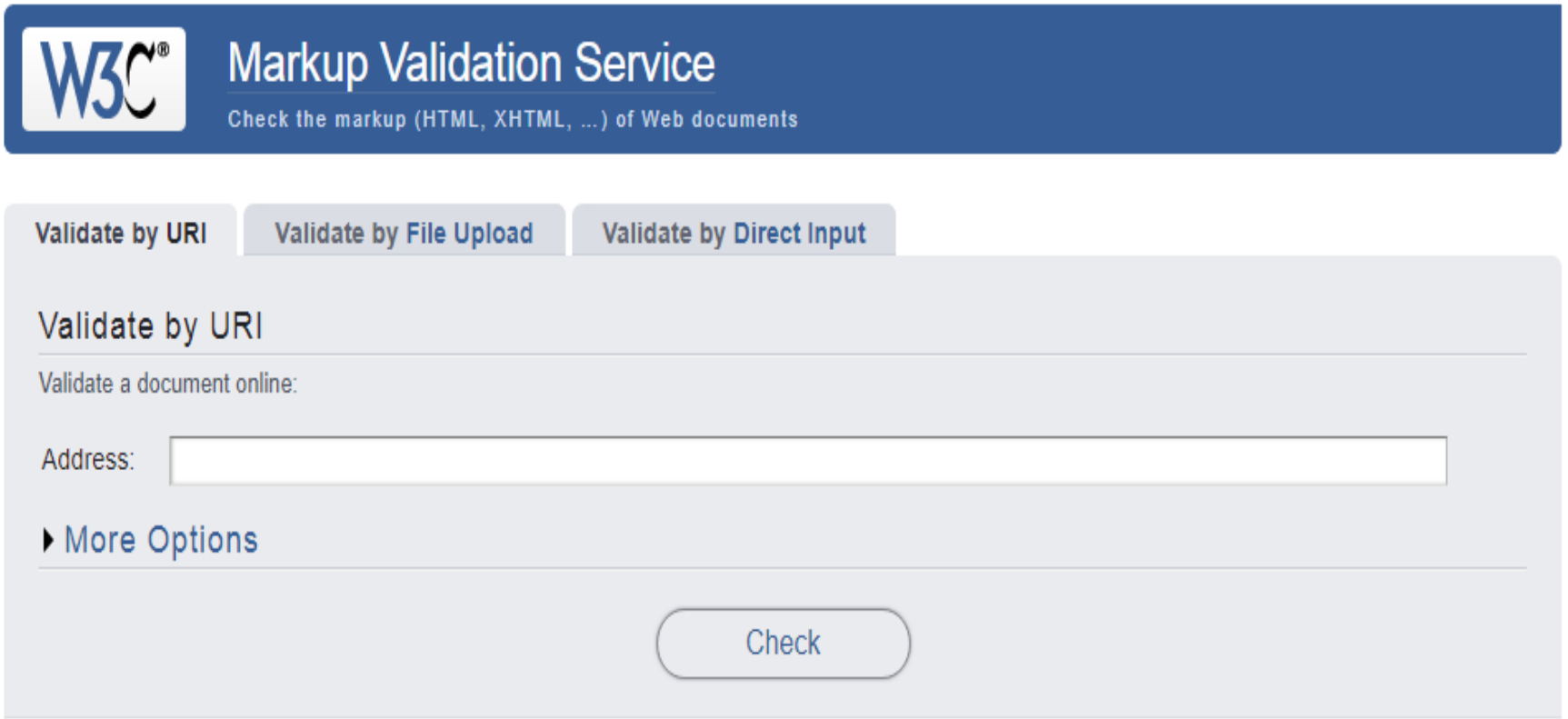
Web design issues

- Browser and Operating system
  - Web pages are implemented in HTML tags and viewed in browser window
  - The different browser and their versions affect the way they render the web page
  - Different browser interpret same HTML pages in different way.
  - Older versions of browsers may not support the new tags and features implemented in HTML/XHMTL.
  - Some browsers may work slightly different on different OS and hardware platform.
  - Browser compatibility is major issue to make web pages portable on different browser and versions.

