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Service at Your Home - An On-Demand Web-Based Home Service Platform

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Abstract: ***The increasing use of digital technology has changed the way people access household services. Traditional methods of finding service providers are often time-consuming, unreliable, and inefficient. This project, titled "Service at Your Home – Web Based Service Platform," proposes a secure and user-friendly web application that connects customers with verified service providers. The system allows users to search, book, pay, and track services online. Service providers can manage profiles and bookings through a structured dashboard. Developed using React (frontend), Node.js (backend), Supabase (database and authentication), and Tailwind CSS (UI styling),the platform ensures scalability and security. The project improves convenience, transparency, and trust in household service management. The platform enables customers to register, search, and book services online, while service providers can create verified profiles, manage bookings, and offer services through a structured digital interface. The system integrates online payment gateways, QR-based verification, real-time service tracking, and feedback mechanisms to ensure transparency, safety, and convenience.The proposed platform will function as a web-based application, where customers can register, search, and book home services seamlessly. Service providers, on the other hand, can create verified accounts, list their services, and receive job requests from customers in real time. The platform aims to simplify the entire process of service discovery, booking, payment, and feedback under a single system. With the integration of online payment gateways, QR-based security checks, and real-time service tracking, the project emphasizes transparency, convenience, and security for end users. Customers will not only save time but also gain confidence by dealing with verified professionals, while service providers benefit from a structured digital marketplace to expand their reach.***

I. INTRODUCTION

A. Overview

The project "Service at Your Home – Web Based Service Platform" is a modern web application designed to provide a secure, efficient, and user-friendly solution for accessing household services. It addresses the limitations of traditional methods of finding service providers, which are often time-consuming, unreliable, and lack transparency. In conventional approaches, users depend on personal contacts, local references, or manual searches, which may lead to delays, inconsistent service quality, and safety concerns. This platform eliminates such challenges by offering a centralized and structured digital system where users can conveniently access trusted services from their homes.

The platform enables customers to search, book, and manage various home services such as plumbing, electrical work, cleaning, and more through a single digital interface. Users can browse services based on categories, availability, and other relevant details, making the process simple and efficient. Service providers can register on the platform and create their profiles; however, they are allowed to offer services only after receiving admin approval, ensuring that all providers are verified and trustworthy. This verification mechanism enhances user confidence and reduces the risk of unverified or fraudulent service providers, thereby creating a safe and reliable environment for both customers and professionals.

The system is developed using React (frontend), Node.js (backend), Supabase (database and authentication), and Tailwind CSS (UI design), which together provide a scalable, fast, and responsive application. The use of modern technologies ensures efficient data handling, real-time updates, secure authentication, and a seamless user experience across devices. Supabase enables real-time database operations and authentication, while Node.js handles backend logic and API communication efficiently. React and Tailwind CSS contribute to building an interactive, visually appealing, and responsive interface that enhances usability. advanced features. Customers can track the live location of service providers in real time, which improves transparency and allows better time management. The system also incorporates QR code-based verification, enabling customers to confirm the identity of the service provider before the service begins, thereby ensuring safety.

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After service completion, customers can generate and download invoices, which helps in maintaining proper records and adds a professional touch to the service process. Additionally, a notification system reminds service providers about their scheduled tasks on the day of work, reducing the chances of missed or delayed appointments.

Another important feature of the system is the issue reporting mechanism, which allows customers to directly report problems or complaints to the admin for quick resolution, ensuring service quality and smooth platform operation. The admin plays a key role in monitoring activities, approving service providers, and handling complaints, thereby improving communication and accountability.

Overall, the system provides a comprehensive digital solution for household service management by integrating service discovery, booking, verification, tracking, payments, and feedback into a single platform, enhancing convenience, transparency, and security while building trust between customers and service providers, and offering scalability for future expansion.

B. Objective

The main Objective of the project is

- To develop a user-friendly and efficient platform
  The main objective is to create a web application that is simple, intuitive, and easy to use for both customers and service providers. Users should be able to search, book, and manage services without difficulty. The interface is designed to be responsive and accessible across devices. This reduces the complexity of traditional service booking methods and improves overall user experience.

- To ensure security and trust through verification
  The system aims to provide a secure environment by allowing only admin- approved service providers to offer services. Additionally, QR code-based verification enables customers to confirm the identity of providers before the service begins. These measures help prevent unauthorized access and improve safety. This objective focuses on building trust between customers and service providers.

- To provide real-time tracking and timely notifications
  Another objective is to improve transparency by enabling real-time tracking of service providers using live location. Customers can monitor the provider's movement and estimated arrival time. The system also sends notifications to providers on the day of work to prevent missed bookings. This ensures better coordination and timely service delivery.

- To implement complete service management and support features
  The platform aims to provide end-to-end service management, including booking, invoice generation, and issue reporting. Customers can download invoices after service completion for proper documentation. They can also report issues directly to the admin for quick resolution. This helps maintain service quality and ensures smooth platform operation.

II. LITERATURE SURVEY

1) Title: Web Application Based On Demand Home Service System

Authors: K. Aravindhan, K. Periyakaruppan, T.S. Anusa, S. Kousika, A. Lakshmi Priya

Year: 2020

Description:

This study presents a presents a web-based on-demand home service system designed to simplify the process of accessing household services such as plumbing, electrical repair, cleaning, and maintenance. The system connects customers with service providers through a centralized platform, where users can register, search for services based on location, and directly contact or book providers. It reduces the dependency on manual methods and enables users to access services quickly and efficiently.

The model focuses on improving accessibility and convenience by providing categorized service listings and enabling users to choose suitable providers based on their requirements. Service providers can register their details and make their services available to users, helping them reach a wider audience. The system also includes basic tracking of service requests and status updates, ensuring better coordination between users and providers.

2) Title: On-Demand Home Service Based Web Application
Authors: K ManojSenthil, P Nirmala Devi, Ravi Samikannu, E S Kirushnamurthy, D Kowsik, S Jayasurya
Year: 2024
Description:
This study presents an on-demand home service web application designed to connect users with service providers for various household tasks such as plumbing, electrical repair, cleaning, and maintenance. The system aims to simplify the process of accessing services by providing a centralized platform where users can register, browse available services, and request service providers based on their location and requirements.
The platform focuses on improving accessibility and efficiency by enabling users to quickly find suitable service providers and complete service requests without delays. It supports service categorization, user registration, and request handling through a web-based interface. The system also highlights the importance of digital transformation in replacing traditional manual methods with automated service management solutions.

