INTERNSHIP TRAINING REPORT

Submitted by

PRANAV P

711523BAD041

In partial fulfillment for the award of the degree of

BACHELOR OF TECHNOLOGY

IN

ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

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KIT - KALAIGNARKARUNANIDHI INSTITUTE OF TECHNOLOGY

(AN AUTONOMOUS INSTITUTION)

Coimbatore- 641402 Affiliated to Anna University, Chennai

Accredited by NAAC with 'A' Grade | Accredited by NBA (AERO, CSE, ECE, EEE, MECH&MBA)

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CERTIFICATE

This is to certify that the Internship Training report submitted by **PRANAV P 711523BAD041** is work done by him/her and submitted during 2024–2025 academic year, in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF TECHNOLOGY IN ARTIFICIAL INTELLIGENCE AND DATA SCIENCE.

Dr.M.Markco	Dr. C.Deepa,.M.E.,Ph.D.,
(Assistant Professor)	(Head of the Department)

Certified that the candidate was examined in the viva-voce examination held on

………………………

…………………….. (**Internal Examiner)**

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INTERNSHIP CERTIFICATE

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Owing deeply to the supreme, we extend our sincere thanks to God almighty who has made all things possible.

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ABSTRACT

WEB DEVELOPMENT is the main objective of this internship. To develop a web-based application or software, 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 — HTML3, HTML4, HTML5, CSS, Bootstrap Framework, 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, etc. Nowadays, there are also some frameworks that are used widely. Frameworks are basically structured programming by using Model, View, and Controller. It is also called MVC. If we develop web-based applications, it is very useful for us because we can access them from anywhere in the world. It is very helpful for our daily life. That is why I chose the subject of my report as **"WEB DEVELOPMENT"**.

This report refers to work completed during my internship with the software project for the department artificial intelligence and data science at the **COIMBATORE**, to equip myself and analyze company departments. During the in-plant I could learn Web Development . During the internship the company staff teaches me one of their project. That project is very useful for IT enabled services, to determine their growth and development in terms of conductions.

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CHAPTER 1
INTRODUCTION

Website development, also known as website design, is the process of creating a new website or implementing changes to one already in use, e.g. adding a significant new section to a live site. It is undertaken to attract and communicate with users and buyers, to enhance brands and to launch specific campaigns. Website development can include web design, web content development (also know as the copy, or words), client liaison, web server and network security configuration, and ecommerce development.

1.1 Web Development

It is the work involved in developing a website for the Internet (World Wide Web) or an intranet (a private network). Web development can range from developing a simple single static page of plain text to complex web applications, electronic businesses, and social network services. A more comprehensive list of tasks to which web development commonly refers, may include Web engineering, Web design, Web content development, client-side/server-side scripting, Web server and network, security configuration and e-commerce development.

Any digital project, for example, a website, an android application etc. at the root level is divided Into two blocks:

- Front-end
- Back-end

1.2 Front-End

These are the two divisions of the project to help the creator develop the project smoothly. This division help working different people work upon the things they are master in. Thus the whole load of the project is balanced.

Front-end covers the part of the project which is visible to the user, i.e., it deals with the client side. Anything happening on the user side of the connection can be received or manipulated by the user. It concerns mostly with the user interface and user experience of the website. How the website is presented to the user is the primary goal of the front-end.

Simplicity, accessibility, proper user experience, clarity of the actions and feedback are some of the basic features which play a vital role in the best possible front-end. HTML is a markup language which is used for defining the structure of the website.

These are the basic things to create front-end of any website. While there are many things to learn afterwards and to use them for a much highly sophisticated front-end of a website.

1.2.1What is Front-End Web Development?

Front-end web development is everything involved in programming the user interface of a web application. Typically it refers to the Hypertext Markup Language (HTML), Cascading Style Sheets (CSS) and JavaScript portion of web site production as opposed to the database or server-side programming. It encompasses everything from building a simple page of HTML text to creating complex, responsive HTML5 websites designed to be accessed via various different browsers, devices and screen sizes.

1.2.2 HTML

- HTML means Hyper Text Markup Language.
- The HTML allows us to construct the visible part of a website.
- HTML is NOT a programming language, it‟s a markup language, which means its purpose is to give structure to the content of the website.
- It is a series of nested tags (it is a subset of XML) that contain all the website information (like texts, images and videos). Here is an example of tags:
  <title>This is a title</title>
- The HTML defines the page structure. A website can have several HTMLs to different pages.

1.2.2.1 HTML: Main Tags

Although there are lots of tags in the HTML specification, 99% of the webs use a subset of HTML tags with less than 10 tags, the most important are:

- **<div>**: a container, usually represents a rectangular area with information inside.
- **<img/>**: an image
- **<a>:** a clickable link to go to another URL

- **<p>:** a text paragraph
- **<h1>:** a title (h2, h3, h4 are titles of less importance)
- **<input>:** a widget to let the user introduce information
- **<style>:** to insert CSS rules
- **<script>:** to execute JavaScript
- **<span>:** a null tag (doesn't do anything)

1.2.3 CSS

- Allows to specify how to present (render) the document info stored in the HTML.
- Stands for Cascading Style Sheets
- Allows to controls all the aspects of the visualization and some other features:
- **Colors**: content, background, borders
- **Margins**: interior margin, exterior margin
- **Position**: where to put it
- **Sizes**: width, height
- **Behavior**: changes on mouse over

1.2.3.1CSS: Syntax

- Inserting the code inside a style tag

```
<style>
        p {color: blue}
</style>
```

- Referencing an external CSS file

```
<link href="style.css" rel="stylesheet" />
```

- Using the attribute style on a tag

```
<p style="color: blue; margin: 10px">
```

1.2.3.2 CSS: Selectors

- The main selectors are:
- **tag name**: just the name of the tag

  p {...} //affects to all <p> tags
- **dot (.):** affects to tags with that class

  p. highlight {...} //affects all <p> tags with class="highlight"

- **sharp character (#):** specifies tags with that id.
  p#intro {...} //affects to the <p> tag with the id="intro"
- **two dots (:):** behavior states (mouse on top)
  p: hover **{...}** //affects to <p> tags with the mouse over
- **brackets ([attr='value']):** tags with the attribute attr with the value 'value „
  input[type="text"] {...} // affects to the input tags of the type text

1.2.4JavaScript

- A regular programming language, easy to start, hard to master.
- Allows to give some interactivity to the elements on the web.
- Syntax similar to C or Java but with no types.
- You can change the content of the HTML or the CSS applied to an element.
- You can even send or retrieve information from the internet to update the content of the web without reloading the page.

1.2.4.1JavaScript: Insert Code

- There is three ways to execute JavaScript code in a website:
- **Embed the code** in the HTML using the <script> tag.

```
<script> /* some code */ </script>
```

- **Import a JavaScript file** using the <script> tag:

```
<script src="file.js" />
```

- **Inject the code** on an event inside a tag:

```
<button onclick="javascript: /*code*/">press me</button>
```

1.2.4.2 JavaScript: Syntax

- Very similar to C++ or Java but much simpler.
  var my_number=10;//this is a comment
- var my_string =” hello”;
  var my_array = [10,20,"name”, true];
- var my_object = {name: "javi", city: "Barcelona”};

```
function say(str)
{
```

```
            for (var i=0; i<10; i++)
           console.log (“say:” +str);
        }
```

1.3 Back-End

Back-end is the part of the website which deals with the core functioning of the website and is hidden to the user for user"s safety. User shouldn"t know what is happening on the website, this is the concern of the back-end developers. Having back-end makes the website more dynamic.

When users interact with the website which involves back-end, it makes the creators easy to involve with users for the main purpose of the website. Back-end involves maintaining the database of various users, helping them to get things done through the various tools and services developed by the programmers of the back-end. Common objectives of the back-end are to involve users with the website, maintaining the proper database for various users.

1.3.1 Backend Development

The backend of a web application is an enabler for a frontend experience. An application"s frontend may be the most beautifully crafted web page, but if the application itself doesn"t work, the application will be a failure. The backend of an application is responsible for things like calculations, business logic, database interactions, and performance. Most of the code that is required to make an application work will be done on the backend. Backend code is run on the server, as opposed to the client. This means that backend developers not only need to understand programming languages and databases, but they must have an understanding of server architecture as well. If an application is slow, crashes often, or constantly throws errors at users, it"s likely because of backend problems.

Backend development is not all ones and zeros though. Much like frontend development, backend development has a human aspect to it as well. Since most of the code for an application is written on the backend, it should be easy to understand and work with. Most backend languages – like Ruby and Python – have standardized styles and idioms that make reading and writing code more efficient and enjoyable.

1.3.1.1 What Do Back-End Developers Do?

What back-end developers do can vary greatly depending on the size and the scope of the application they are working on. I‟ve held many jobs where I was a back-end developer, working on the business logic in an application, and feeding and retrieving data from the front-end.

In the web development world, most back-end developers concern themselves with building the actual logic behind the application they are working on.

Often, front-end developers will build out a user interface and back-end developers will write code that makes it all work.

For example, a front-end developer might create a screen in an application with a button to press to get the customer‟s data.

A back-end developer might write the code that makes that button work by figuring out what data to fetch from the database for the appropriate customer and delivering it back to the front-end, where it is eventually displayed.

A back-end developer might also be heavily involved in the architecture of a system, deciding how to organize the logic of the system so that it can be maintained and run properly.

He might be involved in building frameworks or the architecture of a system to make it easier to program against. Back-end developers tend to spend much more time implementing algorithms and solving problems than front-end developers do.

I‟ve always liked back-end development work because it feels like more of a challenge.

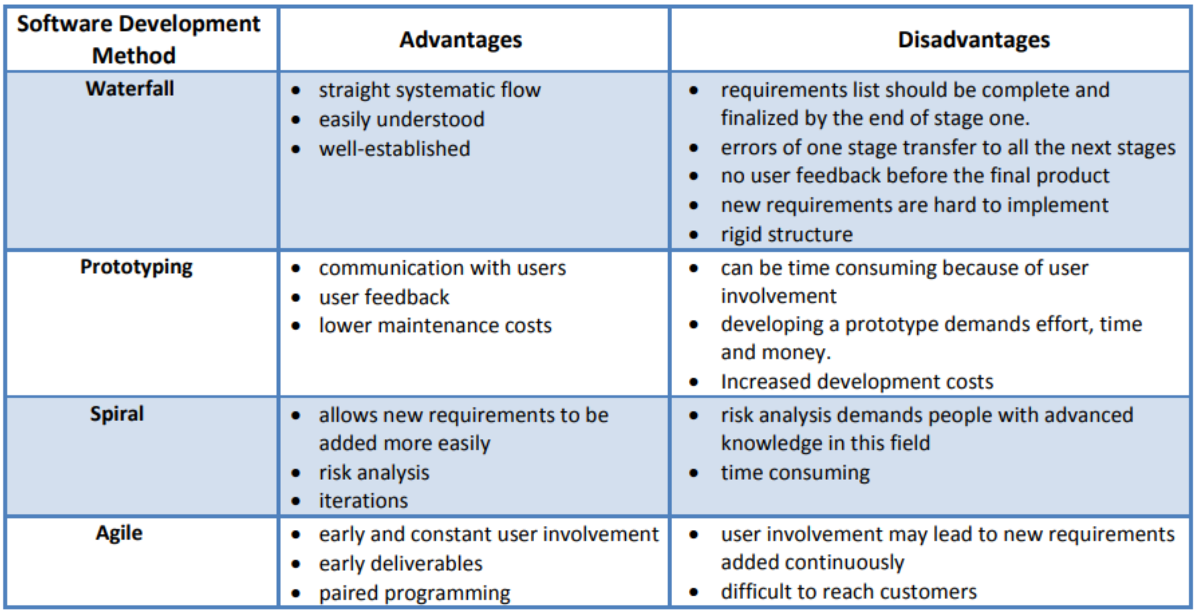
That‟s not to say that front-end developers don‟t ever solve difficult problems, but often front-end development work is more about creating user interfaces and hooking them up rather than implementing the actual business logic that makes the app work.

