

Project Report On



E-commerce (Home Service Management)

Submitted in partial fulfillment for the award of
**Post Graduate Diploma in Advanced
Computing**
From
C-DAC ACTS (Pune)

Guided by
Mr. Pratik Dhole

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Centre of Development of Advanced Computing (C-DAC), Pune



CERTIFICATE

TO WHOMSOEVER IT MAY CONCERN

This is to certify that

Devraj Malwe - 240840120086
Nikhil kolhe - 240840120099
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Shubham Gawade -240840120183
Toshavi Ghatode - 240840120207

have successfully completed their project titled

**“E-commerce
(Home Service Management)”**

Under the Guidance of
Mr. Pratik Dhole

Project Guide

HOD ACTS



ACKNOWLEDGEMENT

This project “**E-commerce(Home Service Management)**” was a great learning experience for us and we are submitting this work to Advanced Computing Training School (CDAC ACTS).

We all are very glad to mention the name of **Mr. Pratik Dhole** for his valuable guidance to work on this project. His guidance and support helped us to overcome various obstacles and intricacies during the course of project work.

Our most heartfelt thank goes to **Ms Swati mam** (Course Coordinator, PG- DAC) who gave all the required support and kind coordination to provide all the necessities like required hardware, internet facility and extra Lab hours to complete the project and throughout the course up to the last day here in C-DAC ACTS, Pune.

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1. Introduction

1.1 Background

In the modern era, accessing reliable home services such as plumbing, electrical work, cleaning, and repairs can be time-consuming and challenging. Many customers struggle to find skilled professionals who are both trustworthy and available at their convenience. Similarly, service providers often face difficulties in reaching potential clients and managing bookings efficiently. To address these challenges, the **Home Service Marketplace System** has been developed as a comprehensive web-based platform.

1.2 Purpose

The purpose of this system is to provide a seamless and efficient solution for connecting customers with local service providers. This platform enables customers to browse, book, and review various home services while allowing service providers to register, manage their offerings, and accept bookings. An administrative panel ensures quality control, user verification, and dispute resolution, ensuring a smooth experience for all stakeholders.

1.3 Objective

- **Enhanced Accessibility** – Providing customers with an easy-to-use platform to search and book services.
- **Service Provider Empowerment** – Enabling skilled professionals to list their services, manage bookings, and receive payments.
- **User Authentication & Security** – Implementing secure login and authentication methods for customers and providers.
- **Admin Oversight** – Facilitating an admin panel for monitoring user activities, managing disputes, and ensuring quality service.
- **Scalability & Performance** – Developing a system using **Spring Boot and MySQL** to handle increasing user demand efficiently.

1.4 Scope of Project

This project is designed as a **full-stack web application**, ensuring smooth integration between the frontend, backend, and database. The key components include:

- **Customer Portal:** Allows users to register, browse services, book appointments, make payments (demo implementation), and rate providers.
- **Service Provider Dashboard:** Enables professionals to register, list their services, manage bookings, and receive payments.
- **Admin Panel:** Provides system monitoring tools, dispute handling features, and the ability to verify service providers.
- **Secure Transactions:** Ensures safe and reliable demo-based financial transactions between customers and service providers.

1.5 Methodology

The project follows the **Agile Software Development Life Cycle (SDLC)** to ensure iterative development and continuous improvements. The development phases include:

- **Requirement Analysis:** Identifying functional and non-functional requirements.
- **System Design:** Creating an architecture with a database schema, API endpoints, and UI wireframes.
- **Implementation:** Developing the platform using **Spring Boot for the backend, React.js for the frontend, and MySQL for the database.**
- **Testing & Validation:** Conducting unit testing, integration testing, and user acceptance testing.
- **Deployment:** Hosting the platform on a server with secure configurations.

1.6 Expected Outcome

The **Home Service Marketplace System** aims to streamline service booking processes, improve the visibility of service providers, and ensure a **safe, secure, and scalable** platform for household service management. By integrating advanced authentication mechanisms, structured data handling, and an intuitive UI, the system is expected to significantly enhance the user experience for both customers and service providers.

2. Software/Hardware Requirement

2.1 Server Requirements:

- **RAM:** Minimum 4GB RAM (8GB recommended for better performance)
- **Processor:** Intel Core I 5 or equivalent AMD processor
- **Storage:** SSD storage for improved performance and faster data retrieval
- **Network:** Ethernet or Wi-Fi connectivity with a stable internet connection
- **Operating System:** Linux distribution (Ubuntu, CentOS) preferred for server deployment
- **Database:** MySQL with optimized indexing for high-performance queries
- **Security:** SSL/TLS encryption, Firewall protection, JWT Authentication

2.2 Client Device Requirements:

- **Processor:** Dual-core processor or higher
- **RAM:** Minimum 4GB RAM for smooth browsing
- **Storage:** Sufficient storage for caching and local data
- **Network:** Ethernet or Wi-Fi connectivity with stable bandwidth
- **Browser Compatibility:** Google Chrome, Mozilla Firefox, Safari (latest versions recommended)

3. Tools and technologies used

- Spring Boot
- Spring Data JPA
- Spring Web
- Spring Security
- RESTful Web Services
- MySQL
- React.js
- HTML
- CSS
- Bootstrap
- Axios
- Node.js
- Express.js
- Git
- GitHub
- Postman
- Draw.io

1. Backend Technologies

a) Spring Boot

Spring Boot is a widely used **Java-based framework** designed to simplify backend development. It offers **built-in support for dependency injection, embedded servers (Tomcat), and microservices architecture**, making it easier to develop and deploy scalable web applications. In this project, Spring Boot is used to develop a **robust REST API**, ensuring efficient communication between the frontend and backend.

b) Spring Data JPA

Spring Data JPA provides an abstraction over **Hibernate**, enabling seamless database interactions. It allows developers to perform **CRUD operations** without writing complex SQL queries by using **Repository interfaces**. In this system, Spring Data JPA is integrated with **MySQL** to handle user authentication, service provider details, bookings, and transactions efficiently.

c) Spring Web

Spring Web is responsible for handling **HTTP requests and responses**, acting as the backbone for RESTful APIs. It helps manage **controller-based routing**, ensuring proper communication between the frontend (React.js) and backend (Spring Boot). It also provides built-in support for handling **JSON requests and responses**, ensuring smooth data exchange.

d) Spring Security

Spring Security is a powerful **authentication and authorization** framework used to protect the system from unauthorized access. It supports **role-based access control (RBAC)**, ensuring that different users (Customers, Service Providers, and Admins) have appropriate permissions. Additionally, it provides protection against **CSRF, SQL injection, and session hijacking**.

e) **RESTful Web Services**

RESTful Web Services define the **architecture for API communication**, using standard **HTTP methods (GET, POST, PUT, DELETE)** to exchange data between the frontend and backend. These services follow a **stateless approach**, ensuring scalability, modularity, and better performance for large-scale applications.

f) **Node.js & Express.js**

Node.js is a **JavaScript runtime environment** that allows server-side scripting, while Express.js is a **lightweight web framework** for handling API requests efficiently. In this project, Node.js and Express.js are used where additional backend processes are required, especially for handling **real-time operations, additional microservices, or third-party integrations**.

