CSE Department Portal

Project Report Submitted in Partial Fulfilment of the Requirements for the Degree of

Bachelor of Engineering
in
Computer Science and Engineering

Submitted by

Dharmendra Tanwar: 19UCSE4005
Ritika Meena: 19UCSE4035

Under the Mentorship of
Dr. N.C. Barwar
H.O.D.

&

Under the Guidance of
Abhisek Gour
Assistant Professor

Department of Computer Science and Engineering
Faculty of Engineering & Architecture
M.B.M University, Jodhpur
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Department of Computer Science & Engineering

M.B.M. University
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CERTIFICATE

This is to certify that the work contained in this report entitled **CSE Department Portal** is submitted by the group members Mr. Dharmendra Tanwar (Roll No: 19UCSE4005), Ms. Ritika Meena (Roll. No: 19UCSE4035) to the Department of computer Science and Engineering, M.B.M University, Jodhpur, for the partial fulfilment of the requirements for the degree of **Bachelor of Engineering** in **Computer Science and Engineering**.

They have carried out their work under my supervision. This work has not been submitted else-where for the award of any other degree or diploma.

The project work in our opinion, has reached the standard fulfilling of the requirements for the degree of Bachelor of Engineering in Computer Science and Engineering in accordance with the regulations of the Institute.

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DECLARATION

We, **Dharmendra Tanwar (Roll No. 19UCSE4005)** and **Ritika Meena (Roll No. 19UCSE4035)**, Hereby declare that this Project titles "**COMPUTER SCIENCE ENGINEERING DEPARTMENT**" is a record of original work done by us under the mentor of **Dr. N.C. Barwar** and guidance of **Professor Abhisek Gour**.

I further certify that this work has not formed the basis the awarded of the Degree/Diploma/Associateship/Fellowship, seminar recognition or Project recognition to any candidate of any university and no part of this report is reproduced as it is form any other source without appropriate reference and permission.

Dharmendra Tanwar
8th Semester
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ACKNOWLEDGMENT

It is great pleasure for me to undertake this project. I feel highly doing the project entitled " Computer Science and Engineering Department Portal".

I am grateful to my project guide Abhishek Gour Assistant Professor of Computer Science and Engineering Department of MBM University, Jodhpur.

I would like to thank respected Prof. N.C. Barwar for giving me such a wonderful opportunity to expand my knowledge for my own branch and giving me guidelines to present a project report. It helped me a lot to realize of what we study for this project.

We deeply express our sincere thanks to our Head of Department Dr. N C Barwar for encouraging and allowing us to present the project on the topic "Computer Science and Engineering Department Portal" at our department premises for the partial fulfilment of the requirements leading to the award of Bachelor of Engineering degree. I take this opportunity to thank all our faculties who have directly or indirectly helped me in this project. I pay my respects and love to my parents and friends for their love and encouragement throughout my career.

I would like to thank my classmates who helped me to make my work more organized and well-stacked till the end.

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I would thank The Almighty for giving me strength to complete my report on time.

ABSTRACT

Website is the best way for publishing information and branding an organization. Full stack web development refers to the development of both front end and back end portions of web application. Front end is known as client side and Back end is known as Server side. Full stack web developers have the ability to design complete web application and websites. They work on the frontend, backend, database and debugging of web application or websites. Front end is the visible part of website or web application which is responsible for user experience. The user directly interacts with the front end portion of the web application or website. Backend refers to the server side development of web application or website with primary focus on how the website works. It is responsible for managing the database through queries and APIs by client side commands. So, I have designed the website on our department of Computer Science and Engineering Portal. For designing the website, I have used HTML and CSS for web designing, Javascript, Bootstrap, AJAX, PHP and MySQL have been used for developing of this site. In this site information about the CSE department has been given. To develop a web based application there are several programming languages that are in use. Some of them are only used for the frontend and backend design of the software. For example, HTML5, CSS, Bootstrap, JavaScript etc. There are also some other programming languages that are used to develop the dynamic functions of the software or application. For example - PHP, Java, Python etc. Nowadays there are also some frameworks that use vastly. Frameworks are basically structured programming by using Model, View and Controller. It is also called as MVC. If we develop web based application that is very useful for us because we can access it from anywhere in the world. It is very helpful for our daily life. That is why I choose subject of my project as “WEB DESIGN” in Universal Informatics added huge experiences in my upcoming career. Solving real life problems was another key issue. This report takes us through all the details of WEBSITE DESIGN knowledge and experience gathered during this project development period.

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Chapter 1

INTRODUCTION

The Web is an Internet-based distributed information system. Anyone with a computer connected to the Internet can easily retrieve information by giving a Web address or by simply clicking a mouse button. The Web is a great way to disseminate information and making it available 24/7. Information can also be collected from Web users and customers through online forms. Maintainers and administrators can control and update Web content from anywhere on the Web. All these make the Web a powerful tool for mass communication, e-business and e-commerce. Compared with TV, radio, news papers, and magazines, putting the word out on the Web is relatively simple and inexpensive. But a website is much more than such one-way communication media. It can be a virtual office or store that is always open and supported by workers from anywhere. Web service companies offer free Web space and tools to generate simple personal or even business Web pages. But, well-designed and professionally implemented websites are much more involved. Even then, expertly produced websites are still much more cost-effective than other means of mass communication. For business and commerce, the cost of a website is negligible when compared to building and operating a brick-and-mortar office or store. Once in-place, a website is a store that never closes and that is very attractive. People take great pains in building an office or store to project the right image and to serve the needs of customers. Likewise, well-informed businesses will insist on professionally architected, designed and implemented websites. Nothing less will do. As a communication medium, the Web consists of these major components:

Networks: The local-area and wide-area networks connecting computers world-wide forming the Internet. Clients: Web browsers that enable end-users to access the Web.

Servers: Constantly running programs that serve up information to the Web.

Documents: Web pages, mostly coded in HTML, that supply information on the Web.

Protocols: The Hyper Text Transfer Protocol HTTP that Web clients and servers use to talk to one another and the TCP/IP (Transmission Control Protocol) on which HTTP depends.

1.1. Web:

The Web consists of a vast collection of documents that are located on computers throughout the world. These documents are created by academic, professional, governmental, and commercial organizations as well as by individuals. The documents are prepared in special formats and retrieved through server programs on each computer that provides Web service. Each Web document can contain (potentially many) links to other documents served by different servers in other locations and therefore become part of a web that spans the entire globe. New materials are being put on the Web continuously and instant access to this collection of information can be enormously advantageous. As the Web grows explosively, MIT of the USA and INRIA (the French National Institute for Research in Computer Science and Control) have agreed to become joint hosts of the W3 Consortium which is supported by industry and will further develop Web related standards, protocols, and services. A Web browser is a program that helps users obtain information from the Web. Given the location of a target document, a browser connects to the correct Web server, retrieves and displays the desired document. You can click on links in a document to obtain other documents. Using a browser you can retrieve information provided by Web servers anywhere on the Internet. Many different Web browsers are available. Mosaic, developed at the US National Center for Supercomputing Applications (NCSA), is the original browser with a convenient graphical user interface. Today, widely used Web browsers are Netscape's Netscape Navigator (NN) and Microsoft's Internet Explorer (IE). RealOne is an audio/video media player and Web browser from RealNetworks. Other browsers include IBM's WebExplorer, JavaSoft's HotJava, W3C's Amaya, Mozilla, Opera, just to name a few. Web browsers compete to offer speed and convenience for the user and are evolving with time. Typically a browser supports the display of HTML files and images in standard formats. Helper applications or plug-ins can augment a browser to treat pages with multimedia contents such as audio, video, animation, and mathematical formulas.

1.2. HTTP:

A Web browser communicates with a Web server through an efficient Hypertext Transfer Protocol (HTTP) designed to work with hypertext and hypermedia documents that may contain regular text, images, audio, and video. Native Web pages are written in the Hypertext Markup Language (HTML) and saved usually in files with the .html (or .htm) name suffix. HTML organizes Web page contents (text, graphics, and other media data) and allows hyperlinks to other pages anywhere on the Web. Clicking on such a link causes your Web browser to follow it and retrieve another page. The Web employs an open addressing scheme allowing links to objects and services provided by Web, email, file transfer, audio/video, and newsgroup servers. Thus, the Web space is a superset of many popular Internet services. Consequently, a Web browser provides the ability to access a wide variety of information and services on the Internet.

1.3. URL:

The full form of URL is Uniform Resource Locators. The Web uses Uniform Resource Locators (URLs) to identify (locate) resources (files and services) available on the Internet. A URL may identify a host, a server port, and the target file stored on that host. URLs are used, for example, by browsers to retrieve information and by HTML to link to other resources.