1.4 Methodologies For Building Websites

An innovative and revolutionary idea can provide the basis for a successful e-Business. Applying the correct business model and defining a specific strategy can increase the profit potential of the e-Business. However, technology and especially computer based technologies play a key role not only in the success of an e-Business, but also in its mere existence.

1.4.1 Software Engineering Methods

The core of every e-Business is a website. Websites are software artifacts, a fact that suggests that the understanding of traditional software engineering techniques is critical.(Glass, 2001; Howcroft and Carroll, 2000;Jeary et al, 2009). At this point, before looking at specific website development methodologies, it is essential to present the key advantages and disadvantages of some well-established software engineering techniques, in order to examine their applicability to the development of an e-Business website.



Software Development Method	Advantages	Disadvantages
Waterfall	• straight systematic flow • easily understood • well-established	• requirements list should be complete and finalized by the end of stage one. • errors of one stage transfer to all the next stages • no user feedback before the final product • new requirements are hard to implement • rigid structure
Prototyping	• communication with users • user feedback • lower maintenance costs	• can be time consuming because of user involvement • developing a prototype demands effort, time and money. • Increased development costs
Spiral	• allows new requirements to be added more easily • risk analysis • iterations	• risk analysis demands people with advanced knowledge in this field • time consuming
Agile	• early and constant user involvement • early deliverables • paired programming	• user involvement may lead to new requirements added continuously • difficult to reach customers

Figure 1.1 *. Comparison of Software Engineering Methods with Advantage & Disadvantage*

The software engineering techniques, which are described above, have been proven successful and effective for traditional software development projects. However, the unique nature of the web and the special characteristics of website development make them unsuitable to be adopted as a whole. As Howcroft and Carroll (2000) state "any methodology for website development must be generic and flexible enough to account for the uniqueness and individuality of websites, yet concise enough to achieve the task of development."

The continuous growth and the rapid changes in the web development sector, make the task of building a website much more challenging. Various methods have been developed over the years, which try to formalize the process of designing and building a website and are tailored to the unique nature of the Web. A number of these methods are presented below, in an attempt to conclude on the best approach to be followed for building the IT employment website.

1.4.2 Website Development Methodologies

Laudon and Traver (2007, p. 193) propose a five-step life cycle of developing an e-Business website.

•**System analysis/planning.** In this step business objectives are identified, in order for the project to have measurable targets and achievements. Also some functionalities of the system that the system must produce in order to achieve the business objectives, are defined.

•**System design.** In this step the main components of the system and their relationship to one another should be described. This phase consists of the logical design, where functions that are going to be performed, databases that are going to be used, security procedures and controls to be used, are all specified. This phase also includes the physical design, which is the materialization of the logical design.

•**Building the system**

•**Testing the system.** Once the coding is complete the system has to be thoroughly tested. Unit testing involves the testing of the website‟s modules. System testing aims to test the site as a whole and ensure its functionality for the user. Acceptance testing is used to verify that the system meets the business objectives, that were defined in the system analysis phase.

• **Implementation and maintenance.** This step is very important, since websites, as any other software, may break down. They need continuous checking, testing and repair. A perfectly designed website, which is often unavailable due to technical reasons, is not a successful one.

This process, described by Laudon and Traver (2007, p. 193) is very abstract and does not focus on the details of each phase. It can only be used as a general guideline, since many methodologies follow similar steps to reach the goal of developing a successful website. A similar, though much more detailed approach, is the one proposed by Howcroft and Carroll (2000). The authors proposed their own methodology for website development after comparing a number of available methods, such as the "Four Phase Model" (strategy, design, production and delivery, designed by Siegel (1997) and Ikonic‟s Five Box Development

Process (a five stage process, which highly depends on thorough documentation between each stage).

The method suggested by Howcroft and Carroll (2000) tries to combine the advantages of the compared methodologies that are presented in the relevant literature. Their method consists of four phases with several steps in each phase. An overview of the main points of this methodology is presented below.

Phase One: Analysis. Deals with the development of a web strategy and an analysis of how a website may achieve this strategy. The main objective of this phase is to reduce the risks of lack of top management commitment and misunderstanding the system requirements. This phase consists of three steps:

i. Development of a web strategy, which means defining where the organization is now, where the organization wishes to be and how it will get from the present state to the desired one.

ii. Defining the objectives.

iii. Objective analysis, which involves: technology analysis, information analysis, skills analysis, user analysis, cost analysis and risk analysis.

Phase Two: Design.“The website should be designed with the knowledge that it is likely to have sections and processes added to it during its lifetime, as requirements change and new technologies emerge.” (Howcroft and Carroll, 2000). It consists of two steps:

i. Information and Graphics Design

ii. Testing of Design, since testing in the early stages can help prevent future errors and malfunctions of the website, making the whole development process more efficient.

Phase Three: Generation. It consists of the four steps that lead the project from the design phase to the actual generation of the website.

i. Resource selection

ii. Design Review

iii. Code generation and Installation

iv. Testing.

Phase Four: Implementation. This is an ongoing phase that does not stop after the development of the website. It involves:

i. Implementation
ii. Maintenance
iii. Objectives review

This method has some key advantages. It is well structured, detailed and simple to understand. It organizes the task of building a website into four well defined phases and provides further guidance to the developers by breaking down each phase into steps. Not only does it allow the tasks to be organized but it makes the tracking of the progress quite effective. On the other hand, Howcroft and Carroll(2000) provide a useful but general framework to assist in the web development process. Their methodology should be altered and adapted to the special requirements of this dissertation‟s project ,since it is not created to be efficient for e-Business websites. Also their methodology looks to be more appropriate and effective for larger projects, where developers have their own distinct roles.

CHAPTER 2
HTML

HTML stands for Hyper Text Mark-up Language. It is used to design web pages using mark-up language. HTML is the combination of Hypertext and Mark-up language. Hypertext defines the link between the web pages. Mark-up language is used to define the text document within tag which defines the structure of web pages.

2.1 Introduction To HTML

This language is used to annotate (make notes for the computer) text so that a machine can understand it and manipulate text accordingly. Most mark-up languages (e.g. HTML) are human readable. Language uses tags to define what manipulation has to be done on the text.

HTML is a mark up language used by the browser to manipulate text, images and other content, in order to display it in the required format. HTML was created by Tim Berners-Lee in 1991. The first ever version of HTML was HTML 1.0, but the first standard version was HTML 2.0, published in 1999.

2.1.1 Elements And Tags

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 page.

```
<!DOCTYPE html>

<html>

<head>

<title>Page Title</title>

</head>

<body>
```

Figure 2.1 *Example of html cade with tags*

2.2 History Of HTML

HTML is a very evolving mark-up language and has evolved with various versions updating. Long before its revised standards and specifications are carried in, each version has allowed its user to create web pages in a much easier and prettier way and make sites very efficient.

- HTML 1.0 was released in 1993 with the intention of sharing information that can be readable and accessible via web browsers. But not many of the developers were involved in creating websites. So the language was also not growing.

- Then comes the HTML 2.0, published in 1995, which contains all the features of HTML 1.0 along with that few additional features, which remained as the standard mark-up language for designing and creating websites until January 1997 and refined various core features of HTML.

- Then comes the HTML 3.0, where Dave Raggett who introduced a fresh paper or draft on HTML. It included improved new features of HTML, giving more powerful characteristics for webmasters in designing web pages. But these powerful features of new HTML slowed down the browser in applying further improvements.

- Then comes HTML 4.01, which is widely used and was a successful version of HTML before HTML 5.0, which is currently released and used worldwide. HTML 5 can be said for an extended version of HTML 4.01, which was published in the year 2012.

2.3 HTML Features

- It is easy to learn and easy to use.
- It is platform independent.
- Images, video and audio can be added to a web page.
- Hypertext can be added to text.
- It is a mark-up language.

CHAPTER 3

CSS

CSS is designed to enable the separation of presentation and content, including layout, colors, and fonts. This separation can improve content accessibility, provide more flexibility and control in the specification of presentation characteristics, enable multiple web pages to share formatting by specifying the relevant CSS in a separate.

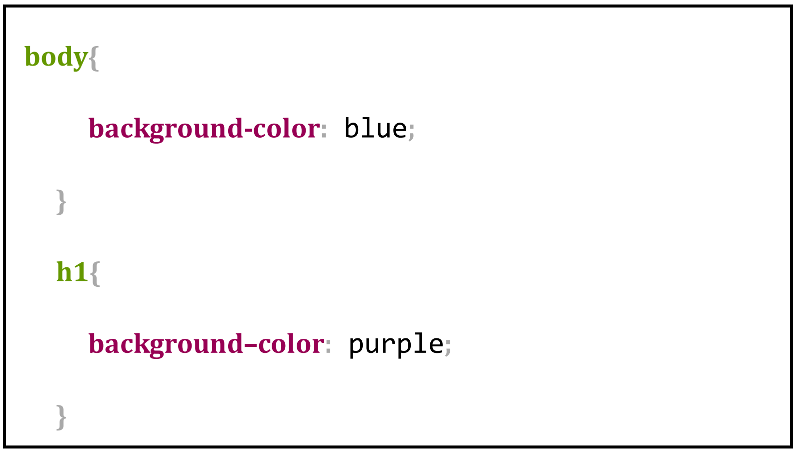
3.1 Introduction To CSS

CSS: It stands for CASCADING STYLE SHEET

- Cascading: refers to procedure that determines which style will apply to a certain section.
- Style: how u want a certain part of your page to look. you can change things like margins, colour font etc.
- Sheets: these are like templates or set of rules, for determining how the web page will look.

CSS file which reduces complexity and repetition in the structural content as well as enabling the .CSS file to be cached to improve the page load speed between the pages that share the file and its formation .

It can format the web page layouts using many features. It can style the text, manage table size, and edit other aspects of the web pages to make them attractive. By using CSS, the user can give a uniform look to the website and its several pages. It does not only define the table but also meets other design needs of the website.



```
body{
    background-color: blue;
  }
  h1{
    background-color: purple;
  }
```

Figure 3.1 Example for CSS code with layout

3.2 History Of CSS

CSS was first proposed by Håkon Wium Lie on October 10, 1994.At the time, Lie was working with Tim Berners -Lee at CERN. Several other style sheet languages for the web were proposed around the same time, and discussions on public mailing lists and inside World Wide web Consortium resulted in the first W3C CSS Recommendation (CSS1)being released in 1996. In particular, a proposal by BertBos was influential; he became co-author of CSS1, and is regarded as co-creator of CSS.

