

Smart City Planning and Development Using Web Tools

Internship Report

Submitted for the partial fulfilment of the degree of

Bachelor of Technology

In

Mathematics & Computing

Submitted By

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0901MC201063

UNDER THE SUPERVISION AND GUIDANCE OF

Dr. Atul Kumar Ray

Assistant Professor

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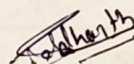
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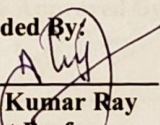
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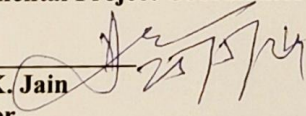
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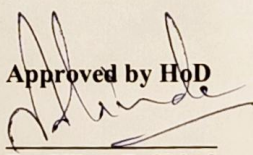
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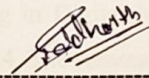
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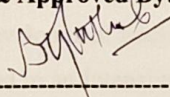
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EXECUTIVE SUMMARY

This report details the work accomplished in the field of web development, with a particular focus on leveraging HTML, the standard markup language for creating web pages, alongside other web technologies and best practices. The primary goal of the project was to enhance the functionality, security, and accessibility of web applications through a comprehensive understanding and application of various web development tools and methodologies. This executive summary encapsulates the enriching experience and contributions made during my internship at Velvish Digital Agency, a dynamic startup specializing in Digital Marketing solutions. The internship spanned a period of January 2024 to June 2024. The summary begins with a declaration affirming the authenticity and originality of the work presented in the report, followed by a plagiarism check certificate to ensure the integrity of the content. It further provides a concise overview of the internship report's structure and key components, including the executive summary, acknowledgment section, certificate of internship, content layout, and chapters detailing the internship journey. During my internship, I assumed the role of a Web Development Intern, engaging in both frontend and backend tasks to support Velvish mission of revolutionizing networking infrastructures my Internship Program from January 2024 to May 2024 covering approximately 300 hours of ongoing internship. I had magnificently concluded the Internship under the Web Development track as an **Intern at Velvish Digital Agency**. During the Internship I was engaged in an Intensive learning program where I learnt Essential Computer Science Fundamentals like Database Management Systems, Object Oriented Programming, and Software Development Lifecycle, Popular Tools and Technologies used at the Organization like Git, JavaScript, etc., and necessary soft skills required to navigate in the corporate world like Email Writing, English Speaking, Effective Communication, etc. Employed HTML to structure web pages efficiently, ensuring a solid foundation for all web content. Adhered to standards and guidelines from authoritative sources such as the W3C and MDN to ensure compatibility and accessibility across different browsers and devices. Advanced web technologies using Responsive Design, Service Workers, Web App Manifests. Security Enhancements using secure data handling, web authentication and version control with git.

कार्यकारी सारांश

यह रिपोर्ट वेब विकास के क्षेत्र में किए गए कार्यों का विवरण देती है, जिसमें अन्य वेब प्रौद्योगिकियों और सर्वोत्तम प्रथाओं के साथ-साथ वेब पेज बनाने के लिए मानक मार्कअप भाषा HTML का लाभ उठाने पर विशेष ध्यान दिया गया है। परियोजना का प्राथमिक लक्ष्य विभिन्न वेब विकास उपकरणों और पद्धतियों की व्यापक समझ और अनुप्रयोग के माध्यम से वेब अनुप्रयोगों की कार्यक्षमता, सुरक्षा और पहुंच को बढ़ाना था। यह कार्यकारी सारांश वेल्विश डिजिटल एजेंसी में मेरी इंटरनशिप के दौरान किए गए समृद्ध अनुभव और योगदान को समाहित करता है, जो डिजिटल मार्केटिंग समाधानों में विशेषज्ञता वाला एक गतिशील स्टार्टअप है। इंटरनशिप जनवरी 2024 से जून 2024 की अवधि तक फैली हुई थी। सारांश रिपोर्ट में प्रस्तुत कार्य की प्रामाणिकता और मौलिकता की पुष्टि करने वाली घोषणा के साथ शुरू होता है, इसके बाद सामग्री की अखंडता सुनिश्चित करने के लिए साहित्यिक चोरी जांच प्रमाण पत्र दिया जाता है। यह इंटरनशिप रिपोर्ट की संरचना और प्रमुख घटकों का एक संक्षिप्त अवलोकन प्रदान करता है, जिसमें कार्यकारी सारांश, पावती अनुभाग, इंटरनशिप का प्रमाण पत्र, सामग्री लेआउट और इंटरनशिप यात्रा का विवरण देने वाले अध्याय शामिल हैं। अपनी इंटरनशिप के दौरान, मैंने एक वेब डेवलपमेंट इंटरन की भूमिका निभाई, नेटवर्किंग इंफ्रास्ट्रक्चर में क्रांति लाने के वेल्विश मिशन का समर्थन करने के लिए फ्रंटएंड और बैकएंड दोनों कार्यों में संलग्न होकर, जनवरी 2024 से मई 2024 तक मेरे इंटरनशिप कार्यक्रम में लगभग 300 घंटे की चल रही इंटरनशिप शामिल थी। मैंने वेल्विश डिजिटल एजेंसी में एक इंटरन के रूप में वेब डेवलपमेंट ट्रैक के तहत इंटरनशिप का शानदार समापन किया था। इंटरनशिप के दौरान मैं एक गहन शिक्षण कार्यक्रम में लगा हुआ था, जहां मैंने डेटाबेस प्रबंधन प्रणाली, ऑब्जेक्ट ओरिएंटेड प्रोग्रामिंग और सॉफ्टवेयर डेवलपमेंट लाइफसाइकल जैसे आवश्यक कंप्यूटर विज्ञान के बुनियादी सिद्धांत, संगठन में उपयोग किए जाने वाले लोकप्रिय उपकरण और तकनीकें जैसे गिट, जावास्क्रिप्ट, आदि और आवश्यक चीजें सीखीं। कॉर्पोरेट जगत में ईमेल लेखन, अंग्रेजी बोलना, प्रभावी संचार इत्यादि जैसे नेविगेट करने के लिए आवश्यक सॉफ्ट कौशल। सभी वेब सामग्री के लिए एक ठोस आधार सुनिश्चित करते हुए, वेब पेजों को

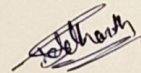
कुशलतापूर्वक तैयार करने के लिए **HTML** को नियोजित किया गया। विभिन्न ब्राउज़रों और उपकरणों में अनुकूलता और पहुंच सुनिश्चित करने के लिए **W3C** और **MDN** जैसे आधिकारिक स्रोतों से मानकों और दिशानिर्देशों का पालन किया जाता है। रिस्पॉन्सिव डिज़ाइन, सर्विस वर्कर्स, वेब ऐप मैनिफ़ेस्ट का उपयोग करके उन्नत वेब प्रौद्योगिकियाँ। सुरक्षित डेटा हैंडलिंग, वेब प्रमाणीकरण और गिट के साथ संस्करण नियंत्रण का उपयोग करके सुरक्षा संवर्द्धन।

ACKNOWLEDGEMENT

The full semester internship has proved to be pivotal to my career. I am thankful to my institute, **Madhav Institute of Technology and Science** to allow me to continue my disciplinary/interdisciplinary internship as a curriculum requirement, under the provisions of the Flexible Curriculum Scheme, approved by the Academic Council of the institute. I extend my gratitude to the Director of the institute, **Dr. R. K. Pandit** and Dean Academics, **Dr. Manjaree Pandit** for this.

I would sincerely like to thank my department, Department of Engineering Mathematics and Computing, for allowing me to explore this Internship. I humbly thank Dr. **Vikas P Shinde**, Professor and Head, Engineering Mathematics and Computing, for his continued support during the course of this engagement, which eased the process and formalities involved.

I am sincerely thankful to my faculty mentors. I am grateful to the guidance of **Dr. Atul Kumar Ray**, Assistant Professor, Engineering Mathematics and Computing for his continued support and guidance throughout the internship. I am also very thankful to the faculty and staff of the department. I extend my deepest appreciation to my family and Isha Mathe for their unwavering support, encouragement, and understanding throughout this journey.