2. Frontend Technologies

a) **React.js**

React.js is a **component-based JavaScript library** used for building modern, dynamic, and interactive web applications. It follows a **declarative approach**, making UI development easier and more efficient. One of its key features is the **virtual DOM**, which enhances performance by updating only the changed parts of the UI instead of re-rendering the entire page. In this project, React.js is used to develop a **user-friendly and responsive interface** that seamlessly interacts with the backend via REST APIs.

b) **HTML**

HTML (HyperText Markup Language) is the **foundation of web pages**, defining the structure and layout of content. It is responsible for organizing elements like headings, paragraphs, images, and forms in a structured manner. In this project, HTML is used to **define the webpage structure**, ensuring clear navigation and accessibility.

c) CSS

CSS (Cascading Style Sheets) is used to **style and format** the HTML elements, ensuring a visually appealing and responsive design. It enables **custom layouts, animations, color schemes, and font styles**, making the UI more engaging. In this project, CSS plays a key role in **enhancing the user experience by ensuring a consistent and adaptive design across different devices**.

d) Bootstrap

Bootstrap is a **popular frontend framework** that simplifies the development of responsive and mobile-friendly web pages. It provides **pre-designed UI components, grid systems, and utility classes**, making it easier to create professional-looking designs with minimal effort. In this project, Bootstrap is used to **improve responsiveness, ensuring the platform is accessible on desktops, tablets, and mobile devices**.

e) Axios

Axios is a **JavaScript library** used to handle **asynchronous API requests** efficiently. It simplifies **sending HTTP requests (GET, POST, PUT, DELETE) from the frontend to the backend** while handling responses and errors gracefully. In this project, Axios is used for **fetching and sending data between React.js and the Spring Boot backend**, ensuring smooth and efficient communication.

3. Database

MySQL

MySQL is a **relational database management system (RDBMS)** that efficiently stores and manages structured data using SQL (Structured Query Language). It is widely used for handling large datasets with high reliability, performance, and security. MySQL supports **ACID (Atomicity, Consistency, Isolation, Durability) compliance**, ensuring data integrity even in

concurrent transactions. In this project, MySQL is used to **store and manage user data, service provider details, bookings, transactions, and reviews**, providing a stable and scalable foundation for the backend. The integration with **Spring Data JPA** allows seamless interaction with the database, eliminating the need for complex SQL queries.

4. Development & Management Tools

a) Git

Git is a **distributed version control system** that allows developers to track changes in source code efficiently. It enables **branching, merging, and collaboration** among multiple developers, ensuring smooth code integration. Git helps maintain **code history**, allowing developers to revert to previous versions if needed. In this project, Git is used to **manage source code modifications, track progress, and streamline development workflows**.

b) GitHub

GitHub is a **cloud-based repository hosting service** that works with Git to facilitate **collaborative software development**. It provides features like **pull requests, issue tracking, and continuous integration (CI/CD)** to ensure seamless code management. In this project, GitHub is used to **store the codebase, track issues, and enable team members to collaborate efficiently on different features and bug fixes**.

c) Postman

Postman is an **API testing and debugging tool** that allows developers to **send HTTP requests, analyze responses, and automate API tests**. It simplifies the testing of **RESTful APIs** by providing an intuitive user interface for **validating request parameters, headers, authentication methods, and response data**. In this project, Postman is used to **test backend endpoints before frontend integration, ensuring APIs**

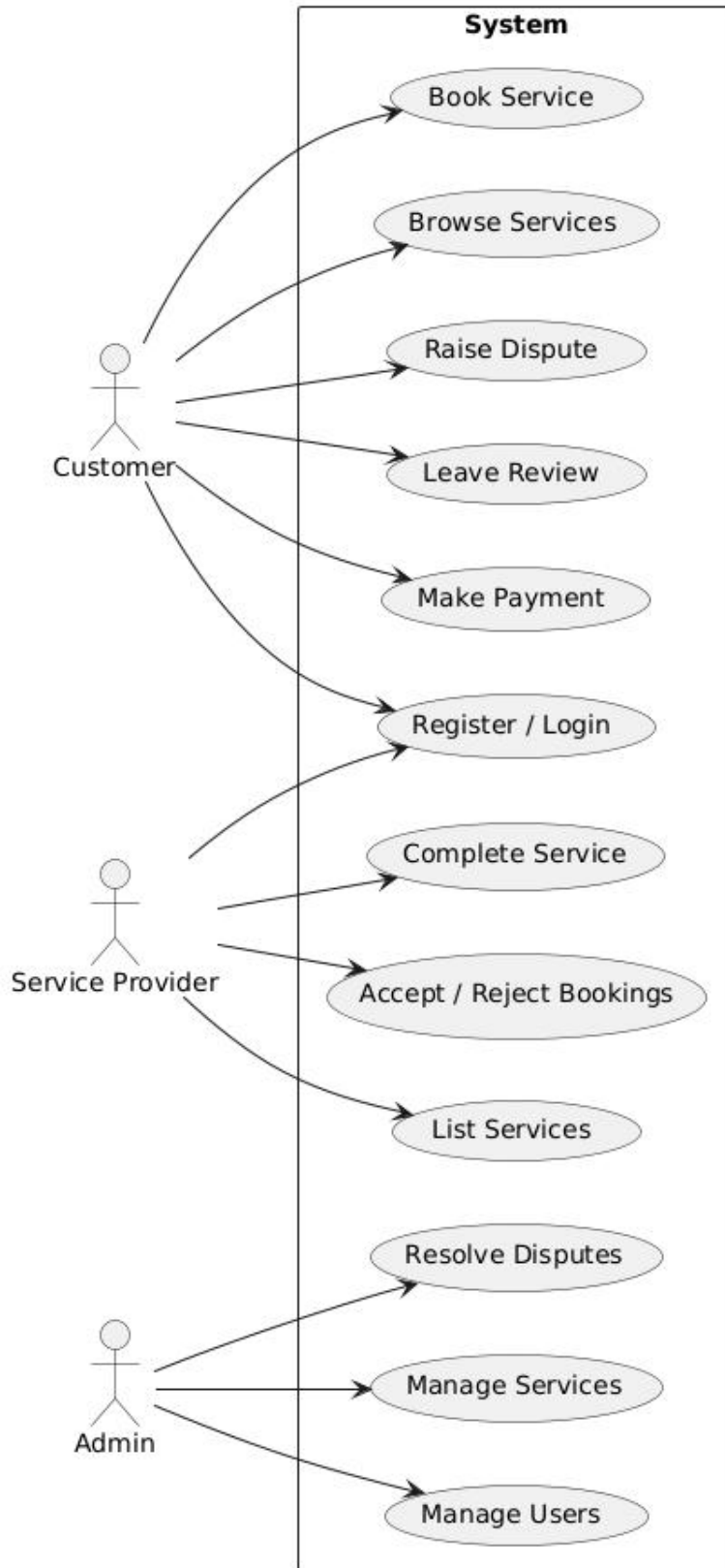
function correctly and securely.

d) Draw.io

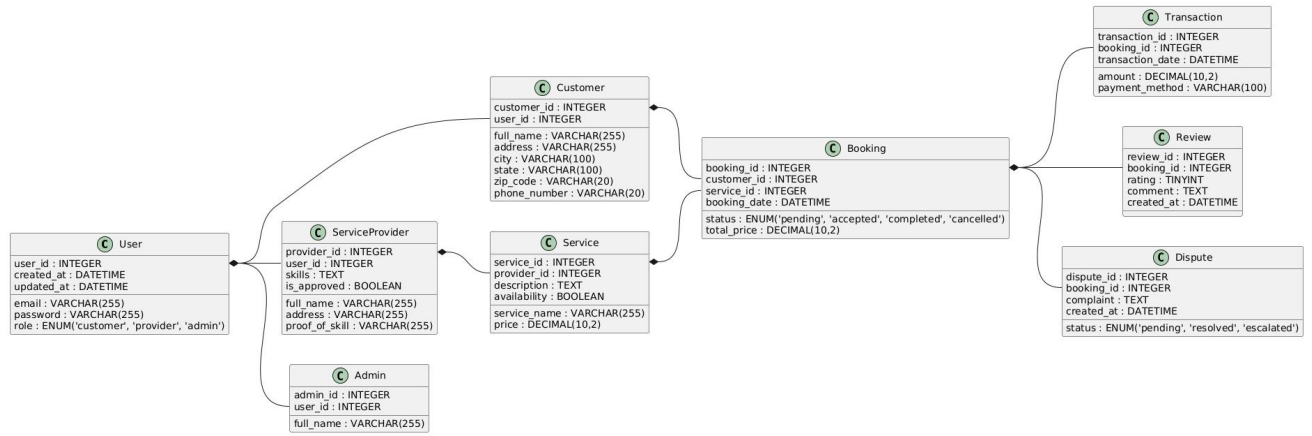
Draw.io is a **diagramming tool** used to **create system architecture diagrams, ER (Entity-Relationship) models, flowcharts, and process diagrams**. It helps visualize **database schemas, API workflows, and application structure**, making complex relationships easier to understand. In this project, Draw.io is used to **design and document the database structure, project flow, and system interactions, aiding in better planning and implementation.**