Style sheets have existed in one form or another since the beginnings of Standard Generalized Mark-up Language (SGML) in the 1980s, and CSS was developed to provide style sheets for the web.One requirement for a web style sheet language was for style sheets to come from different sources on the web. Therefore, existing style sheet languages like DSSSL and FOSI were not suitable. CSS, on the other hand, let a document's style be influenced by multiple style sheets by way of "cascading" styles.

3.2.1 CSS1- CSS 1 is the very first version of the cascading style sheet and recommendation of W3C. It was launched in 1996 with the capabilities of font properties. It is also used for adding colour to the background and text side. In CSS 1, there were text alignment functionalities. It also has capabilities of padding, positioning, and generic classifications. But now, this version is outdated and not maintained by W3C.

3.2.2 CSS2 - W3C developed the next version of CSS and named it CSS2 and launched it in 1998. It has more features and functionalities than the previous version. And now users could use new features like relative, absolute, and fixed positioning. There were media types, and bidirectional text features were also there. This version also saw many revisions in the same, and updates came as CSS2.1.

3.2.3 CSS3 - CSS3 is the latest version of CSS officially by W3C, and it was launched in 1999. It has a vast collection of font types, and you can use any font type from Google and Typecast. Also, this version is divided into many modules that make it easy to handle, and it also saves time formatting the web pages. Currently, most companies and organizations use CSS3 and HTML5 for their web development and designing tasks. Hence, if you also wish to learn such a skill, then make sure you will learn the latest launch of such technology.

3.3 Features Of CSS

Cascading Style Sheet (CSS) is used to set the style in web pages that contain HTML elements. It sets the background colour, font-size, font-family, colour, etc property of Elements on a web page.

There are three types of CSS which are given below:

- Inline CSS
- Internal or Embedded CSS
- External CSS

3.3.1 Inline CSS: Inline CSS contains the CSS property in the body section attached with element is known as inline CSS. This kind of style is specified within an HTML tag using the style attribute.

3.3.2 Internal or Embedded CSS: This can be used when a single HTML document must be styled uniquely. The CSS rule set should be within the HTML file in the head section i.e. the CSS is embedded within the HTML file.

3.3.3 External CSS: External CSS contains separate CSS file which contains only style property with the help of tag attributes (For example class, id, heading etc.). CSS property written in a separate file with .CSS extension and should be linked to the HTML document using link tag. This means that for each element, style can be set only once and that will be applied across web pages.

3.4 Properties Of CSS:

Inline CSS has the highest priority, then comes Internal/Embedded followed by External CSS which has the least priority. Multiple style sheets can be defined on one page. If for an HTML tag, styles are defined in multiple style sheets then the below order will be followed.

- As Inline has the highest priority, any styles that are defined in the internal and external style sheets are overridden by Inline styles.

- Internal or Embedded stands second in the priority list and overrides the styles in the external style sheet.

CHAPTER 4
JAVASCRIPT

JavaScript, often abbreviated as JS, is a programming language that is one of the core technologies of the World Wide Web, alongside HTML and CSS. As of 2022, 98% of websites use JavaScript on the client side for webpage behavior, often incorporating third-party libraries.

4.1 Introduction To Java Script

- JAVA SCRIPT is a scripting language most often for client side web development. JAVA SCRIPT is high level language but easy to understand and learn like how do you want your certain section to react like on clicking a button what will happen , when you move your mouse over a specified text what the effect will be etc are the functions which we can take advantage of after learning this language. onclick (), onmouseover, onchange() etc are the functions we can use.
- JQUERY is a part of JavaScript which provides you the events like hide() and show(), toggle(), fadeIn() and fadeOut().

4.2 History Of Javascript

The Mosaic web browser was released in 1993. As the first browser with a graphical user interface accessible to non-technical people, it played a prominent role in the rapid growth of the nascent World Wide web. The lead developers of Mosaic then founded the Netscape corporation, which released a more polished browser, Netscape Navigator, in 1994. Navigator quickly became the most used browser.

During these formative years of the web, web pages could only be static, lacking the capability for dynamic behaviour after the page was loaded in the browser. There was a desire in the burgeoning web development scene to remove this limitation, so in 1995, Netscape decided to add a scripting language to Navigator. They pursued two routes to achieve this: collaborating with Sun Microsystems to embed the Java programming language, while also hiring Brendan Eich to embed the Scheme language.

Netscape management soon decided that the best option was for Eich to devise a new language, with syntax similar to Java and less like Scheme or other extant scripting languages. Although the new language and its interpreter implementation were officially called Live Script when first shipped as part of a Navigator release in September 1995, the name was changed to JavaScript three months later.

The choice of the JavaScript name has caused confusion, sometimes giving the impression that it is a spin-off of Java. Since Java was the hot new programming language at the time, this has been characterized as a marketing ploy by Netscape to give its own new language cachet.

4.3 Features Of Javascript

4.3.1. Light Weight Scripting Language

JavaScript is a lightweight scripting language because it is made for data handling at the browser only. Since it is not a general-purpose language so it has a limited set of libraries, also as it is only meant for client -side execution and that too for web applications, hence the lightweight nature of JavaScript is a great feature.

4.3.2. Dynamic Typing

JavaScript supports dynamic typing which means types of the variable are defined based on the stored value. For example, if you declare a variable x then you can store either a string or a Number type value or an array or an object. This is known as dynamic typing.

To understand this, in languages like Java, we explicitly mention that a particular variable will store a certain type of data, whereas in JavaScript we do not have to provide the data type while declaring a variable. In JavaScript, we just have to use var or let keyword before the variable name to declare a variable without worrying about its type.

4.3.3. Object-Oriented Programming Support

Starting from ES6, the concept of class and OOPs has been more refined. Also, in JavaScript, two important principles with OOP in JavaScript are Object Creation patterns (Encapsulation) and Code Reuse patterns (Inheritance). Although JavaScript developers rarely use this feature but it‟s there for everyone to explore.

4.3.4. Functional Style

This implies that JavaScript uses a functional approach, even objects are created from the constructor functions and each constructor function represents a unique object-type. Also, functions in JavaScript can be used as objects and can be passed to other functions too.

4.3.5. Platform Independent

This implies that JavaScript is platform-independent or we can say it is portable; which simply means that you can simply write the script once and run it anywhere and anytime. In general, you can write your JavaScript applications and run them on any platform or any browser without affecting the output of the Script.

4.3.6. Prototype-based Language

JavaScript is a prototype-based scripting Language. This means JavaScript uses prototypes instead of classes or inheritance. In languages like Java, we create a class and then we create objects for those classes. But in JavaScript, we define object prototype and then more objects can be created using this object prototype.

4.3.7. Interpreted Language

JavaScript is an interpreted language which means the script written inside JavaScript is processed line by line. These Scripts are interpreted by JavaScript interpreter which is a built-in component of the web browser. But these days many JavaScript engines in browsers like the V8 engine in chrome uses just in time compilation for JavaScript code.

4.3.8. Async Processing

JavaScript supports Promise which enables asynchronous requests wherein a request is initiated and JavaScript doesn't have to wait for the response, which at times blocks the request processing. Also starting from ES8, Async functions are also supported in JavaScript, these functions don't execute one by one, rather they are processed parallelly which has a positive effect on the processing time, reducing it to a great extent.

4.3.9. Client-side Validations

This is a feature which is available in JavaScript since forever and is still widely used because every website has a form in which users enter values, and to make sure that users enter the correct value, we must put proper validations in place, both on the client-side and on the server-side. JavaScript is used for implementing client-side validations.

4.4 Bootstrap

Bootstrap is a free and open-source CSS framework directed at responsive, mobile first frontend web development. It contains CSS- and (optionally) JavaScript-based design templates for typography, forms, buttons, navigation, and other interface components Bootstrap is the sixth-most-starred project on GitHub, with more than 135,000 stars, behind free Code Camp and marginally behind Vue.js framework. According to Alexa Rank, Bootstrap is in the top-2000 in the USA while vuejs.org is in the top-7000 in the USA.

Bootstrap, originally named Twitter Blueprint, was developed by Mark Otto and Jacob Thornton at Twitter as a framework to encourage consistency across internal tools. Before Bootstrap, various libraries were used for interface development, which led to inconsistencies and a high maintenance burden. According to Twitter developer Mark Otto.

Figure 4.1 *Bootstrap logo*

A super small group of developers and I got together to design and build a new internal tool and saw an opportunity to do something more. Through that process, we saw ourselves build something much more substantial than another internal tool. Months later, we ended up with an early version of Bootstrap as a way to document and share common design patterns and assets within the company.

CHAPTER 5

NODE.JS

Node.js is an open-source server environment. Node.js is cross-platform and runs on Windows, Linux, Unix, and macOS. Node.js is a back-end JavaScript runtime environment. Node.js runs on the V8 JavaScript Engine and executes JavaScript code outside a web browser.

5.1 Introduction To Node.Js

Node.js is an open-source, cross-platform JavaScript run-time environment that executes JavaScript code outside the browser. According to official node.js website,

Node.js® is a JavaScript runtime built on Chrome‟s V8 JavaScript engine.

Node.js uses an event-driven, non-blocking I/O model that makes it lightweight and efficient.

Node.js‟ package ecosystem, npm, is the largest ecosystem of open source libraries in the world.

I/O refers to input/output. It can be anything ranging from reading/writing local files to making an HTTP request to an API. I/O takes time and hence blocks other functions.

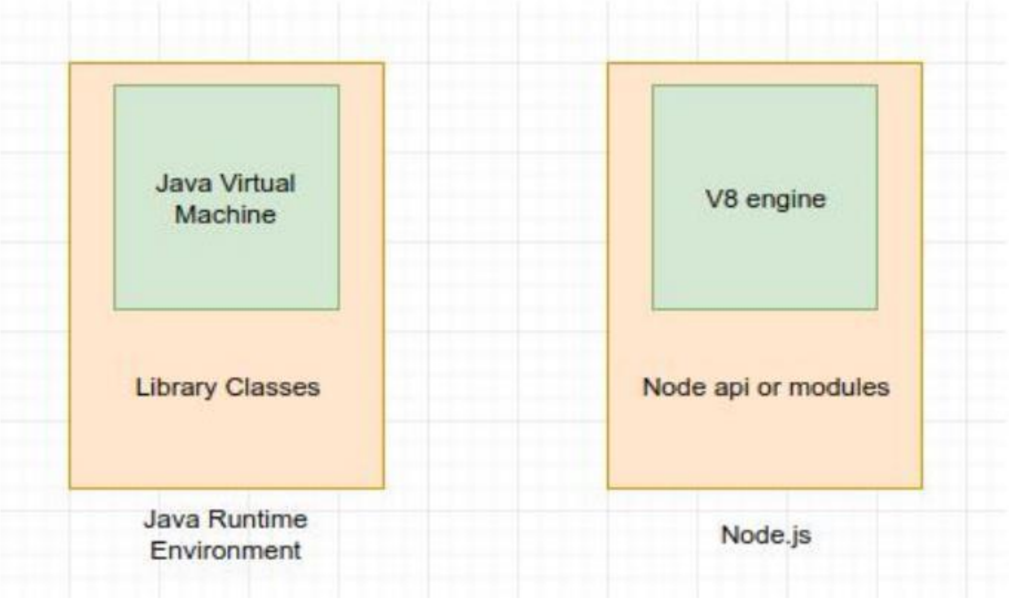


Figure. 5.1 *Node.js basic structure with runtime environment*

5.2 History Of Node.Js

Node.js was originally written by Ryan Dahl in 2009. He was inspired to create Node.js after seeing a file upload progress bar on Flickr. The browser did not know how much of the file had been uploaded and had to query the Web server. He desired an easier way. He demonstrated the project at the inaugural European JSConf on November 8, 2009. Node.js combined Google's V8 JavaScript engine, an event loop, and a low-level I/O API.