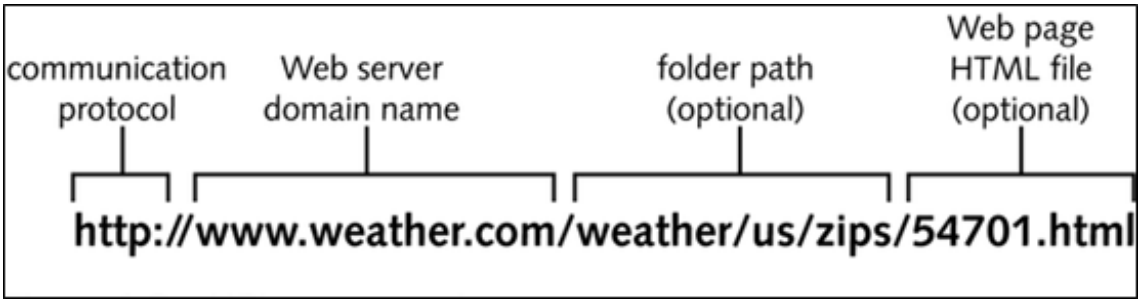

Figure 1.1: Part of URL

The server identifies a host and a server program. The optional port number is needed only if the server does not use the default port (e.g. 21 for FTP and 80 for HTTP). The remainder of the URL, when given, is a file pathname. If this pathname has a trailing /

character, it represents a directory, rather than a data file. The suffix (.html, .txt, .jpg, etc.) of a data file indicates the file type. The pathname can also lead to an executable program that dynamically produces an HTML or other valid file to return. Within an HTML document you can link to another document served by the same Web server by giving only the pathname part of the URL. Such URLs are partially specified. A partial URL with a / prefix (e.g. /file_xyz.html) refers to a file under the server root, the top-level directory controlled by the Web server. A partial URL without a leading / points to a file relative to the location of the document that contains the URL in question. Thus, a simple file_abc.html refers to that file in the same directory as the current document. When building a website, it is advisable to use URL relative to the current page as much as possible.

1.4. **WEB DEVELOPMENT:**

The objective of the web design is to handle the entire design of a website. The software keeps track of all the information about the entire website. The system contains database where all the information will be stored safely. Web development refers to the building, creating, and maintaining of websites. It includes aspects such as web design, web publishing, web programming, and database management. It is the creation of an application that works over the internet i.e. websites. This project provided us essential skills and knowledge one requires in the field of web designing. The crucial tools used during the tenure helped us in gaining knowledge about programming languages. By taking this project we enhanced our knowledge in Web designing and got insight in how the websites are designed using HTML and CSS.
The word Web Development is made up of two words, that is:

Web: It refers to websites, web pages or anything that works over the internet.

Development: Building the application from scratch.

Web Development can be classified into two ways: First is Frontend of website and Second is Backend of website.

2.1 Frontend Web Development :

The part of a website that the user interacts directly is termed as front end. It is also referred to as the 'client side or user side' of the website.

HTML (HyperText Markup Language) is used to design the front end portion of web pages using markup language. It acts as a skeleton for a website since it is used to make the structure of a website.CSS (Cascading Style Sheets) is a simply designed language intended to simplify the process of making web pages presentable. It is used to style our website. JavaScript is a scripting language used to provide a dynamic behaviour to our website. JavaScript is a text-based programming language used both on the client-side and server-side that allows you to make web pages interactive. Bootstrap is a free and open-source tool collection for creating responsive websites and web applications. It is the most popular CSS framework for developing responsive, mobile-first websites. Nowadays, the websites are perfect for all the browsers (IE, Firefox, and Chrome) and for all sizes of screens (Desktop, Tablets and Phones).

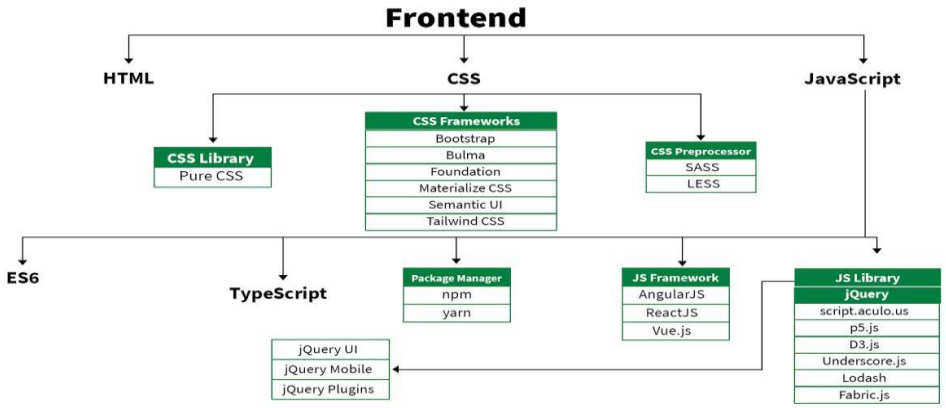

Figure 1.2: Frontend Roadmap

HTML stands for Hyper Text Markup Language. It is used to design the front end portion of web pages using markup language. HTML is the combination of Hypertext and Markup language. Hypertext defines the link between the web pages. The markup language is used to define the text documentation within tag which defines the structure of web pages.

Cascading Style Sheets, fondly referred to as CSS, is a simply designed language intended to simplify the process of making web pages presentable. CSS allows you to apply styles to web pages. More importantly, CSS enables you to do this independent of the HTML that makes up each web page.

JavaScript is a famous scripting language used to create the magic on the sites to make the site interactive for the user. It is used to enhancing the functionality of a website to running cool games and web-based software.

Bootstrap is a free and open-source tool collection for creating responsive websites and web applications. It is the most popular HTML, CSS, and JavaScript framework for developing responsive, mobile-first web sites.

jQuery is an open source JavaScript library that simplifies the interactions between an HTML/CSS document, or more precisely the Document Object Model (DOM), and JavaScript. Elaborating the terms, jQuery simplifies HTML document traversing and manipulation, browser event handling, DOM animations, Ajax interactions, and cross-browser JavaScript development.

AngularJs is a JavaScript open source front-end framework that is mainly used to develop single page web applications. It is a continuously growing and expanding framework which provides better ways for developing web applications. It changes the static HTML to dynamic HTML. It is an open source project which can be freely used and changed by anyone. It extends HTML attributes with Directives, and data is bound with HTML.

React is a declarative, efficient, and flexible JavaScript library for building user interfaces. ReactJS is an open-source, component-based front end library responsible only for the view layer of the application. It is maintained by Facebook.

2.2 Backend Web Development :

Backend is the server side of a website. It is the part of the website that users cannot see and interact. It is the portion of software that does not come in direct contact with the users. It is used to store and arrange data.

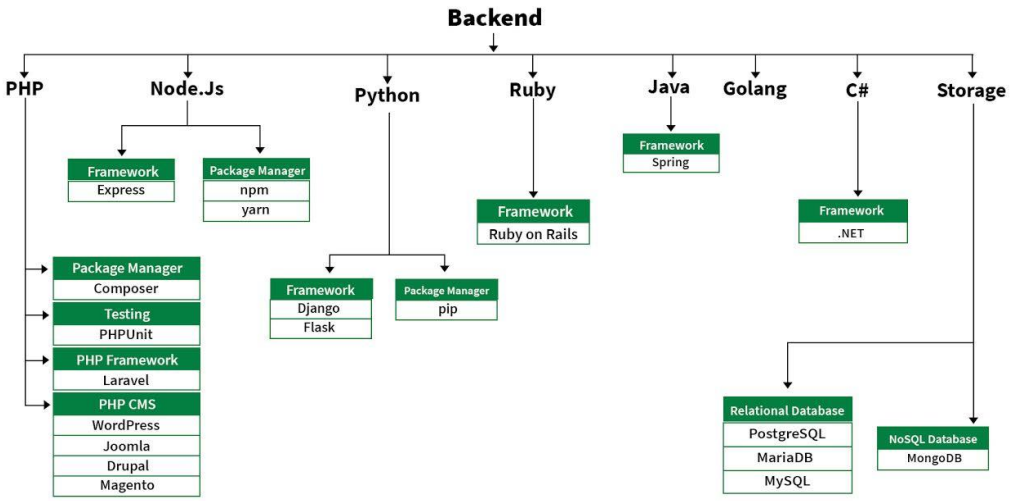

Figure 1.3: Backend Roadmap

Backend refers to the server-side development of web application or website with a primary focus on how the website works. It is responsible for managing the database through queries and APIs by client-side commands. This type of website mainly consists of three parts front end, back end, and database.

The back end portion is built by using some libraries, frameworks, and languages which are discussed below:

C++ is a general purpose programming language and widely used now a days for competitive programming. It is also used as backend language.

Java is one of the most popular and widely used programming language and platform. It is highly scalable. Java components are easily available. Java is one of the most popular and widely used programming language. It is highly scalable. Java is an excellent language for backend development trusted by many big tech companies such as LinkedIn, Netflix, Twitter, etc. It is a distinct language that is known to most backend developers worldwide.

Python is a programming language that lets you work quickly and integrate systems more efficiently. Python is a programming language that lets you work quickly and integrate systems more efficiently. There are mainly two Python backend frameworks for web development. They are Django and Flask.

Javascript can be used as both (front end and back end) programming languages.

Node.js is an open source and cross-platform runtime environment for executing JavaScript code outside of a browser. It's used in production by large companies such as PayPal, Uber, Netflix, Walmart and so on.