4. Project UML Diagram

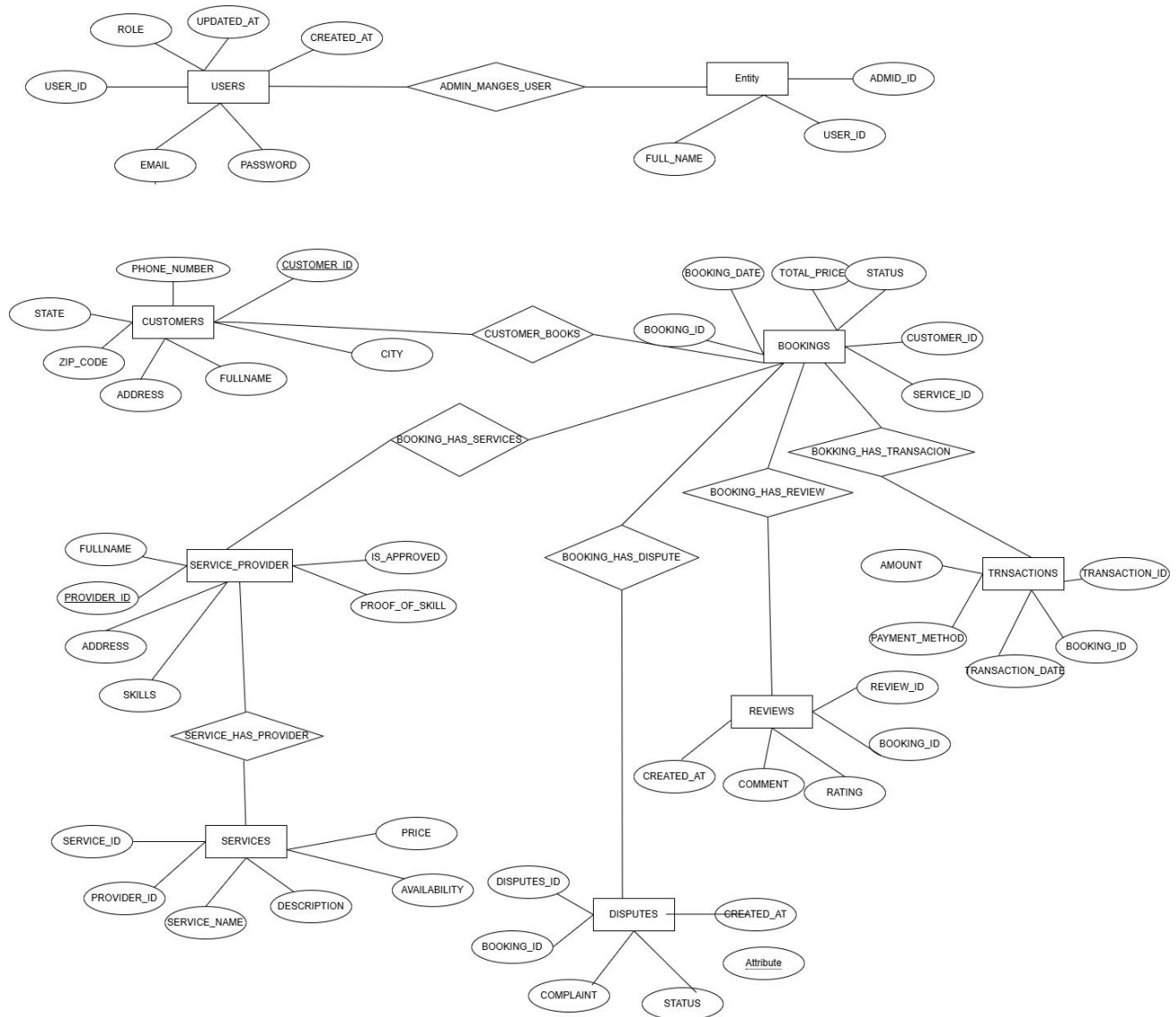
4.1 Use Case Diagram



4.1 Class Diagram



4. Project Entity relationship(ER) Diagram



5. Advantages

- **Convenient Service Booking** - Customers can easily find and book trusted service providers from various categories (electricians, plumbers, cleaners, etc.), saving time and effort.
- **Enhanced Accessibility** - The platform is accessible from any device with an internet connection, providing a seamless experience for both customers and service providers.
- **Role-Based Access Control** - Secure authentication using **Spring Security and JWT** ensures that customers, service providers, and admins have appropriate access levels.
- **Efficient Service Management** - Service providers can manage their profiles, list services, accept or reject bookings, and track their earnings in one place.
- **Transparent Customer Reviews & Ratings** - Customers can rate and review service providers, ensuring a feedback-driven system that improves service quality.
- **Secure Transactions & User Data Protection** - The system follows best security practices like **password hashing, authentication via JWT, and encrypted database storage** to protect sensitive information.
- **Automated Booking System** - Reduces manual intervention in service scheduling, making the process more efficient for both customers and service providers.
- **Scalability & Performance Optimization** - Built with **Spring Boot, React.js, and MySQL**, the system ensures high performance, modularity, and scalability for future expansions.
- **Admin Oversight & Fraud Prevention** - Admins can monitor user activities, verify service providers, resolve disputes, and ensure quality control, maintaining the platform's integrity.
- **Future-Ready Architecture** - The project structure allows easy **integration of additional features** like real-time notifications, AI-based service recommendations, and a mobile application in the future.