5.3 Why Node.Js?

Node.js lets us use JavaScript language on the server, so it allows us to write JavaScript outside the browser which, till now, was used only for front-end things only.

Node.js operates on a single thread, using non-blocking I/O calls, allowing it to support tens of thousands of concurrent connections without incurring the cost of thread context switching. It uses asynchronous programming. A common task for a web server can be to open a file on the server and return the content to the client but servers should not be used for simple tasks when you can get them done without the help of servers.

Here is how PHP or ASP handles a file request:

1. Sends the task to the computer's file system.

2. Waits while the file system opens and reads the file.

3. Returns the content to the client.

4. Ready to handle the next request.

Here is how Node.js handles a file request:

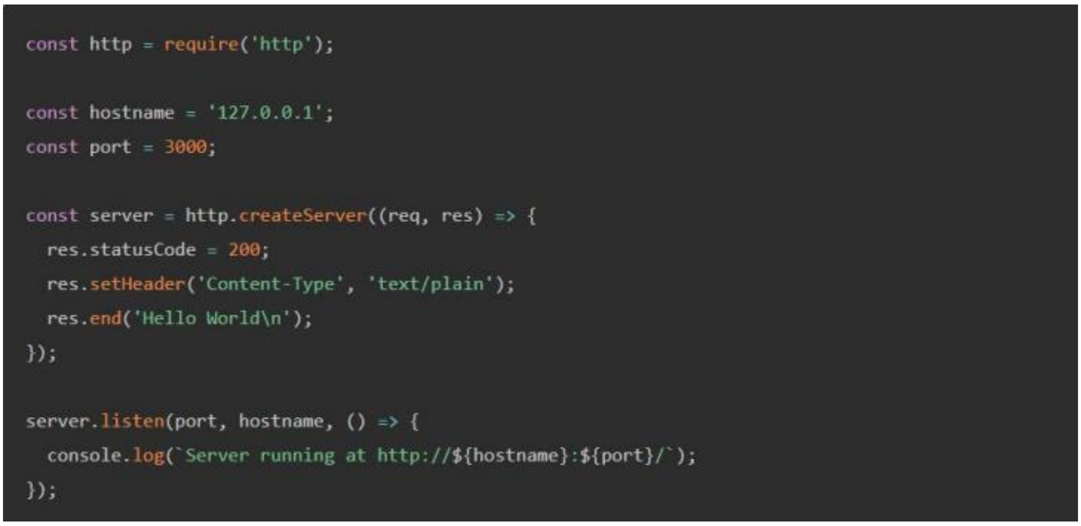
1. Sends the task to the computer's file system.

2. Ready to handle the next request.

3. When the file system has opened and read the file, the server returns the content to the client.

5.4 Working Of Node.Js

As an asynchronous event driven JavaScript runtime, Node is designed to build scalable network applications. In the following "hello world" example, many connections can be handled concurrently. Upon each connection the callback is fired, but if there is no work to be done, Node will sleep.



```
const http = require('http');

const hostname = '127.0.0.1';
const port = 3000;

const server = http.createServer((req, res) => {
  res.statusCode = 200;
  res.setHeader('Content-Type', 'text/plain');
  res.end('Hello World\n');
});

server.listen(port, hostname, () => {
  console.log(`Server running at http://${hostname}:${port}/`);
});
```

***Figure. 5.2** Sample cade of node.js*

Node.js eliminates the waiting, and simply continues with the next request. Node.js runs single-threaded, non-blocking, asynchronously, which is very memory efficient.

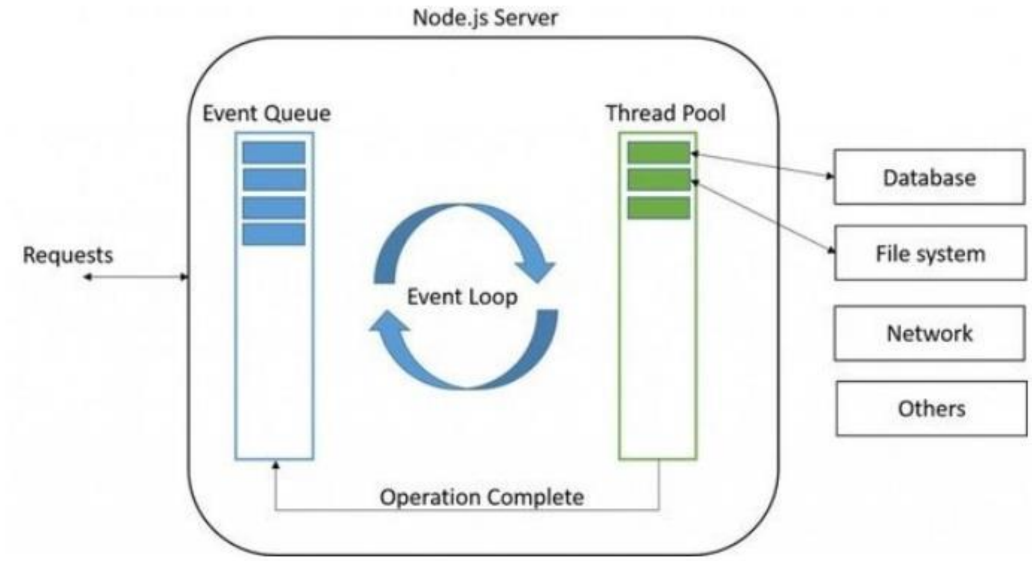


***Figure. 5.3** Working of node.js with block diagram*

CHAPTER 6

EXPRESS.JS

Express.js, or simply Express, is a back end web application framework for building RESTful APIs with Node.js, released as free and open-source software under the MIT License. It is designed for building web applications and APIs. It has been called the de facto standard server framework for Node.js.

6.1 Introduction To Express.Js

Express is a minimal and flexible Node.js web application framework that provides a robust set of features for web and mobile applications.

Performance: Express provides a thin layer of fundamental web application features, without obscuring Node.js features that you know and love.

6.2 History Of Express.Js

Express.js was founded by TJ Holowaychuk. The first release, according to Express.js's GitHub repository, was on 22 May 2010. Version 0.12

In June 2014, rights to manage the project were acquired by StrongLoop. StrongLoop was acquired by IBM in September 2015; in January 2016, IBM announced that it would place Express.js under the stewardship of the Node.js Foundation incubator.

6.3 Routing

Routing refers to determining how an application responds to a client request to a particular endpoint, which is a URI (or path) and a specific HTTP request method (GET, POST, and 4so on)

Each route can have one or more handler functions, which are executed when the route is matched.

Route definition takes the following structure:

PATH is a path on the server.

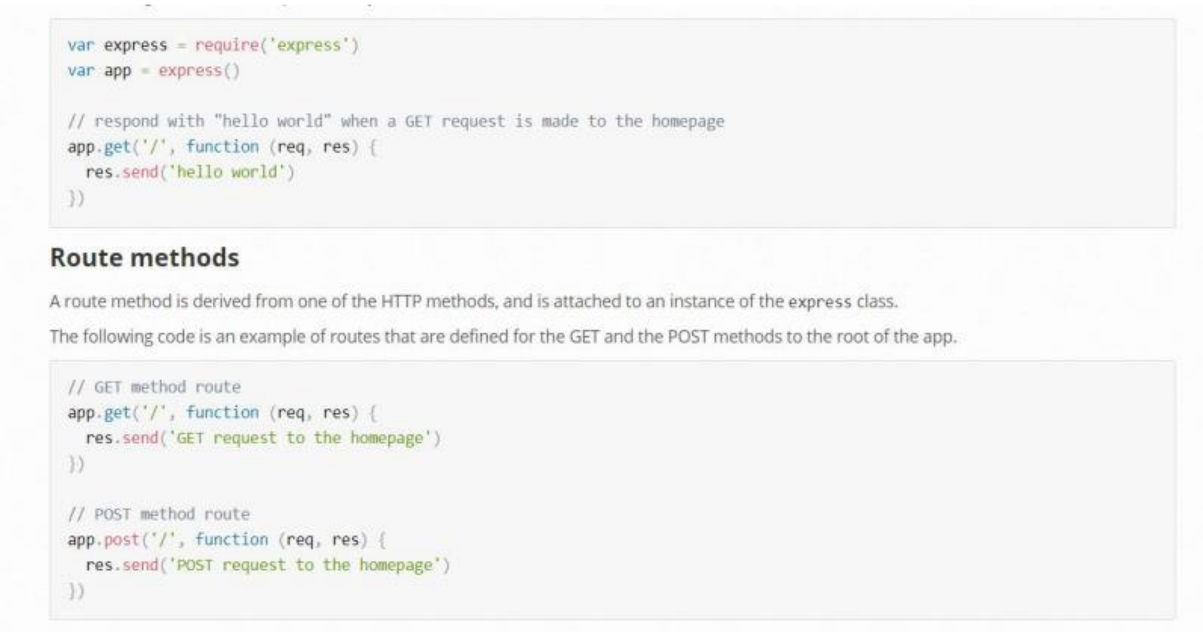
HANDLER is the function executed when the route is matched.

Routing refers to how an application‟s endpoints (URIs) respond to client requests. For an introduction to routing, see Basic routing.

You define routing using methods of the Express app object that correspond to HTTP methods; for example, app.get() to handle GET requests and app.post to handle POST requests. For a full list, see app.METHOD. You can also use app.all() to handle all HTTP methods and app.use() to specify middleware as the callback function (See Using middleware for details).

These routing methods specify a callback function (sometimes called “handler functions”) called when the application receives a request to the specified route (endpoint) and HTTP method. In other words, the application “listens” for requests that match the specified route(s) and method(s), and when it detects a match, it calls the specified callback function.

In fact, the routing methods can have more than one callback function as arguments. With multiple callback functions, it is important to provide next as an argument to the callback function and then call next() within the body of the function to hand off control to the next callback.



```
var express = require('express')
var app = express()

// respond with "hello world" when a GET request is made to the homepage
app.get('/', function (req, res) {
  res.send('hello world')
})
```

Route methods

A route method is derived from one of the HTTP methods, and is attached to an instance of the express class.