3) Title**:** Smart On-Demand Home Service Web Application
Authors: Rhea Nayang Tortor, Rodri Temprosa Alviar, Eayan Earl Golifardo Dacian, Paul Andrei Rabe Pelaez, Journey Laraquel Sales
Year: 2024
Description:
This presents a smart on-demand home service web application designed to connect customers with service providers through a centralized digital platform. The system enables users to register, browse various household services such as plumbing, electrical repair, and cleaning, and book service providers based on their requirements. The platform aims to replace traditional manual methods with a more efficient and accessible online system, improving service availability and reducing time consumption.
The proposed system focuses on enhancing user interaction by providing structured service listings, simplified booking processes, and efficient request handling. It allows service providers to register and offer their services while ensuring smooth coordination between customers and providers. The study highlights the importance of digital transformation in improving accessibility, usability, and overall service delivery in modern environments.

4) Title: GIGTROOP: A Home Service Provider Application
Authors: Sujata Wankhede, Yogesh Katre, Sagar Pokhare, Sonali Walke, Suvidya Mandlik, Yash Wadichar
Year: 2024
Description:
This paper presents GIGTROOP, a home service provider application designed to simplify access to household services in modern urban environments. The system provides a centralized platform where users can book services such as repairs, cleaning, appliance installation, and maintenance. It focuses on reducing the burden of manual searching and negotiation by offering a streamlined and user- friendly booking process.
The platform emphasizes convenience and efficiency by enabling users to schedule services easily while allowing service providers to register and offer their skills to a wider audience. It supports categorized services and ensures that customers can access reliable doorstep services without difficulty. The study highlights how digital solutions improve quality of life by saving time and providing hassle-free service access.

III. SYSTEM ANALYSIS

A. Existing System

In the current scenario, household services such as plumbing, electrical work, cleaning, and maintenance are mostly accessed through traditional and unstructured methods. Customers usually depend on personal contacts, local references, advertisements, or nearby service shops to find service providers. This approach is time-consuming and often unreliable, as users have limited information about the service provider's skills, experience, and trustworthiness. There is no proper system to verify the identity of the provider, which raises safety concerns when allowing unknown individuals into homes.
Although some digital platforms and applications have been introduced, most existing systems focus only on basic service listing and booking functionalities. They often lack important features such as real-time tracking of service providers, secure verification mechanisms, automated notifications, and structured issue management systems. In many cases, service providers can register

without strict verification, which reduces trust and reliability. Additionally, there is limited transparency in pricing, service status, and communication between customers and providers.

Furthermore, existing systems do not provide complete service management capabilities such as invoice generation, complaint handling, and proper admin monitoring. Customers cannot easily track service progress or report issues effectively, and providers may miss scheduled tasks due to lack of reminders. As a result, the current systems fail to offer a fully secure, transparent, and efficient solution for managing household services, highlighting the need for an improved and more advanced platform.

Overall, the existing system for accessing household services is inefficient, unstructured, and lacks reliability. Users mainly depend on manual methods such as personal contacts or local references, while available digital platforms provide only basic booking features without advanced functionalities like real-time tracking, secure verification, notifications, or proper issue management. The absence of strict provider verification and limited transparency in pricing and service status further reduces user trust and safety. Additionally, the lack of features such as invoice generation, complaint handling, and effective admin control makes current systems incomplete, highlighting the need for a more secure, transparent, and efficient solution.

B. Proposed System

The proposed system introduces a modern and structured web-based platform that simplifies the process of accessing household services such as plumbing, electrical work, cleaning, and maintenance. Unlike traditional methods, the system provides a centralized digital solution where customers can easily search, book, and manage services through a user- friendly interface. Service providers can register on the platform, but they are allowed to offer services only after admin approval, ensuring that all providers are verified and trustworthy. This creates a safer and more reliable environment for users.

The system goes beyond basic service booking by integrating advanced features that improve transparency and user experience. Customers can track the real-time location of service providers using live tracking, which helps in better time management and reduces uncertainty. Additionally, QR code-based verification allows users to confirm the identity of the provider before the service begins, enhancing security. The platform also includes automated notifications that remind service providers about their scheduled work, ensuring timely service delivery and reducing missed appointments.

Furthermore, the proposed system provides complete service management features, including invoice generation and download after service completion, which helps users maintain proper records. Customers can also report issues directly to the admin through an integrated complaint system, enabling quick resolution and improved service quality. With effective admin monitoring, secure authentication, and advanced functionalities, the system offers a transparent, efficient, and reliable solution for managing household services, overcoming the limitations of existing systems.

The system includes advanced features such as real-time tracking using live location, QR code-based provider verification, automated notifications for scheduled work, invoice generation, and an issue reporting mechanism for quick resolution. Overall, the platform improves convenience, transparency, security, and service management, offering a reliable and user-friendly solution for both customers and service providers.

C. Proposed Solution

The proposed solution aims to overcome the limitations of existing household service systems by developing a secure, centralized, and user-friendly web platform. It enables customers to easily search, book, and manage services while ensuring that only admin-approved service providers can offer services, thereby improving trust and safety.

The system incorporates advanced features such as real-time tracking of service providers using live location, QR code-based verification for identity confirmation, automated notifications to prevent missed bookings, and invoice generation for proper record-keeping. Additionally, an issue reporting mechanism allows customers to directly communicate with the admin for quick resolution. Overall, the solution enhances efficiency, transparency, security, and service quality, providing a complete digital approach to household service management.

D. Ideation & Brainstorming

The ideation and brainstorming phase was focused on identifying a solution to improve the way people access household services. Various ideas such as mobile applications, service listing websites, and manual booking systems were explored. After evaluating their feasibility, scalability, and user convenience, a web-based platform with real-time features was selected. This led to the development of a modern service platform that connects customers with verified service providers, ensuring secure, efficient, and transparent service management.

1) Problem Identification

During the initial phase, the team conducted research and discussions to understand the real challenges faced by users while accessing household services. The study included interactions with students, families, and working professionals to identify common issues in finding reliable service providers. Some of the major problems identified were:

- Finding trustworthy service providers is difficult, as most people rely on personal contacts or local references.
- Traditional methods are time-consuming and lack proper organization, leading to delays and inconvenience.
- Service providers may forget scheduled tasks due to lack of reminders, affecting service reliability.
- Customers do not have an easy way of reporting issues or complaints, leading to poor service management.

These challenges highlighted the need for a secure, user-friendly, and efficient web-based system that can provide reliable service booking, real-time tracking, verification, and effective communication between customers and service providers.