6. Screenshots

A) User Related Functionalities

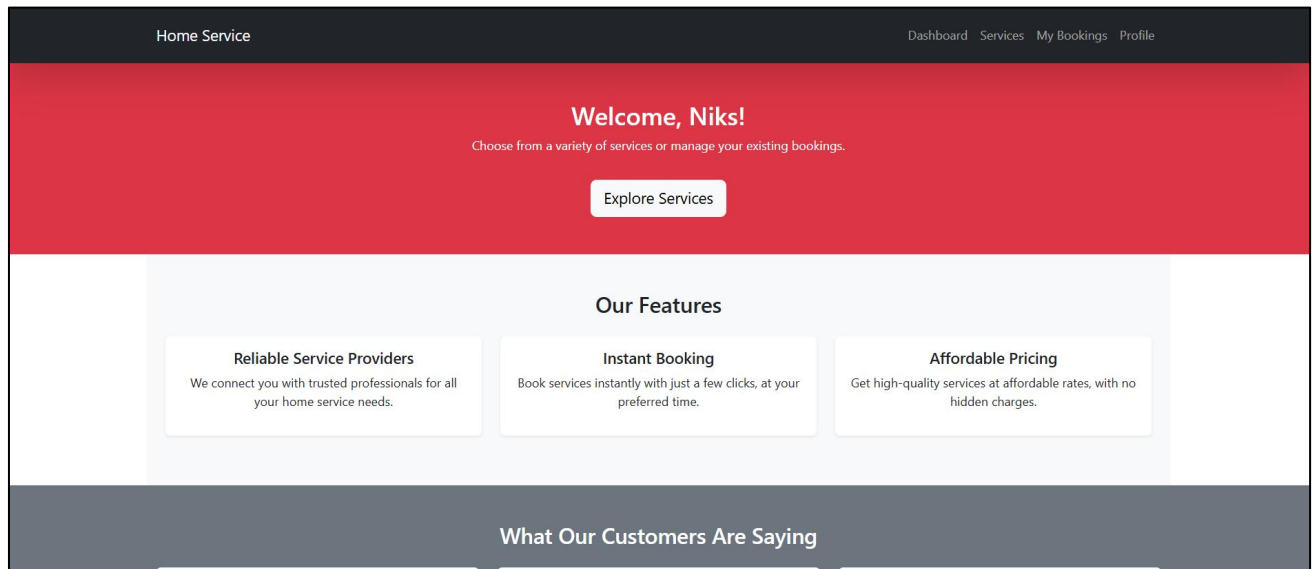


Fig 1: Home Page

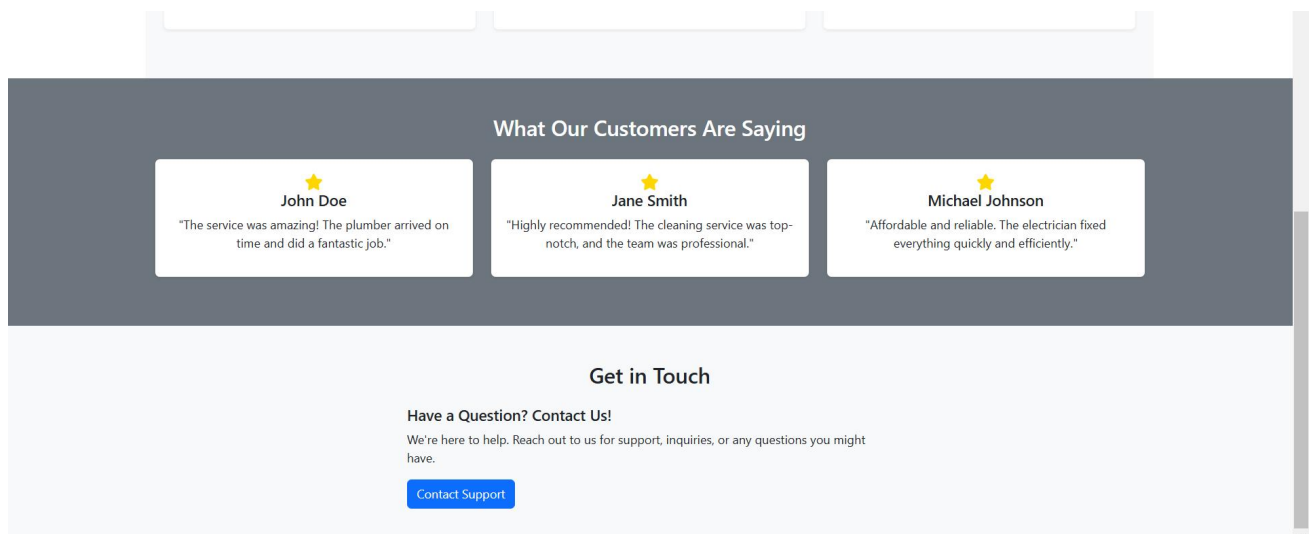
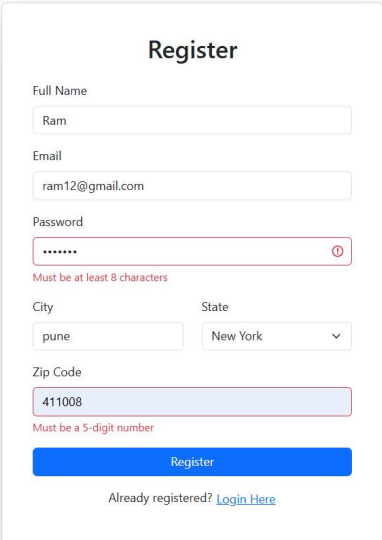


Fig 2: Testimonials

Fig2 – User Registration page

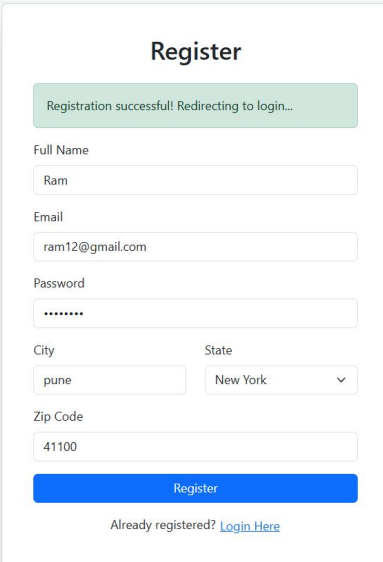


The image shows a 'Register' form with the following fields and values:

- Full Name:** Ram
- Email:** ram12@gmail.com
- Password:** (with a red error message: 'Must be at least 8 characters')
- City:** pune
- State:** New York (dropdown menu)
- Zip Code:** 411008 (with a red error message: 'Must be a 5-digit number')

At the bottom of the form is a blue 'Register' button and a link: 'Already registered? [Login Here](#)'.

Fig 3 – User Registration page validation

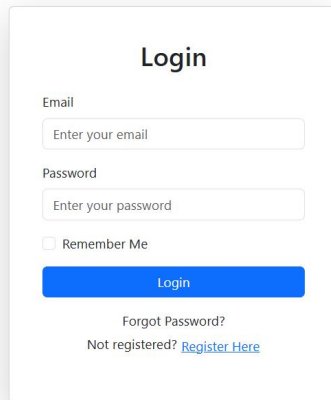


The image shows the 'Register' form after successful validation. A green message box at the top says: 'Registration successful! Redirecting to login...'. The form fields are filled with the same data as in Fig 2:

- Full Name:** Ram
- Email:** ram12@gmail.com
- Password:** (no error message)
- City:** pune
- State:** New York (dropdown menu)
- Zip Code:** 41100 (no error message)