PHP is a server-side scripting language designed specifically for web development. Since, PHP code executed on server side so it is called server side scripting language. PHP is a server-side scripting language designed specifically for web development. Every website requires to store the database of its users. This database comprises the complete website structure. Thus, one can simply retrieve, organize, modify, and save data whenever needed. It runs on a server. PHP plays a crucial role in the backend development of a website. It is integrated with multiple databases such as MySQL, SQL Server, PostgresSQL, and Oracle. Programming languages such as PHP run on frameworks that ease the web development process. PHP is best for every type of web app – from CMS systems to music streaming platforms. Developers use PHP to enhance the backend code of these web software systems. Laravel is one of the best PHP backend frameworks that offers an immense development environment without installing PHP, web server, or third-party software. Laravel has the best Object-relational Mapper as compared to the other frameworks out there. This Object-relational mapping allows you to interact with your database objects and database relationships using expressive syntax. Laravel comes with the inbuilt template engine known as Blade Template Engine. It supports WordPress, Symfony, Zend, CakePHP3, etc.

Chapter 2
Technology Used

A lot of technology has been used during this Project. In which different technology has also been used in Frontend and Backend. HTML , CSS , Javascript , Bootstrap use in Frontend and PHP and MySQL use in Backend. AJAX is a technique for creating fast and dynamic web pages. AJAX allows web pages to be updated asynchronously by exchanging small amounts of data with the server behind the scenes.

2.1. HTML :

HTML stands for HyperText Markup Language. It is used to design web pages using a markup language. HTML is the combination of Hypertext and Markup language. Hypertext defines the link between the web pages. A markup language is used to define the text document within tag which defines the structure of web pages. This language is used to annotate (make notes for the computer) text so that a machine can understand it and manipulate text accordingly. Most markup languages (e.g. HTML) are human-readable. The language uses tags to define what manipulation has to be done on the text. HTML is a formatting system for displaying material retrieved over the Internet. Each retrieval unit is known as a Web page (from World Wide Web), and such pages frequently contain hypertext links that allow related pages to be retrieved. It is used to design the front-end portion of web pages using a markup language. HTML is the combination of Hypertext and Markup language. Hypertext defines the link between the web pages. The markup language is used to define the text documentation within the tag which defines the structure of web pages. HTML can only create static web pages. HTML uses predefined tags and elements which tell the browser how to properly display the content. Remember to include closing tags. If omitted, the browser applies the effect of the opening tag until the end of the page. A document written in HTML contains ordinary text interspersed with markup tags and uses the .html filename extension. The tags mark portions of the text as title, section header, paragraph, reference to other documents, etc. Thus, an HTML file consists of two kinds of information: contents and HTML tags. A browser follows the HTML tags to layout the page content for display. Because this, line breaks and extra white space between words

in the content are mostly ignored. In addition structuring and formatting contents, HTML tags can also reference graphics images, link to other documents, mark reference points, generate forms or questionnaires, and invoke certain programs. Various visual editors or page makers are available that provide a GUI environment for creating and designing HTML documents. An HTML tag takes the form <tag>.

Figure 2.1: Tag Information

HTML page structure contains the essential building-block elements (i.e. doctype declaration, HTML, head, title, and body elements) upon which all web pages are created.

The <! DOCTYPE html> tag is the document type declaration (not technically a tag). It declares a document as being an HTML document. The doctype declaration is not case-sensitive.

The <html> tag is called the HTML root element. All other elements are contained within it.

The <head> tag contains the "behind the scenes" elements for a webpage. Elements within the head aren't visible on the front-end of a webpage.

HTML elements used inside the <head> element include: <style> Tag, <title> Tag, <base> Tag, <noscript> Tag, <script> Tag, <meta> Tag, <link> Tag. The <body> tag is used to enclose all the visible content of a webpage.

In other words, the body content is what the browser will show on the front-end. An HTML document can be created using any text editor. Save the text file using .html or .htm. Once saved as an HTML document, the file can be opened as a webpage in the browser.

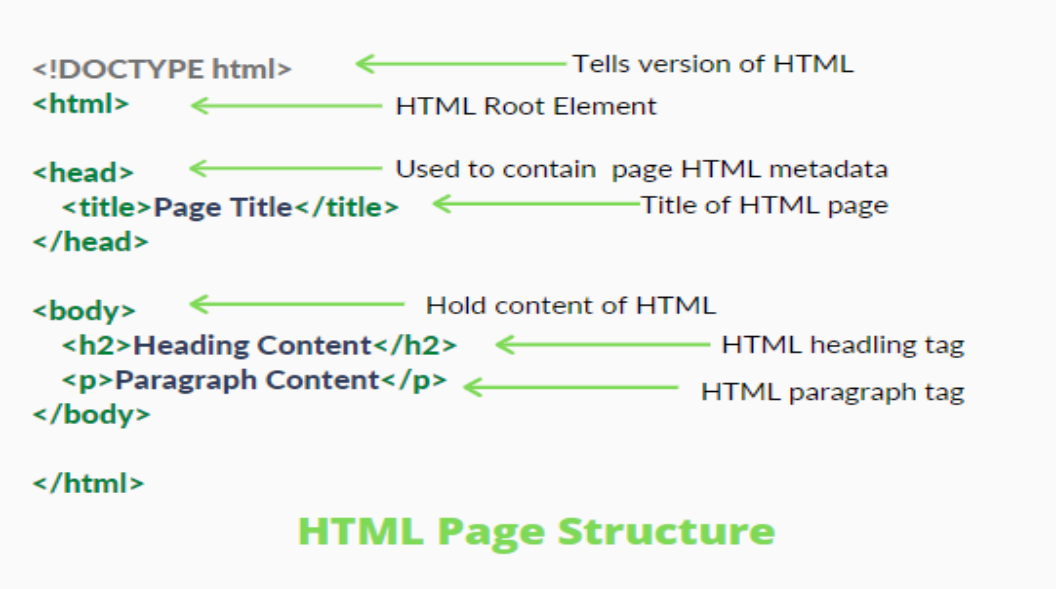

Figure 3.2: HTML Page Structure

2.2. CSS:

CSS (Cascading Style Sheets) is a style sheet language used to design a webpage to make it attractive. The reason for using this is to simplify the process of making web pages presentable. It allows you to apply styles on web pages. More importantly, it enables you to do this independent of the HTML that makes up each web page.CSS is a style sheet language that makes a website aesthetically appealing and stylist. There are three types of CSS: In inline CSS contains the CSS property in the body section attached with the element known as inline CSS. In internal or embedded CSS rule set should be within the HTML file in the head section i.e the CSS is embedded within the

HTML file. In external CSS contains a separate CSS file that contains only style property with the help of tag attributes. Cascading Style Sheets, fondly referred to as CSS, is a simply designed language intended to simplify the process of making web pages presentable. CSS allows you to apply styles to web pages. More importantly, CSS enables you to do this independent of the HTML that makes up each web page. CSS selectors are used to "find" (or select) HTML elements based on their element name, id, class, attribute, and more. There are total main 4 selectors: first is universal selector, element selector, id selector and class selector. A CSS comprises style rules that are interpreted by the browser and then applied to the corresponding elements in your document.

A style rule set consists of a selector and declaration block.

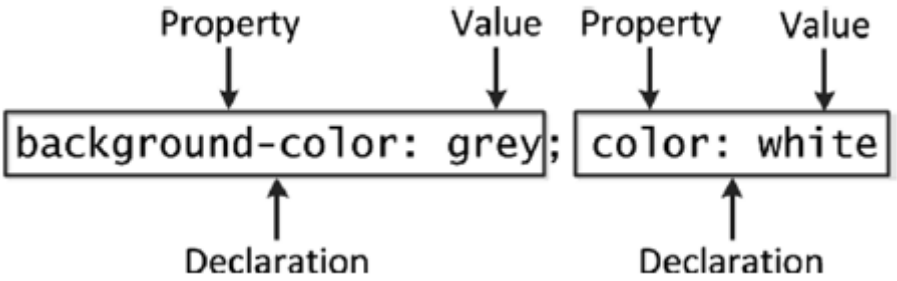

Figure 2.3: CSS Syntax

There are 3 ways to write CSS in our HTML file. First is Inline CSS, Second is Internal CSS and third is External CSS.

Priority order: Inline > Internal > External

2.2.1. Type of CSS:

There are mainly three type of CSS:

2.2.1.1 Inline CSS:

Before CSS this was the only way to apply styles.

Not an efficient way to write as it has a lot of redundancy.

Self-contained and uniquely applied on each element.

The idea of separation of concerns was lost.

Example:

```
<h3 style=" color: red"> Have a great day </h3>
<p  style =" color: green"> I did this , I did that </p>
```

2.2.1.2 Internal or Embedded CSS:

With the help of style tag, we can apply styles within the HTML file

Redundancy is removed

But the idea of separation of concerns still lost

Uniquely applied on a single document

Example:

```
<style>
        h1{
                color: red;
        }
</style>
<h3> Have a great day </h3>
```

2.2.1.3 External CSS:

With the help of <link> tag in the head tag, we can apply styles.

Reference is added, File saved with .css extension, Redundancy is removed.