Siddharth

0901MC201063

CERTIFICATE OF INTERNSHIP



Digital Solutions
To Grow Your Business

REF: V/2024/IC/8

13th May 2024

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Mr Siddharth**, currently pursuing his Bachelor of Technology degree in Mathematics and Computing branch from the Madhav Institute of Technology and Science, Gwalior, with enrollment number 0901MC201063, is undergoing his internship in Web Development at Velvish from 8th January 2024 till 8th July 2024. This project-based internship is a part of his educational curriculum.

Throughout the internship period, he has demonstrated punctuality, diligence, and sincerity.



Best Regards,

Mohit Kumar Tripathi
Director

A handwritten signature in black ink, appearing to read "Siddharth", written over a light blue scribbled background.

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Summary

CONTENT

Table of Contents

Declaration by the Candidate.....	1
Plagiarism Check Certificate	2
Executive Summary	3
कार्यकारी सारांश.....	4
Acknowledgement	6
Certificate of Internship	7
Content.....	8
List of Figures	12
Chapter 1: Introduction	13
Chapter 2: Literature Survey.....	14
2.1 Responsive Web Design and Mobile First Approach.....	14
2.2 Progressive Web Apps (PWAs).....	14
2.3 JavaScript Frameworks and Libraries.....	14
2.4 Web Accessibility and Inclusive Design	15
Chapter 3: Foundational Concepts.....	16
3.1 Object Oriented Programming	16
3.2 GIT	16
3.2.1 What is the use of Git?.....	16
3.2.2 Advantages/ features of Git	16
3.3 Software development Life Cycle (SDLC).....	17
3.3.1 Phases.....	17
3.3.2 Importance	18
3.4 Software Testing	18
3.4.1 Types.....	18

3.4.2	Techniques	18
Chapter 4:	Foundational Training	19
4.1	Hypertext Markup Language (HTML)	19
4.1.1	Key Concepts and Elements	19
4.1.2	Importance	19
4.2	Cascading Style Sheets (CSS).....	19
4.2.1	Styling and Selectors.....	19
4.2.2	Importance	19
4.3	JavaScript	19
4.3.1	Core Concepts: Variables, Functions, Control Flow, DOM Manipulation	20
4.3.2	Advanced JavaScript Concepts.....	20
4.4	Bootstrap	20
4.5	Jquery.....	22
4.6	MERN Stack	23
4.6.1	MongoDB	23
4.6.2	Express.js	24
4.6.3	React.js.....	24
4.6.4	Node.js	24
4.6.5	Importance	24
Chapter 5:	Web Development Contributions to the Smart City Project in Indore	26
5.1	Introduction.....	26
5.2	Understanding the Project Objectives.....	26
5.3	Testing and Form Creation	26
5.4	Testing Procedures.....	26
5.5	Creation of Eligibility Criteria	27
5.6	Challenges and Solutions.....	27

Chapter 6: Assignment.....	28
6.1 Problem Statement.....	28
Code & Result.....	29
.....	33
.....	34
.....	34
.....	35
Chapter 7: Conclusion.....	36
References.....	37
Turnitin Plagiarism Report	38
Annexure-1	39
Learning Outcomes.....	39
Annexure-2	40
Daily Diary.....	40
Annexure-3a.....	41
MPR-1.....	41
Annexure-3b	42
MPR-2.....	42
.....	42
Annexure-3c.....	43
MPR-3.....	43
Annexure-3c.....	44
MPR- 4.....	44
Annexure-4	45

CHAPTER 1: INTRODUCTION

Velvish takes pride in being a full-service digital organization that offers professional end-to-end creative solutions adapted to your specific business requirements. We allow you to grow your business and prosper in the digital arena by providing a comprehensive suite of services such as consultation, outsourcing, training, support, design, development, marketing, and new online tactics.

Our journey into the digital market began with a desire to explore new frontiers and embrace cutting-edge technologies. Over the years, we have used our knowledge to provide meaningful digital solutions to a wide range of clients, from new entrepreneurs to established businesses. The faith and confidence our clients have in us has accelerated our growth and allowed us to reach our full potential.

At the heart of our philosophy is the conviction that simplicity is the pinnacle of sophistication. We are a dynamic group of people who are adventurous, clever, and adaptable, all driven by a shared enthusiasm for invention. With extensive experience in engineering, design, analytics, research, and other relevant fields, we have the comprehensive knowledge and expertise required to create solid, results-driven digital solutions.

Whether you want to improve your web appearance, streamline company procedures, or drive growth through focused marketing methods, we have the expertise to make your vision a reality. Velvish is dedicated to delivering excellence in all of our projects, allowing you to confidently and successfully navigate the digital terrain.

CHAPTER 2: LITERATURE SURVEY

Web development is a dynamic and ever-changing sector that is driven by new market trends, customer demands, and technological advancements. To study the most recent trends and best practices influencing the web development scene, we conducted a literature review that included a number of recent studies, articles, and industry publications.

2.1 Responsive Web Design and Mobile First Approach

Responsive web design, which seeks to create seamless user experiences across several devices and screen sizes, has become a standard practice in modern online development. Fluid grids, flexible pictures, and media queries are vital for creating adaptable online layouts, as illustrated by articles such as Ethan Marcotte's seminal work on responsive web design [1]. Furthermore, the mobile-first approach emphasizes user-centered design concepts, performance, and accessibility from the start of the design process, with an emphasis on mobile devices [2].

2.2 Progressive Web Apps (PWAs)

By obfuscating the distinctions between online and native mobile applications, progressive web apps offer an important paradigm change in web development. PWAs use Web technologies such as web app manifests, service workers, and responsive design to create quick, dependable, and entertaining app-like experiences [3]. Studies conducted by Google [4] and Mozilla [5] investigate the advantages of Progressive Web Apps (PWAs) concerning better user interaction, higher conversion rates, and better offline functionality.

2.3 JavaScript Frameworks and Libraries

JavaScript frameworks and libraries remain crucial in modern web development because they make it easier for programmers to create dynamic, rich web applications. Frameworks like as React.js, Angular, and Vue.js provide powerful abstractions for building user interface elements, managing state, and handling complex data interactions [6]. Developers and businesses evaluating technology stacks can benefit from research studies that compare the scalability, performance, and developer experience of various JavaScript frameworks [7].

2.4 Web Accessibility and Inclusive Design

Web accessibility is crucial for ensuring that websites and applications are usable by individuals of all abilities. The Web Content Accessibility Guidelines (WCAG) [8] offer a comprehensive framework for developing accessible web content, focusing on aspects like keyboard navigation, semantic HTML, and support for assistive technologies. Within the web development community, ongoing research into accessibility auditing methods and inclusive design helps to foster inclusive practices and increase awareness. [9].

The literature study emphasizes the diverse and continuously growing nature of online development, which includes responsive design principles, progressive web apps, JavaScript frameworks, web accessibility, and emergent architectural patterns. By remaining abreast of current trends and following best practices, web developers can create new, user-centric experiences that promote corporate success and satisfy the expectations of an ever-changing digital world.

CHAPTER 3: FOUNDATIONAL CONCEPTS

3.1 Object Oriented Programming

Object-oriented programming (OOP) is a computer science paradigm centered around the concept of classes and objects. This approach allows software programs to be broken down into reusable code blueprints called classes, which can then be used to create unique instances of various entities. Popular object-oriented programming languages include JavaScript, C++, Java, and Python.

The four pillars of object-oriented programming are:

1. **Inheritance:** inherit data from child classes and behaviours from the parent class
2. **Encapsulation:** contains information in an object, selected information is only exposed.
3. **Abstraction:** only exposing high-level public methods for accessing an object
4. **Polymorphism:** many methods can do the same task

3.2 GIT

3.2.1 What is the use of Git?

In software development, source code management is a common application. Git is used for tracking source code changes. The source code management tool uses a distributed version control system.

Typically used to manage programmer collaboration in the generation of source code during software development. Its goals include data integrity, speed, and support for nonlinear, distributed computations.