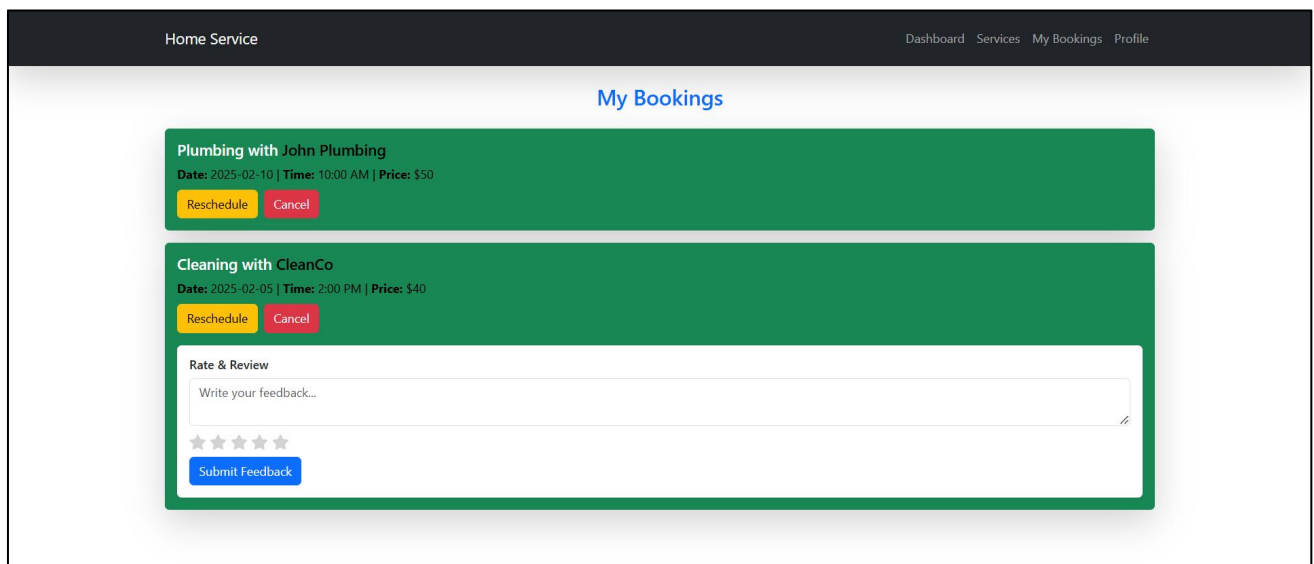
The blue 'Register' button and the 'Already registered? [Login Here](#)' link are still present at the bottom.

Fig 4– User Registration Successful



A login form titled "Login" with a white background and a subtle shadow. It contains two input fields: "Email" with the placeholder "Enter your email" and "Password" with the placeholder "Enter your password". Below the password field is a checkbox labeled "Remember Me". A blue "Login" button is positioned below the checkbox. At the bottom, there are two links: "Forgot Password?" and "Not registered? [Register Here](#)".

Fig 5 –User login page



A service review page with a dark header. The header contains "Home Service" on the left and "Dashboard Services My Bookings Profile" on the right. The main content area is titled "My Bookings" in blue. It features two green cards for bookings. The first card is for "Plumbing with John Plumbing" on "2025-02-10" at "10:00 AM" for "\$50", with "Reschedule" and "Cancel" buttons. The second card is for "Cleaning with CleanCo" on "2025-02-05" at "2:00 PM" for "\$40", also with "Reschedule" and "Cancel" buttons. Below the second card is a "Rate & Review" section with a text area for feedback, five stars, and a "Submit Feedback" button.