Web design issues

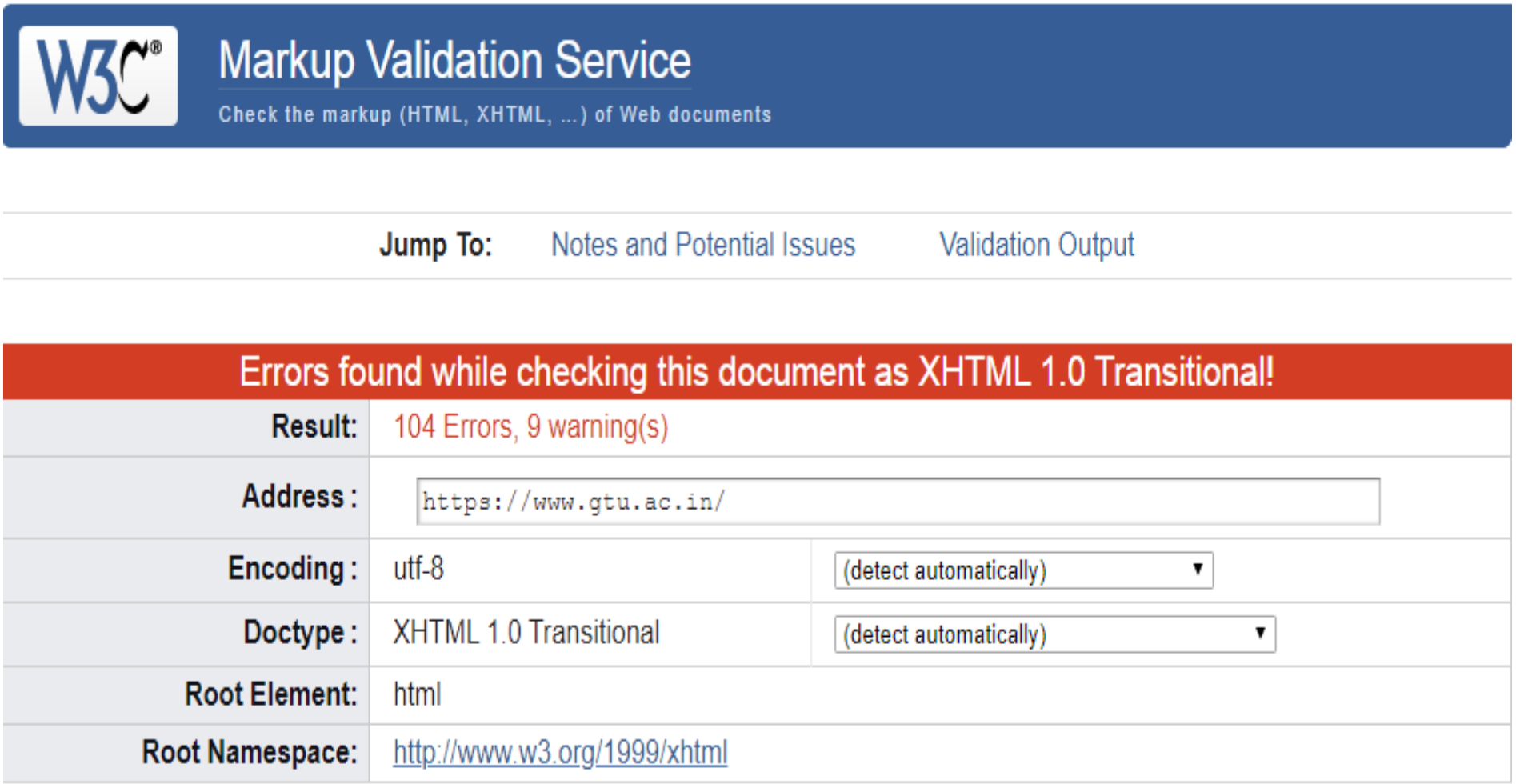
- **Browser and Operating system**
  - **Solution**
    - To make web page portable, test it on different browser and os.
    - Use the development tools to add special features to your pages supported by majority browsers.
    - The best way to avoid the problems is to follow standards.
    - Use validation rules to of the W3c to validate your code.
    - W3C improves the browser compatibility of your code as latest versions of popular browsers such as IE, Firefox, Netscape etc. have started supporting standards.
    - Check your site on https://validator.w3.org/

Web design issues



This validator checks the markup validity of Web documents in HTML, XHTML, SMIL, MathML, etc. If you wish to validate specific content such as RSS/Atom feeds or CSS stylesheets, MobileOK content, or to find broken links, there are other validators and tools available. As an alternative you can also try our non-DTD-based validator.