3.2.2 Advantages/ features of Git

1. **Optimized Performance:** Git excels in performance compared to alternative version control systems. Its processes, including committing, branching, and merging, are finely tuned to surpass the performance of other systems.
2. **Robust Security Measures:** Git prioritizes security by utilizing the SHA-1 cryptographic algorithm. This algorithm ensures the integrity of your work by securely preserving versions, files, and directories, thereby mitigating the risk of data corruption.

-
3. **Branching Model:** Git stands out from other version control systems with its unique branching methodology. This approach enables the creation of multiple independent local branches. This flexibility allows for role-based code management (e.g., separate branches for production, testing, etc.), seamless context switching (easily switching between commits and code), and safe experimentation with disposable branches.
 4. **Staging Area:** Git provides an intermediate phase called the "index" or "staging area," where contributions can be formatted and modified before being committed. This allows for precise control over what changes are included in the final commit.
 5. **Distributed:** Git is inherently distributed, meaning it duplicates the entire code base or repository onto each developer's computer. This allows developers to work independently on their local copies of the project.
 6. **Open Source:** This is a crucial element of contemporary software development. The open-source nature of the software invites contributions from developers worldwide, allowing them to add features and plugins that enhance its functionality. Consequently, the Linux kernel has grown to encompass around 15 million lines of code.

3.3 Software development Life Cycle (SDLC)

SDLC refers to the structured process used for developing high-quality software systems. It consists of several phases that guide the software development process from requirements gathering to maintenance.

3.3.1 Phases

1. **Requirements Gathering:** In this phase, the project requirements are collected and documented to comprehend the software system's aims and expectations.
2. **System Design:** The system design process entails developing a blueprint for the software system, including its architecture, modules, and data structures.
3. **Coding and Implementation:** This phase focuses on writing the actual code for the software system in accordance with the design specifications.
4. **Testing:** The testing process entails checking and validating the software system to ensure that it satisfies the specified requirements and operates as intended.
5. **Deployment:** During this phase, the software system is installed in the production environment and made available to end users..

-
6. **Maintenance:** During the maintenance phase, the software system is monitored and improved to solve any issues, bugs, or changes that arise over its existence.

3.3.2 Importance

A methodical and structured approach to software development is ensured by the SDLC, which results in the delivery of software systems that are dependable, high-quality, and maintainable. It assists in lowering expenses, limiting risks, and satisfying customer expectations.

3.4 Software Testing

Software testing is the process of evaluating a software system or any of its components to identify defects, errors, or inconsistencies and ensure that it meets requirements.

3.4.1 Types

1. Unit Testing
2. Integration Testing
3. System Testing
4. Acceptance Testing

3.4.2 Techniques

Software testing uses a range of approaches, including automated testing tools, white-box testing, and black-box testing, to methodically confirm and validate the functionality and performance of the software system.

CHAPTER 4: FOUNDATIONAL TRAINING

4.1 Hypertext Markup Language (HTML)

HTML, or Hypertext Markup Language, is the standard markup language for creating web pages. It uses a collection of tags and components to specify the organization and content of a webpage.

4.1.1 Key Concepts and Elements

HTML comprises concepts like the Document Object Model (DOM), which enables dynamic modification of web page components, tags, attributes, and document structure.

4.1.2 Importance

The foundation for organizing and structuring web content is provided by HTML, which is the core language of web development. It makes it possible to create easily navigable, orderly webpages.

4.2 Cascading Style Sheets (CSS)

CSS, or Cascading Style Sheets, is a stylesheet language that describes the appearance and visual design of web pages.

4.2.1 Styling and Selectors

Styles, including colours, fonts, and layouts, can be applied to HTML components by developers using CSS. Selectors are utilized to focus styling on particular elements.

4.2.2 Importance

A key component of online design is CSS, which enables aesthetically pleasing and uniform presentation across a variety of web pages. It makes a website look better overall and improves the user experience.

4.3 JavaScript

JavaScript is a high-level programming language that is primarily used for creating interactive and dynamic web content. It permits developers to add functionality to web pages and allows client-side scripting.

4.3.1 Core Concepts: Variables, Functions, Control Flow, DOM Manipulation

1. **Variables:** JavaScript allows the declaration and manipulation of variables to store and retrieve data during program execution.
2. **Functions:** Functions are reusable blocks of code that perform specific tasks and can be invoked whenever needed.
3. **Control Flow:** JavaScript provides control flow structures such as conditionals (if-else statements) and loops (for, while) to control the flow of program execution.
4. **DOM Manipulation:** JavaScript interacts with the Document Object Model (DOM) to manipulate and modify web page elements dynamically.

4.3.2 Advanced JavaScript Concepts

JavaScript supports OOP principles such as encapsulation, inheritance, and polymorphism.

1. **Asynchronous Programming:** Asynchronous programming in JavaScript enables non-blocking execution of code, allowing tasks to run independently without waiting for each other to complete.
2. **JavaScript Libraries and Frameworks:** JavaScript offers a wide range of libraries and frameworks that provide pre-built functionalities and components for streamlined web development. Popular libraries and frameworks include React, Angular, and jQuery.

4.4 Bootstrap

Bootstrap is a powerful front-end framework used for creating responsive and mobile-first web projects. Originally developed by Twitter and released as an open-source project in 2011, Bootstrap has since become one of the most popular frameworks for building responsive websites and web applications. It provides a robust toolkit that includes CSS and JavaScript components, making it easier for developers to create consistent, functional, and visually appealing web interfaces.

4.4.1 Key Features of Bootstrap

- **Responsive Design**
Bootstrap's grid system and responsive utility classes enable developers to create web pages that look great on any device, from desktops to smartphones. The grid system allows for flexible layout designs that adapt to different screen sizes.
- **Pre-styled Components**
Bootstrap comes with a variety of pre-styled components such as buttons, forms, navigation bars, modals, and alerts. These components follow a consistent design language, ensuring that the user interface looks cohesive and professional.
- **Customizable**
Despite its comprehensive default styles, Bootstrap is highly customizable. Developers can override the default styles with their own custom CSS or use the Bootstrap customization tools to modify variables and create a unique look and feel.
- **JavaScript Plugins**
Bootstrap includes numerous JavaScript plugins that enhance the functionality of components. These plugins provide interactive features such as tooltips, carousels, modals, and dropdowns, which can be easily integrated into web projects.
- **Cross-browser Compatibility**
Bootstrap is designed to be compatible with all modern browsers. It provides a consistent experience across different platforms and devices, helping to reduce cross-browser bugs and inconsistencies.
- **Documentation**
One of the standout features of Bootstrap is its extensive and well-organized documentation. It provides clear instructions, examples, and code snippets for using and customizing every component and feature, making it accessible for both beginners and experienced developers.

4.4.2 Advantages of Using Bootstrap

- **Quick Development:** Bootstrap significantly speeds up the development process by providing ready-to-use components and a responsive grid system.
- **Consistency:** The framework ensures a consistent look and feel across different pages and projects, thanks to its pre-styled components.
- **Community Support:** As an open-source project, Bootstrap has a large and active community. This means plenty of tutorials, plugins, themes, and support from other developers.

-
- **Flexibility:** With its customizable features, Bootstrap can be tailored to meet specific project requirements while maintaining its core functionality.

4.4.3 Practical Applications

- **Web Development:** Bootstrap is widely used in web development for creating responsive websites and applications. Its pre-styled components and responsive grid system are particularly beneficial for building dynamic, mobile-friendly sites.
- **Prototyping:** Designers and developers often use Bootstrap for rapid prototyping. Its ready-made components and ease of customization allow for quick iteration and feedback.
- **Content Management Systems (CMS):** Many CMS platforms, such as WordPress, integrate Bootstrap into their themes and plugins, providing users with robust design options.

4.5 JQuery

jQuery is a fast, small, and feature-rich JavaScript library designed to simplify the client-side scripting of HTML. Released in 2006 by John Resig, jQuery has become one of the most widely used JavaScript libraries in web development. Its easy-to-use API works across a multitude of browsers, making tasks such as HTML document traversal, event handling, animation, and Ajax much simpler with an easy-to-use syntax.