Fig 6 – Service Review page

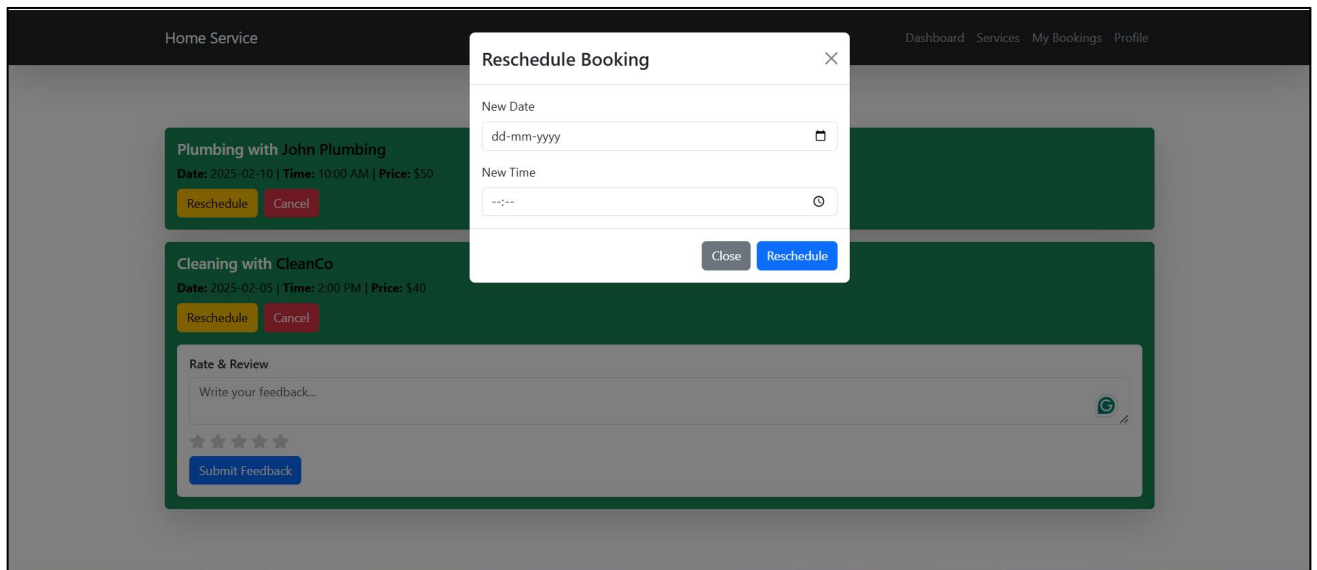


Fig 7 –Reschedule Booking

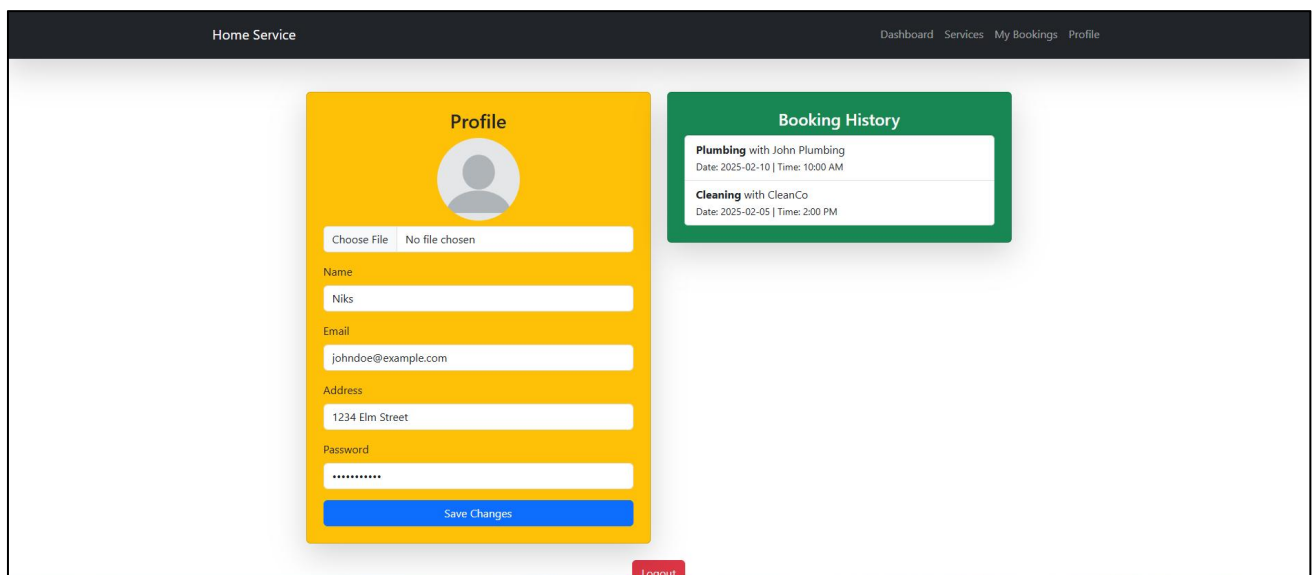


Fig 8 – Profile pg

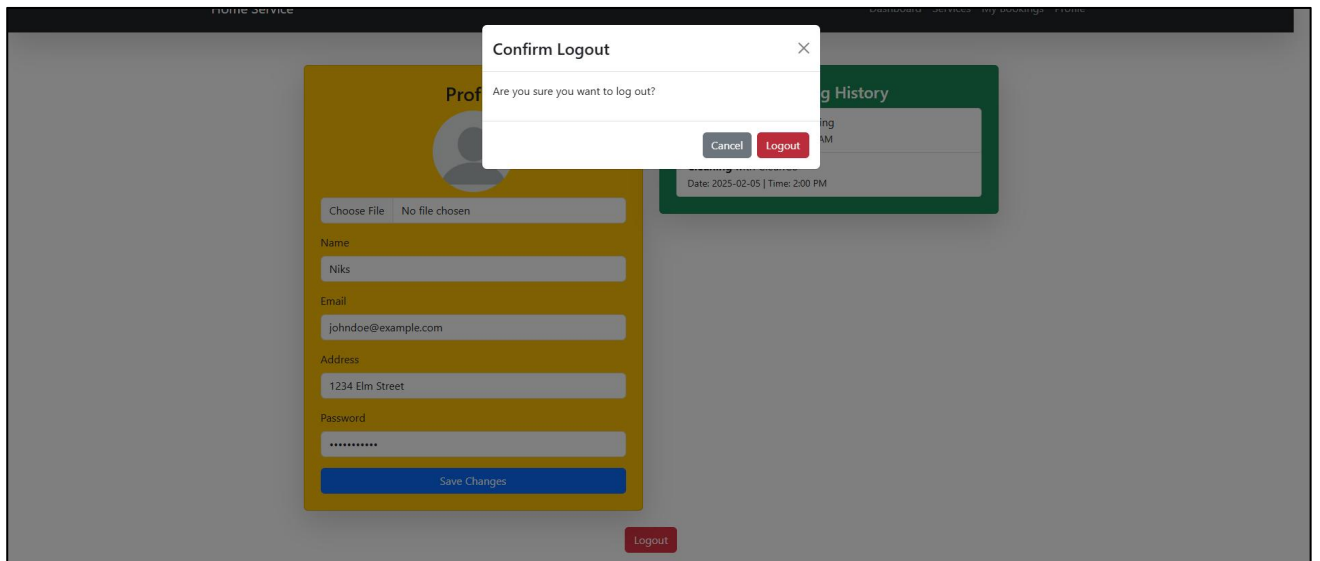


Fig 9 – Log out



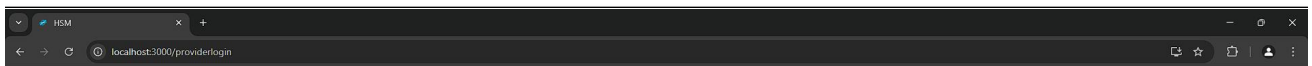
Login

Email

Password

Login

Forgot Password?
Not registered? [Register Here](#)
[Login as Service Provider](#)



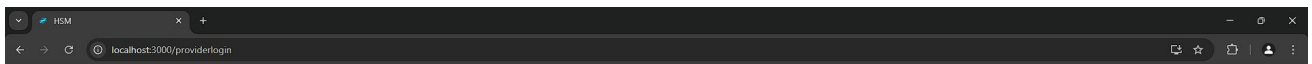
Service Provider Login

Email

Password

Login

Forgot Password?
Not registered? [Register Here](#)



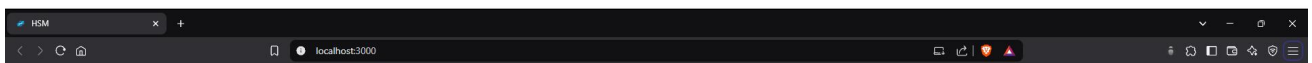
Service Provider Login

Email

Password

Login

Forgot Password?
Not registered? [Register Here](#)



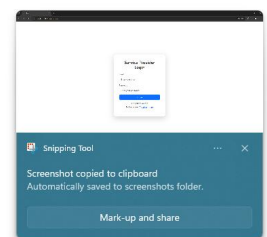
Login

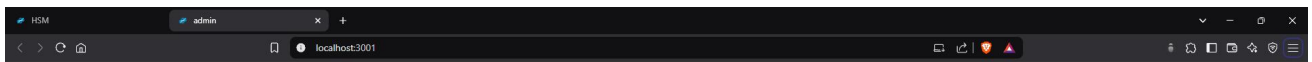
Email

Password

Login

Forgot Password?
Not registered? [Register Here](#)
[Login as Service Provider](#)

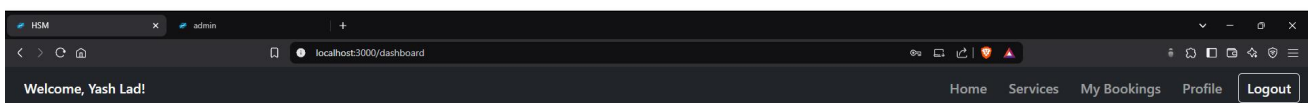




Home Service Management

[Admin Login](#)

Login



Welcome, Yash Lad!

Choose from a variety of services or manage your existing bookings.

Explore Services

Our Features

Reliable Service Providers

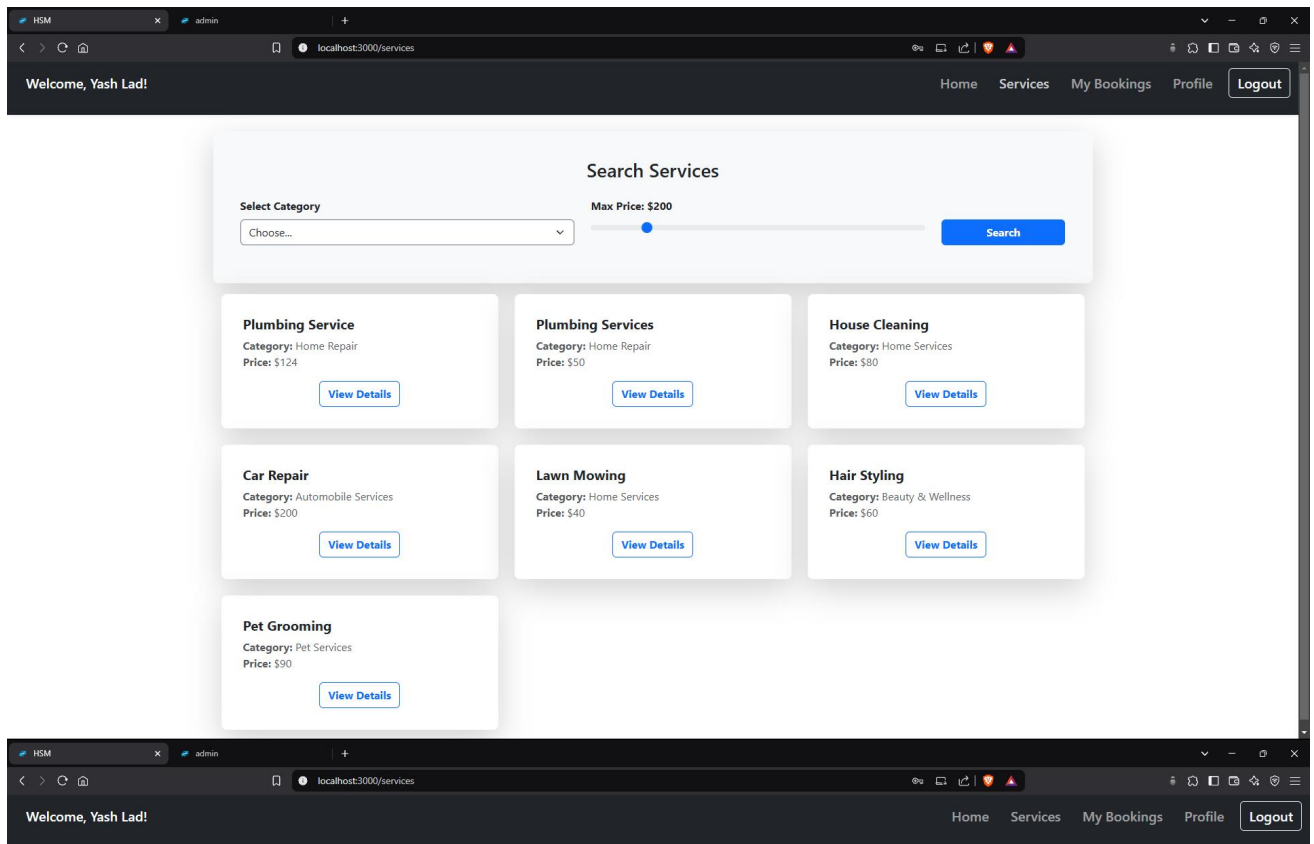
We connect you with trusted professionals for all your home service needs.