Web design issues



Web design issues

- **Bandwidth and Cache**
  - Users have different connection speed (bandwidth) to access the website.
  - Bandwidth plays important role in the designing of website.
  - Webpage with too many images, takes more time to download and users do not have patience to wait for longer time than 0-15 seconds. Then they move to other site without looking..
  - Need to consider the users who have low speed connections: dial-up and also high speed connections: broadband or leased-line.
  - Browsers provide temporary memory called cache to store the graphics.
  - Images can be cached whenever the page is downloaded first and when next time the same page is visited then gets images from cache so, helpful on low-speed connection.

Web design issues

- **Display Resolution**
  - Developers do not have control on display resolution of the monitors on which users view pages.
  - Now a days, most common screen resolution is: 1024 * 768. Old monitors uses 800 * 600.

- **There are three choices for web page design**

  - Design a web page with fixed resolution say 800 * 600. It can fit properly in same screen resolution but leaves some part of the screen if resolution is 1024 * 768. Vice a versa.
  - Make a flexible design using HTML table to fit into different resolution.
  - If page is displayed on monitor with higher resolution then it is displayed on left-hand side and some part on the right-hand side remains blank. We can use cantered design to display page , leaving equal space on both the side of the page.

Web design issues

- **Look and Feel**
  - It decides the overall appearance of the website. It includes website theme, font, graphics, color, presentation and access.

- **Website Theme**
  - All pages must hold together and give impression that it is single unit. While navigating it gives feeling to user that he/she is on same website.
  - Theme must reflect the objective of organization and convey message of it.
  - Use logo of company as theme.
  - Use color scheme as theme. Give same color to links, button, labels etc..
  - For ex. website for global warming can use pictures, message related to cause and effects of it on lives.

Web design issues

- **Look and Feel**
  - **Fonts**
    - It is important from reading and scanning point of view.
    - Different fonts have different readability and it affects the user physiology.
    - Height and width of the same character is different in different fonts, which affects line ending and paragraph boundaries.
    - Maintain consistency in using font type and size. Don’t use too many fonts with too many sizes.
    - Consider the availability of fonts on visitor’s machine. Default font is Times New Roman.

Web design issues

- **Look and Feel**
  - **Graphics**
    - It makes website attractive and convey lots of information. Images, charts etc..
    - One of the important points is the graphics file format. Different file formats support different level of compression and features. Use them at right place by considering features.
    - Too many images with larger sizes reduces download speed. Use limited graphics.
    - Use images that suit the theme of the website and profile of target audience rather than just to include it.

Web design issues

- **Look and Feel**
  - **Color**
    - They are part of everybody's life.
    - People's liking are different for colors.
    - Website with good theme but improper color scheme do not attract viewers and it fails.
    - It must suit to theme, content and target audience.

❖ The task of graphics and art for the designers rather than developers.

Web design issues

- **Look and Feel**
  - **Presentation and Access**
    - Website is to provide content online to diverse group of visitors having different reading habits and expectations.
    - Clear presentation helps in accessing the desired information quickly and easily without hurdles.
    - User grid based structure to divide the page into rows and columns, use space to make different parts of webpage visible, keep page simple and focused if possible (google.com),
    - Don’t overload with content, don’t make page lengthy instead divide into multiple pages, if lengthy page is required then put bottom, top links
    - Put common links on each page (link to home page on each page)

Web design issues

- **Page Layout and Linking**
  - Website consists of individual pages which are linked together
  - Page layout defines the visual structure of the page and divides it into different parts to present the information of varying importance, It is also called page template
  - **Two possible ways to prepare the layout**
    - Using HTML table to design the grid based layout
    - Using CSS to design page layout
  - One can also use readymade templates available by third party (free or paid).
  - **Points to remember**: Maintain balance between text and graphics, locate the items on the page using screen importance to attract user's attention, maintain consistency among the layout of the page which must match with theme.