The idea of separation of concerns is maintained and uniquely applied to each document

Example:

```
<head>
 <link rel="stylesheet" type="text/css" href="name of the Css file">
</head>
        h1{
                color: red;         //.css file
            }
```

2.2.2. CSS Selectors:

CSS selectors are used to “find” (or select) HTML elements based on their element name, id, class, attribute, and more. There are mainly five type of selector :

2.2.2.1 THE UNIVERSAL SELECTORS:

Rather than selecting elements of a specific type, the universal selector quite simply matches the name of any element type .

```
* {
color: #000000;
}
```

3.2.2.2 THE ELEMENT SELECTORS:

The element selector selects elements based on the element name. You can select all p elements on a page like this (in this case, all p elements will be center-aligned, with a red text color) :

```
p {
   text-align: center;
   color: red;
}
```

2.2.2.3 THE DESCENDANT SELECTOR:

Suppose you want to apply a style rule to a particular element only when it lies inside a particular element. As given in the following example, the style rule will apply to the em element only when it lies inside the ul tag.

```
ul em {
  color: #000000;
}
```

2.2.2.4 THE ID SELECTOR :

The id selector uses the id attribute of an HTML element to select a specific element. The id of an element should be unique within a page, so the id selector is used to select one unique element. To select an element with a specific id, write a hash (#) character, followed by the id of the element. The style rule below will be applied to the HTML element with id=”para1″:

```
#para1 {
  text-align: center;
  color: red;
}
```

2.2.2.5 THE CLASS SELECTORS :

The class selector selects elements with a specific class attribute. To select elements with a specific class, write a period (.) character, followed by the name of the class. In the example below, all HTML elements with class=”center” will be red and center-aligned:

```
p.group
    {
     color: red;
    }

<p class="group">This paragraph refers to two classes.</p>
```

The purpose of CSS is to provide Web developers with a standard way to define, apply, and manage sets of style characteristics. CSS provides these capabilities through a technical model based on a hierarchical scope of effect, the separation of style from content, and a well-defined set of published standards. This section touches on each of these three topics in turn, focusing on how CSS can help the Web developer create maintainable, reusable code.

2.3. JavaScript

JavaScript is a lightweight, cross-platform, and interpreted compiled programming language which is also known as the scripting language for WebPages. There are also more advanced server side versions of JavaScript such as Node.js, which allow you to add more functionality to a website than downloading files (such as real-time collaboration between multiple computers). Inside a host environment (for example, a web browser), JavaScript can be connected to the objects of its environment to provide programmatic control over them. JavaScript gives web pages interactive elements that engage a user. It is well-known for the development of web pages, many non-browser environments also use it.

JavaScript can be used for Client-side developments as well as Server-side developments. Javascript is both imperative and declarative type of language.

JavaScript contains a standard library of objects, like Array, Date, and Math, and a core set of language elements like operators, control structures, and statements.

Client-side supplies objects to control a browser and its Document Object Model (DOM). Like if client-side extensions allow an application to place elements on an HTML form and respond to user events such as mouse clicks, form input, and page navigation. Useful libraries for the client-side are AngularJS, ReactJS, VueJS and so many others. JavaScript can be added to your HTML file in two ways:

First one is Internal JS: We can add JavaScript directly to our HTML file by writing the code inside the <script> tag. The <script> tag can either be placed inside the <head> or the <body> tag according to the requirement.

Second is External JS: We can write JavaScript code in other file having an extension.js and then link this file inside the <head> tag of the HTML file in which we want to add this code.

JavaScript is considered as lightweight due to the fact that it has low CPU usage, is easy to implement and has a minimalist syntax. Minimalist syntax as in, it has no data types. Everything is treated here as an object. It is very easy to learn because of its syntax similar to C++ and Java. A lightweight language does not consume much of your CPU's resources. It doesn't put excess strain on your CPU or RAM. JavaScript runs in the browser even though it has complex paradigms and logic which means it uses fewer resources than other languages.

For example, NodeJs, a variation of JavaScript not only performs faster computations but also uses less resource than its counterparts such as Dart or Java.

Additionally, when compared with other programming languages, it has less in-built libraries or frameworks, contributing as another reason for it to be lightweight. However, this brings it a drawback that we need to incorporate external libraries and frameworks.

JavaScript contains a standard library of objects, such as Array, Date, and Math, and a core set of language elements such as operators, control structures, and statements.

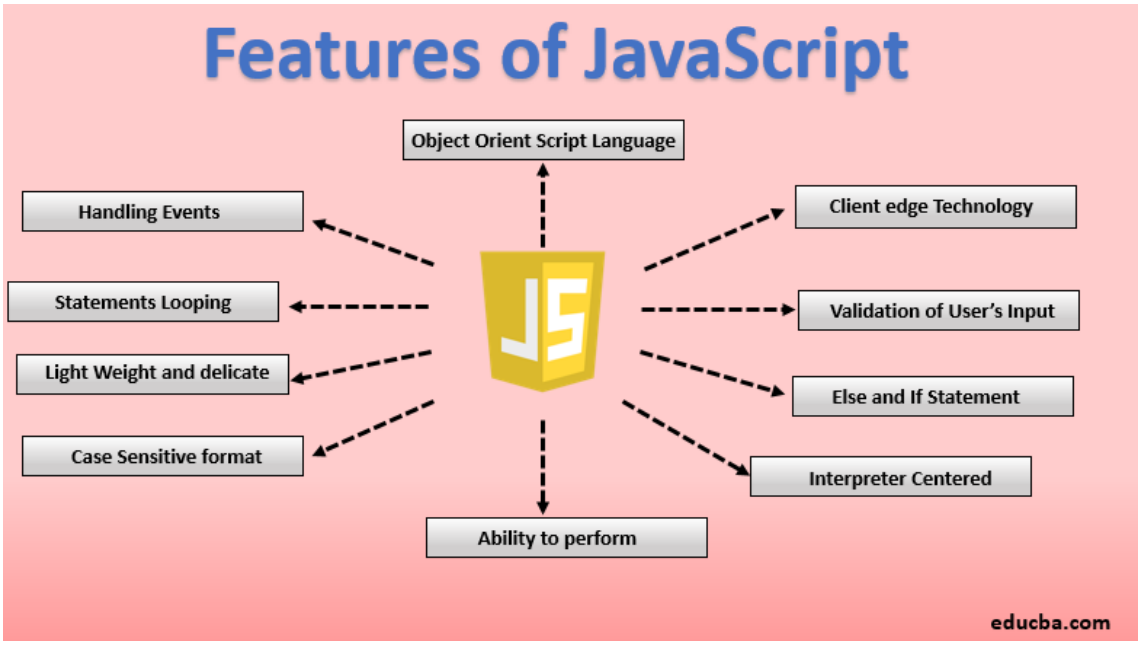

Figure 2.4: Features of Javascript

Mainly Javascript is divided into two part first is Client side Javascript and second is server side Javascript.

2.3.1. Client Side Javascript:

Client-side JavaScript extends the core language by supplying objects to control a browser and its Document Object Model (DOM). For example, client-side extensions allow an application to place elements on an HTML form and respond to user events such as mouse clicks, form input, and page navigation.

2.3.2. Server Side Javascript:

Server-side JavaScript extends the core language by supplying objects relevant to running JavaScript on a server. For example, server-side extensions allow an application to communicate with a database, provide continuity of information from one invocation to another of the application, or perform file manipulations on a server.

This means that in the browser, JavaScript can change the way the webpage (DOM) looks. And, likewise, Node.js JavaScript on the server can respond to custom requests from code written in the browser.

JavaScript is standardized at Ecma International - the European association for standardizing information and communication systems (ECMA was formerly an acronym for the European Computer Manufacturers Association) to deliver a standardized, international programming language based on JavaScript. This standardized version of JavaScript, called ECMAScript, behaves the same way in all applications that support the standard. Companies can use the open standard language to develop their implementation of JavaScript. The ECMAScript standard is documented in the ECMA-262 specification.

2.4. Bootstrap:

Bootstrap was developed by Mark Otto and Jacob Thornton at Twitter. It was released as an open source product in August 2011 on GitHub. Bootstrap is the most popular HTML, CSS and JavaScript framework for developing a responsive (A website is called responsive website which can automatically adjust itself to look good on all devices, from smart phones to desktops etc.). It is absolutely free to download and use. It is a front-end framework used for easier and faster web development. It includes HTML and CSS based design templates for typography, forms, buttons, tables, navigation, modals, image carousels and many others. It can also use JavaScript plug-ins. It facilitates you to create responsive designs. It is very easy to use. Anybody having basic knowledge of HTML and CSS can use Bootstrap. It facilitates users to develop a responsive website. It is compatible on most of browsers like Chrome, Firefox, Internet Explorer, Safari and Opera etc.