2) Idea Generation

The ideation and brainstorming phase involved exploring multiple potential solutions to address the identified challenges in accessing reliable household services. The team used creative thinking techniques such as mind mapping, "How Might We" questions, and scenario-based analysis to generate innovative ideas. Some of the key ideas generated were:

- Web-Based Service Booking Platform: A centralized system where users can search, book, and manage household services through a browser-based interface without installation.
- Real-Time Service Tracking: Integration of live location tracking to allow customers to monitor the service provider's movement and estimated arrival time.
- Notification and Reminder System: Automated alerts for service providers regarding their scheduled tasks to prevent missed bookings.
- QR Code-Based Verification Module: A feature that allows customers to scan a QR code to verify the identity of the service provider before the service begins.

Through this idea generation process, the concept of a modern web-based home service platform was finalized — a system designed to provide secure, efficient, and transparent service management with real-time and user-centric features.

3) Evaluation and Selection

After generating multiple ideas, the team evaluated each concept based on feasibility, security, usability, real-time performance, and overall user experience. The goal was to select a solution that could be effectively implemented using modern web technologies while delivering maximum value to both customers and service providers.

The selected solution was designed using a modular architecture, allowing easy updates and scalability for future enhancements such as mobile integration, additional service categories, and advanced analytics. This approach ensures flexibility and adaptability as user requirements evolve.

Selection Criteria Included:

- Feasibility: Can the system be developed using available technologies like React, Node.js, and Supa base?
- Security: Does the system ensure safe interactions through admin approval and QR verification?
- **Us**ability**:** Is the platform simple and user-friendly for both customers and service providers?
- Scalability: Can the system handle increasing users and additional services in the future?
- Efficiency**:** Does it reduce time consumption and improve service coordination?

4) Concept Development

Once the core ideas were finalized, the team moved into the concept development phase to transform the idea into a functional system. This stage focused on defining workflows, designing system architecture, and ensuring a smooth and intuitive user experience.

The process included:

- Creating system architecture diagrams to illustrate the interaction between frontend, backend, database, and external services.

- Designing database structure and workflows for managing users, services, bookings, payments, and feedback.
- Developing wireframes and UI mockups for the platform using tools like Figma, focusing on simplicity and responsiveness.
- Identifying key modules such as user authentication, service booking, provider dashboard, real-time tracking, QR verification, notifications, and issue reporting.
- Conducting collaborative brainstorming sessions using tools like Draw.io and Miro to refine workflows and improve the user journey.

E. Problem Solution Fit

The "Service at Your Home – Web Based Service Platform" was conceptualized to address the major challenges faced by users in accessing reliable household services. The problem–solution fit ensures that the developed system directly solves real-world issues such as lack of trust, inefficiency, and poor service management through a secure, real- time, and user-friendly digital platform designed for convenience and transparency.

Identified Problems

- Difficulty in finding trustworthy service providers, as users depend on personal contacts or local references.
- Traditional service booking methods are time-consuming, unstructured, and inefficient.
- Existing platforms provide only basic booking features without real-time tracking or proper service monitoring.
- Lack of provider verification leads to safety concerns when allowing unknown individuals into homes.
- Service providers may forget scheduled tasks due to absence of reminders, affecting service reliability.
- No proper system for customers to report issues or complaints, leading to poor service quality management.
- Lack of transparency in pricing, service status, and communication between customers and providers.

Proposed Solutions

- Centralized Web-Based Platform: Provides a single system where users can search, book, and manage household services easily.
- Admin-Based Provider Verification: Ensures only approved and verified service providers can offer services, improving trust and safety.
- Real-Time Tracking (Live Location): Enables customers to track service providers in real time, enhancing transparency and time management.
- QR Code-Based Verification: Allows customers to verify the identity of service providers before the service begins, ensuring security.
- Notification and Reminder System: Sends automated reminders to service providers about scheduled tasks to avoid missed bookings.

Fit Analysis

The "Service at Your Home – Web Based Service Platform" demonstrates a strong alignment between the identified problems and the implemented solutions. Each feature has been designed considering usability, security, real-time performance, and user convenience. By integrating modern web technologies with real-time capabilities and verification mechanisms, the system effectively addresses challenges such as lack of trust, inefficiency, and poor service management. The inclusion of admin approval, QR-based verification, and issue reporting ensures a safe and transparent environment for both customers and service providers.

Furthermore, the solution is scalable and adaptable, allowing future enhancements such as mobile application support, additional service categories, advanced analytics, and wider geographical coverage. The use of technologies like React, Node.js, and Supabase ensures high performance, real-time updates, and secure authentication, making the system suitable for real-world deployment. This guarantees long-term sustainability and continuous improvement of the platform. The system workflow begins when a customer registers and searches for a required service through the web interface. The user selects a service and books it based on availability, after which the request is assigned to a service provider.

Only admin-approved providers can accept and perform services, ensuring reliability. On the scheduled day, the provider receives notifications as reminders, reducing the chances of missed appointments. Customers can track the provider's live location in real time and verify their identity using QR code scanning before the service begins.

Once the service is completed, the system generates an invoice that can be downloaded by the customer for record-keeping. Customers can also provide feedback or report issues directly to the admin, enabling quick resolution and improving service quality. All service data, including bookings, payments, and feedback, is stored in the database for future reference and system improvement. This workflow ensures a smooth, transparent, and efficient service experience, delivering a reliable digital solution for managing household services.

