BUS TICKET RESERVATION SYSTEM

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in partial fulfillment of the requirement for award of the degree of

Bachelor of Technology
in
Computer Science & Engineering

By

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DECLARATION

We declare that this written submission represents my ideas in our own words and where others' ideas or words have been included, we have adequately cited and referenced the original sources. We also declare that we have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in our submission. We understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

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APPROVAL SHEET

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ABSTRACT

The Bus Ticket Reservation System is an innovative and user-friendly online platform designed to simplify the process of booking and managing bus tickets.This system is intended to cater to the needs of both passengers and bus operators,providing a seamless and efficient solution for bus ticket booking, seat selection, payment processing, and ticket management. The primary objective of the Bus Ticket Reservation System is to eliminate the hassle associated with traditional ticket booking methods. Passengers can access the system through a web-based or mobile application, allowing them to search for available bus routes, view schedules, choose seats, and make secure online payments.Additionally, the system provides real-time information on bus availability and pricing, ensuring transparency and convenience for passengers.

Keywords:
User Registration and Authentication
Bus Route Management
Seat Selection
Payment Gateway Integration
Booking Confirmation
Ticket Cancellation and Refunds
User Profiles
Customer Support

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LIST OF ACRONYMS AND ABBREVIATIONS

HTML	Hyper Text Markup Language
CSS	Cascading Stlye Sheet
JS	Java Script
PHP	Hypertext Preprocessor
SQL	Structured Query Language
IDE	Integrated Development Environment

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Chapter 1

INTRODUCTION

1.1 Introduction

A Bus Ticket Reservation System simplifies the process of booking bus tickets by providing passengers with user-friendly and convenient options. Passengers can easily access the system online through websites or mobile applications, allowing them to check bus schedules, select routes, and choose their preferred seats. This system offers flexibility, enabling passengers to plan their journeys with options for one-way, round-trip, or multi-stop travel. It also provides various payment methods, including credit/debit card payments and digital wallets, making transactions hassle-free. After booking, passengers receive a confirmation with essential details, and they can even cancel bookings if plans change, subject to the system's refund policy. For bus operators, the system offers management tools for inventory control, scheduling, and financial reporting, while passengers benefit from improved travel experiences with options for digital or physical tickets and convenient customer support. In summary, a Bus Ticket Reservation System enhances both the booking process and the overall travel experience.

1.2 Aim of the project

The Bus Ticket Reservation System leverages online technology to provide passengers with a convenient and efficient platform for booking bus tickets. This system not only eliminates the need for physical visits to booking counters but also offers real-time updates on route availability and seat selection, empowering passengers to make informed travel choices.

1.3 Project Domain

The project domain for the Bus Ticket Reservation System primarily falls within the realm of Transportation and Travel Management. Specifically, it focuses on improving the ticket booking and management process for bus transportation services.

- Multi-Modal Transportation Integration: Expand the system to include not only bus ticket reser-

vations but also integrate other modes of transportation, such as trains, flights, and taxis. This would create a comprehensive transportation booking platform.

- Geo-Location and Real-Time Tracking: Implement GPS and real-time tracking for buses, enabling passengers to track the exact location and estimated arrival time of their booked buses.
- Seat Selection and Virtual Bus Layouts: Allow passengers to choose their preferred seats by providing a virtual bus layout during the booking process, complete with seat availability status.
- Integration with Mobile Wallets: Enable users to make payments through popular mobile wallets like Apple Pay, Google Pay, or PayPal for a seamless and secure booking and payment experience.
- Route Planning and Optimization: Incorporate route planning algorithms to suggest the most efficient and cost-effective bus routes for passengers, considering factors like distance, traffic, and travel time.
- User Reviews and Ratings: Implement a system for passengers to le

1.4 Scope of the Project

The scope of the Bus Ticket Reservation System project encompasses the creation of a user-friendly online platform that revolutionizes the bus ticketing process. This system will include web and mobile applications for passengers to easily search for routes, select seats, make secure payments, and receive booking confirmations.