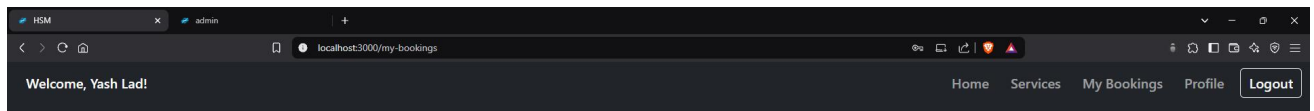
Instant Booking

Book services instantly with just a few clicks, at your preferred time.

Affordable Pricing

Get high-quality services at affordable rates, with no hidden charges.





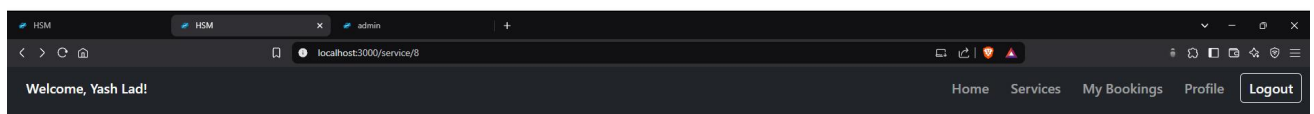
My Bookings

Plumbing Service with Alice Johnson
Date: 2/11/2025 | Time: 12:43:00 PM | Price: \$124 | Status: ACCEPTED

[Reschedule](#) [Cancel](#)

Car Repair with Jane Smith
Date: 2/9/2025 | Time: 1:21:06 PM | Price: \$200 | Status: PENDING

[Reschedule](#) [Cancel](#)



Service: Car Repair **Category:** Automobile Services

Provider: Jane Smith

Price: \$200

Availability: AVAILABLE

Select Date

Select Time

[Book Now](#)

Service: Plumbing ServiceCategory: Home Repair

Provider: Alice Johnson

Price: \$124

Availability: AVAILABLE

Select Date

dd-mm-yyyy

Select Time

--:--

Book Now

My Bookings

Plumbing Service with Alice Johnson

Date: 2/11/2025 | Time: 12:43:00 PM | Price: \$124 | Status: ACCEPTED

RescheduleCancel

Plumbing Service with Alice Johnson

Date: 2/9/2025 | Time: 1:23:04 PM | Price: \$124 | Status: PENDING

RescheduleCancel

Home Service Management

Admin Panel

User Management

Service Management

Approve Service Provider

Dispute Handling

Logout

User Management

Search by name...

All Roles

ID	Name	Role	Email	Actions
3	John Dude	SERVICE_PROVIDER	johndoe@example.com	<div>Edit</div> <div>Delete</div>
4	Alice Johnson	SERVICE_PROVIDER	alice.johnson@example.com	<div>Edit</div> <div>Delete</div>
5	Yash Lad	CUSTOMER	yash@gmail.com	<div>Edit</div> <div>Delete</div>
6	Nikhil Kolhe	SERVICE_PROVIDER	nikhil@gmail.com	<div>Edit</div> <div>Delete</div>
8	Jane Smith	SERVICE_PROVIDER	janesmith@example.com	<div>Edit</div> <div>Delete</div>
9	Robert Williams	SERVICE_PROVIDER	robert@example.com	<div>Edit</div> <div>Delete</div>
10	Emily Davis	CUSTOMER	emily@example.com	<div>Edit</div> <div>Delete</div>
11	Michael Brown	SERVICE_PROVIDER	michael@example.com	<div>Edit</div> <div>Delete</div>
12	Jessica Wilson	SERVICE_PROVIDER	jessica@example.com	<div>Edit</div> <div>Delete</div>
13	Shubham Gawade	SERVICE_PROVIDER	shubham@gmail.com	<div>Edit</div> <div>Delete</div>

User Management

yash

Customer

ID	Name	Role	Email	Actions
5	Yash Lad	CUSTOMER	yash@gmail.com	<div>Edit</div> <div>Delete</div>

Home Service Management

Admin Panel

User Management

Service Management

Approve Service Provider

Dispute Handling

Logout

Service Management

Search by service name...

Search by provider...

ID	Service Name	Provider	Price	Actions
4	Plumbing Service	Alice Johnson	\$124	<div>Edit</div> <div>Delete</div>
6	Plumbing Services	Nikhil Kolhe	\$50	<div>Edit</div> <div>Delete</div>
7	House Cleaning	John Dude	\$80	<div>Edit</div> <div>Delete</div>
8	Car Repair	Jane Smith	\$200	<div>Edit</div> <div>Delete</div>
9	Lawn Mowing	Robert Williams	\$40	<div>Edit</div> <div>Delete</div>
10	Hair Styling	Michael Brown	\$60	<div>Edit</div> <div>Delete</div>
11	Pet Grooming	Jessica Wilson	\$90	<div>Edit</div> <div>Delete</div>

Register

Full Name

Enter your full name

Email

Enter your email

Password

Create a strong password

Address

Enter your full address

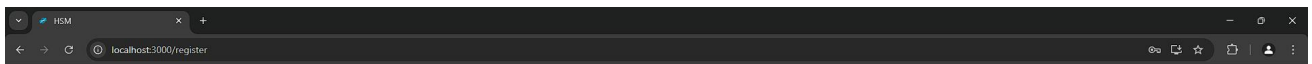
Role

Select Role

Register

Already registered? [Login Here](#)





Register

Request has been sent for approval.