The following code is an example of routes that are defined for the GET and the POST methods to the root of the app.

```
// GET method route
app.get('/', function (req, res) {
  res.send('GET request to the homepage')
})

// POST method route
app.post('/', function (req, res) {
  res.send('POST request to the homepage')
})
```

Figure. 6.1 *Example of a very basic route code.*

CHAPTER 7

SQL

SQL (Structured Query Language) is a programming language used to communicate with and manipulate databases. To get the most of the mounds of data they collect, many businesses must become versed in SQL. Here"s everything you should know about using SQL to access and manipulate data.

7.1Introduction To Sql

SQL stands for Structured Query Language. It is used for storing and managing data in relational database management system (RDMS). It is a standard language for Relational Database System. It enables a user to create, read, update and delete relational databases and tables. All the RDBMS like MySQL, Informix, Oracle, MS Access and SQL Server use SQL as their standard database language. SQL allows users to query the database in a number of ways, using English-like statements.

The SQL programming language was developed in the 1970s by IBM researchers Raymond Boyce and Donald Chamberlin. The programming language, known then as SEQUEL, was created following Edgar Frank Codd"s paper, “A Relational Model of Data for Large Shared Data Banks,” in 1970.

7.2 List Of Sql Commands

7.2.1Background

SQL, Structured Query Language, is a programming language designed to manage data stored in relational databases. SQL operates through simple, declarative statements. This keeps data accurate and secure, and it helps maintain the integrity of databases, regardless of size.

7.2.2Commands:

7.2.2.1 ALTER TABLE

```
ALTER TABLE table_name
ADD column_name datatype;
```

ALTER TABLE lets you add columns to a table in a database.

7.2.2.2 AND

```
SELECT column_name(s)
FROM table_name
WHERE column_1 = value_1
AND column_2 = value_2;
```

AND is an operator that combines two conditions. Both conditions must be true for the row to be included in the result set.

7.2.2.3 CREATE TABLE

```
CREATE TABLE table_name (
column_1 datatype,
column_2 datatype,
column_3 datatype
);
```

CREATE TABLE creates a new table in the database. It allows you to specify the name of the table and the name of each column in the table.

7.2.2.4 INSERT

```
INSERT INTO table_name (column_1, column_2, column_3) VALUES
(value_1, 'value_2', value_3);
```

INSERT statements are used to add a new row to a table

CHAPTER 8
PROJECT DESCRIPTION

8.1 Description

Sweet Delights is a visually engaging frontend e-commerce website designed to showcase a cozy cafe's offerings online. It allows visitors to explore a variety of delicious menu items, view daily deals, and experience the ambiance of the cafe without visiting physically.

- Browse through the food and drink menu
- View “Popular Items” and “Deal of the Day” offers
- Explore the cafe’s kitchen and ambiance through visuals
- Use the contact/enquiry form to reach out for feedback or table bookings
- Access brief “About Us” info in the footer section

As a frontend-only platform, there are no user logins or transactions. The focus is on presentation, responsiveness, and user engagement, making it ideal for showcasing the cafe’s brand and inviting new customers..

8.2 Process

- Any visitor can browse the Sweet Delights website and view the full food and beverage menu.
- Users can explore “Today’s Specials” and “Deal of the Day” sections to discover promotional items.
- Visitors can navigate through different sections such as Home, Menu, and Contact/Enquiry without login.
- A contact form is available for users to send enquiries, feedback, or reservation requests directly to the cafe.
- The website is structured for two basic roles:
  - Visitor: Can browse the site, explore menu items, deals, and contact the cafe.
  - Admin (Developer Role): Can update content manually in the codebase, such as adding new items, updating specials, or editing design elements.
- All items are categorized (e.g., Desserts, Snacks) with images, names, and prices.
- The system is designed to be simple, engaging, and accessible, offering a seamless frontend experience for cafe promotion.

8.3 Web Pages Details

- Page: The home page displays the cafe’s highlights, including featured menu items, Today’s Specials, and Deals of the Day to attract visitor attention.
- Menu Page: This page showcases a categorized list of food and beverage items with names, images, and prices. It gives users a complete view of what's offered.
- Contact / Enquiry Page: A simple form allows visitors to reach out to the cafe with questions, feedback, or table reservation requests.
- Footer Section: Includes brief About Us information describing the cafe's story, values, and ambiance, along with contact details and links.

8.4 Goals Of Website

- **Strengthen customer connection**: By presenting an appealing online presence, the website builds a deeper bond between the cafe and its customers, helping attract new visitors and retain regular ones.
- **Promote offerings effectively**: Highlighting Today’s Specials, Deals of the Day, and menu items helps increase customer interest and footfall.
- **Increase visibility and brand appeal**: A visually rich, responsive website showcases the cafe’s ambiance and menu, boosting its reach beyond local walk-ins.
- **Enhance communication**: The enquiry/contact form offers a direct line between customers and the cafe, improving service and engagement.

8.5 Purpose of Project for your Sweet Delights Cafe Website:

- To create an engaging online platform that showcases the cafe's food, ambiance, and daily specials.
- To offer a convenient way for customers to explore the menu and deals from anywhere.
- To increase customer interest and footfall without high marketing costs.
- To build brand presence and visibility in the local market through a professional website.
- To improve interaction and communication between the cafe and its customers via the contact/enquiry form.

8.6 Requirement Analysis

8.6.1 Hardware Requirement

- Computer/Laptop with windows 10
- Mobile device (to check responsiveness)

8.6.2 Software Requirement

- Microsoft Visual Studio Code
- Installed Bootstrap Library
- Other extensions of HTML, CSS and JavaScript in Visual Studio code
- Web Browser(Chrome)

8.6.3 Functional Requirement

- Mobile Responsive: Make sure your responsive implementation is professionally executed; as clunky mobile experience discounts the quality of the business for the fast-paced shopper.
- Ease of use in the checkout flow: Focus on ease of use; ensure you don"t introduce any unnecessary steps to complete the purchase. Strive for a one-click experience.
- Personalization: A third-party personalization tool integrated into your ecommerce platform can influence your sales by up to 59% percent.
- Accessibility: Follow the universal guidelines provided and implement your accessibility standard to include all shoppers.

8.6.4Non-Functional Requirement

8.6.4.1 Usability

- The website is designed so users can easily explore the menu or check Today's Specials within a single visit.
- Visitors can quickly find desired food items, view deals, and submit enquiries with minimal clicks.

•The layout is intuitive and visually memorable, making navigation smooth even for first-time users.

8.6.4.2 Security

- As the website is frontend-only and does not involve monetary transactions or user login, security risks are minimal.
- Basic protection measures like form validation help prevent spam or invalid inputs in the enquiry section.
- If expanded in the future, security policies such as data privacy and role-based content control can be implemented.

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8.7 User Classes And Characteristics

8.7.1 Class Diagram

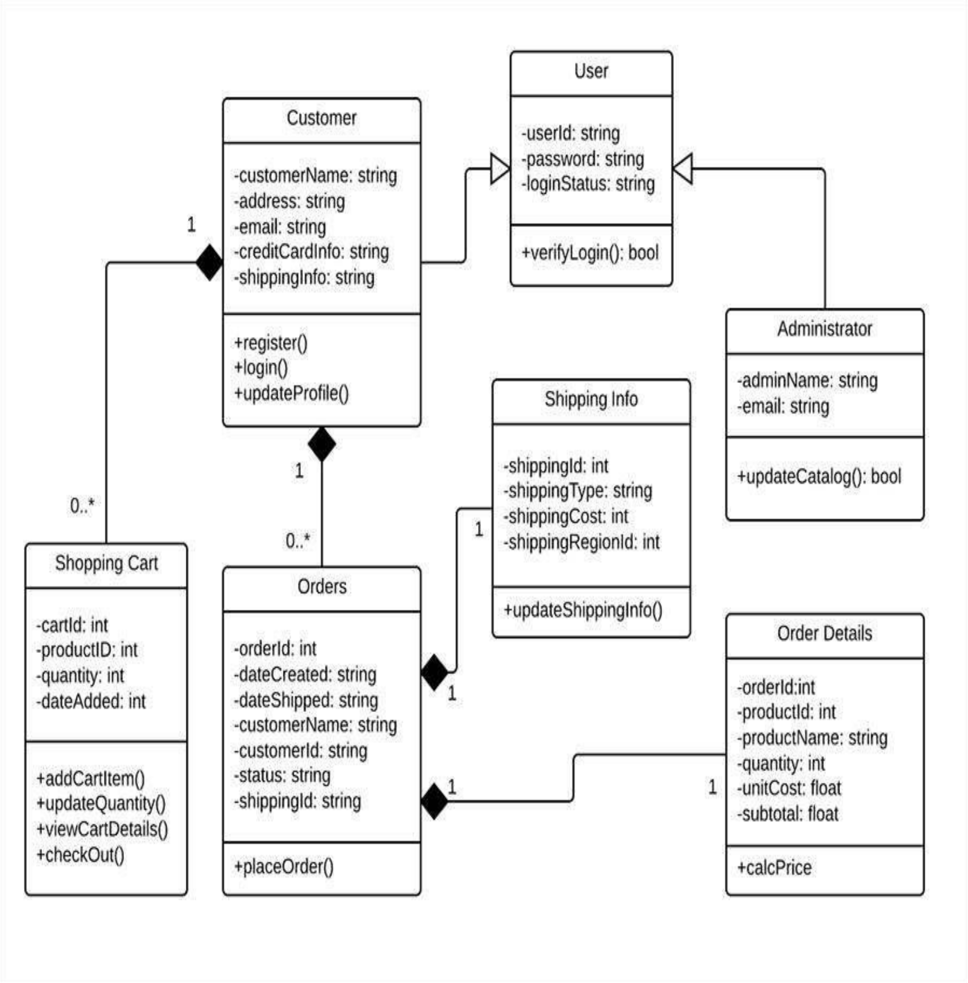
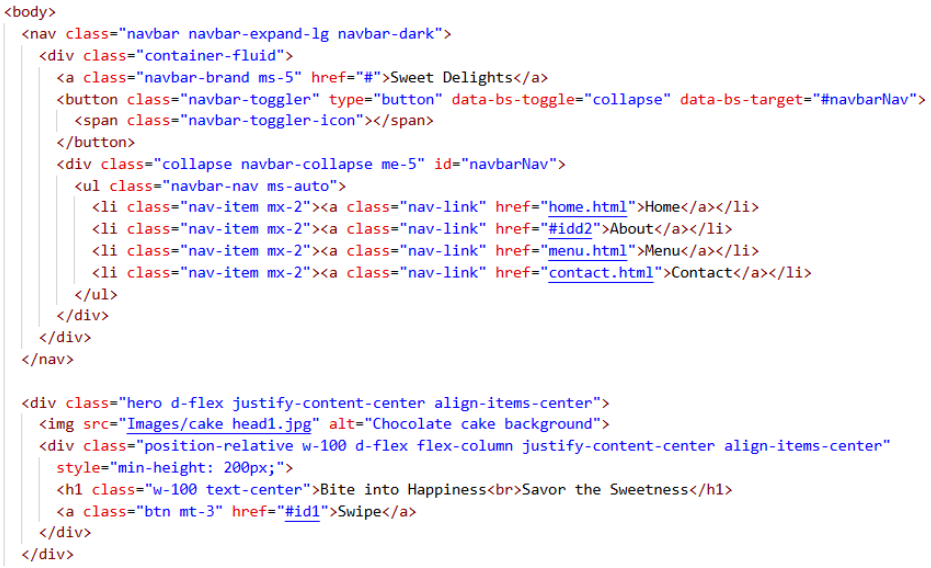