1.5 Methodology

The front-end and back-end technologies that use to create our online payment website can depend on required specific requirements and preferences. Here are some of front-end and back-end technologies that we consider:

Front-end Technologies:

1. HTML5
2. CSS
3. Bootstrap
4. JavaScript
5. J Query

Back-end Technologies:

1.PHP

2.MySQL

Chapter 2

REQUIREMENT SPECIFICATION

2.1 User characteristics

Casual Travelers: These users book bus tickets occasionally for leisure trips or special occasions Frequent Commuters: Daily or regular travelers who rely on buses for their daily commute.
Small and Local Operators: Smaller companies managing local or regional routes. Intercity and Long-Distance Operators: Companies offering long-distance travel services.
System Administrators: Responsible for maintaining and managing the technical aspects of the reservation system. Support Staff: Handling customer inquiries, assisting with bookings, and resolving issues.
Payment Gateway Providers: Companies that offer secure payment processing services integrated into the system.
Transportation Regulatory Bodies: Governing bodies responsible for overseeing and regulating bus transportation services, fares, and safety.

2.2 Dependencies

In the context of a Bus Ticket Booking System, dependencies refer to the various factors, components, and entities that rely on or influence the functioning and success of the system.
Web Development Technologies: The website's functionality and design rely on web development technologies such as HTML, CSS, JavaScript, and other programming languages.
Database Management Systems: The website stores and retrieves data from a database management system, such as MySQL or MongoDB.
Payment Gateways: The website relies on payment gateways to securely process online payments made by customers.
Third-party APIs: The website may integrate with third-party APIs such as Google pay , phonepe, credit card, amazon pay, upi for making payments.

Infrastructure, financial, and user dependencies further shape the system's effectiveness, highlighting the intricate network of factors and entities that contribute to its functionality and overall viability. Managing these dependencies is crucial for the system's success and its ability to provide a seamless and user-friendly booking experience for all stakeholders involved..

2.3 Hardware specification

The hardware specifications for an bus ticket reservation system website can vary depending on the scale of the website,the number of users, and the complexity of the website's functionality. However, some common hardware specifications that can be considered when building an online payment booking system website are:

- Server: A server is required to host the website, store the website's data, and handle requests from users. The server can be either a physical server or a cloud-based server.
- Processor: The processor of the server should be fast enough to handle multiple user requests simultaneously without any delays or lags.
- RAM: The amount of RAM required depends on the number of users and the size of the database.Generally, a minimum of 4GB RAM is recommended.
- Storage: The amount of storage required depends on the size of the database and the website's content. It is recommended to use solid-state drives (SSDs) as they are faster and more reliable.
- Backup and Recovery Systems: Backup and recovery systems are necessary to prevent data loss in case of hardware failures or other emergencies

2.4 Software specification

• Web server software: Apache or Nginx.
• Back-end programming language: PHP 7.2 or higher.
• Database management system: MySQL 5.7 or higher.
• Front-end technologies: HTML5, CSS3, JavaScript, jQuery, Bootstrap.
• Integrated development environment (IDE): Visual Studio Code