F. Architecture Design

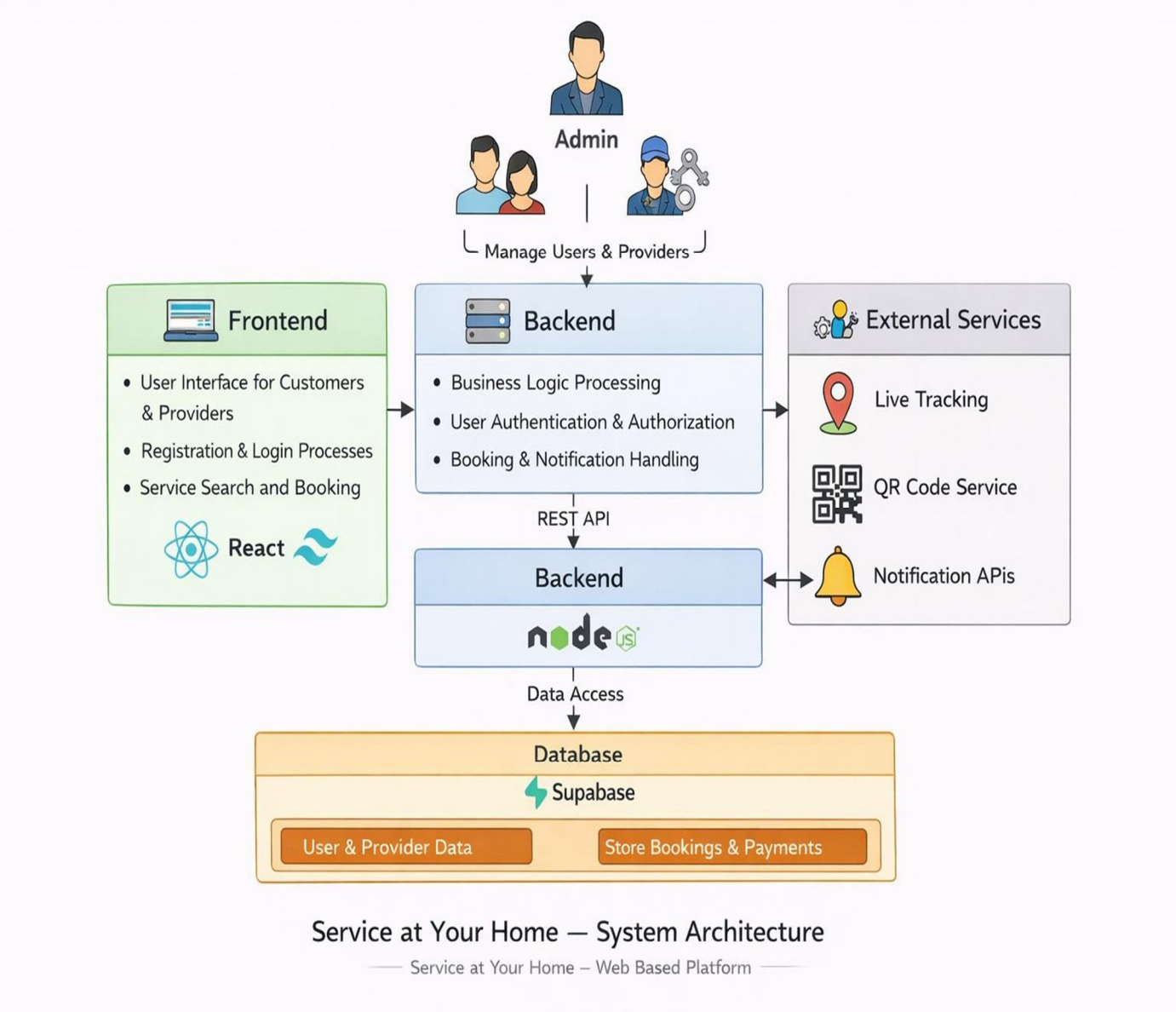


Figure 3.1: Model Architecture

The figure shown above represents the Solution Architecture that we made use of in our Project.

The Service at Your Home – Web Based Service Platform enables efficient interaction between customers, service providers, and admin through a centralized digital system. The process begins when the user accesses the platform through the frontend interface developed using React and Tailwind CSS, where customers can register, log in, search for services, and book them based on availability. The request is sent to the backend through secure API calls, where Node.js handles the business logic such as authentication, booking management, provider assignment, and notification handling.

Once a service is booked, the system assigns the request to an admin-approved service provider, ensuring safety and reliability. On the scheduled day, the provider receives notifications as reminders, and the customer can track the provider's live location in real time. Before the service begins, the customer can verify the provider's identity using QR code scanning, which adds an additional layer of security.

G. Description Of Modules

1) Admin Module

The Admin Module provides centralized control over the entire Service at Your Home platform. The admin is responsible for managing both customers and service providers, ensuring that the system operates securely and efficiently. One of the key functionalities of this module is provider verification, where service providers can register but are allowed to offer services only after admin approval. This ensures that only trusted and verified professionals are available on the platform, enhancing user safety and reliability.

In addition to verification, the admin monitors all platform activities, including service bookings, user interactions, and reported issues. The module allows the admin to view and manage complaints submitted by customers and take appropriate actions for resolution. The admin can also oversee system performance, manage user accounts, and ensure that platform rules and policies are followed. With dashboards and monitoring tools, this module plays a crucial role in maintaining transparency, security, and smooth operation of the entire system.

2) Service Provider Module

The Service Provider Module enables professionals such as plumbers, electricians, and cleaners to register and offer their services through the platform. Providers can create and manage their profiles by adding details such as service type, experience, availability, and pricing. However, they can begin offering services only after receiving admin approval, ensuring a verified and trustworthy environment.

Once approved, service providers can view and manage incoming service requests from customers. They can accept or reject bookings based on their availability and receive automated notifications for scheduled tasks to avoid missing appointments. The module also supports features such as updating service status, tracking job assignments, and maintaining service history. Additionally, providers can generate or view invoices related to completed services. This module helps service providers efficiently manage their work while improving coordination and service delivery.

3) Customer Module

The Customer Module allows users to easily access and book household services through a simple and user-friendly interface. Customers can register, log in, browse available services by category, and select service providers based on their needs. The platform enables seamless booking of services, providing details such as service type, date, and time.

To enhance transparency and security, customers can track the live location of service providers in real time and verify their identity using QR code scanning before the service begins. After service completion, customers can download invoices for record-keeping. The module also allows users to report issues or complaints directly to the admin, ensuring quick resolution and improved service quality. With features like booking management, tracking, verification, and feedback, this module ensures a convenient, secure, and reliable service experience for users.

H. Dataflow Diagram

Data Flow Theory explains how data moves through a system — from input to processing and finally to output. It focuses on identifying how information is transferred, transformed, and stored within various components of a system. In software engineering, a Data Flow Diagram (DFD) visually represents this flow using processes, data stores, and external entities, helping developers understand system functionality and data dependencies. The theory emphasizes efficiency, clarity, and structured design, ensuring smooth communication between modules and reducing redundancy in data handling.