__Figure 8.1__ Class diagram of e commerce website

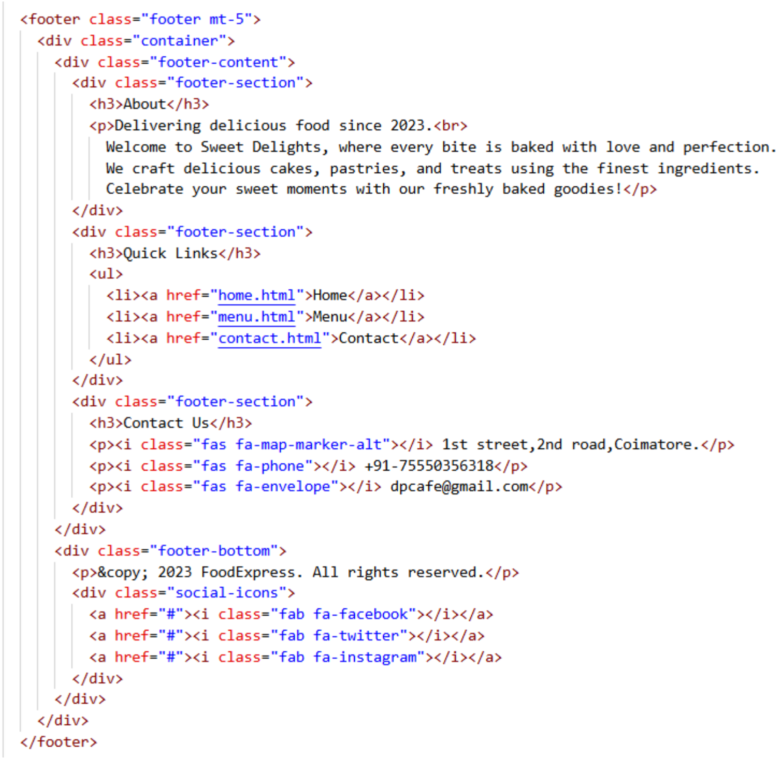
8.8 Simple Source Code

8.8.1 Home Page



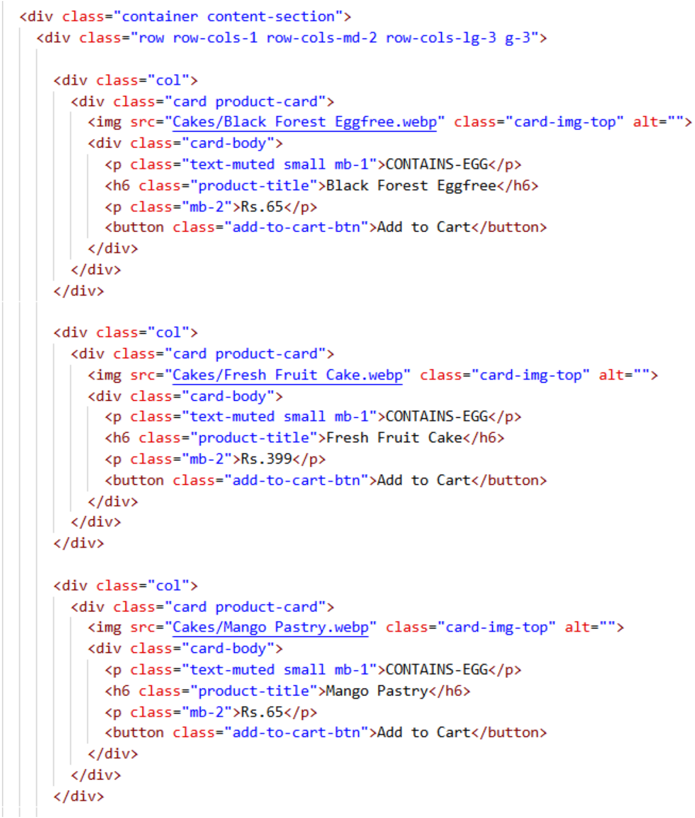
```
<body>
  <nav class="navbar navbar-expand-lg navbar-dark">
    <div class="container-fluid">
      <a class="navbar-brand ms-5" href="#">Sweet Delights</a>
      <button class="navbar-toggler" type="button" data-bs-toggle="collapse" data-bs-target="#navbarNav">
        <span class="navbar-toggler-icon"></span>
      </button>
      <div class="collapse navbar-collapse me-5" id="navbarNav">
        <ul class="navbar-nav ms-auto">
          <li class="nav-item mx-2"><a class="nav-link" href="home.html">Home</a></li>
          <li class="nav-item mx-2"><a class="nav-link" href="#idd2">About</a></li>
          <li class="nav-item mx-2"><a class="nav-link" href="menu.html">Menu</a></li>
          <li class="nav-item mx-2"><a class="nav-link" href="contact.html">Contact</a></li>
        </ul>
      </div>
    </div>
  </nav>

  <div class="hero d-flex justify-content-center align-items-center">
    <img src="Images/cake head1.jpg" alt="Chocolate cake background">
    <div class="position-relative w-100 d-flex flex-column justify-content-center align-items-center"
      style="min-height: 200px;">
      <h1 class="w-100 text-center">Bite into Happiness<br>Savor the Sweetness</h1>
      <a class="btn mt-3" href="#id1">Swipe</a>
    </div>
  </div>
```

8.8.2 Footer Page



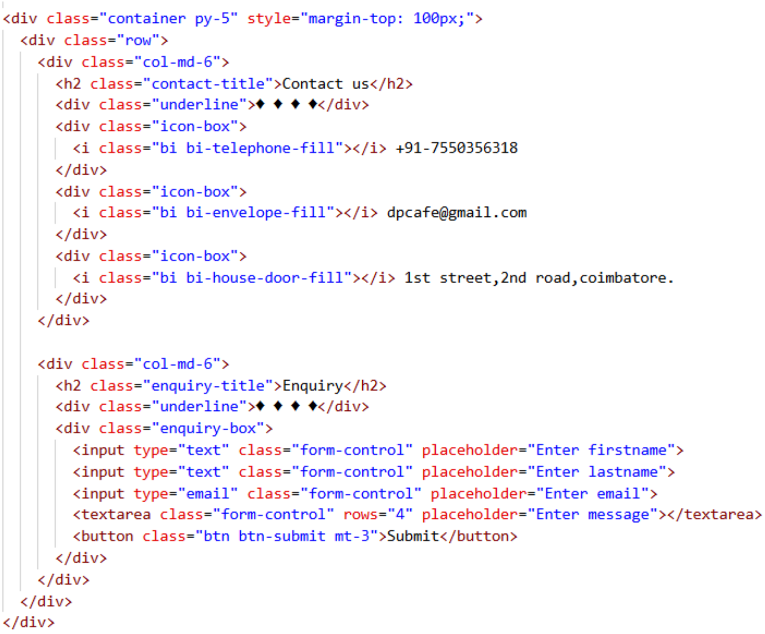
```
<footer class="footer mt-5">
  <div class="container">
    <div class="footer-content">
      <div class="footer-section">
        <h3>About</h3>
        <p>Delivering delicious food since 2023.<br>
          Welcome to Sweet Delights, where every bite is baked with love and perfection.
          We craft delicious cakes, pastries, and treats using the finest ingredients.
          Celebrate your sweet moments with our freshly baked goodies!</p>
      </div>
      <div class="footer-section">
        <h3>Quick Links</h3>
        <ul>
          <li><a href="home.html">Home</a></li>
          <li><a href="menu.html">Menu</a></li>
          <li><a href="contact.html">Contact</a></li>
        </ul>
      </div>
      <div class="footer-section">
        <h3>Contact Us</h3>
        <p><i class="fas fa-map-marker-alt"></i> 1st street,2nd road,Coimatore.</p>
        <p><i class="fas fa-phone"></i> +91-75550356318</p>
        <p><i class="fas fa-envelope"></i> dpcafe@gmail.com</p>
      </div>
    </div>
    <div class="footer-bottom">
      <p>&copy; 2023 FoodExpress. All rights reserved.</p>
      <div class="social-icons">
        <a href="#"><i class="fab fa-facebook"></i></a>
        <a href="#"><i class="fab fa-twitter"></i></a>
        <a href="#"><i class="fab fa-instagram"></i></a>
      </div>
    </div>
  </div>
</footer>
```

8.8.3 Product Card Page



```html
<div class="container content-section">
  <div class="row row-cols-1 row-cols-md-2 row-cols-lg-3 g-3">

    <div class="col">
      <div class="card product-card">
        <img src="Cakes/Black Forest Eggfree.webp" class="card-img-top" alt="">
        <div class="card-body">
          <p class="text-muted small mb-1">CONTAINS-EGG</p>
          <h6 class="product-title">Black Forest Eggfree</h6>
          <p class="mb-2">Rs.65</p>
          <button class="add-to-cart-btn">Add to Cart</button>
        </div>
      </div>
    </div>

    <div class="col">
      <div class="card product-card">
        <img src="Cakes/Fresh Fruit Cake.webp" class="card-img-top" alt="">
        <div class="card-body">
          <p class="text-muted small mb-1">CONTAINS-EGG</p>
          <h6 class="product-title">Fresh Fruit Cake</h6>
          <p class="mb-2">Rs.399</p>
          <button class="add-to-cart-btn">Add to Cart</button>
        </div>
      </div>
    </div>

    <div class="col">
      <div class="card product-card">
        <img src="Cakes/Mango Pastry.webp" class="card-img-top" alt="">
        <div class="card-body">
          <p class="text-muted small mb-1">CONTAINS-EGG</p>
          <h6 class="product-title">Mango Pastry</h6>
          <p class="mb-2">Rs.65</p>
          <button class="add-to-cart-btn">Add to Cart</button>
        </div>
      </div>
    </div>
```