Chapter 3

WEBSITE DESIGN

3.1 Sitemap

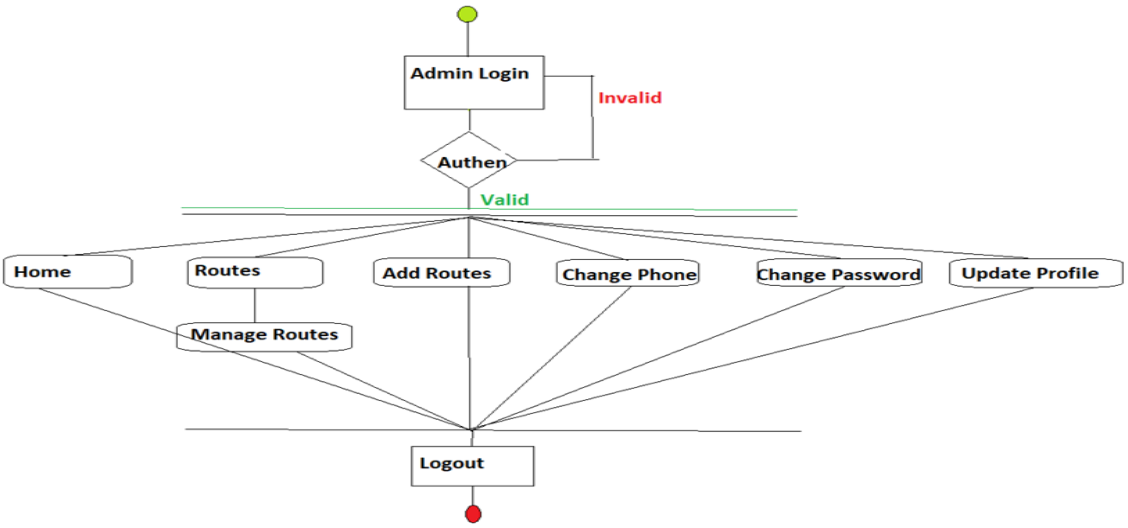

Figure 3.1: **Architecture Diagram**

A sitemap is a hierarchical list or diagram that shows the structure of a website and the relation- ships between its pages. It is an important tool for both users and search engines to navigate a website, as it provides a clear overview of the site's organization and content.

Figure: 3.1 Tells about the architecture of the overall website. Overall, a sitemap is an essential tool for any website that wants to provide a good user experience and optimize its content for search engines. It helps users understand the organization and structure of a website, navigate to the pages they need, and discover new content that may be of interest to them. At the same time, it helps search engines crawl and index the site more efficiently, ensuring that all the pages are properly ranked and displayed in search results.