Bootstrap comes bundled with basic HTML and CSS design templates that include many common UI components. These include Typography, Tables, Forms, Buttons, Glyphicons, Dropdowns, Buttons and Input Groups, Navigation, Pagination, Labels and Badges, Alerts, Progress Bars, Modals, Tabs, Accordions, Carousels, and many others. Many of these use JavaScript extensions and jQuery plugins. These Bootstrap templates are made available as well-factored CSS classes that you can apply to your HTML to achieve different effects. This makes using Bootstrap very convenient. By using semantic class names like .success, .warning and .info, these components are easily reusable and extensible. But while Bootstrap uses descriptive class names that have meaning, it isn't specific about implementation details. All classes can be overridden with custom CSS style and color, and still the meaning of the class will stay the same. This responsiveness is achieved using a fluid Bootstrap grid system that can be applied to appropriately scale up to 12 columns according to the size of the device or viewport. Grids provide structure to the layout, defining the horizontal and vertical guidelines for arranging content and enforcing margins. Grids also offer an intuitive structure for viewers, because it's easy to follow a left to right, or a right to left flow of content moving down the page. Before grids, and before CSS was so powerful, grid based layouts were achieved by using tables, where the content would be arranged inside table cells. As CSS became more mature, a number of CSS frameworks for grid-based layouts started to appear. These include YUI grids, 960 GS and blueprint, to name a few. To use the Bootstrap grid system, a few rules need to be followed. Grid column elements are placed inside row elements, which create horizontal groups of columns. You can have as many rows as you want on the page, but columns must be immediate children of rows. In a full row, the column widths will be any combination that adds up to 12, but it is not mandatory to use all 12 available columns. Rows need to be placed either in a fixed-width layout wrapper, which has a .container class and a width of 1170px, or in full-width layout wrapper, which has a .container-fluid class, and which enables the responsive behaviour in that row. The Bootstrap grid system has four tiers of classes: xs for phones (<768px), sm for tablets (≥768px), md for desktops (≥992px), and lg for larger desktops (≥1200px). These basically define the sizes at which the columns will collapse or spread horizontally. The class tiers can be used in any combination to get dynamic and flexible layouts.

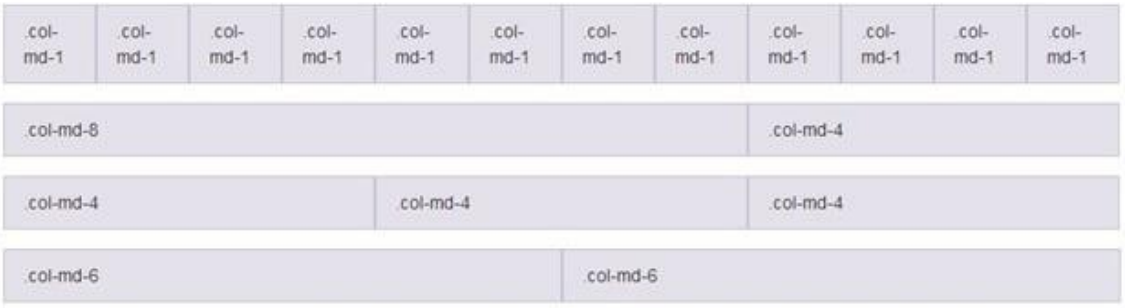

Figure 2.5: Bootstrap Grid System

Beginning developers often assume their pure and un-styled HTML will look the same across all browsers. Unfortunately, every browser has its own default "user agent" style sheet that is applied to the HTML, and no two browsers have the same defaults. For example, heading font sizes are not consistent across browsers, some unordered and ordered lists have left margins and others have left padding, browsers apply custom borders and padding to the HTML body, and even buttons are rendered differently across browsers. To solve all these inconsistencies, different CSS "reset" rules were born that define consistent style defaults. Bootstrap brings some more goodies to table besides pure CSS reset. It comes with normalize.css, an HTML5-ready alternative to CSS resets, and it also has some well-designed defaults of its own. For example, Bootstrap sets the global default font-size to 14px, with a line-height of 1.428. The default font is changed to Helvetica/Arial, with sans serif fallback. All these styles are applied to the <body> and all paragraphs, with the addition that <p> (paragraphs) receive a bottom margin of half their computed line-height (10px by default). Besides these defaults, there are also customizable styles for standard HTML tags that bring more consistency to the text, such as highlighted text (<mark>), deleted text (<del> and <s>), underlined text (<u>), small text (<small>), and bold text (). Alignment classes help to arrange content on the page more easily by using .text-left, .text-center, .text-right, .text-justify and .text-nowrap classes. There are also predefined styles for block quotes, and unordered and ordered list, with inline options, just to name a few. To get a full list, head to the Bootstrap Typography page.

One interesting thing that Bootstrap also makes possible is that you can use, for example, heading styles by using either the <h1> tag, or the .h1 class. The latter will match the styling of the <h1> heading, but will allow the text to be displayed inline.

2.5. PHP:

PHP started out as a small open source project that evolved as more and more people found out how useful it was. Rasmus Lerdorf unleashed the first version of PHP way back in 1994. PHP is a recursive acronym for "PHP: Hypertext Preprocessor". PHP is a server side scripting language that is embedded in HTML. It is used to manage dynamic content, databases, session tracking, even build entire e-commerce sites. It is integrated with a number of popular databases, including MySQL, PostgreSQL, Oracle, Sybase, Informix, and Microsoft SQL Server. PHP is pleasingly zippy in its execution, especially when compiled as an Apache module on the Unix side. The MySQL server, once started, executes even very complex queries with huge result sets in record-setting time. PHP supports a large number of major protocols such as POP3, IMAP, and LDAP. PHP4 added support for Java and distributed object architectures (COM and CORBA), making n-tier development a possibility for the first time. PHP is forgiving: PHP language tries to be as forgiving as possible. PHP Syntax is C-Like. PHP performs system functions, i.e. from files on a system it can create, open, read, write, and close them. PHP can handle forms, i.e. gather data from files, save data to a file, through email you can send data, return data to the user. You add, delete, modify elements within your database through PHP. Access cookies variables and set cookies. Using PHP, you can restrict users to access some pages of your website. It can encrypt data. PHP can actually do anything related to server-side scripting or more popularly known as the backend of a website. For example, PHP can receive data from forms, generate dynamic page content, can work with databases, create sessions, send and receive cookies, send emails etc. There are also many hash functions available in PHP to encrypt user’s data that makes PHP secure and reliable to be used as a server-side scripting language. So these are some of the abilities of PHP that makes it suitable to be used as server-side scripting language. You will get to know more of these abilities in further tutorials.

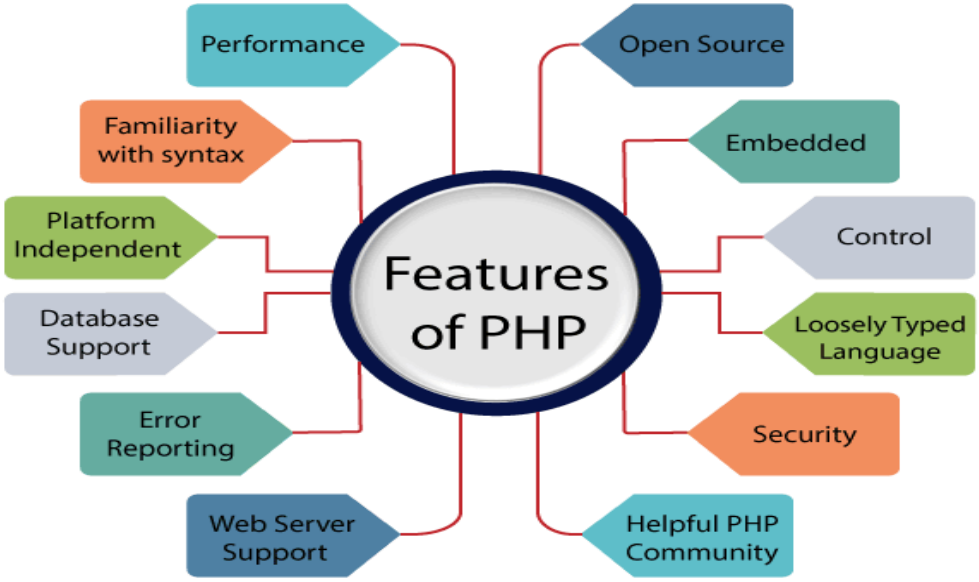

Figure 2.6: Features of PHP

PHP script is executed much faster than those scripts which are written in other languages such as JSP and ASP. PHP uses its own memory, so the server workload and loading time is automatically reduced, which results in faster processing speed and better performance. PHP source code and software are freely available on the web. You can develop all the versions of PHP according to your requirement without paying any cost. All its components are free to download and use. PHP has easily understandable syntax. Programmers are comfortable coding with it. PHP code can be easily embedded within HTML tags and script. PHP is available for WINDOWS, MAC, LINUX & UNIX operating system. A PHP application developed in one OS can be easily executed in other OS also. PHP supports all the leading databases such as MySQL, SQLite, ODBC, etc. PHP has predefined error reporting constants to generate an error notice or warning at runtime. E.g., E_ERROR, E_WARNING, E_STRICT, E_PARSE. PHP allows us to use a variable without declaring its datatype. It will be taken automatically at the time of execution based on the type of data it contains on its value. PHP is compatible with almost all local servers used today like Apache, Netscape, Microsoft IIS, etc.

PHP is a secure language to develop the website. It consists of multiple layers of security to prevent threads and malicious attacks. Different programming languages require long script or code, whereas PHP can do the same work in a few lines of code. It has maximum control over the websites like you can make changes easily whenever you want. It has a large community of developers who regularly updates documentation, tutorials, online help, and FAQs. Learning PHP from the communities is one of the significant benefits.