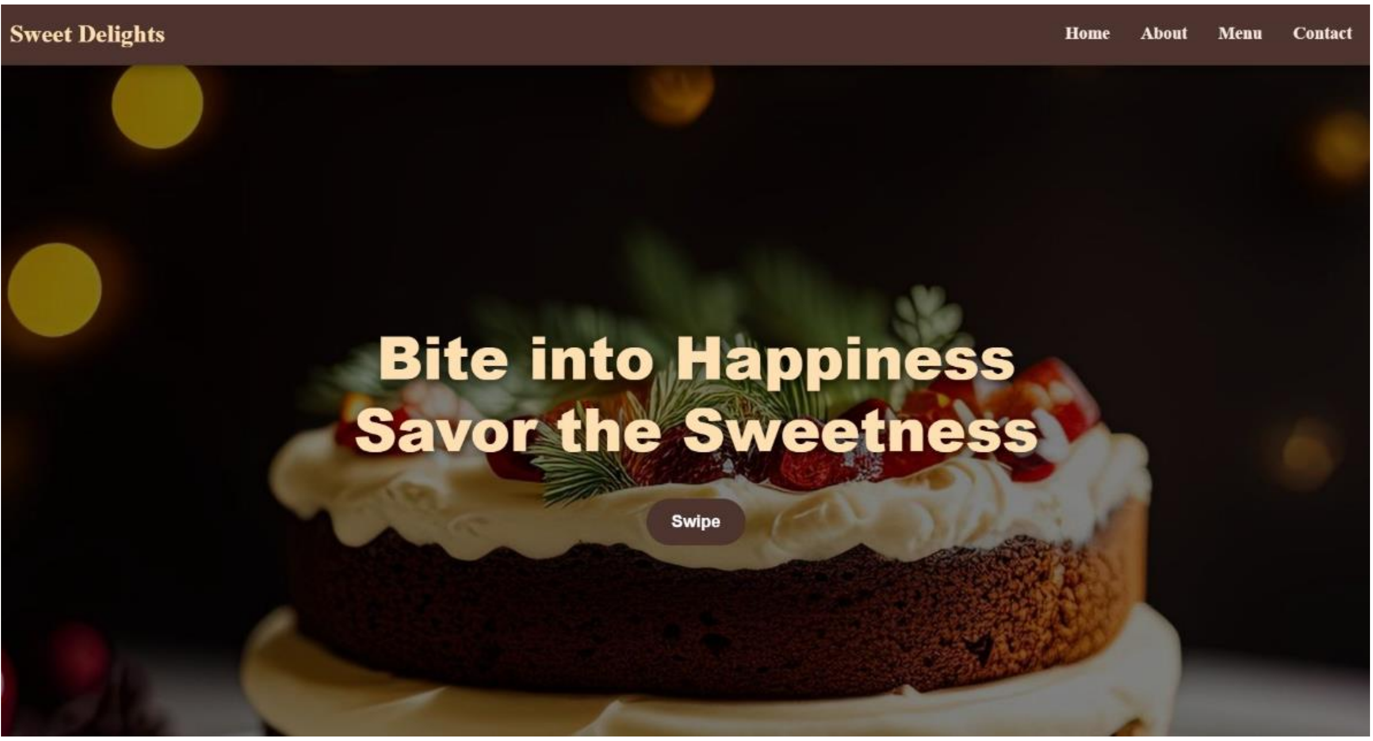
8.8.4 Contact and Enquiry Page



```html
<div class="container py-5" style="margin-top: 100px;">
  <div class="row">
    <div class="col-md-6">
      <h2 class="contact-title">Contact us</h2>
      <div class="underline">♦ ♦ ♦ ♦</div>
      <div class="icon-box">
        <i class="bi bi-telephone-fill"></i> +91-7550356318
      </div>
      <div class="icon-box">
        <i class="bi bi-envelope-fill"></i> dpcafe@gmail.com
      </div>
      <div class="icon-box">
        <i class="bi bi-house-door-fill"></i> 1st street,2nd road,coimbatore.
      </div>
    </div>

    <div class="col-md-6">
      <h2 class="enquiry-title">Enquiry</h2>
      <div class="underline">♦ ♦ ♦ ♦</div>
      <div class="enquiry-box">
        <input type="text" class="form-control" placeholder="Enter firstname">
        <input type="text" class="form-control" placeholder="Enter lastname">
        <input type="email" class="form-control" placeholder="Enter email">
        <textarea class="form-control" rows="4" placeholder="Enter message"></textarea>
        <button class="btn btn-submit mt-3">Submit</button>
      </div>
    </div>
  </div>
</div>
```

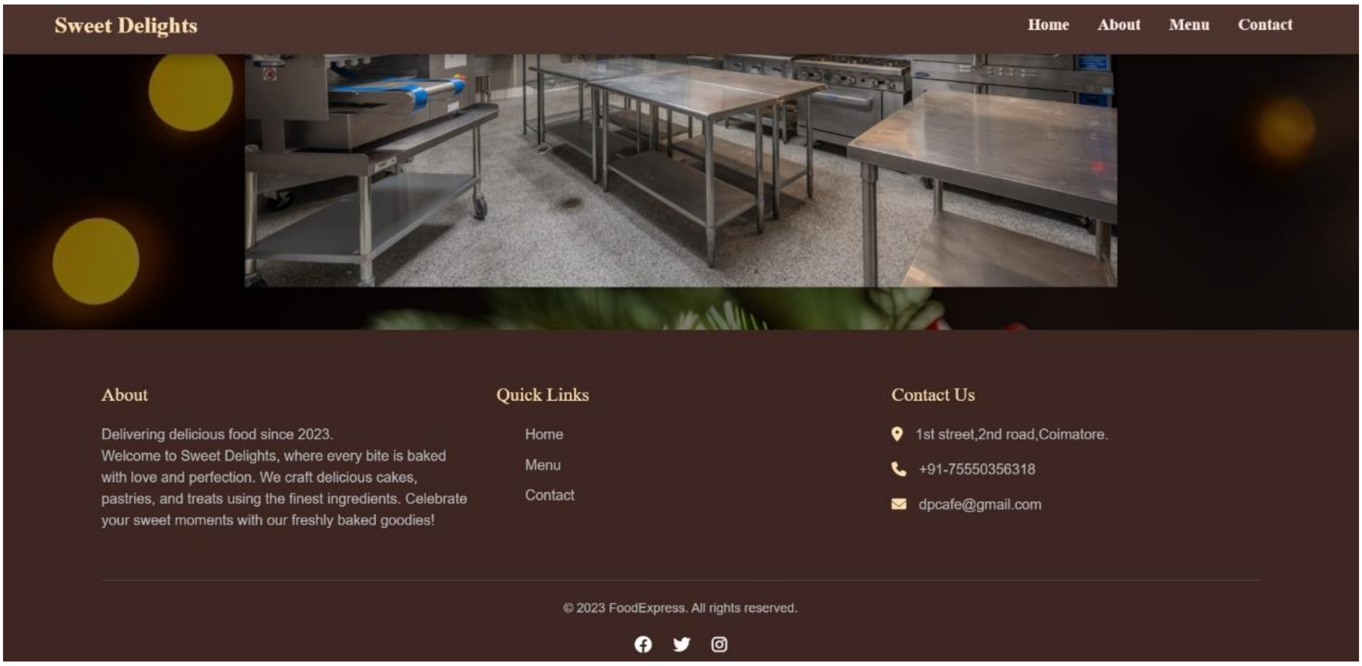
CHAPTER 9

SCREENSHOTS OF PROJECT



`

__Figure 9.1__ Home page banner with logo and header



About

Delivering delicious food since 2023.
Welcome to Sweet Delights, where every bite is baked with love and perfection. We craft delicious cakes, pastries, and treats using the finest ingredients. Celebrate your sweet moments with our freshly baked goodies!

Quick Links

- Home
- Menu
- Contact

Contact Us

1st street,2nd road,Coimatore.

+91-75550356318

dpcafe@gmail.com

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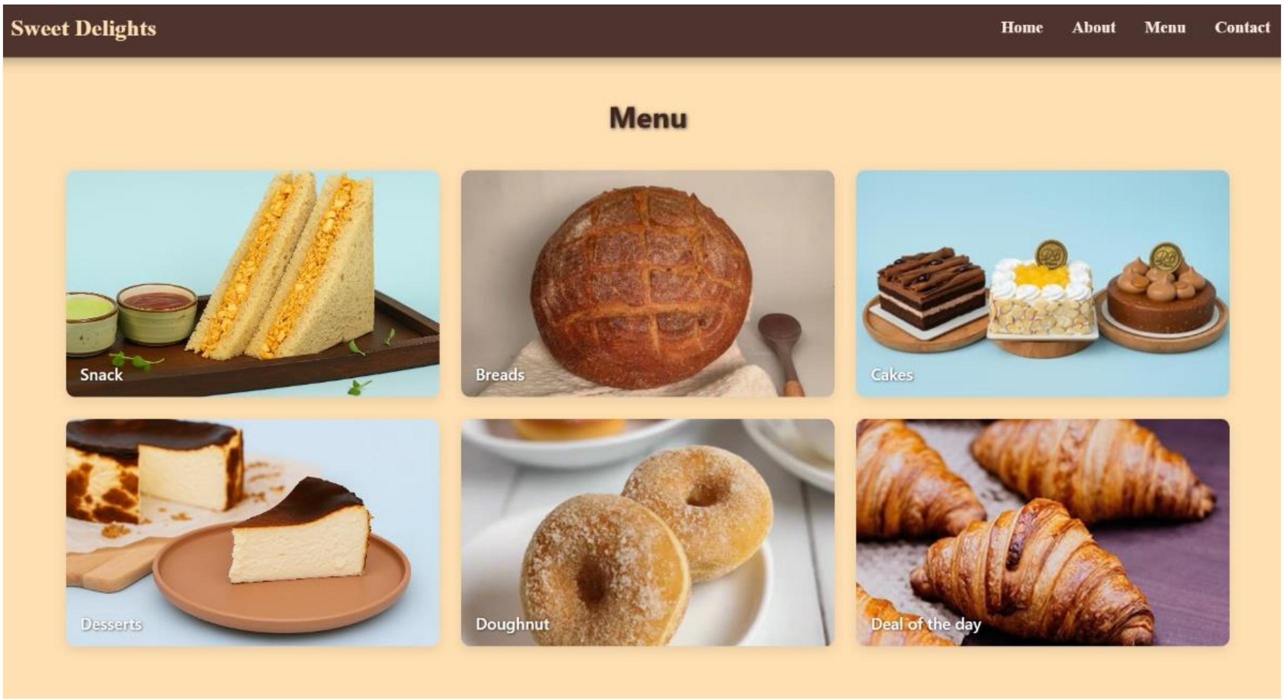
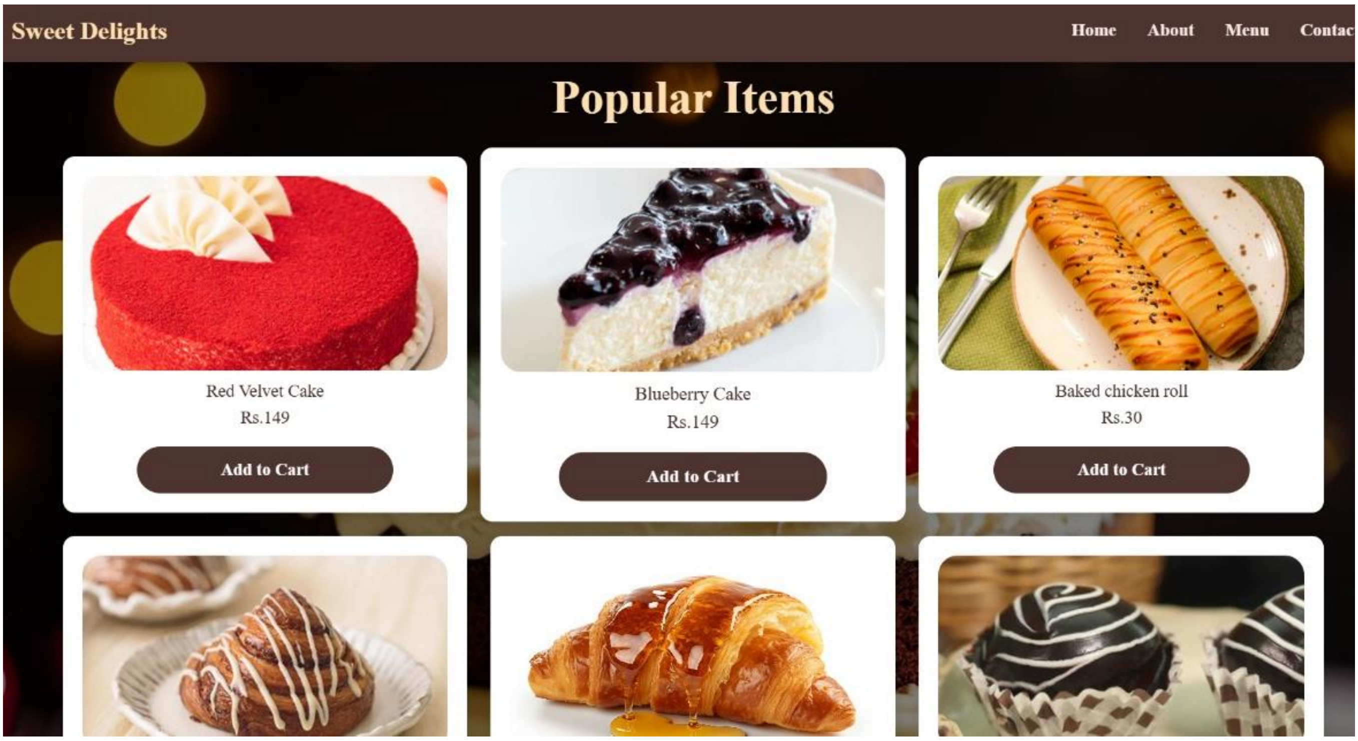
__Figure 9.2__ Home page bottom with footer and clip outs