3.2 Design Phase

3.2.1 Data Flow Diagram

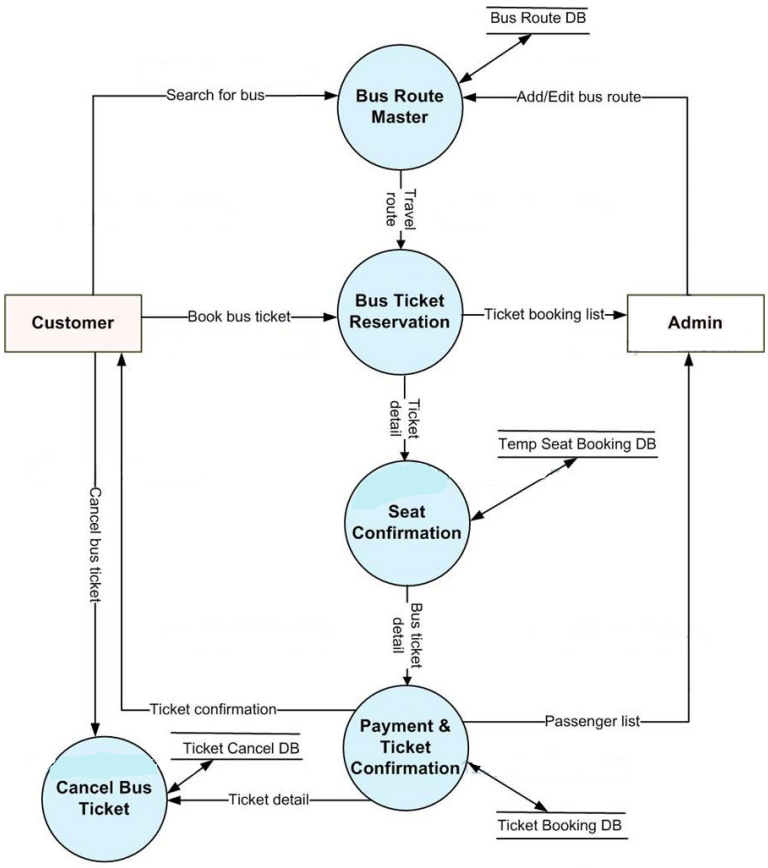

Figure 3.2: **Data Flow Diagram**

- Process 1: Represents the process of user registration, login, and authentication.
- Process 2: Represents the process of searching for bus routes, selecting seats, and making a reservation.
- Data Flow 1: Represents the flow of user registration and login data.
- Data Flow 2: Represents the flow of search criteria (e.g., destination, date, time) from the user to the system.
- Data Flow 3: Represents the flow of available bus routes, schedules, and seat information from the Bus Operator Database to the reservation system.
- Data Flow 4: Represents the flow of reservation details (e.g., passenger information, selected seats) from the user to the system.
- Data Flow 5: Represents the flow of payment information from the user to the system.
- Data Flow 6: Represents the flow of booking confirmation and ticket information from the system to the user.

3.3 Front End and Back End Design

3.3.1 Home Page

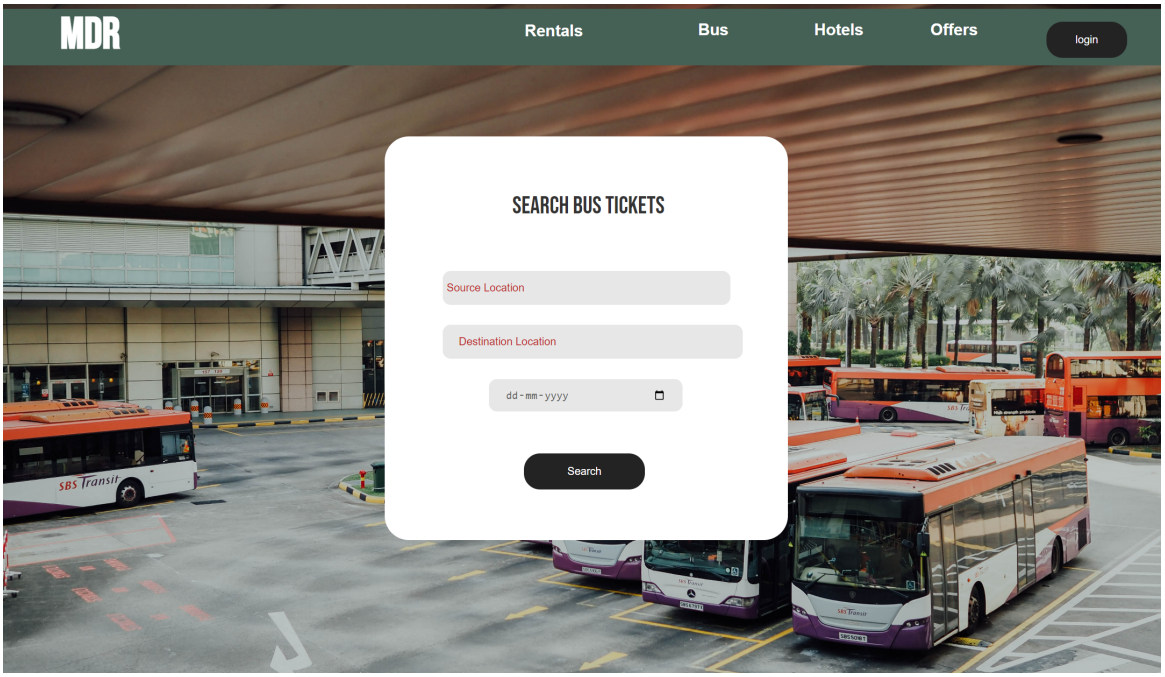

Figure 3.3: **Home Page**

Figure 3.3: Home Page is our complete outlook of the homepage for our website. our website has a source location and destination location at which date and search button,background image it looks like depot and there will be a login button for who are register and offers and hotel,etc..