2.6. MySQL:

MySQL is an Oracle-backed open source relational database management system (RDBMS) based on Structured Query Language (SQL). MySQL runs on virtually all platforms, including Linux, UNIX and Windows. Although it can be used in a wide range of applications, MySQL is most often associated with web applications and online publishing. MySQL is an important component of an open source enterprise stack called LAMP. LAMP is a web development platform that uses Linux as the operating system, Apache as the web server, MySQL as the relational database management system and PHP as the object-oriented scripting language. (Sometimes Perl or Python is used instead of PHP.) Originally conceived by the Swedish company MySQL AB, MySQL was acquired by Sun Microsystems in 2008 and then by Oracle when it bought Sun in 2010. Developers can use MySQL under the GNU General Public License (GPL), but enterprises must obtain a commercial license from Oracle.
Today, MySQL is the RDBMS behind many of the top websites in the world and countless corporate and consumer-facing web-based applications, including Face book, Twitter and YouTube. MySQL is based on a client-server model. The core of MySQL is MySQL server, which handles all of the database instructions (or commands). MySQL server is available as a separate program for use in a client-server networked environment and as a library that can be embedded (or linked) into separate applications. MySQL operates along with several utility programs which support the administration of MySQL databases. Commands are sent to MySQL Server via the MySQL client, which is installed on a computer. MySQL was originally developed to handle large databases quickly. Although MySQL is typically installed on only one

machine, it is able to send the database to multiple locations, as users are able to access it via different MySQL client interfaces. These interfaces send SQL statements to the server and then display the results.

2.7. AJAX:

AJAX stands for Asynchronous JavaScript and XML. AJAX is a new technique for creating better, faster, and more interactive web applications with the help of XML, HTML, CSS, and Java Script. Ajax uses XHTML for content, CSS for presentation, along with Document Object Model and JavaScript for dynamic content display. Conventional web applications transmit information to and from the sever using synchronous requests. It means you fill out a form, hit submit, and get directed to a new page with new information from the server. With AJAX, when you hit submit, JavaScript will make a request to the server, interpret the results, and update the current screen. In the purest sense, the user would never know that anything was even transmitted to the server. ML is commonly used as the format for receiving server data, although any format, including plain text, can be used. AJAX is a web browser technology independent of web server software. A user can continue to use the application while the client program requests information from the server in the background. Intuitive and natural user interaction. Clicking is not required, mouse movement is a sufficient event trigger. Data-driven as opposed to page-driven. It is terminology given to the act using JavaScript embedded in a webpage (client-side code) to make an HTTP request (to a backend) and processing the response without leaving the page. Ajax is an acronym for Asynchronous Javascript and XML.

It is used to communicate with the server without refreshing the web page and thus increasing the user experience and better performance. While Ajax is a web application development technique that is designed to make web pages more responsive and interactive with a user, Ajax has some limitations to consider before you develop an Ajax-based application.

Ajax incorporates these technologies to create a new approach to developing web applications. Ajax defines a method of initiating client to server communication without

page reloads. It provides a way to enable partial page updates. From a web page user perspective, it means improved interaction with a web application, which gives the user more control of their environment, similar to that of a desktop application.

In a traditional web application, HTTP requests, that are initiated by the user's interaction with the web interface, are made to a web server. The web server processes the request and returns an HTML page to the client. During HTTP transport, the user is unable to interact with the web application.

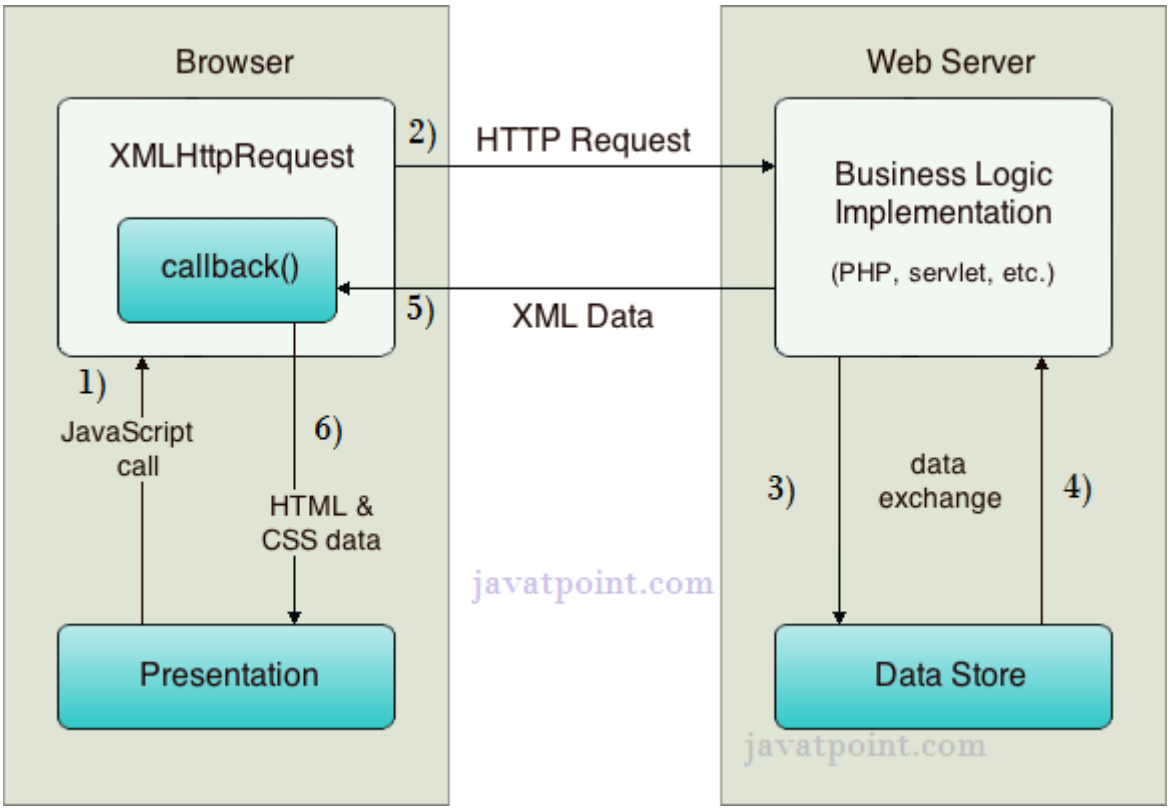

Figure 2.7: How AJAX works

2.8. WAMP SERVER:

WAMP is an acronym that stands for Windows, Apache, MySQL, and PHP. It's a software stack which means installing WAMP installs Apache, MySQL, and PHP on your operating system (Windows in the case of WAMP). Even though you can install

them separately, they are usually bundled up, and for a good reason too. What's good to know is that WAMP derives from LAMP (the L stands for Linux). The only difference between these two is that WAMP is used for Windows, while LAMP – for Linux based operating systems.

Let's quickly go over what each letter represents:

"W" stands for Windows, there's also LAMP (for Linux) and MAMP (for Mac).

"A" stands for Apache. Apache is the server software that is responsible for serving web pages. When you request a page to be seen by you, Apache grants your request over HTTP and shows you the site.

"M" stands for MySQL. MySQL's job is to be the database management system for your server. It stores all of the relevant information like your site's content, user profiles, etc.

"P" stands for PHP. It's the programming language that was used to write WordPress. It acts like glue for this whole software stack. PHP is running in conjunction with Apache and communicating with MySQL.

WAMP acts like a virtual server on computer. It allows you to test all WordPress features without any consequences since it's localized on our machine and is not connected to the web. First of all, this means that we don't need to wait until files are uploaded to your site, and secondly – this makes creating backups much easier. WAMP speeds up the work process for both developers and theme designers alike. WAMP is used as a safe space to work on our website, without needing to actually host it online. WAMP also has a control panel. Once you install the software package, all of the services mentioned above (excluding the operating system that is) will be installed on our local machine.

Chapter 3

PROJECT DETAILS

In this project we have used a lot of software before creating this computer science department portal and in it the hardware requirements and software requirements have also been kept in mind.

3.1. Hardware Requirement:

Processor: Intel i3(minimum) or Ryzen3 (minimum) or Latest Processor
Memory: minimum 4GB RAM or 128 GB ROM [minimum]
Screen Resolution: 1280x680 or large

3.2.Software Requirement:

OS: Windows 7 or Latest version
WAMP 2.0 Server
PHP Designer 8
Sublime Text or Visual Studio Code
Google Chrome or Microsoft Edge or Opera Mini
Internet Connection

In final year major project we have created a complete dynamic website of computer science department portal. In which html, css and Javascript are used in the front end. And the website has been made responsive by using bootstrap in the frontend framework and with the help of bootstrap navigation bar many classes have also been used. Most of the form tag is used in HTML and the input tag in the form tag is used to control the input. PHP and MySQL database is used in the backend of this project. And somewhere AJAX is also used.

The first page or home page of the web portal is a static page which tells about the CSE department portal and courses and placements.

The second page is of the notice in which the department has the upcoming notice and some useful information display which is controlled by the admin.
In the third page detail of faculty of CSE department. In the Faculty page of this website, all the faculty of the department are shown in one format. This format looks like a card showing the name of the faculty, post name, email address and profile photo.
In the fourth page , the detail description of the syllabus is given and in this page, on clicking the automatic semester with the help of Ajax, the semester syllabus is loaded from the database.