Web design issues

- **Page Layout and Linking**
  - **Locating Information**
    - Web page is viewed on computer screen and it is divided into **five major areas** such as centre, top, right, bottom and left. (As per the importance of viewing pattern)
    - The main importance of user viewing pattern are centre, then top, right, bottom and left in particular order.
    - Put important information in **centre** to get immediate attention of the user.
    - Most website use **left side** for the **links** of other pages.
    - **Top** is used to display **logo** and **title** or **flash** as advertisements.
    - **Right** hand side for other information like **news or other updates, circulars**.
    - **Bottom part** used to quick link to important sections or to provide copyright message.

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Important Links

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Tablet Yojana 2019 - 2020.

Inauguration of Incubation Centre renovated Building GTU Ahmedabad Startup Centre.

Navratri Celebration was launched in GTU Campus our Vice Chancellor Pro. (Dr). Navin Sheth. And Misses Sheth performed aarti of Goddess Ambaji in present of faculty and

TABLET YOJANA-2019 by GOVERNMENT of GUJARAT

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RECENT CIRCULARS

MESSAGE FROM THE VICE-CHANCELLOR

Dear Students, Faculty Members, Principals/Directors;
Namaskar!!!

Prof. (Dr.) Navin Sheth
Vice Chancellor, GTU

I congratulate all the students who have successfully cleared their final semester exam and achieved a milestone in their life. I also extend my best wishes to all the students whose new semester has started and advise to adopt DCC approach in the life. DCC here stands for Dedication, Curiosity and Commitment in each and every activity they perform in their life.

GTU has celebrated its 11[th] foundation day where invitees mentioned that GTU is always ready to adopt change and strive for innovation for the betterment of students. GTU has been selected as best state University for its outstanding performance in promoting "Innovation & Start-ups and appreciated SSIP Prashansa" Award from Government of Gujarat. GTU