3.3.2 Signup and Login page

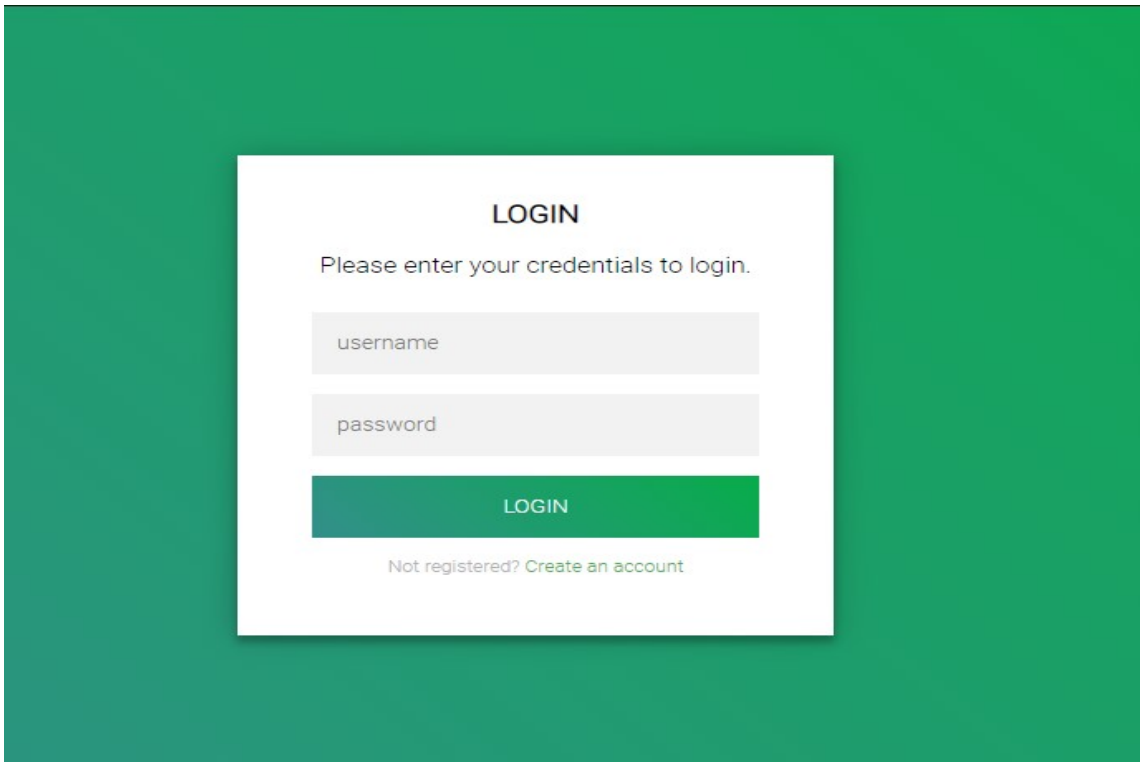

Figure 3.4: **Login Page**

The bus ticket booking website's signup page is the gateway for new users to join the community of travelers. It boasts a welcoming and user-friendly design, making it easy for individuals to create their accounts and start their travel journey. The signup form is comprehensive, requesting essential details such as name, email address, contact number, and a secure password. To enhance security and user trust, the page may include a password strength indicator. Once users fill out the required information and click the "Sign Up" button, they receive a verification email to confirm their account. The signup process ensures that travelers have access to personalized booking options, special promotions, and a seamless ticket reservation experience.