- **DOM Manipulation**

jQuery makes it straightforward to select, traverse, and manipulate elements in the Document Object Model (DOM). With its powerful selectors and methods like `.html()`, `.text()`, `.css()`, `.addClass()`, and `.removeClass()`, developers can easily change the content and style of web pages.

- **Event Handling**
jQuery simplifies the process of capturing and responding to events such as clicks, form submissions, and mouse movements. Methods like `.on()`, `.off()`, `.click()`, and `.hover()` make it easy to bind event handlers to elements.
- **Animations and Effects**
jQuery includes a variety of methods for creating animations and effects. Methods like `.show()`, `.hide()`, `.fadeIn()`, `.fadeOut()`, and `.slideUp()` allow developers to create engaging and dynamic user interfaces.
- **Ajax Support**
jQuery provides a range of methods for making asynchronous HTTP requests, allowing for dynamic content updates without reloading the entire page. The `.ajax()`, `.get()`, `.post()`, and `.load()` methods streamline the process of communicating with a server.
- **Cross-browser Compatibility**
One of jQuery's core strengths is its ability to abstract away browser inconsistencies. It provides a consistent API that works across all major browsers, saving developers from having to write custom code for different environments.
- **Plugins**
jQuery's plugin architecture allows developers to extend its capabilities. There is a vast ecosystem of plugins available for tasks ranging from form validation to image sliders, which can be easily integrated into projects.
- **Utilities**
jQuery includes several utility functions that simplify common programming tasks. Methods like `.each()`, `.map()`, and `.grep()` facilitate array manipulation, while utility functions like `$.extend()` and `$.proxy()` offer advanced functional capabilities.

4.6 MERN Stack

The MERN stack is a popular combination of technologies used for building dynamic web applications. It consists of four key components:

4.6.1 MongoDB

MongoDB is a NoSQL database that uses flexible documents that resemble JSON to store data. Because of its scalability and versatility, it can handle massive data volumes and adapt to changing schemas.

4.6.2 Express.js

Express.js is a minimalist web application framework for Node.js. It simplifies the process of building web servers and handling HTTP requests and responses. A comprehensive feature set for routing, middleware integration, and template rendering is offered by Express.js.

4.6.3 React.js

React.js is a JavaScript library for building user interfaces. It enables programmers to design reusable, interactive user interface components that update quickly in response to modifications in data. React.js follows a component-based architecture, making it easy to manage complex UIs and build single-page applications (SPAs).

4.6.4 Node.js

Node.js is a server-side JavaScript runtime environment that allows developers to run JavaScript code outside of a web browser. It is lightweight and effective for developing scalable web applications because it has an event-driven architecture and non-blocking I/O operations. Server-side logic, managing API calls, and database integration are prominent uses for Node.js.

4.6.5 Importance

The MERN stack offers several advantages for web development:

1. **Full-Stack JavaScript:** With MERN, developers can use JavaScript for both frontend and backend development, promoting code reusability and simplifying the development process.
2. **Single Language, Single Paradigm:** Using JavaScript throughout the entire development stack reduces context switching and improves developer productivity.
3. **Scalability and Performance:** Each component of the MERN stack is designed for scalability and high performance, making it suitable for building robust and efficient web applications.
4. **Rich Ecosystem:** The MERN stack benefits from a vibrant ecosystem of tools, libraries, and community support, allowing developers to leverage existing resources and accelerate development timelines.

-
5. **Real-Time Data Updates:** The MERN stack is well-suited for building real-time applications that require frequent updates and interactions with data.

CHAPTER 5: WEB DEVELOPMENT CONTRIBUTIONS TO THE SMART CITY PROJECT IN INDORE

5.1 Introduction

During my internship as a web developer, I had the invaluable opportunity to contribute to the Smart City Project in Indore. This project aimed to leverage technology to enhance the quality of life for residents, improve infrastructure, and promote sustainable development. My role in this endeavor involved testing and creating various forms while ensuring compliance with eligibility criteria. This chapter outlines my contributions and experiences in this capacity.

5.2 Understanding the Project Objectives

Before delving into the technical aspects of my work, it was essential to gain a comprehensive understanding of the Smart City Project's objectives. Indore, like many other cities, faced challenges related to urbanization, infrastructure management, and citizen services. The project sought to address these challenges by harnessing the power of digital technology to create a more efficient, sustainable, and citizen-centric urban environment.

5.3 Testing and Form Creation

One of my primary responsibilities as a web developer intern was to test and create forms integral to the Smart City Project's implementation. These forms served as crucial interfaces through which citizens could interact with various aspects of the project, such as applying for services, submitting feedback, or accessing relevant information.

5.4 Testing Procedures

Before deploying any form, rigorous testing was conducted to ensure its functionality, usability, and security. This involved:

Functionality Testing: Verifying that the form performed its intended functions correctly, such as data submission, validation, and error handling.

Usability Testing: Assessing the user experience to ensure that the form was intuitive, easy to navigate, and accessible across different devices and platforms.

Security Testing: Identifying and addressing potential vulnerabilities to safeguard user data and protect against unauthorized access or exploitation.

5.5 Creation of Eligibility Criteria

In addition to testing existing forms, I was tasked with creating new forms that incorporated eligibility criteria for specific services offered as part of the Smart City Project. This involved collaborating closely with project stakeholders to understand the requirements and translating them into actionable criteria within the form interface.

5.6 Challenges and Solutions

Throughout my internship, I encountered various challenges, such as:

Complex Eligibility Criteria: Some services required intricate eligibility criteria, posing a challenge in designing forms that accurately captured this information without overwhelming users.

Integration with Existing Systems: Ensuring seamless integration of the forms with existing backend systems and databases required careful planning and coordination with the development team.

To overcome these challenges, I adopted a systematic approach, leveraging my technical skills and seeking guidance from mentors and colleagues when needed. Additionally, I conducted thorough research and stayed updated on best practices in web development and user experience design.

CHAPTER 6: ASSIGNMENT

6.1 Problem Statement

As an intern tasked with developing a website for a tour and travel agency, the goal is to create a digital platform that effectively showcases the agency's offerings while providing a seamless and user-friendly experience for customers. The following requirements have been identified for the website:

1. **Navigation Bar:** The website must include a navigation bar featuring essential links for easy access to different sections, including:
 - Home
 - About
 - Services
 - Contact
2. **Modern-Slider:**
3. **About Us:**
4. **Call dialog box:**
5. **Enquiry Form:** Incorporate an enquiry form that allows users to submit their contact details and specific inquiries regarding tours, packages, or custom itineraries. The form should be user-friendly and include fields for name, email, phone number, subject, and message.
6. **Responsive Design:** Ensure the website is responsive and optimized for various devices, including desktops, laptops, tablets, and smartphones. This will enhance accessibility and provide a seamless browsing experience across different screen sizes.
7. **Visual Appeal:** Utilize high-quality images and engaging multimedia content to visually showcase destinations, activities, and experiences offered by the agency. The website design should reflect the adventurous spirit of the brand and captivate visitors from the moment they land on the homepage.
8. **Contact Information:** Display contact information prominently on of the website, including phone number, email address, and physical address. This makes it easy for users to get in touch with the agency for inquiries or bookings.

CODE & RESULT

1. Introduction

Company Overview: Zetake Services India Pvt. Ltd. has established itself as one of India's leading marketing and sales outsourcing companies. Since its inception in 2017, the company has been dedicated to offering strategic support to businesses, helping them achieve significant growth. With a team of experienced professionals, Zetake ensures efficient execution of marketing and sales activities, allowing its clients to focus on their core business operations.

Website Purpose: The primary goal of the Zetake website is to provide a comprehensive overview of the company's services and capabilities. It serves as a platform to showcase the company's strengths, success stories, and client testimonials. Additionally, the website aims to facilitate easy communication between Zetake and its potential clients through various contact options and a user-friendly interface.