Student's Portal

NEWS

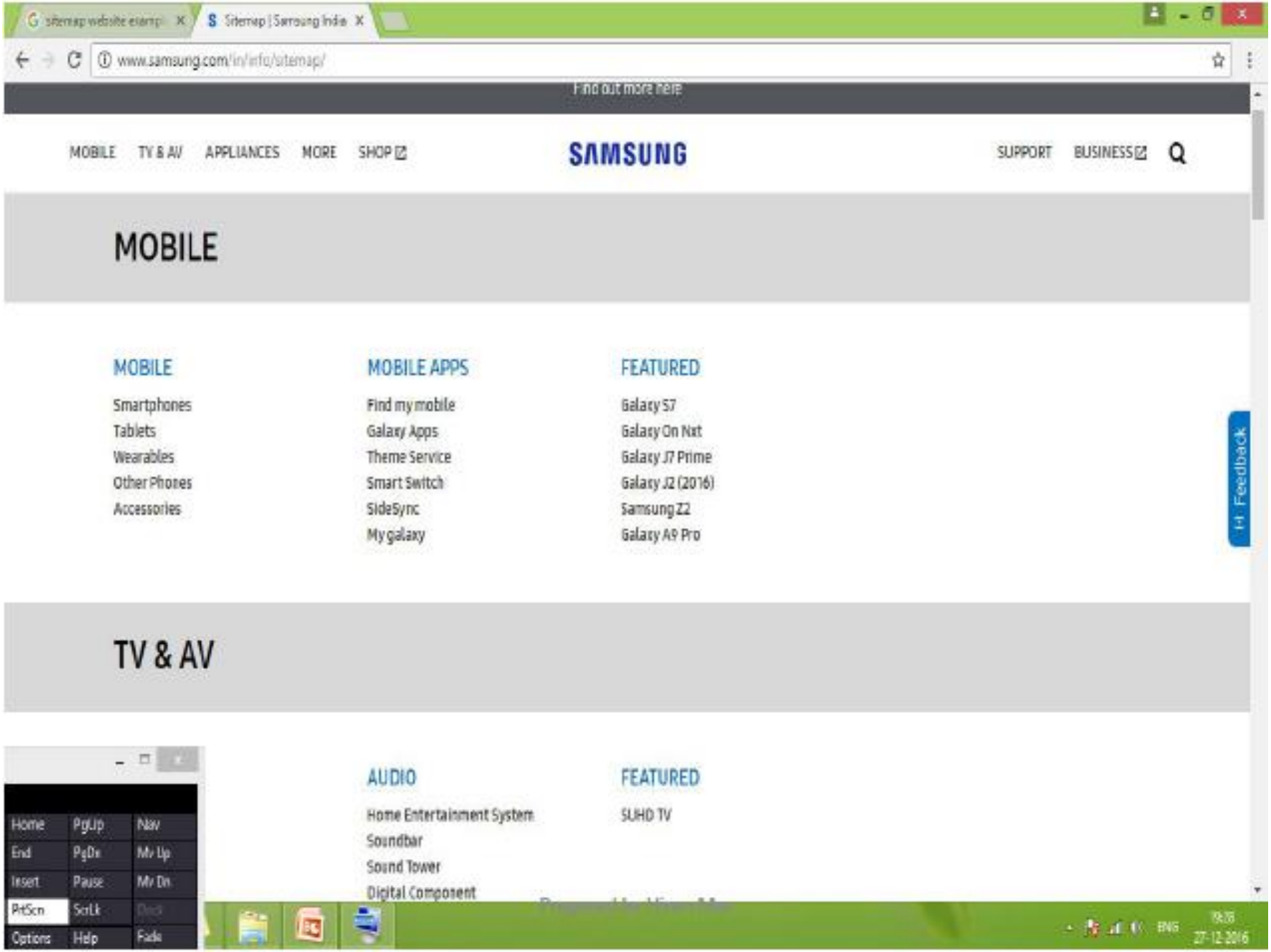
- 25-Jun-2019
  Circular for "ONE DAY WORKSHOP ON NPTEL" National Programme on Technology Enhanced Learning JOINTLY ORGANIZED BY NPTEL, IIT Madras & Gujarat Technological University on 11th July 2019 at Gandhinagar Institute of Technology
- 19-Jun-2019
  Circular for Faculty Development

Web design issues

- **User Centric Design**
  - **Locating Information**
    - How to predict the exact behaviour of website users, which is difficult.
    - Keep in mind the general behaviour of common user which helps in making design user-centric.
    - General reading habit on online magazine or newspaper site: reads normally from left to right and top to bottom hence, we can organize the contents in column fashion. Highlight the words in the paragraph to explore the meaning.

Web design issues

- **Sitemap**
  - Many time website is too complex with large numbers of sections and each with many pages.
  - It becomes difficult to move quickly by visitors from one part to another. Even user becomes confused where he/she is in website.
  - Keep hierarchy of few levels and provide the navigation bar on each page to jump directly to a particular section.
  - Another solution is to provide the sitemap including links to each section and their pages directly.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Planning and Publishing Website

- **Planning a Website**
  - In order to achieve higher success of the website in terms of user satisfaction, better planning is needed.
  - **Before you start developing website, ask the following questions:**
    - Why are we developing this website?
    - What do we achieve by developing this website?
    - Who are the people who will use this website?
    - What are the information contents?
    - How are these contents organized?
    - What are the possible ways?
    - How the files prepared are organized?
  - The answers to the above questions lead to better planning…