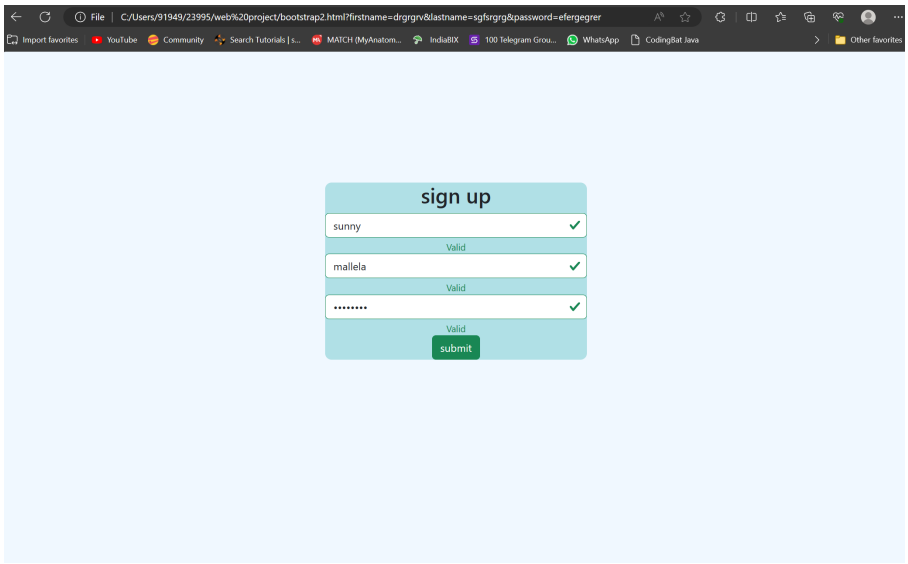

Figure 3.5: **Sign Up Page**

The bus ticket booking website's login page is the portal to a world of convenient and hassle-free travel planning. It features a clean and intuitive design, inviting users to access their accounts and embark on their journey. The page prominently displays two input fields: "Username" and "Password," ensuring a secure and straightforward login process. Beneath the login form, there's a "Forgot Password" link to assist users in case they've forgotten their credentials. A "Sign Up" button allows new users to easily navigate to the registration page if they don't yet have an account. The login page exudes a sense of trust and reliability, assuring passengers that their travel plans are in safe hands. Upon successful login, travelers gain access to a wide range of bus routes, schedules, and booking options, turning their travel dreams into reality.

3.3.3 Form Validation

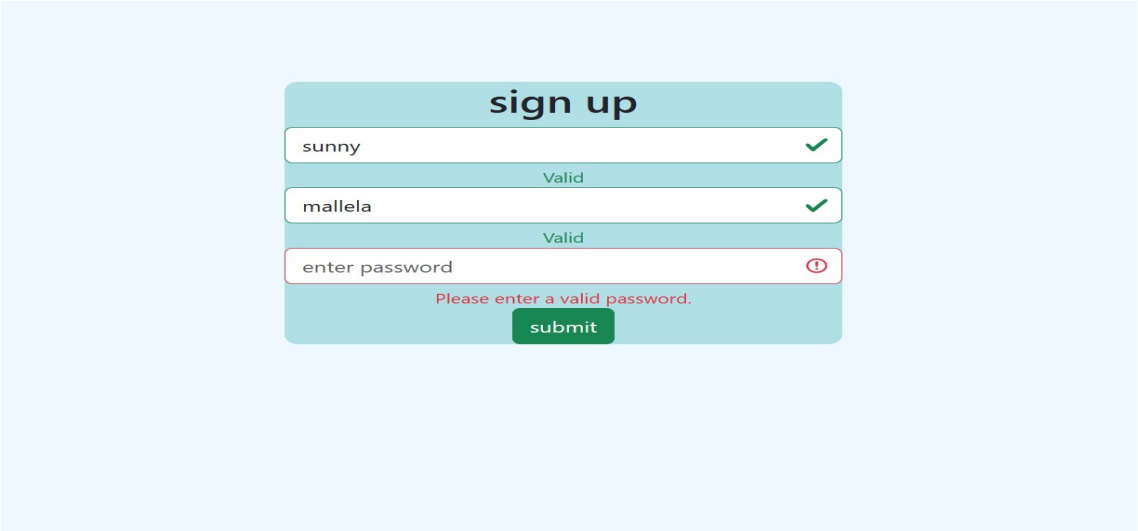

Figure 3.6: **Architecture Diagram**

Form validation in a signup process is a crucial step to ensure that user-provided information is accurate and complete before creating an account. It typically involves checking that all required fields are filled out, verifying the format and validity of data such as email addresses, and confirming that passwords meet security criteria, like length and complexity. Effective form validation helps prevent errors, enhance security, and improve the overall user experience by guiding users to provide correct information and ensuring the integrity of data stored in the system.