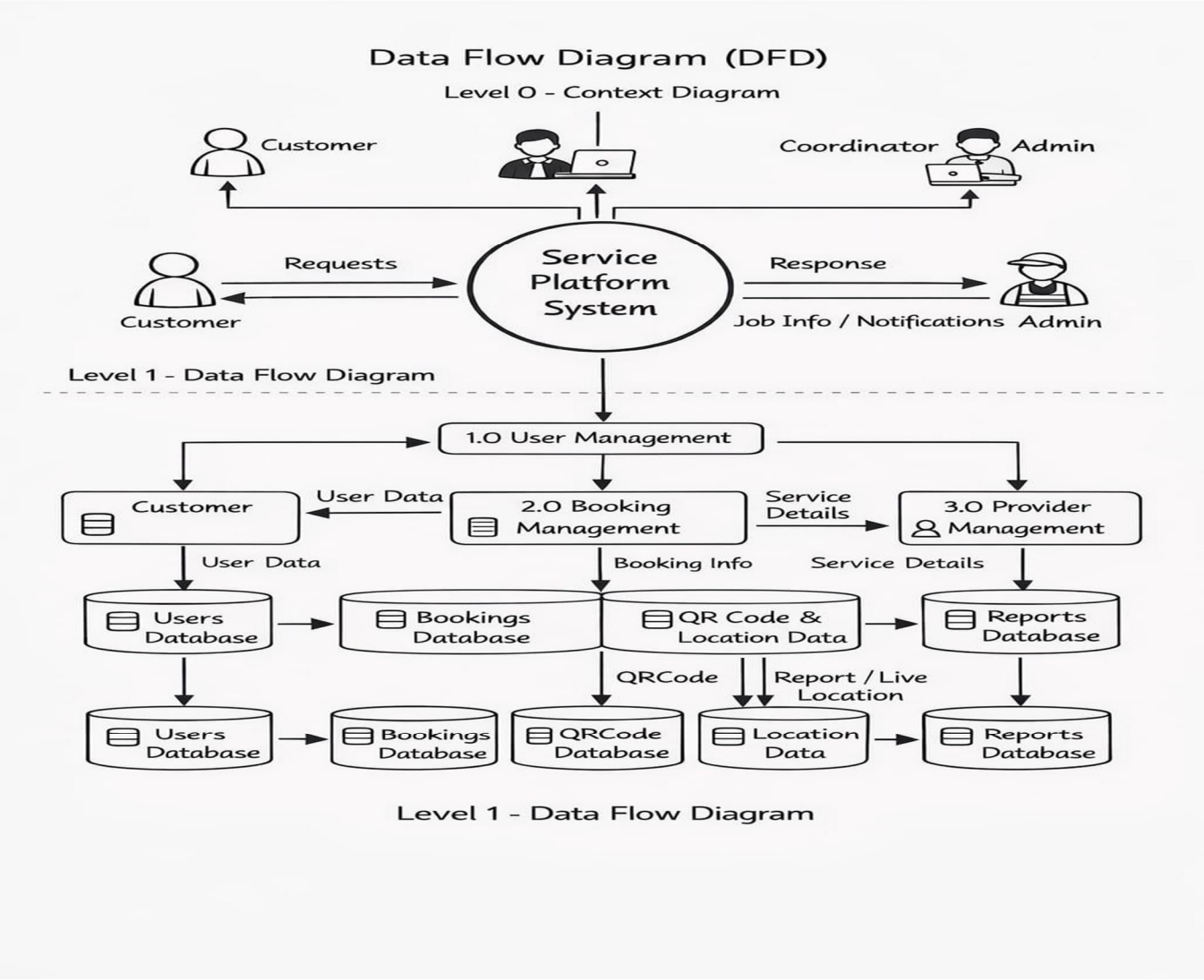


Figure 3.2: Data Flow Diagram

IV. SYSTEM REQUIREMENTS

A. *Hardware Requirement*

- SYSTEM: PC or Laptop with a minimum Intel Core i3 processor, 4 GB RAM, and at least 20 GB of available storage for development and execution.
- GRAPHICS: A minimum display resolution of 1366×768 is required for proper rendering of the web interface and dashboard views.
- INPUT DEVICES: Keyboard and mouse are required for interacting with the system, including booking services and managing dashboards.
- OUTPUT: Built-in or external display and speakers are sufficient for viewing system outputs such as service details, notifications, and invoices.
- STABLE INTERNET CONNECTION: A reliable internet connection (minimum 1–2 Mbps) is required for accessing the web platform, real-time tracking, and API-based services such as notifications and QR verification.
- CLIENT DEVICES: Compatible with desktops, laptops, and mobile devices running modern browsers such as Chrome, Firefox, or Edge.
- SERVER (Optional for Deployment): For hosting, a system with Intel i5 processor, 8 GB RAM, and 100 GB storage is recommended to handle multiple users and real-time operations.

B. Software Requirements

The Service at Your Home – Web Based Service Platform is developed using modern web technologies and tools to ensure scalability, performance, and real-time functionality.

- React.js: Used to build the frontend interface, providing a dynamic, responsive, and user- friendly experience.
- Tailwind CSS: Applied for styling the application with a clean and responsive UI design.
- Node.js & Express.js: Used for backend development to handle business logic, API requests, authentication, and service management.
- Supabase: Acts as the database and authentication provider, enabling real-time data synchronization and secure user management.
- JWT Authentication: Used for secure user login and role-based access control (admin, provider, customer).
- QR Code Library/API: Integrated for generating and scanning QR codes to verify service provider identity.
- Notification APIs: Used to send reminders and alerts to service providers regarding scheduled tasks.
- Google Maps API / Location Services: Enables real-time tracking of service providers using live location.
- Visual Studio Code: Used as the development environment for coding, testing, and debugging the application.
- Git & GitHub: Used for version control and collaborative development.

V. IMPLEMENTATION

A. Register And Login

The Register and Login module of the Service at Your Home – Web Based Service Platform serves as the secure entry point for all users, including customers, service providers, and administrators. New users can create an account by providing required details such as name, email, password, and role selection (customer or service provider). During registration, an OTP (One-Time Password) verification process is implemented, where a unique OTP is sent to the user's registered email or mobile number. The user must enter the correct OTP to complete registration, ensuring authenticity and preventing unauthorized or fake accounts. Service providers are also required to submit additional service-related details, which are reviewed and approved by the admin before they can start offering services.

The login process allows registered users to access the platform by entering valid credentials such as email/username and password. The system uses secure authentication mechanisms to verify user identity and ensure safe access. Once login is successful, the system identifies the user's role and redirects them to their respective dashboards.

Customers are directed to a dashboard where they can search, book, and track services, while service providers can manage service requests, update availability, and receive notifications for scheduled work. The admin has access to a centralized dashboard to manage users, approve service providers, monitor activities, and handle complaints. This module ensures secure access, role-based navigation, and reliable user authentication within the platform.