Planning and Publishing Website

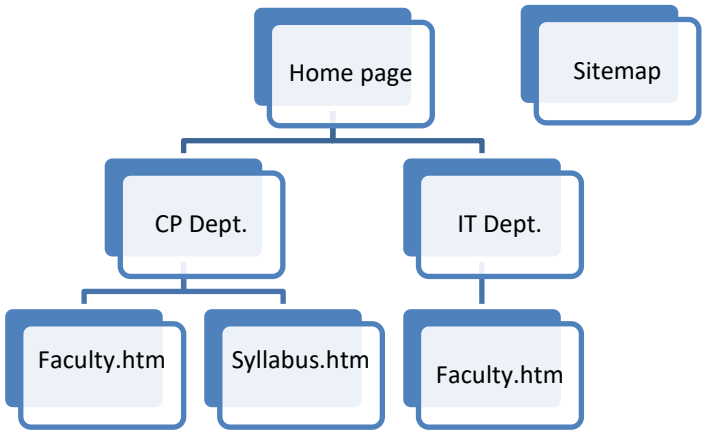
- **Planning a Website**
  - **Objective**
    - There is always some objective behind every activity.
    - If the objective behind developing website is clear then rest of the steps in planning will become easier.
    - Websites are developed for different reasons: to provide information and better service to customer, to make the business online, government website etc…
  - **Goal**
    - It means the achievement from the development of the website. The benefit an individual or organization gets from it – called value addition.
    - ***It depends on the type of website:*** if website is to provide the information then the goal should be user satisfaction in terms of getting timely and accurate information, If it is business website then the goal is to increase the sell.

Planning and Publishing Website

- **Planning a Website**
  - **Audience/User Profile:**
    - Target audience needs to identified for proper planning of the website not in terms of look and feel but also to identify content and its organization.
    - **Ask questions:** who are the visitors? Why do they visit the site? How frequently do they visit? What are their expectations, likings and preferences?
    - **For children website:** use cartoons and graphics with colors
    - **For technology** savvy use advanced technology
    - **For users interested in music** use background music.
    - For continuous improvement, a feedback form is designed to get their requirements and views about site.

Planning and Publishing Website

- **Planning a Website**
  - **Identifying and Organizing Contents**
    - Website is to provide the information in one or other form such as text, images, audio, video to the target audience.
    - So, identify the content from the various sources depending upon the objective of the website.
    - Once the information is identified and collected then prepare the page layout, logical grouping and navigation choices.



Planning and Publishing website

- **Publishing of website**:
  - Implement each page using various suitable technologies HTML, CSS, JavaScript and any of other server side technologies such as JSP, ASP .NET, PHP etc.
  - Organize the files containing your webpages and other contents like images into proper directory.
  - Test your individual pages and their links on local machine so when launched it will work properly.
  - Register your domain name
  - Upload website on web server by copying the folder containing whole website.
  - Access your website from any browser with the above URL.

Design Effective navigation

- **Navigation**
  - Most important design element after page layout in website designing is **navigation** design.
  - It provides a way to move from one page to another page in website using hyperlink given on a page.
  - If not proper then user feels the problem in moving around the pages.
  - **Important tips:**
  - it should be either text based or graphical, it should be clear and meaningful (use words/picture related to information), it should be consistent (same font and color on each page), it should be understandable, organize the links such that contents are grouped logically, provide search link, provide the way to return to first page from anywhere, provide the user with information regarding location ->, navigation menu (horizontal or vertical)

Web Design Principles

- There are 4 principles:
  - **Design for Medium**
  - **Design the whole site**
  - **Design for User**
  - **Design for Screen**

Web Design Principles

- **Design for Medium**

  A Web site is designed for the computer – not for paper

  - **Look and Feel**

    – The interface that the user must navigate often is called the look and feel of the Web site.

    – Look and feel implies the personality that the Web site conveys to the user and the way it works.

Web Design Principles

- **Design for Medium**
  - **Make your Design Portable**
    - The Web site must be portable across different browsers, OS and computer platforms.
    - Test the website in different browsers such as Internet Explorer, FireFox, Google Chrome, Opera, etc.
    - Certain features of HTML like cascading style sheets cannot be interpreted properly by certain browsers.
    - If necessary, design separate websites for different types of browsers; detect the user's browser and direct him to appropriate version of the Web site
    - Check website in different browsers; a website designed for a desktop PC may not be usable on a mobile device.