3.3.4 Parse the webpage using Jquery and DOM

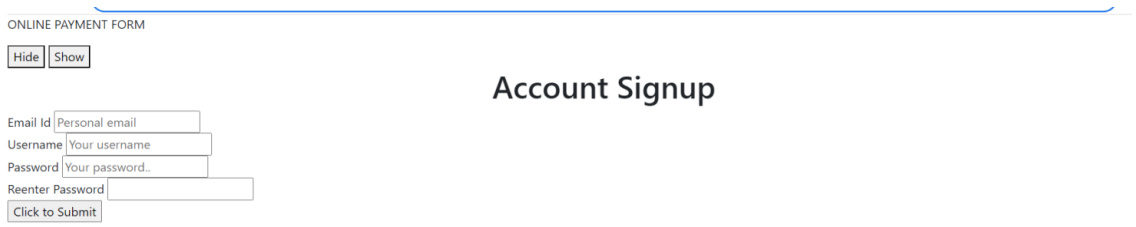

Figure 3.7: **Architecture Diagram**

- Initialization and Setup: Start by including the jQuery library in your HTML document using a script tag. Create a separate JavaScript file for your code.
- Select Elements: Utilize jQuery selectors to pinpoint specific HTML elements on the webpage. These selectors can be element names, classes, IDs, or attribute values
- Access and Manipulate Elements: Once you've selected elements, you can access their properties, attributes, and content using jQuery methods.

3.3.5 Creation of Webserver using Node Js

Figure 3.8: **Architecture Diagram**

Creating a web server with Node.js empowers you to build powerful web applications and APIs. The process outlined above provides a foundational structure, but the specifics will depend on your project's requirements and complexity.The figure 3.8 It is a JavaScript runtime that allows you to run JavaScript on the server-side, making it a versatile platform for building web applications.It contains creating a file ,read and write on it .

3.3.6 Design of Three Tier application using Node js and MySQL

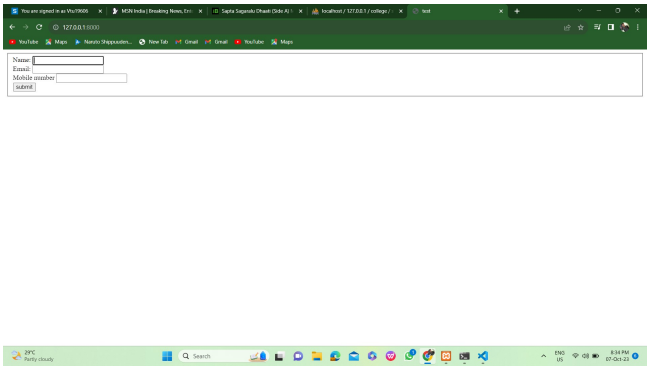

Figure 3.9: **Architecture Diagram**

The figure 3.10 depicts creating a reactive form for user registration using Angular. A Three-Tier Application is a software architecture pattern where an application is divided into three interconnected components or tiers: the Presentation Tier, the Application Logic Tier, and the Data Storage Tier. Each tier has a specific role and responsibility within the application.This form allows users to input their information, by displaying the submitted data in the browser console upon submission, developers can efficiently debug and troubleshoot the registration process.

3.3.7 Design of Reactive form for User Registration using Angular

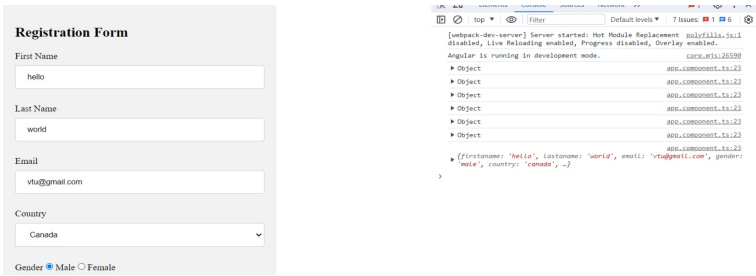

Figure 3.10: **Architecture Diagram**

Designing a reactive form for user registration using Angular involves creating a dynamic and interactive form that allows users to input their information and register for a service or application. Reactive forms in Angular are built using the Reactive Forms module, which provides a more programmatic and flexible way to manage form data and validation. Here's a theoretical overview of how to design a reactive form for user registration in Angular: Set Up Your Angular Project:

- Make sure you have Node.js and Angular CLI installed. Create a new Angular project using the Angular CLI: ng new my-registration-app.
- Import the ReactiveFormsModule: In your Angular application, you need to import the ReactiveFormsModule from @angular/forms in your app.module.ts file to enable the use of reactive forms.