Ajax is a JavaScript and XML mix function that displays information from a server/database to a web page without having to reload a web page. Like this syllabus the next session is of timetable in which on clicking on semester like syllabus page the semester wise timetable is also displayed from the database. And also the alumni can update and handle the semester. In the next two sections we have linked our Alumni website and University website. In which by clicking on the section of the navbar, it redirects the client to the alumni and university website.
And in the last section we have created a login page. In login, three facilities have been given on the website in which admin, faculty and student can login to their account. Creating the account of a new faculty and new student can only be controlled by an admin. When any user login with id and password in admin login and faculty login then he will be authenticated from database through id and password authentication and if that id and password is correct then account will be login otherwise not. Once the account is logged in, a session will be created which will be different for everyone. And the ID and password used in this web site will be used correctly as it is using the protocol method post which there is no possibility of any third party attack.
The page has been added in the notice section on the admin portal, in which the admin can do it if the already uploaded notice on the first page has to be removed. And in the second there is a page of add notice in which any upcoming event or important information and notices want to be displayed in the notice of the home page, then the admin can add the notice or information according to the date in it. Two pages have also been added in the Faculty section of Admin, in which the first page shows the Existing Faculty in the CSE Department Portal, in which there is also a Remove Faculty

button next to each Faculty, if you want to remove any Faculty, then the Admin Faculty is shown can remove. And in the second page, if you want to create a new faculty account, then the admin can create a new account. Similarly, in the student section of the admin, one can remove the assisting student according to the graduation year and semester and can create the account of the new student, which means that the admin has the facility to admit the new student. Similarly, in the next two sections, a similar facility is also available for syllabus and time table, such as updating the syllabus and time table of a semester or adding some new topic to the syllabus. In the next section, the admin's profile page is added, in which the admin tells the basic details about himself like admin name, date of birth, admin's mail id, mobile number, adhar number, qualification, specification and password. Most of the information can be changed by the admin except for the admin id. And in the last section admin can logout his account. The session is destroyed after the administrator logs out of his account.

In the login page of the Faculty, the home page is displayed after logging in to your account according to the ID and password. In this also the ID and password are also authenticated from the database. In which the first is the profile page in which the faculty is written about their profile such as Faculty Name, ID, Email, Mobile Number, Adhar Number, Post Name, Qualification, Specification and Password, Profile photo appears in which the ID is shown except all other information can be changed. In the rest of the Attendance section, two pages have been added in which faculty can mark the student's attendance as per semester in one page and in this only the absent can mark the student's attendance as it will not insert more records in the database. Faculty can mark the student's current date or current date only in the mark attendance page. And in the page of view attendance, faculty can see and change the marked attendance. Similarly, two pages have been inserted in the assignment section as well. In which the first page is of add Assignment, in which the Faculty can give the assignment of their subject semester wise to the student as well as from the last date. However, in the Assignments view, the Semester Vice can see the assignments submitted by the student, how many students have submitted the assignments in a particular semester and can view the solutions of the questions of the assignments. By the way, if a student has uploaded a file in the assignment, then he can also download it. By the way, in the next

two sections, the notice and syllabus have been told, in which only one can see the syllabus and the notice. And in Time Table Section Faculty can view their Time Table. And in the last section the session gets destroyed after the faculty logout their account. And in the last login page, the student has been given the facility to login to his account. In which after selecting your roll number, password and passout year as student ID, this data is authenticated from the database. And if this data is correct, then the student login and the home page appear. In the first section, there is a profile page insert in which basic information is given. And the student can change all the details except ID, Password, Graduation Year and Semester. And in the second section, the page of attendance is inserted, in which your attendance is shown according to any date. Assignment page is entered in the third section of the student in which he can submit the solution of his assignment according to the subject of the semester. AJAX is also used in this page, in which the assignment and its date will be shown as soon as the subject is selected, which will also have the option of submit assignment. Then the notices of the department will show in the next notice section. In the next two sections, two pages are inserted in which Syllabus and Time Table are mentioned which gets loaded through AJAX directly on selecting the semester. And in the last option there is a logout option in which students logout their account.

The project uses PHP programming and MySQL database in the backend. A predefined super global variable is also available in PHP to extract the submitted data from the HTML page, with the help of which one can extract the submitted data directly. Like $_GET, $_POST , $_REQUEST, ... etc. And session is also used to store sensitive information from login page. There is a function to create a direct session in PHP, with the help of which you can create your session and also destroy the session. To insert and extract data in MySQL, the function of MySQL connectivity is available in PHP, which can activate direct query by establishing MySQL connection.

Chapter 4

RESULTS / OUTCOME

In this project I have developed a dynamic website using a full stock technology. And I have created this website keeping in view my department and named it as CSE Department Portal. CSE Department portal is a complete Dynamic website which is built using PHP technology and MySQL database in Backend. And HTML, CSS, JavaScript and Bootstrap5 and AJAX use in Frontend. This project is deployed on WAMP server.

In the landing page of the project, a home section has been told about the brief of Computer Science Engineering Department. The present notice and upcoming activity related notice are given in notice section. In the section of Faculty, all the faculty is explained in brief. In the Syllabus and Time Table section, semester wise syllabus and timetable mentioned. University Website and Alumni section is a hyperlink in which connected to other website, clicking on which opens another page. And in the last there is login sections in which there are three different options one for admin, second for faculty and third for student.

When admin login his account then admin can view all content in notice, faculty, student details and syllabus section. Admin can remove these content and admin can also add new content in these section. If the admin wants to make some changes in his profile, then admin can do it like change profile photo, change date of birth , change mobile number , change adhar number , change password etc. In the Last admin can also logout his account.

When Faculty login his account then faculty can view his profile, if he wants to make some changes in his profile, then faculty can do it. Faculty can view notice, semester wise syllabus, his time table (distributed with all semester and all period). Faculty also has an Assignment and Attendance section in which they can assign semester wise assignments in their different subjects and mark attendance of students. And he can also view all assignment and attendance and if he wants to be changes in assignment and attendance then he can do it. In last admin can also logout his account.

When Student login his account then student can view his profile, if he wants to make some changes in his profile, then student can do it. Student can view notice, syllabus, time table, assignments and marked assignment. Students can submit assignment with in the last date. In Last student can also logout his account.