2. Website Structure and Design

Homepage: The homepage of the Zetake website features a visually appealing main banner with rotating slides. Each slide highlights a different aspect of the company's services, such as marketing and sales outsourcing, business growth support, and trusted partnership. This dynamic element captures the visitor's attention and conveys key messages effectively.

Navigation: A responsive navigation bar is prominently placed at the top of the homepage, providing easy access to essential sections of the website. The navigation bar includes links to the Home, About, Services, and Contact pages, ensuring that users can quickly find the information they need.

3. Content Analysis

Main Banner: The main banner consists of three rotating slides, each designed to emphasize different value propositions. The first slide focuses on the company's ability to help businesses grow by deploying passionate sales professionals. The second slide highlights Zetake's 360° end-to-end marketing and sales outsourcing services, while the third slide underscores the company's commitment to being a trusted partner for business growth.

Services Section:

The services section provides detailed descriptions of Zetake's core offerings:

- **Branding Costless:** This service aims to help businesses create a strong brand identity that resonates with their customers. The description emphasizes the importance of branding in shaping customer perceptions.
- **Marketing Gratis:** This service encompasses market research, advertising, promotion, and public relations. It aims to align marketing activities to increase profitability.
- **Sales Private Label:** This service focuses on providing a dedicated sales team to ensure a steady revenue stream. The description highlights the expertise and experience of Zetake's sales professionals.
- **Support Ontime:** This service offers ancillary support services to enhance business productivity by allowing clients to focus on critical functions.

Each service description is accompanied by an image and a call-to-action button, encouraging users to contact Zetake for more information.

Statistics and Achievements: The website features a statistics section that showcases key achievements, including the number of clients served, turnover, industries covered, and professionals employed. These statistics reinforce Zetake's credibility and highlight its successful track record.

Testimonials: Client testimonials are prominently displayed, providing social proof of Zetake's effectiveness. Testimonials from clients such as Sajji Joshep, Aman Asnani, Sumit Jain, and Sushmita Narula illustrate the positive impact of Zetake's services on their businesses.

Partners Section: The partners section features logos of well-known clients, further establishing Zetake's reputation and reliability. This visual representation of partnerships demonstrates the company's extensive network and industry presence.

4. Technical Elements

Metadata: The website includes comprehensive meta tags to enhance search engine optimization (SEO). Meta descriptions, author information, and Open Graph tags ensure better visibility on search engines and social media platforms.

Scripts: Google Analytics is integrated to track website performance and user behavior. Additionally, Google reCAPTCHA is used on the contact form to enhance security and prevent spam submissions.

Schema Markup: The website utilizes JSON-LD schema markup to provide structured data about Zetake Services India Pvt. Ltd. This enhances SEO by enabling rich search results and providing search engines with detailed information about the company.

5. User Experience and Design

Responsive Design: The website is designed to be fully responsive, ensuring that it adapts seamlessly to different devices and screen sizes. This guarantees an optimal viewing experience for users, whether they are accessing the site from a desktop, tablet, or smartphone.

Preloader: A preloader animation is included to improve user experience by engaging visitors while the website content loads. This helps to create a positive first impression and reduce bounce rates.

Engaging Visuals: High-quality images and a modern slider contribute to the website's visual appeal. The use of professional images in the services section and throughout the site enhances the overall aesthetic and keeps users engaged.

6. Contact and Engagement

Contact Information: The website provides multiple contact options, including email addresses, phone numbers, and social media links. This ensures that potential clients can easily reach out to Zetake through their preferred communication channel.

Contact Form: A detailed contact form is available, allowing users to submit their inquiries directly through the website. The form includes fields for name, mobile number, email, and message, ensuring that Zetake receives all necessary information to respond effectively.

Social Media Integration: Links to Zetake's social media profiles are included, enabling users to follow and engage with the company on platforms like Facebook, Instagram, Twitter, and LinkedIn. This enhances Zetake's online presence and facilitates ongoing interaction with clients.

```

ZETAKE
├── resources
│   ├── .htaccess
│   └── index.html
└── index.html

index.html > html > head > script
1 <!DOCTYPE html>
2 <html lang="en">
3   <head>
4     <meta name="viewport" content="width=device-width, initial-scale=1">
5     <meta charset="UTF-8">
6     <title>Top Marketing & Sales Outsourcing Company - Zetake</title>
7     <meta name="description" content="We are one of the best marketing & sales outsourcing company in India offering strategies and support
8     <meta name="Author" content="Zetake Services India Private Limited">
9     <meta name="copyright" content="Zetake Services India Private Limited">
10    <meta name="Distribution" content="global">
11    <meta name="robots" content="index, follow">
12    <meta name="googlebot" content="index, follow">
13    <meta property="og:locale" content="en_IN">
14    <meta property="og:type" content="website">
15    <meta property="og:url" content="https://zetake.com">
16    <meta property="og:site_name" content="Zetake Services India Private Limited">
17    <meta property="og:title" content="Top Sales Outsourcing Company - Zetake">
18    <meta property="og:description" content="We are one of the best marketing & sales outsourcing company in India offering strategies and
19    <meta property="og:image" content="resources/images/common/crawler-image.png">
20    <link href="resources/styles/bootstrap.min.css" rel="stylesheet">
21    <link rel="stylesheet" href="resources/styles/fontawesome.css">
22    <link rel="stylesheet" href="resources/styles/style.css">
23    <link rel="stylesheet" href="resources/styles/owl.css">
24    <link rel="icon" href="resources/images/common/favicon.ico">
25    <link rel="canonical" href="https://zetake.com/">
26    <script async src="https://www.googletagmanager.com/gtag/js?id=G-BM6HRLSED8"></script>
27    <script>
28      window.dataLayer = window.dataLayer || [];
29      function gtag(){dataLayer.push(arguments);}
30      gtag('js', new Date());
31
32      gtag('config', 'G-BM6HRLSED8');
33    </script>
34    <script src="https://www.google.com/recaptcha/api.js?render=6Le18igcAAAAA52FKfgcXT5dATJdTjwXuknXrY"></script>
35    <script type="application/ld+json">
36      {
37        "@context": "http://schema.org",

```

Figure 6.1 Code Snapshot of HTML File

Front End Code

```

ZETAKE
├── resources
│   ├── .htaccess
│   └── index.html
└── index.html

index.html > html > head > script
1 <!DOCTYPE html>
2 <html lang="en">
3   <head>
4     <meta name="viewport" content="width=device-width, initial-scale=1">
5     <meta charset="UTF-8">
6     <title>Top Marketing & Sales Outsourcing Company - Zetake</title>
7     <meta name="description" content="We are one of the best marketing & sales outsourcing company in India offering strategies and support
8     <meta name="Author" content="Zetake Services India Private Limited">
9     <meta name="copyright" content="Zetake Services India Private Limited">
10    <meta name="Distribution" content="global">
11    <meta name="robots" content="index, follow">
12    <meta name="googlebot" content="index, follow">
13    <meta property="og:locale" content="en_IN">
14    <meta property="og:type" content="website">
15    <meta property="og:url" content="https://zetake.com">
16    <meta property="og:site_name" content="Zetake Services India Private Limited">
17    <meta property="og:title" content="Top Sales Outsourcing Company - Zetake">
18    <meta property="og:description" content="We are one of the best marketing & sales outsourcing company in India offering strategies and
19    <meta property="og:image" content="resources/images/common/crawler-image.png">
20    <link href="resources/styles/bootstrap.min.css" rel="stylesheet">
21    <link rel="stylesheet" href="resources/styles/fontawesome.css">
22    <link rel="stylesheet" href="resources/styles/style.css">
23    <link rel="stylesheet" href="resources/styles/owl.css">
24    <link rel="icon" href="resources/images/common/favicon.ico">
25    <link rel="canonical" href="https://zetake.com/">
26    <script async src="https://www.googletagmanager.com/gtag/js?id=G-BM6HRLSED8"></script>
27    <script>
28      window.dataLayer = window.dataLayer || [];
29      function gtag(){dataLayer.push(arguments);}
30      gtag('js', new Date());
31
32      gtag('config', 'G-BM6HRLSED8');
33    </script>
34    <script src="https://www.google.com/recaptcha/api.js?render=6Le18igcAAAAA52FKfgcXT5dATJdTjwXuknXrY"></script>
35    <script type="application/ld+json">
36      {
37        "@context": "http://schema.org",