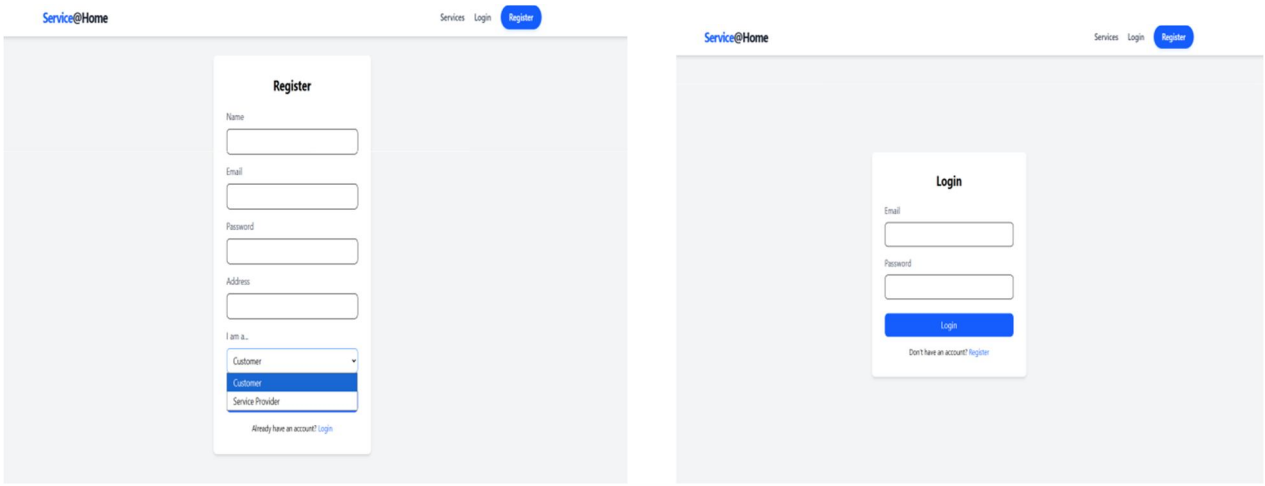


Fig 5.1 REGISTER AND LOGIN MODULE

B. Customer Module

The Customer Module provides a user-friendly interface that allows customers to access and manage household services efficiently. New users can register by providing basic details such as name, email, and password. During registration, an OTP (One-Time Password) verification process is implemented, where a unique OTP is sent to the user's registered email or mobile number. The user must enter the correct OTP to complete the registration, ensuring secure and authenticated user access. Once registered, customers can log in using their credentials and access the platform.

After successful login, customers can browse available services such as plumbing, electrical work, cleaning, and more through categorized listings. They can select a service, choose a suitable date and time, and book a service provider based on availability. The system provides a smooth booking experience and displays all necessary service details, ensuring convenience and clarity for the user.To enhance transparency and security, customers can track the live location of the service provider in real time and verify their identity using QR code scanning before the service begins. After service completion, customers can download invoices for record-keeping. Additionally, the module allows users to report issues or complaints directly to the admin, ensuring quick resolution and improved service quality. This module ensures a secure, reliable, and convenient experience for customers while using the platform.

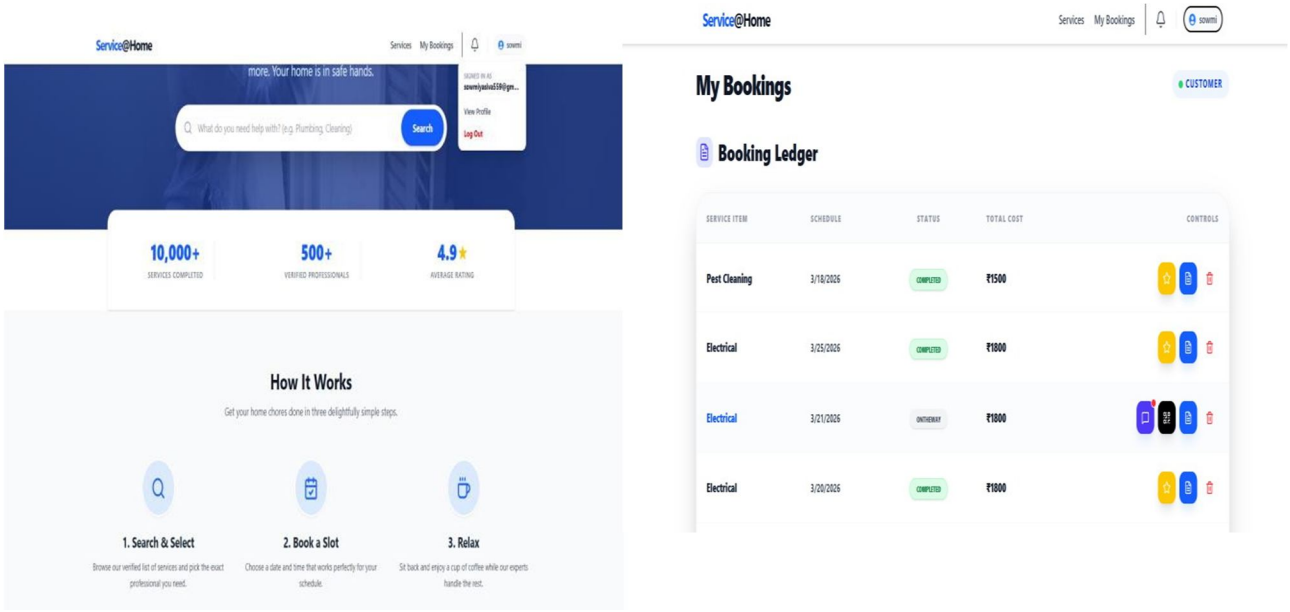


Fig 5.2 Customer Module

C. Service Provider Module

The Service Provider Module enables professionals such as plumbers, electricians, cleaners, and other service workers to register and offer their services through the platform. During registration, service providers must enter their personal and service-related details such as service type, experience, availability, and contact information. An OTP (One-Time Password) verification process is implemented to ensure secure registration. After successful verification, the provider's account is sent for admin approval, and only approved providers are allowed to access the system and start offering services, ensuring reliability and safety.

Once approved, service providers can log in to their dashboard and manage their services efficiently. They can view incoming service requests from customers, accept or reject bookings based on their availability, and update their service status accordingly. The system also sends automated notifications and reminders to providers on the day of work, helping them avoid missing scheduled tasks and ensuring timely service delivery.The module also supports features such as viewing booking history, managing profile details, and tracking assigned jobs. Providers can confirm service completion, after which invoices are generated for the customer. This module ensures smooth coordination between customers and service providers, improves service efficiency, and enhances the overall reliability of the platform.