Web Design Principles

- **Design for Medium**
  - **Design for Low Bandwidth**
    - Different types of Internet connections are used – dial-up, broadband, cable, etc.
    - Plan your pages so that they are accessible at different connection speeds.
    - Avoid large images, complicated animations, movies as these take time to download.
    - Provide alternate text (by using the ALT property of HTML)
    - Design an alternate page that uses less graphics so that it will download quickly for users with a slow connection.

Web Design Principles

- **Design for Medium**
  - **Plan for Clear Presentation of Information**
    - Information design (ID) means the presentation and organization of your information. ID is the most important factor in determining the success of a Web site.
    - Don’t use too many fonts & colors as this distracts the user.
    - Provide direct links to the areas in the Web site that you think are the most in demand.
    - Use contrasting colors so that the text is easy to read.
    - On the computer screen, users tend to scan rather than read the whole page.

Web Design Principles

Web Design Principles

Web Design Principles

Web Design Principles

- **Design the Whole Site**
  - When designing the site, plan the unifying themes and structure that will hold the pages together.
  - The theme should reflect the personality of your organization
  - If designing a site for children, consider use of visuals, bright colors, and lively animations, big font

Web Design Principles

- **Design the Whole Site**
  - **Create Smooth Transitions**
    - Create a unified look among the pages
    - Reinforce the identifying elements of the site
    - Create smooth transitions from one page to another – this is done by repeating colors and fonts for similar page elements.

      E.g., all para headings in a particular font and color on all pages
    - All body text in a particular color and font style on all pages.

Web Design Principles

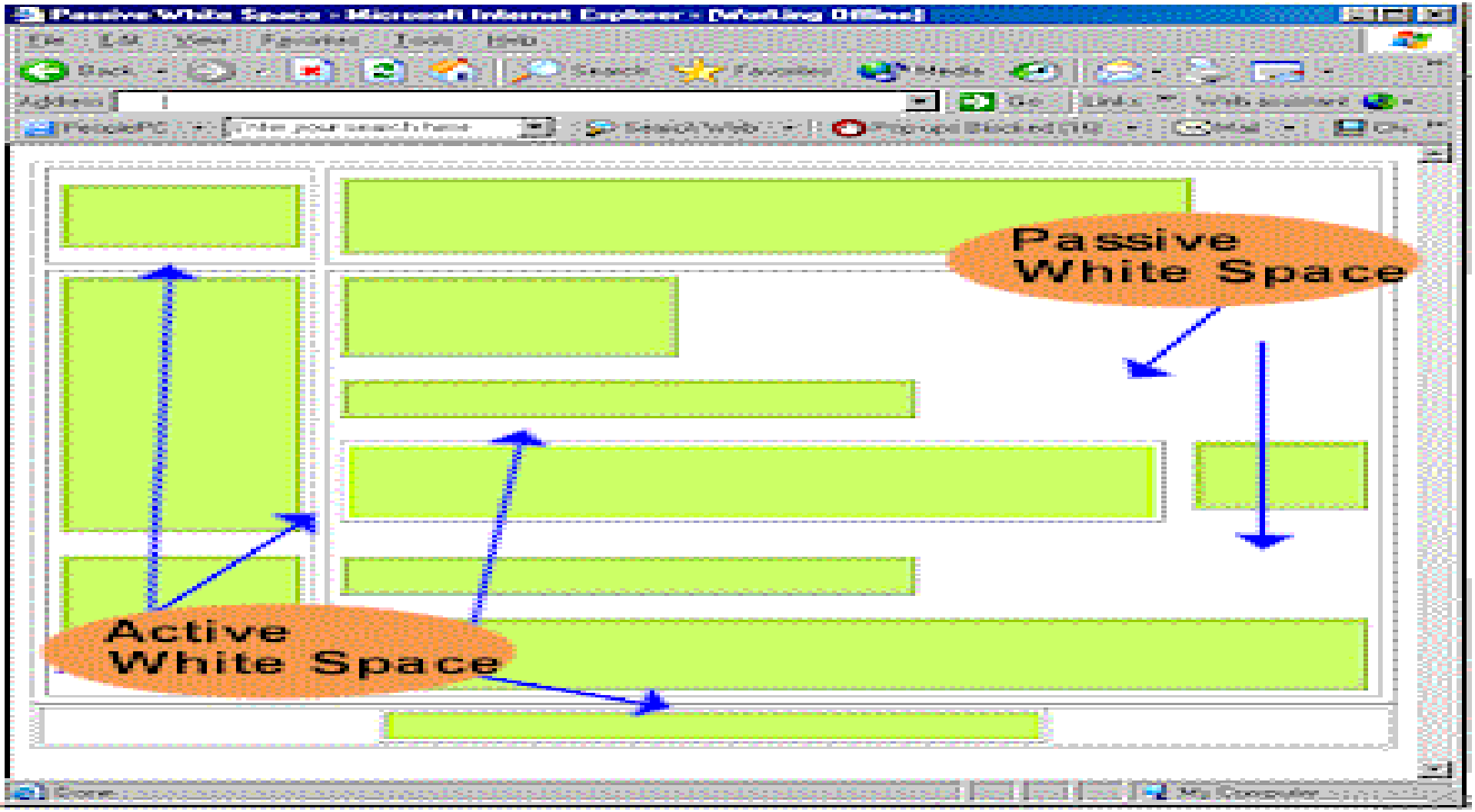
- **Design the Whole Site**
  - **Use of Grid to Provide a Visual Structure**
    - A grid is a way of organizing a page into rows and columns.
    - A grid can provide a uniform look (consistency) to all the pages of a site.
    - The TABLE element of HTML can be used to build the grid for pages.
    - Another way of creating a grid is by using the concept of frames (FRAMESET tag)