```

Figure 6.2 Code Snapshot of Content File

```

ZETAKE
  resources
  .htaccess
  index.html
  index.html > html > body > div#top.main-banner.header-text > div.Modern-Slider > div.item.item-1 > div.img-fill
    2 <html lang="en">
    88 <body>
    134 <div class="main-banner header-text" id="top">
    135 <div class="Modern-Slider">
    136 <div class="item item-1">
    137 <div class="img-fill">
    138 <div class="text-content">
    139 <h6>We help you grow </h6>
    140 <h4>Best Marketing & Sales<br>Outsourcing Company In India</h4>
    141 <p>We are capable of full marketing & sales outsourcing by deploying on-ground passionate sales professionals to execute
    142 <a href="#about" class="filled-button">about</a>
    143 </div>
    144 </div>
    145 </div>
    146 <div class="item item-2">
    147 <div class="img-fill">
    148 <div class="text-content">
    149 <h6>we are here to support you</h6>
    150 <h4>360° End to End<br>Marketing & Sales Outsourcing</h4>
    151 <p>Now run your business more effectively without the worries relates to marketing & sales. Partner with us to rapidly gr
    152 <a href="#services" class="filled-button">services</a>
    153 </div>
    154 </div>
    155 </div>
    156 <div class="item item-3">
    157 <div class="img-fill">
    158 <div class="text-content">
    159 <h6>we have a solid background</h6>
    160 <h4>Trusted Partner For<br>Your Business Growth</h4>
    161 <p>As an integral part of your team executing your mission, we can help you develop revenue strategies and identify growt
    162 <a href="#about" class="filled-button">contact</a>
    163 </div>
    164 </div>
    165 </div>
    166 </div>
    167 </div>
    168 <div class="request-form">
  