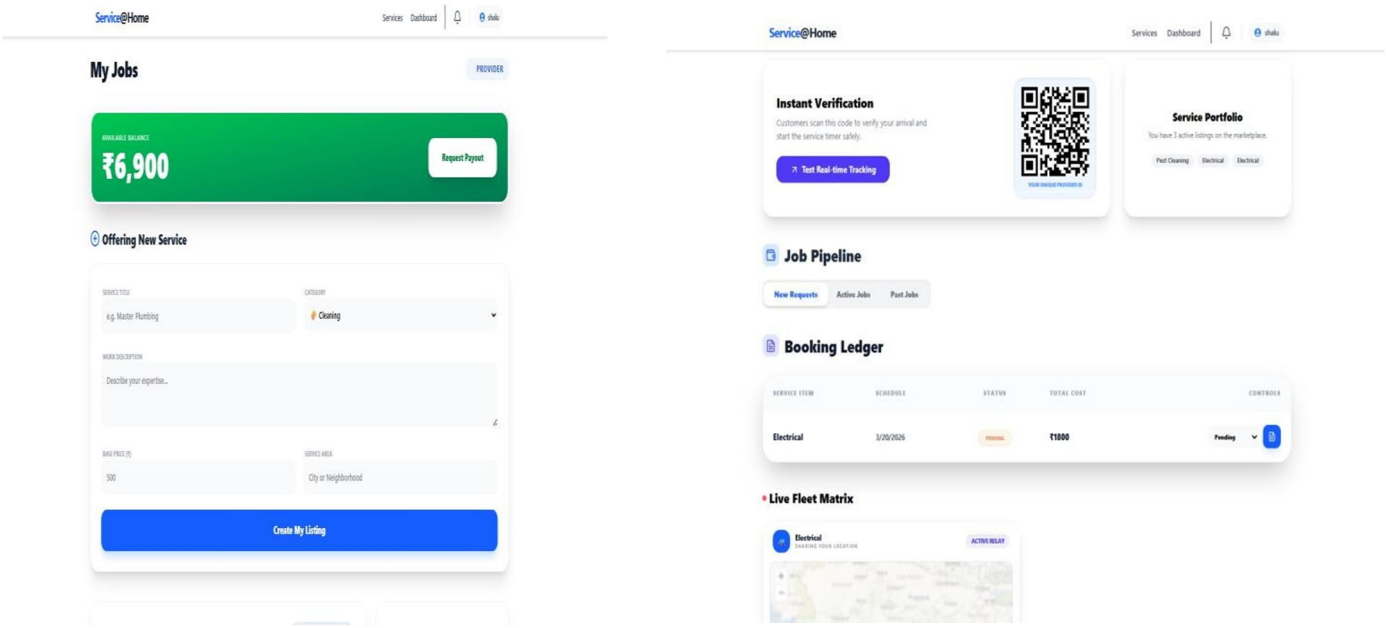


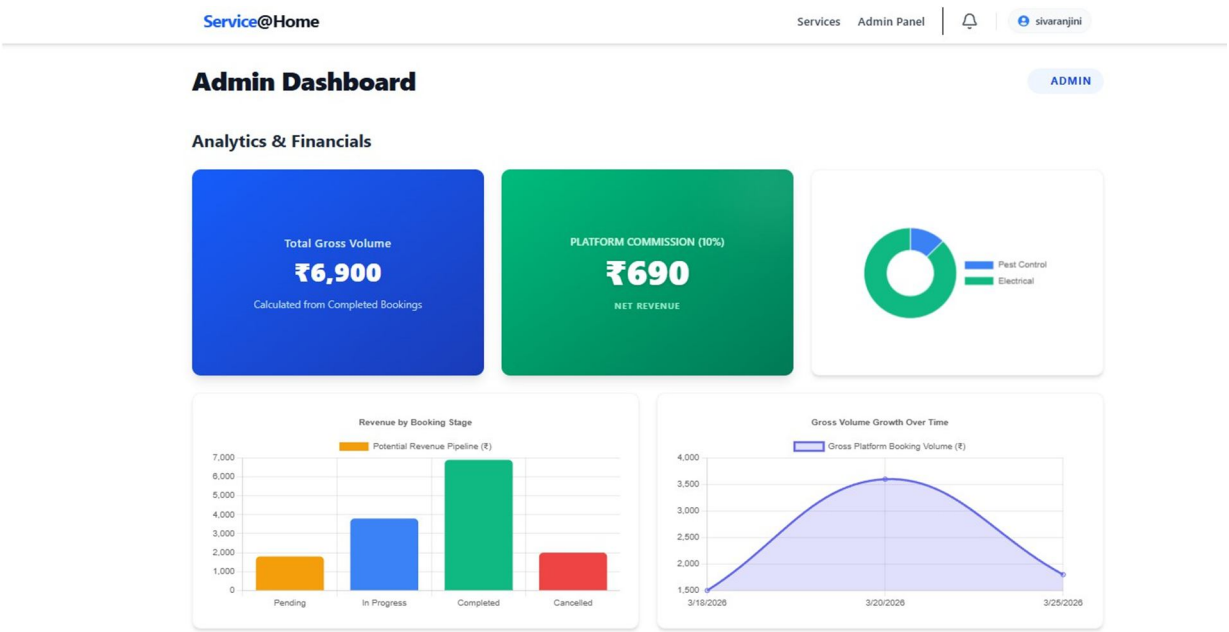
Fig 5.3 Service Provider Module

D. Admin Module

The Admin Module provides centralized control over the entire platform. The admin manages users and service providers, ensuring that only verified providers are approved to offer services.

The admin can monitor bookings, handle customer complaints, and take necessary actions to maintain service quality. This module also allows the admin to manage user accounts and oversee overall system activities.

By ensuring security, monitoring operations, and resolving issues, the admin module plays a key role in maintaining a reliable and efficient platform.