Web Design Principles

- **Design the Whole Site**
  - **Use of Active White Space**
    - White spaces are the blank areas of a page.
    - White space is the area between text, images, paragraphs, etc
    - White space that is used purposely is called active white space.
    - Passive white spaces are the blank areas that appear on the border of the screen due to screen resolution problems

Web Design Principles

- **Design the Whole Site**
  - **Use of Active White Space**



Web Design Principles

- **Design the Whole Site**
  - **Use of Active White Space**
    - A lack of white space creates the impression that the page contains too much information
    - It is difficult to find information on a page that does not have sufficient active white space.
    - Plenty of active white space reduces confusion.
    - Provide navigation elements on the same position in all pages – this provides uniformity and ease of use.

Web Design Principles

- **Design for the User**
  - Keep in mind the user
  - Why has the user come to your Web site?
  - What type of information does the user want?
  - Is the site for information, entertainment, ..?

Web Design Principles

- **Design for the User**
  - **Design for Interaction:**
    - Think about how the user will interact with the Web page
    - If the page is a collection of links, interaction will be clicking on the content and scrolling
    - Pointing to graphics and clicking on images to reach another page.
    - Design page into separate groups, e.g., links for pages of physics, maths, comp sc., …

Web Design Principles

- **Design for the User**
  - **Design for Location**
    - Difficult to predict the user's exact viewing path
    - However, research has shown that the areas of importance are as shown in the next slide
    - Put most important info in the middle, next most important at the top, and so on.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Web Design Principles

- **Design for the User**
  - **Keep a Flat Hierarchy**
    - Don’t make users navigate through too many layers to find the information they want
    - Provide a simple menu for navigation
    - Use the same navigation menu on all pages for uniformity
    - Provide a site map that shows the user’s location in the Web site

Web Design Principles

- **Design for the User**
  - **Use the Power of Hypertext Linking**
    - Web pages enable a non-linear reading method (like reading a magazine)
    - This can be done by providing hyperlinks through text or images
    - Provide hyperlinks directly into the text
    - Don’t use the “Click Here” phrase for linking
    - Provide links that allow the user to jump to top of page, bottom of page, go the menu from anywhere in the page, etc

Web Design Principles

- **Design for the User**
  - **How much Content is Enough?**
    - Don’t overload the user with too much information on a single page
    - Compare the websites of Google, Yahoo, Times Of India
    - Provide short paragraphs and links to more info for each topic.

Web Design Principles

- **Design for the Screen:**
  - Shape of screen
  - Provide enough contrast on page – light background and dark font
  - Avoid light text on light background

Worst Site


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