```

Figure 6.3 Code Snapshot of Modern Slider

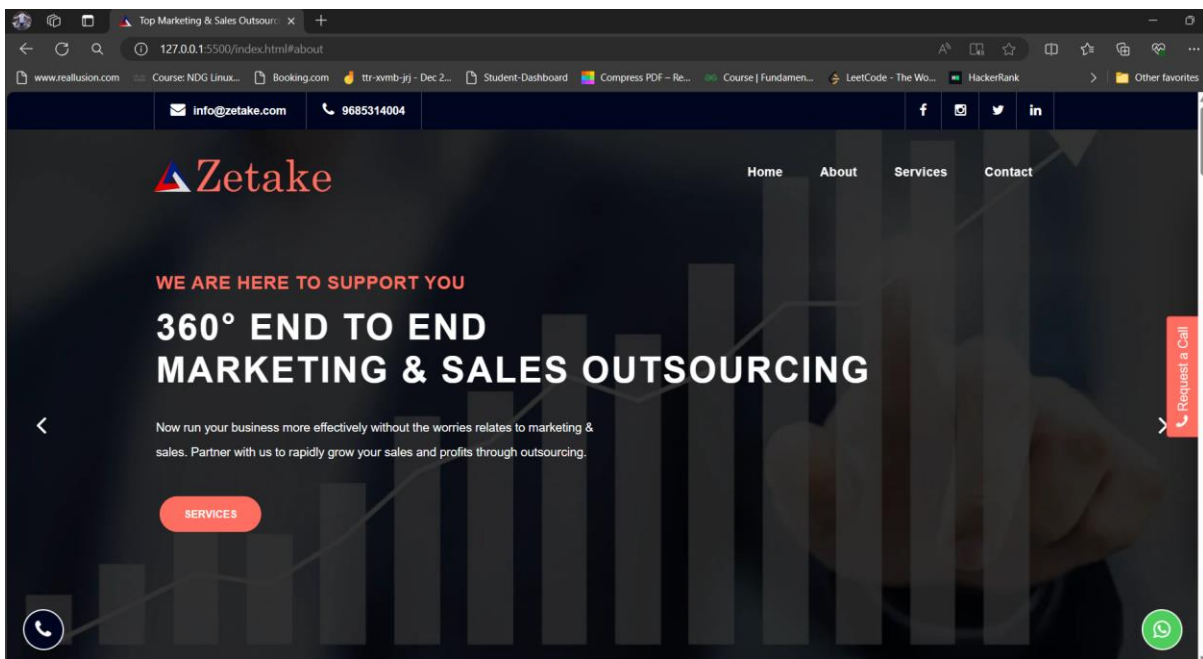


Figure 6.4 Code Snapshot of Visual representation of Modern slider

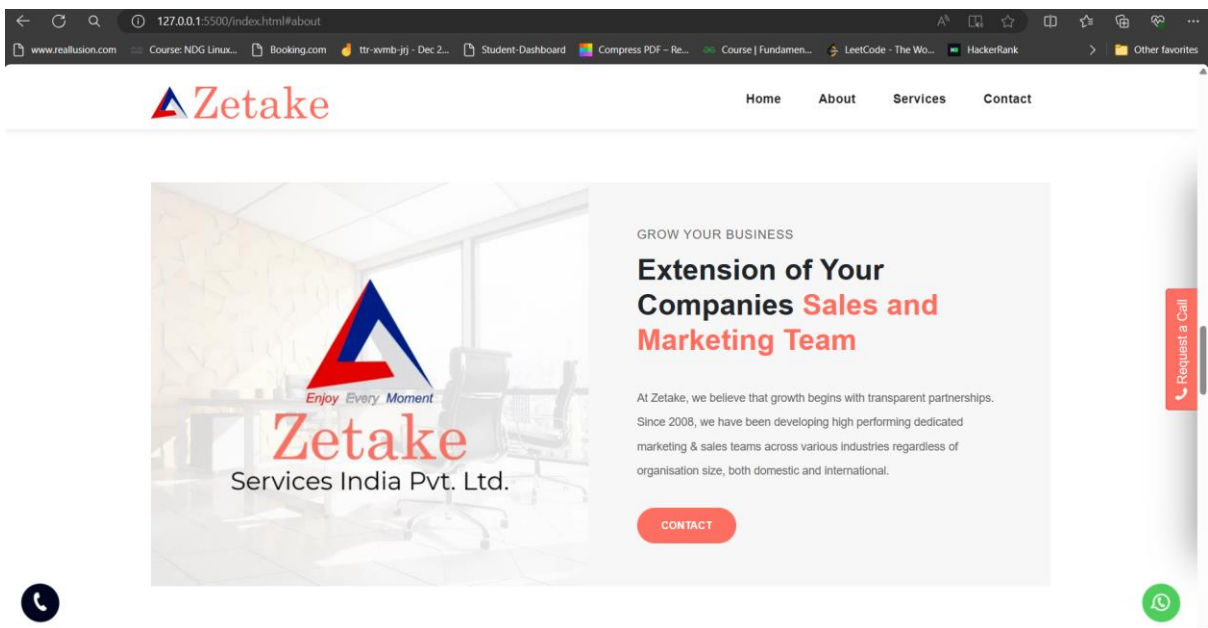


Figure 6.5 About Section

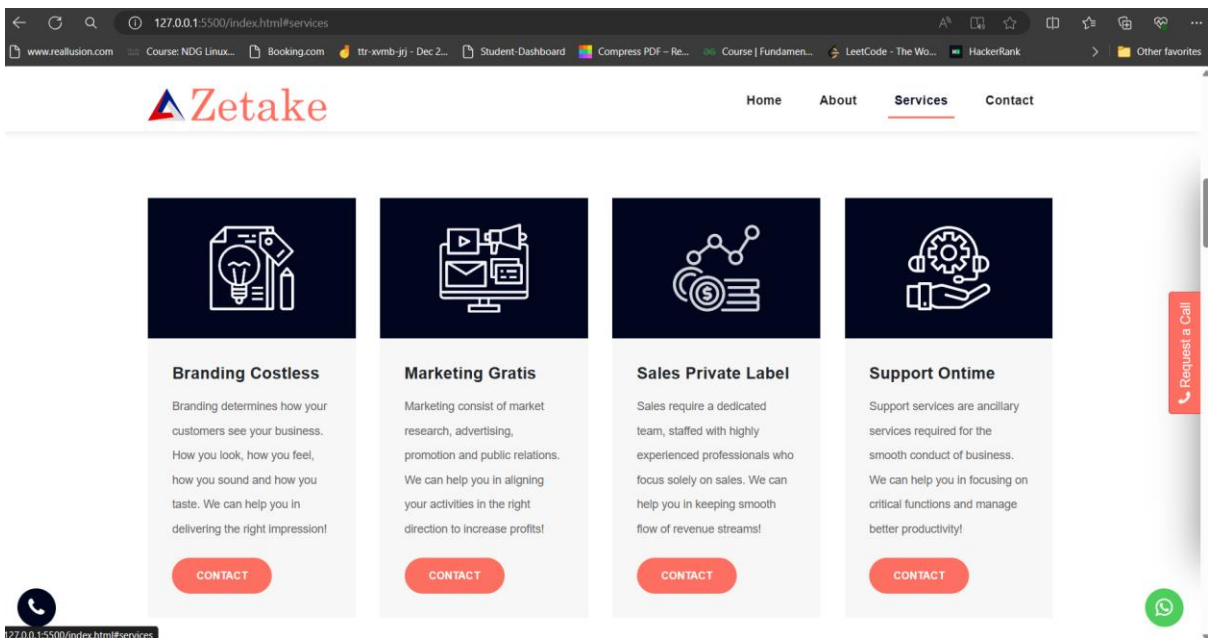


Figure 6.6 Service Section

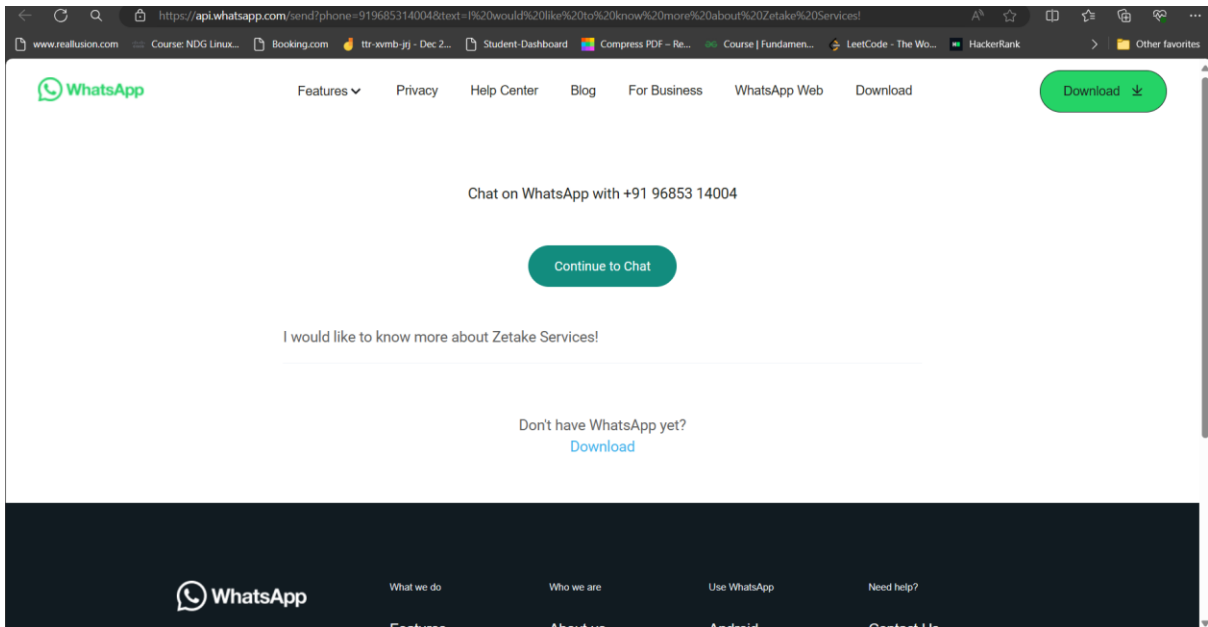


Figure 6.7 Contact Section

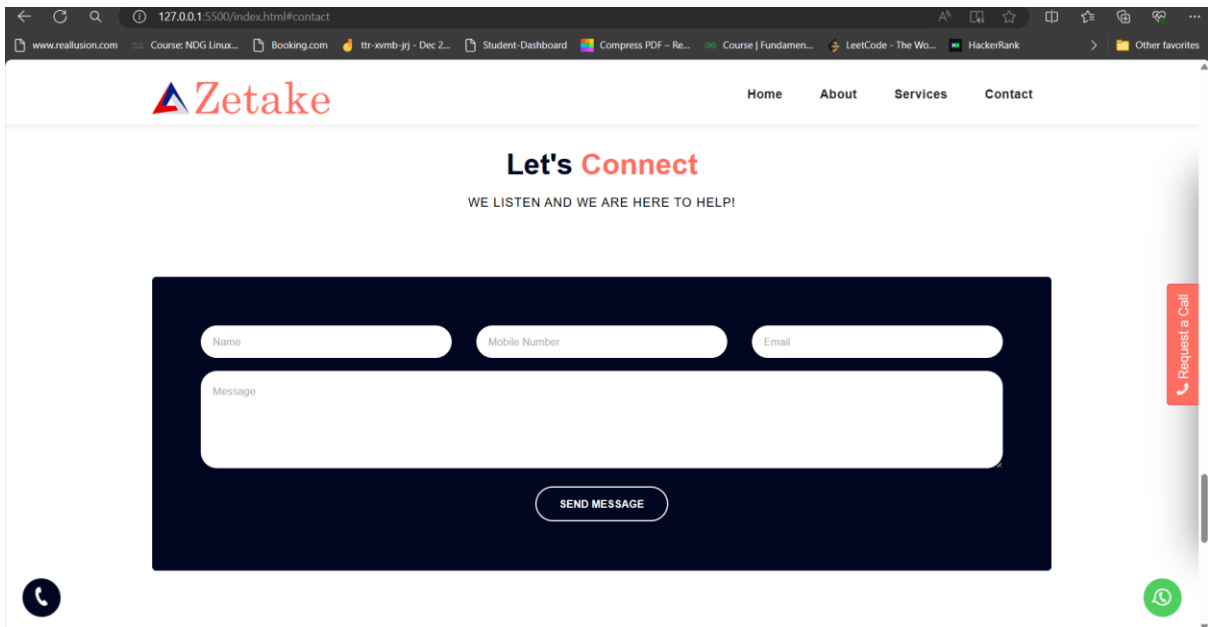


Figure 6.8 Query Form

CHAPTER 7: CONCLUSION

For me, working as an intern at **Velvish Digital Agency** has been fulfilling and enriching. I have been exposed to a wide range of technical and practical skills during the last four months that are crucial for a career in software development.

Gaining an in-depth understanding of software development approaches, particularly the Agile methodology, was one of the internship's most important lessons. This information is essential for producing high-quality software that fulfills end users' expectations.

The practical exposure to MERN technologies, which are essential to software development, and programming languages like HTML, CSS, and JavaScript was another important learning outcome from the internship. Additionally, I gained knowledge of how to operate software tools that are necessary for organizing code, working with other developers on projects, and managing teams, such as GitHub, Git, and SQL databases.

My exposure to web development tools throughout the internship also enabled me to create user-friendly web applications. I also gained knowledge about the significance of software testing, which is necessary to guarantee that the program is user-friendly and of the highest caliber.

Furthermore, I was able to enhance my communication and cooperation skills—two things that are essential in a professional job environment—by cooperating with other interns on a variety of projects and working as a team. My future professional growth and development will benefit greatly from the experience I obtained during my internship.