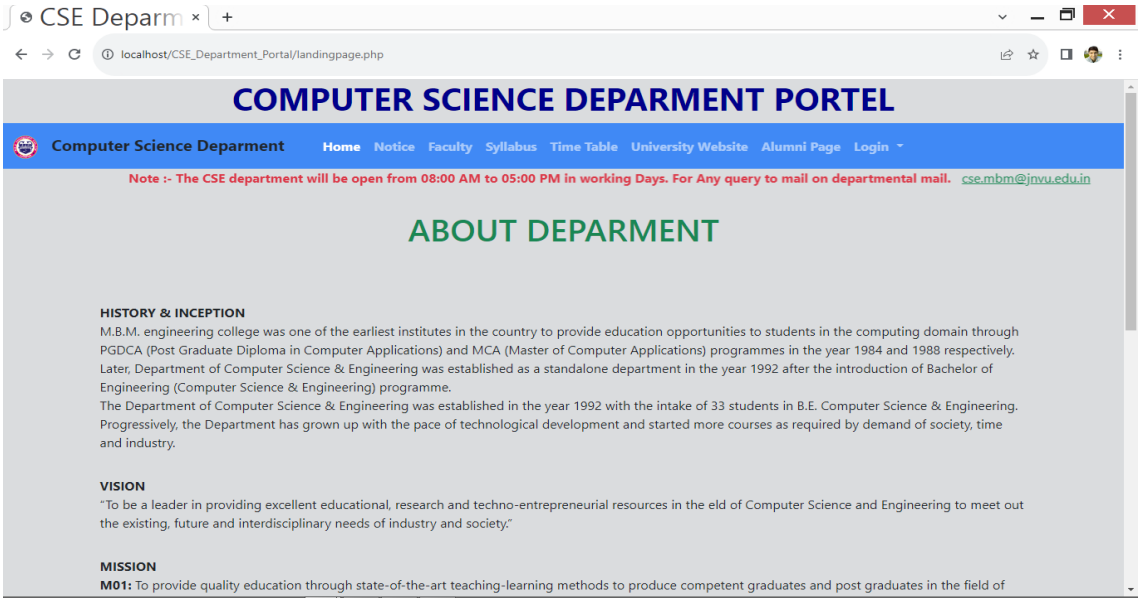

Figure 4.1: Home Page of CS Department Portal

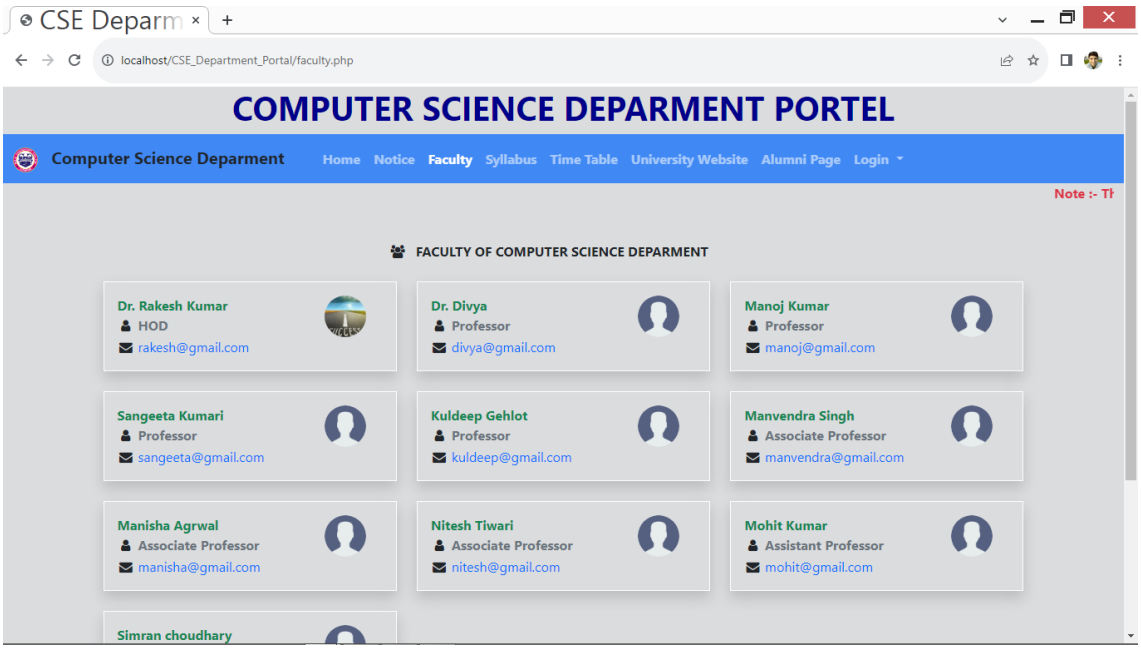

Figure 4.2: Faculty Page of CS Department Portal

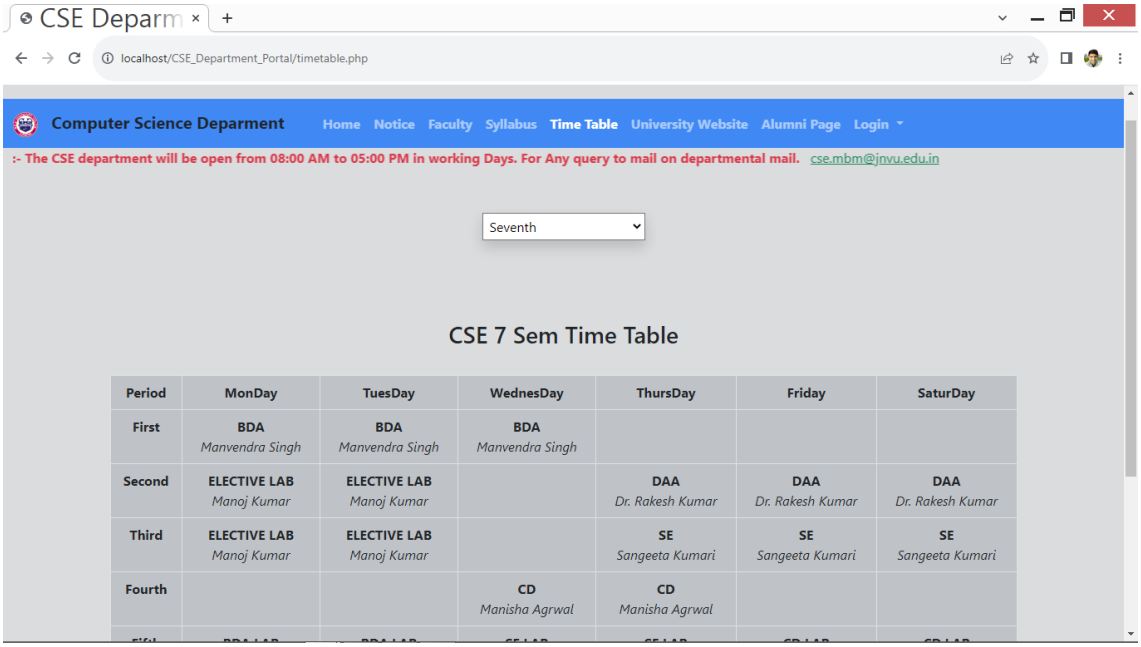

Figure 4.3: Time Table Page of CS Department Portal

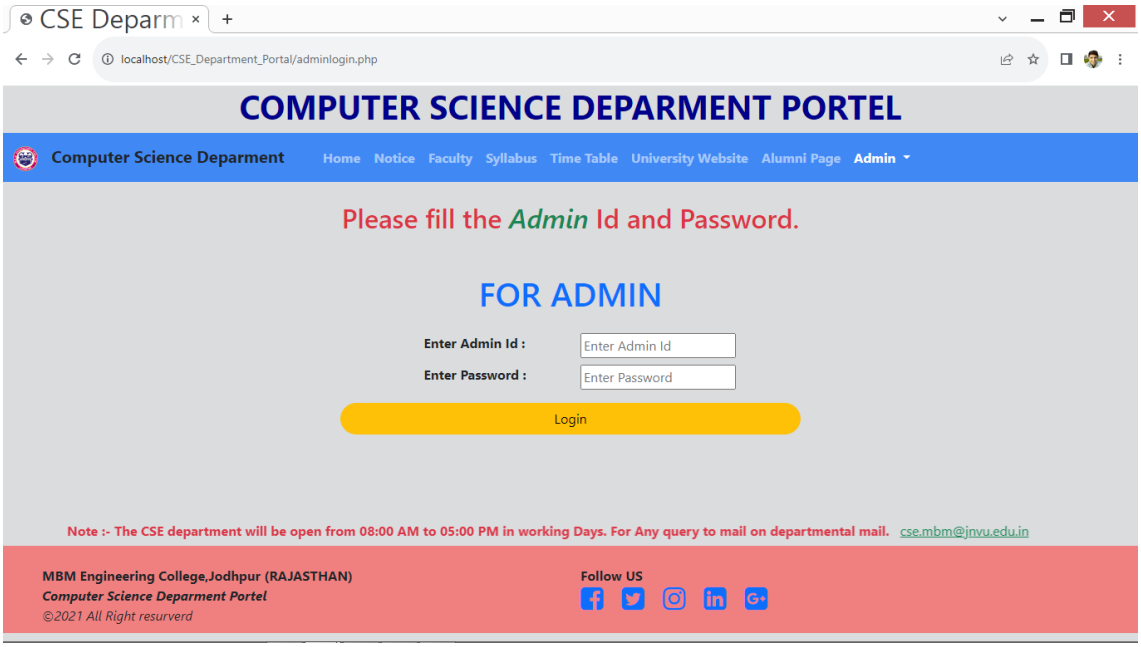

Figure 4.4: Admin Login Page of CS Department Portal

Chapter 5

CONCLUSION

In HTML, Basic Concept (WWW & HTTP, client server communication),Basic HTML (tags, element, attributes, paragraphs, headings, line breaks, lists, table, colour codes, font, text linking, email, images, background, comments, media), HTML Forms (input, text fields, password, checkbox, combo-box, radio box, text areas, files, buttons), HTML5 features.

In CSS, Basic CSS (selector, internal, external, inline, class, id, background, font, text, padding, margin, border, list CSS, hovering and elements), Advance CSS (border-radius, opacity, cursor, layers, position, display, float, gradient and multiple-column), Concept of Menu (single menu, drop-down menu), Template design using CSS div etc. In Bootstrap, Grid System, Typography, Tables, forms, buttons, images, Dropdown, button group, Navigation element, Bootstrap plug-ins (Transition, Modal, Dropdown, Tab, tooltip, Alert, Button).

In JavaScript, Basic JavaScript (syntax, enable, location, operators, variables, events, alert, confirm, prompt, POP up, date, print), JavaScript string (strings, length, split, search, replace). In PHP, PHP Basic syntax for variable types and calculations. Creating conditional structures, Storing data in arrays, Using PHP built-in functions and creating custom functions, Understanding POST and GET in form submission. How to receive and process form submission data. Reading and writing cookies and session. Create a database in phpMyAdmin and connect in PHP. Read and process data in a MySQL database.

In MySQL, Understand basic concepts of how a database stores information via tables. Understand SQL syntax used with MySQL. Learn how to retrieve and manipulate data from one or more tables. Learn how to filter data based upon multiple conditions. Update and insert data into the existing tables.

In AJAX, COMMUNICATING WITH AJAX, which stands for Asynchronous JavaScript and XML provides a way for a browser to send and receive requests to a remote server Using AJAX is a three step process: the browser sends a request, receives the response, and then processes the result To perform an AJAX request, JavaScript code will use the XMLHttpRequest object When a page makes an AJAX request, the JavaScript code will specify a JavaScript function which the browser will call when the browser receives a response from the remote server.

I got to learn a lot in this project and its results were also good when working on a project. How the website works and also know about their frontend and backend part. Then also read the things required to build the website like HTML, CSS, JavaScript, Bootstrap, PHP, MySQL and AJAX. And applied all these technologies on the project. In conclusion, Thanks to this project, I acquired deeper knowledge concerning my technical skills, but I also personally benefited. Currently HTML is a common part of web applications, and it is one of the most popular languages for web designing used by professionals worldwide. If we surf internet, we can see millions of websites designed with HTML and CSS. I learned to live in a different environment from the one I am used to. Indeed, I grew more independent in work and also in everyday life. I realized that I could do more things than I thought, like learning new things by myself. There are huge opportunities available for the students who want to work in this field. Many private and public organizations hire web designer for their online work and website development. With the rapid advent of online industry, the demand of web development professionals is increasing, and this has created a huge job opportunity for the aspirants in the upcoming days. Also, an experienced person in this field can also work as a freelancer; there are many online companies which provide online projects to the individuals.

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