Sweet Delights

Menu

Figure 9.3 *Menu Page to the Sweet Delights Cafe*



Sweet Delights

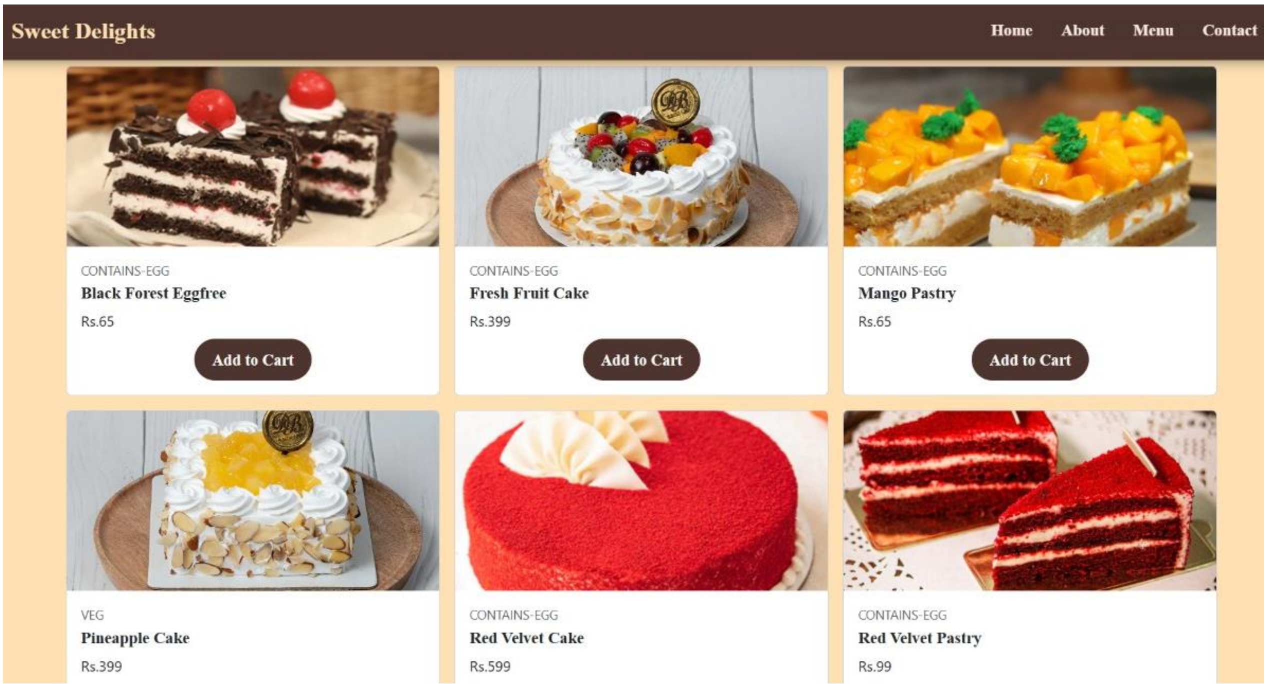
Popular Items

Red Velvet Cake
Rs.149

Blueberry Cake
Rs.149

Baked chicken roll
Rs.30

Figure 9.4 *Frequently Saled Popular Items of Sweet Delights cafe*



CONTAINS-EGG
Black Forest Eggfree
Rs.65

CONTAINS-EGG
Fresh Fruit Cake
Rs.399

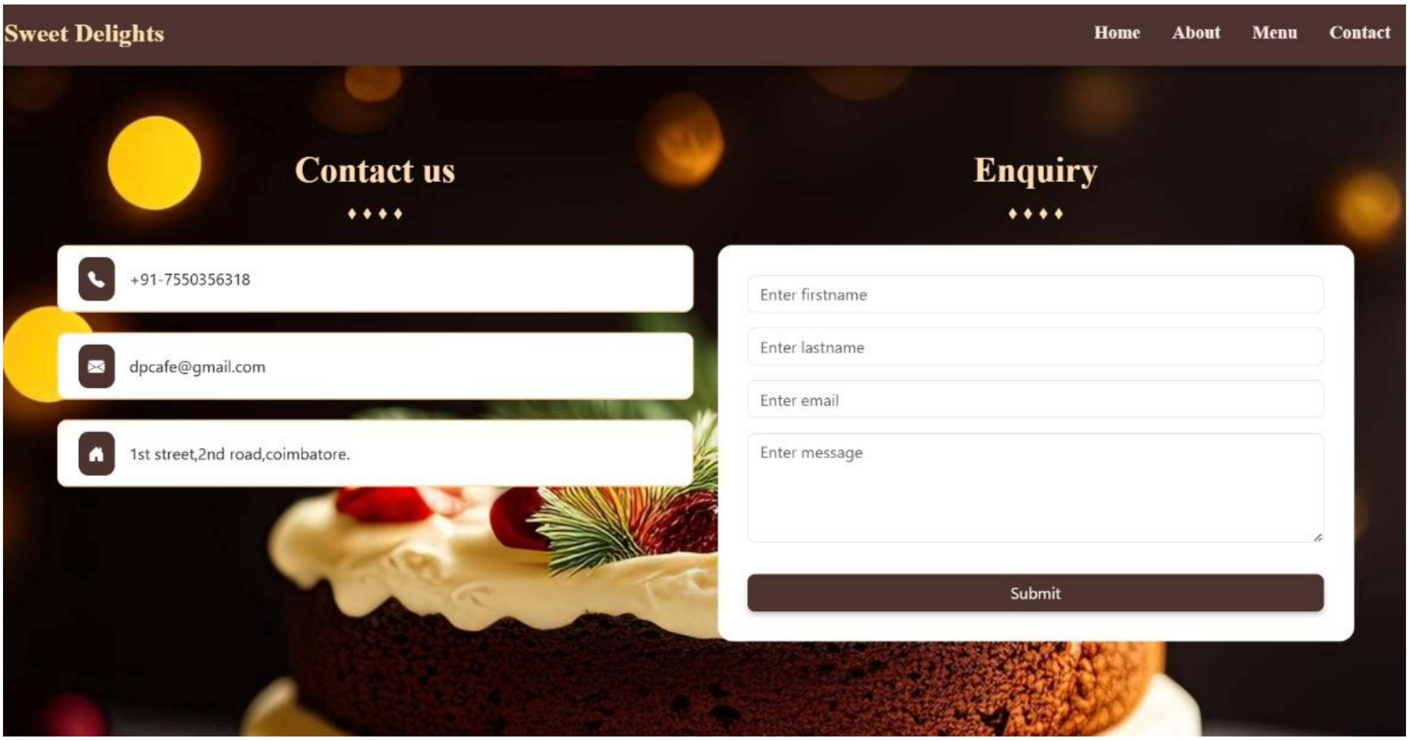
CONTAINS-EGG
Mango Pastry
Rs.65

VEG
Pineapple Cake
Rs.399

CONTAINS-EGG
Red Velvet Cake
Rs.599

CONTAINS-EGG
Red Velvet Pastry
Rs.99

Figure 9.5 *Items with add to cart option*



☎ +91-7550356318

✉ dpcafe@gmail.com

1st street,2nd road,coimbatore.

Figure 9.6 *Contact details and Enquiry Page for getting feedback from the Customer*

CONCLUSION

Feel Educare helped me gain a lot of industry related knowledge of PHP and React.js.I learned how to focus more on SEO (Search Engine Optimization) and worked on handling large code base.

I learned how to tackle problems related to CORS which I would have never came across with without this industrial experience. I also worked on .htaccess file for reedirecting routes.

The timing has never been better for using technology to enable and improve learning at all levels, in all places, and for people of all backgrounds. From the modernization of E-rate to the proliferation and adoption of openly licensed educational resources, the key pieces necessary to realize best the transformations made possible by technology in education are in place.

Educators, policymakers, administrators, and teacher preparation and professional development programs now should embed these tools and resources into their practices. Working in collaboration with families, researchers, cultural institutions, and all other stakeholders, these groups can eliminate inefficiencies, reach beyond the walls of traditional classrooms, and form strong partnerships to support everywhere, all-the-time learning.

Although the presence of technology does not ensure equity and accessibility in learning, it has the power to lower barriers to both in ways previously impossible. No matter their perceived abilities or geographic locations, all learners can access resources, experiences, planning tools, and information that can set them on a path to acquiring expertise unimaginable a generation ago.

FUTURE SCOPE

•To include various APIs, AI frameworks and virtual reality in order to make it more attractive.

•With increasing demand of Node.js and React.js in Tech. Market and all big and small businesses going online, the Demand of Web Developers has seen multifold increment.

•To make the UI a motion UI for better view from customer point of view.

•Also, an experienced person in this field can also work as a freelancer. There are many companies which provide online projects to individuals.

•To expand the educational institutes categories i.e. to include more courses and curriculums .

•To include various payment gateways for payment purpose.

•There have to be language varieties so that Non-English users can access easily without any difficulty.

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THANK YOU