All things considered, my internship at Bytesite has been a life-changing experience, and I am appreciative of the chance to improve as a software developer. My internship has given me the information and abilities I need to confidently pursue a career in software development. I'm excited to use the abilities and information I learned during the internship to further my career as a software developer and to contribute to projects in the future.

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Please Follow Standard Format such as IEEE Format

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CHARACTER COUNT

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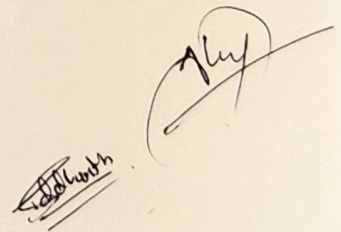
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- Crossref database
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Summary

LEARNING OUTCOMES

Understanding HTTP Requests and Responses: Learners will acquire the skills to send HTTP requests using Python's requests library and handle the responses efficiently. This includes mastering how to manage headers, data payloads, and various HTTP methods like GET and POST.

Handling JSON Data: Students will become adept at working with JSON data in Python. They will learn to parse JSON responses from APIs and how to format and send JSON data in their requests.

Error Handling in Web Requests: Participants will grasp the significance of error handling in web requests. They will learn to use try-except blocks to manage potential errors, ensuring their code remains robust and reliable.

Automating Web Interactions: Through this code, learners will gain insights into automating web service interactions. This includes automating website logins, handling session cookies, and maintaining session states.

Understanding Web Authentication: Students will explore web authentication techniques, such as using tokens for logging in. They will learn how to send authentication tokens in headers and manage authenticated sessions.

Practical Application of Python Libraries: The code offers hands-on experience with popular Python libraries like requests and json. Learners will apply these libraries to practical tasks, enhancing their programming skills and understanding of Python's functionality.


Data Extraction and Processing: The code illustrates how to extract specific information from web pages or APIs and process it accordingly. Learners will understand how to retrieve and utilize valuable data points in their applications.

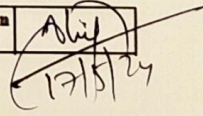
DAILY DIARY

Month	Duration Start date – End date (DD/MM/YY) - (DD/MM/YY)	Progress of Internship/ Project
Month - 1	09-01-2024 08-02-2024	Introduction to Web Development Overview of web technologies
Month - 2	09-02-2024 08-03-2024	Understanding client-server architecture
Month - 3	09-03-2024 08-04-2024	Basic HTML structure Introduction to CSS for styling
Month - 4	09-04-2024 08-05-2024	Basic JavaScript concepts

MPR-1

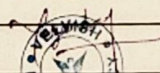
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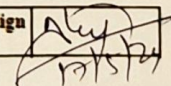
Name of student	SIDDHARTH		Department	Mathematics & Computing	
Industry/Organization	Velvish - Digital Agency		Date/Duration	09/01/24 - 08/02/24	
Criterion	Poor	Average	Good	Very Good	Excellent
Punctuality/Timely completion of assigned work	-	-	-	-	✓
Learning capacity/Knowledge upgradation	-	-	-	-	✓
Performance/Quality of work	-	-	-	-	✓
Behaviour/Discipline/Team work	-	-	-	-	✓
Sincerity/Hard work	-	-	-	-	✓
Comment on nature of work done/Area/Topic	<p>Introduction to Web Development</p> <ul style="list-style-type: none"> • Overview of web technologies • Understanding client-server architecture <ul style="list-style-type: none"> • Basic HTML structure • Introduction to CSS for styling <ul style="list-style-type: none"> • Basic JavaScript concepts 				
<u>OVERALL GRADE (Any one)</u>	POOR/AVERAGE/GOOD/BETTER/GOOD/EXCELLENT ✓				
<u>Name of Industry Mentor</u>	Mr. Yogendra Kumar Dwivedi				
<u>Signature of Industry Mentor</u>					

Receiving Date	17/5/24	Name of Faculty Mentor	Dr. Atul K. Ray	Sign	
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MPR-2


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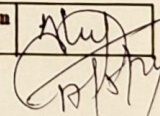
Name of student	SIDDHARTH		Department	Mathematics & Computing	
Industry/Organization	Velvish - Digital Agency		Date/Duration	09/02/24 -08/03/24	
Criterion	Poor	Average	Good	Very Good	Excellent
Punctuality/Timely completion of assigned work	-	-	-	-	✓
Learning capacity/Knowledge upgradation	-	-	-	-	✓
Performance/Quality of work	-	-	-	-	✓
Behaviour/Discipline/Team work	-	-	-	-	✓
Sincerity/Hard work	-	-	-	-	✓
Comment on nature of work done/Area/Topic	<p style="text-align: center;">Frontend Development</p> <ul style="list-style-type: none"> • Advanced HTML5 features (semantics, forms, multimedia) <ul style="list-style-type: none"> • Advanced CSS (flexbox, grid layout, animations) <ul style="list-style-type: none"> • Responsive web design principles • Introduction to CSS preprocessors (e.g., SASS, LESS) • Introduction to frontend frameworks/libraries (e.g., Bootstrap, jQuery) 				
OVERALL GRADE (Any one)	<u>POOR/AVERAGE/GOOD/VERY GOOD/EXCELLENT</u>				
Name of Industry Mentor	Mr. Yogendra Kumar Dwivedi				
Signature of Industry Mentor					

Receiving Date	17/5/24	Name of Faculty Mentor	Dr. Atul K. Ray	Sign	
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MPR-3


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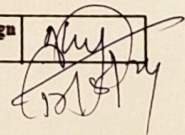
Name of student	SIDDHARTH		Department	Mathematics & Computing	
Industry/Organization	Velvish - Digital Agency		Date/Duration	09/03/24 -08/04/24	
Criterion	Poor	Average	Good	Very Good	Excellent
Punctuality/Timely completion of assigned work	-	-	-	-	✓
Learning capacity/Knowledge upgradation	-	-	-	-	✓
Performance/Quality of work	-	-	-	-	✓
Behaviour/Discipline/Team work	-	-	-	-	✓
Sincerity/Hard work	-	-	-	-	✓
Comment on nature of work done/ Area/Topic	<p style="text-align: center;">Backend Development</p> <ul style="list-style-type: none"> • Introduction to Server-side Programming • Handling HTTP Requests and Responses <ul style="list-style-type: none"> • Database Fundamentals • Working with Databases <p style="text-align: right;">✓</p>				
<u>OVERALL GRADE (Any one)</u>	<u>POOR/AVERAGE/GOOD/VERY GOOD/EXCELLENT</u>				
<u>Name of Industry Mentor</u>	Mr. Yogendra Kumar Dwivedi				
<u>Signature of Industry Mentor</u>					

Receiving Date	12/5/24	Name of Faculty Mentor	Dr. Atul K. Ray	Sign	
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MPR- 4

FORMAT**MONTHLY REPORT OF PROGRESS (MRP) FROM INDUSTRY MENTOR**

Name of student	SIDDHARTH		Department	Mathematics & Computing	
Industry/Organization	Velvish - Digital Agency		Date/Duration	09/03/24 -08/04/24	
Criterion	Poor	Average	Good	Very Good	Excellent
Punctuality/Timely completion of assigned work	-	-	-	-	✓
Learning capacity/Knowledge upgradation	-	-	-	-	✓
Performance/Quality of work	-	-	-	-	✓
Behaviour/Discipline/Team work	-	-	-	-	✓
Sincerity/Hard work	-	-	-	-	✓
Comment on nature of work done/Area/Topic	<p style="text-align: center;">Backend Development</p> <ul style="list-style-type: none"> • Introduction to Server-side Programming • Handling HTTP Requests and Responses <ul style="list-style-type: none"> • Database Fundamentals • Working with Databases <p style="text-align: right;">✓</p>				
OVERALL GRADE (Any one)	<u>POOR/AVERAGE/GOOD/VERY GOOD/EXCELLENT</u>				
Name of Industry Mentor	Mr. Yogendra Kumar Dwivedi				
Signature of Industry Mentor					

Receiving Date	12/5/24	Name of Faculty Mentor	Dr. Atul K. Ray	Sign	
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