3.3.8 Develop web application to implement routing and navigation in Angular

Figure 3.11: **Architecture Diagram**

3.3.9 Creation of Microservices

3.3.10 Deployment of Microservices

Chapter 4

TESTING

4.1 Testing

Test Cases

1. Verify that user is able to login in the application without registration or not.
2. Verify that user is able to sign up or login with email or not.
3. Verify that user is able to redirect on home page screen without login or not.
4. Verify that user is able to login with invalid credentials or not.
5. Verify that user is able to skip login screen or not.
6. Verify that links on the login page should be working properly or not.
7. Verify that user is able to access all the modules of the application.
8. Verify that user has all access to application with logged in mode.

4.1.1 Test Result

The above mentioned test cases all are passed successfully when they are tested against the online payment bus booking website created. All the test cases produced positive results. All the pages and modules in the website are functioning properly.

4.1.2 Test Bugs

Chapter 5

WEBSITE LAUNCH

Figure 5.1: **Test Image**

Chapter 6

RESULTS AND DISCUSSIONS

6.1 Website performance

The website loads quickly and smoothly, with all pages and features easily accessible without delays or glitches.Website speed is increased by optimizing images, minimizing HTTP requests, and using content delivery networks (CDNs) to reduce server response times. The website is responsive and mobile-friendly, with a clear and easy-to-use interface that adapts to different screen sizes.Customer experience is enhanced by offering engaging features such as ratings, reviews, and recommendations.Prioritizing performance considerations from the outset of development can significantly enhance the system's effectiveness and user satisfaction.

6.2 Security

The Bus Ticket Reservation System can safeguard sensitive information and maintain the trust of both passengers and bus operators. The identity of website is authenticated the encyrption techniques are used to convert the data into the code to prevent unauthorized access or viewing of the data.Data backup refers to the process of creating copies of important data and storing them in a secure location, to prevent data loss in the event of a security breach or technical issue.Firewalls and Vulnerability scanners for monitoring network traffic and scanning security vulnerabilities.

6.3 Responsiveness and mobile-friendliness

Optimization of website for different screen sizes can be achieved by using a responsive design that adapts to different screen sizes or by creating a separate mobile version of the website.Text size is legible and easily readable on a small screen and a font size that is easy to read without having to zoom in or scroll horizontally.Using compressed images, image sprites, and responsive images to ensure that they load quickly and look great on any device.

Chapter 7

CONCLUSION AND FUTURE ENHANCEMENTS

7.1 Conclusion

the development and operation of a Bus Ticket Reservation System represent a significant step forward in modernizing and streamlining the bus transportation industry.It addresses the diverse needs of passengers, bus operators, and system administrators, offering secure and user-friendly online booking and management functionalities. an online payment website must prioritize performance, security, and mobile-friendliness to provide a seamless and enjoyable experience for users. The website should load quickly, be easy to navigate, and offer secure payment options to ensure that users have a positive experience. Additionally,By focusing on these key areas, an online payment website can build trust with its customers, increase sales, and stay ahead of its competition in the ever-growing digital payment industry.

7.2 Future Enhancements

In the ever-evolving landscape of bus transportation and online booking systems, the potential for future enhancements in a Bus Ticket Reservation System is both exciting and promising. As technology continues to advance, there are numerous avenues for improvement and expansion. From seamless mobile wallet integration and predictive analytics to AI-driven chatbots and multi-language support, the focus remains on enhancing passenger convenience and optimizing bus operator operations. These planned enhancements aim not only to streamline the booking process but also to provide passengers with a more personalized and efficient travel experience

Chapter 8

SOURCE CODE

Chapter 9

SCREENSHOTS