Full Name
tosh

Email
tosh@gmail.com

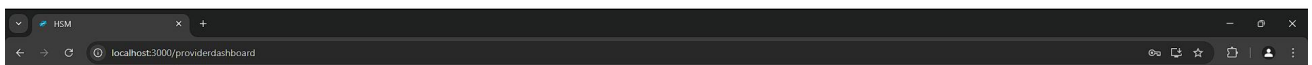
Password

Address
pashan

Role
SERVICE PROVIDER

Register

Already registered? [Login Here](#)



Dashboard

Manage Services

Booking Requests

Booking History

Profile

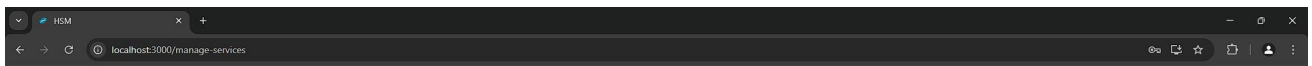
Logout

Provider Dashboard

Total Earnings
\$100.00

Completed Bookings
2

Active Bookings
0

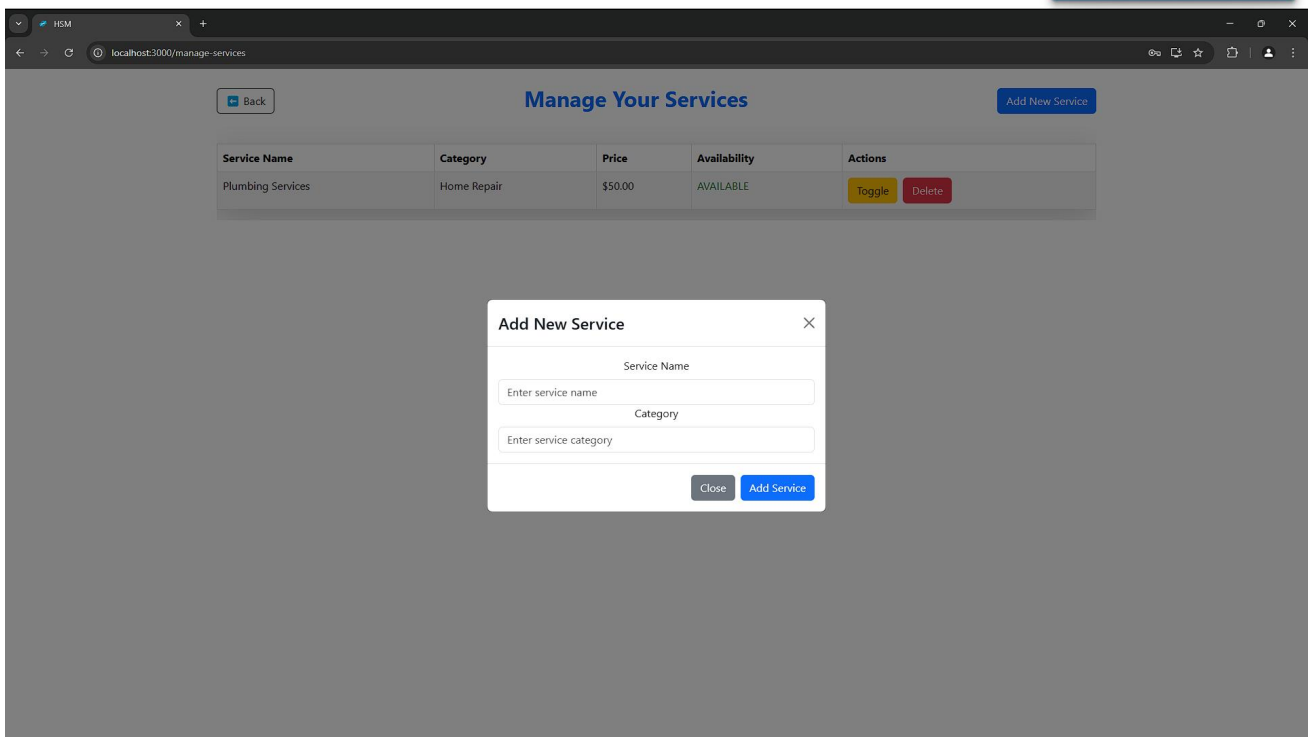
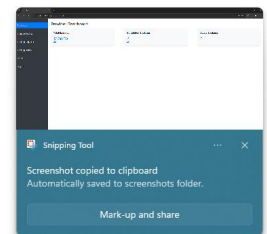


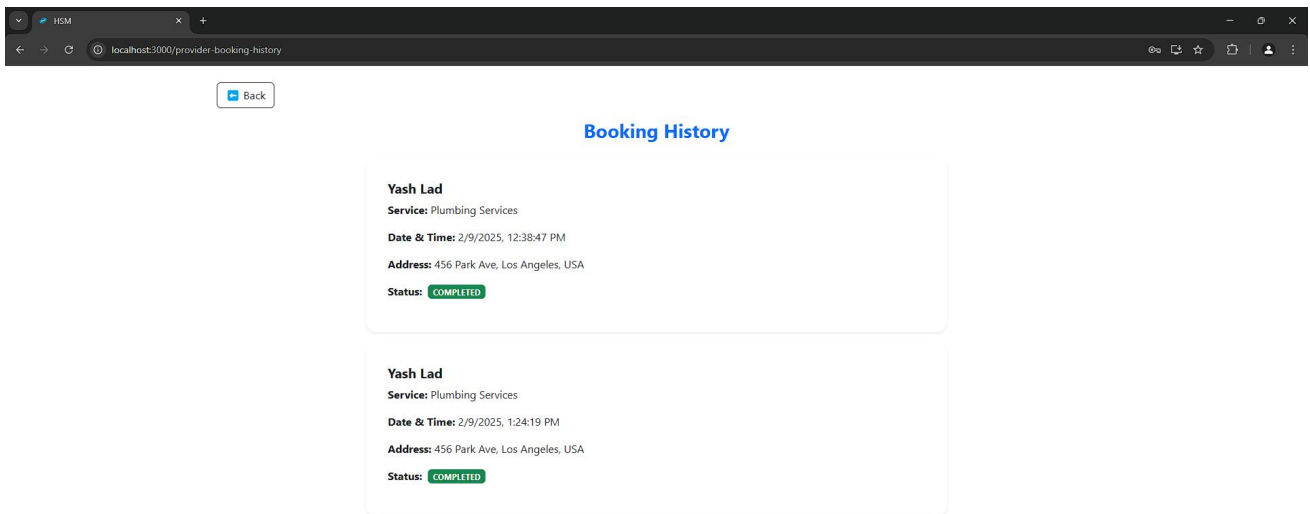
Back

Manage Your Services

Add New Service

Service Name	Category	Price	Availability	Actions
Plumbing Services	Home Repair	\$50.00	AVAILABLE	<button>Toggle</button> <button>Delete</button>





7. FUTURE SCOPE:

- **Integration of a Secure Payment Gateway** – Implementing real-time **online payment options** (such as Stripe, Razorpay, or PayPal) to allow customers to pay securely for service
- **Geo-Location Based Search** – Enhancing the platform with **Google Maps API** or **OpenStreetMap** to enable users to find nearby service providers more efficiently.
- **Mobile Application Development (Android & iOS)** – Expanding the platform with a **dedicated mobile app** to provide a seamless user experience on smartphones. The app will offer **push notifications, offline access, and location-based services** to improve accessibility and convenience for both customers and service providers.
- **Real-Time Chat and Notifications** – Implementing **WebSockets** or **Firebase** for instant messaging between customers and service providers, along with **SMS/email notifications** for booking confirmations and updates.
- **Subscription-Based Model for Service Providers** – Introducing a **premium membership** where service providers can pay for **better visibility, priority listings, and exclusive features**.

- **Enhanced Security Features** – Strengthening platform security with **OAuth-based authentication**, biometric login, and two-factor authentication (2FA) to prevent unauthorized access.

8. Conclusion

The Home Service Marketplace System successfully bridges the gap between customers and service providers by offering a user-friendly, secure, and efficient platform for booking household services. By leveraging Spring Boot for the backend, React.js for the frontend, and MySQL for database management, the system ensures scalability, reliability, and high performance.

With features like role-based authentication, real-time booking management, customer reviews, and an admin oversight panel, the platform provides a seamless experience for all users. The secure authentication mechanisms using Spring Security and JWT enhance data protection and prevent unauthorized access.

The project also lays a strong foundation for future enhancements, such as mobile app development, real-time notifications, geo-location-based search, and advanced security measures, making it adaptable for evolving user needs.

Overall, this system streamlines service booking, enhances accessibility, and improves trust between customers and service providers, ensuring a modern, scalable, and feature-rich solution for managing home services efficiently.

9. References

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