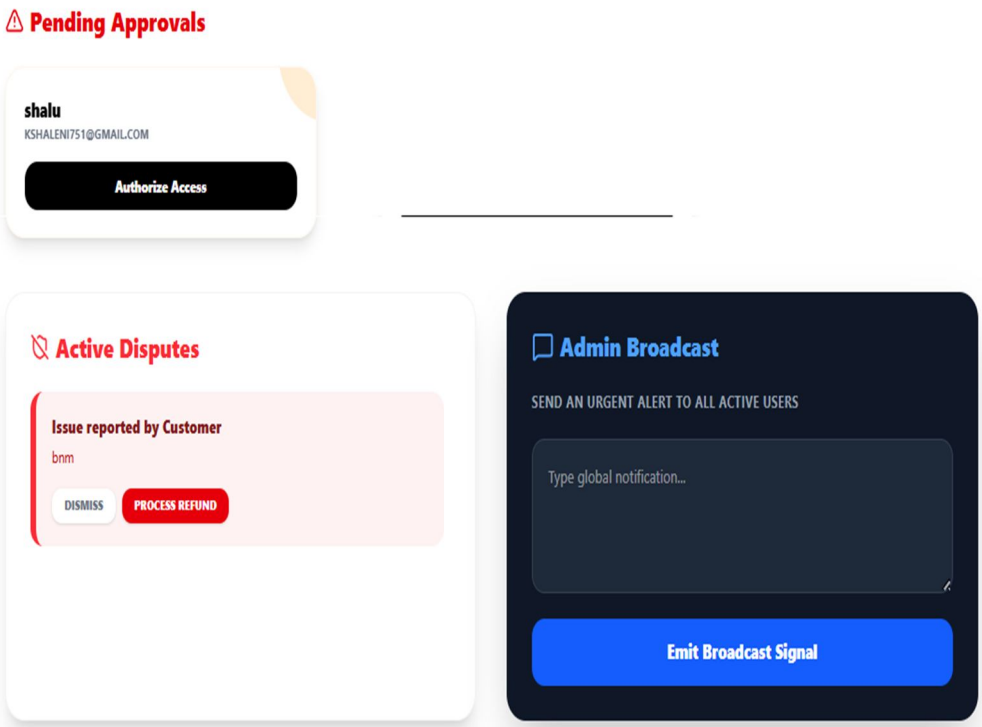


Fig 5.4 Admin Module

E. Software Description

1) VS CODE

Visual Studio Code (VS Code) is the primary Integrated Development Environment (IDE) used for developing the Service at Your Home – Web Based Service Platform. It is a lightweight yet powerful open-source code editor developed by Microsoft that supports multiple programming languages including JavaScript, HTML, CSS, and backend frameworks such as Node.js. VS Code provides a unified workspace where both frontend and backend development can be efficiently managed.

The IDE offers advanced features such as syntax highlighting, IntelliSense (auto- completion), debugging tools, and an integrated terminal, which significantly improve developer productivity. Extensions like Prettier, ESLint, Tailwind CSS IntelliSense, REST Client, and Live Server are used to enhance code formatting, maintain coding standards, and enable real-time preview of the application. Developers can test API endpoints, debug errors, and monitor logs directly within the IDE.

Additionally, VS Code includes built-in Git integration, allowing developers to manage version control, track code changes, and collaborate effectively. This is especially useful for maintaining different modules such as authentication, booking, tracking, and notifications. The flexibility, speed, and extensive extension support make VS Code an ideal choice for building a full-stack, real-time web application like this project.

2) Frontend

The frontend of the system is developed using React.js and Tailwind CSS, providing a dynamic, responsive, and highly interactive user interface. The frontend is responsible for handling all user interactions and presenting data in a clear and intuitive manner. It serves as the visual layer where customers, service providers, and admin interact with the system.

The interface includes several components such as registration and login forms with OTP verification, service listing pages, booking interfaces, dashboards, tracking views, and invoice download options. React's component-based architecture allows reusable UI elements, improving development efficiency and maintainability. State management ensures that user actions such as booking, tracking, and updates are reflected instantly.

Tailwind CSS is used to design a clean and modern layout with responsive grids, flexible components, and consistent styling. The

frontend also integrates with APIs to fetch real-time data such as service availability, booking status, and provider location. Features like live tracking, QR code display for verification, and dynamic notifications are handled through interactive UI components.

The responsive design ensures that the platform works seamlessly across multiple devices including desktops, tablets, and mobile browsers. Every element of the interface is designed with simplicity and usability in mind, ensuring that even non-technical users can easily navigate the system.

3) Backend

The backend of the system is developed using Node.js and Express.js, which handle all server-side operations and business logic. The backend acts as the core processing unit, managing communication between the frontend and the database while ensuring secure and efficient data handling.

It provides RESTful APIs for functionalities such as user registration, login authentication, service booking, provider approval, notification handling, invoice generation, and issue reporting. The backend also implements role-based access control, ensuring that customers, service providers, and admin have access only to their respective functionalities.

The system includes logic for OTP verification, secure session handling, and validation of user inputs to prevent unauthorized access. It also integrates QR code generation and verification processes to ensure that only authenticated service providers can perform services. Notification services are implemented to send reminders and alerts for scheduled bookings.

The backend efficiently handles asynchronous operations such as real-time updates, booking confirmations, and tracking data. Its scalable architecture ensures that the system can support multiple users and simultaneous requests without performance issues.

4) Database

The system uses Supabase as the primary database and authentication provider, offering a modern, cloud-based backend infrastructure. Supabase provides a real-time PostgreSQL database, which allows instant synchronization of data across the application.

The database stores structured data such as user profiles, service provider details, service categories, booking records, invoices, payment details, and complaints. Data is organized into relational tables to ensure consistency and efficient querying. Supabase also provides built-in authentication features, including secure login, OTP verification, and role-based user management, reducing the complexity of implementing authentication manually.

Real-time capabilities of Supabase enable features such as live booking updates, tracking status changes, and instant notifications, enhancing user experience. The cloud-based nature ensures high availability, scalability, and data security, making it suitable for handling large volumes of users and transactions.

5) Integration Module

The integration module enhance the system by incorporating external services and advanced functionalities that improve usability, security, and performance.

- Real-Time Tracking Module: Uses location services such as Google Maps API to track the live location of service providers. Customers can view the provider's movement and estimated arrival time in real time, improving transparency and time management.
- QR Code Verification Module: Generates unique QR codes for each service provider. Customers can scan the QR code before service begins to verify the provider's identity, ensuring safety and preventing unauthorized access.
- Notification Module: Implements automated alerts and reminders for both customers and service providers. Providers receive notifications about scheduled tasks, while customers receive updates about booking status and service progress.
- Invoice Generation Module: Automatically generates digital invoices after service completion. Customers can download these invoices for record-keeping, ensuring professionalism and transparency in transactions.

F. Code Implementation

1) Step 1: Set up the Authentication System (Register, Login & OTP Verification)

This step ensures secure user registration and login by implementing authentication with OTP verification for validating user identity.

Code Snippet:

```
// Backend (Node.js + Express + Supabase) import express from "express";
import { createClient } from "@supabase/supabase-js"; const app = express();
app.use(express.json());
const supabase = createClient(SUPABASE_URL, SUPABASE_KEY); app.post("/register", async (req, res) => {
  const { email, password } = req.body;
  const { data, error } = await supabase.auth.signUp({ email, password }); if (error) return res.status(400).json(error);
  res.json({ message: "OTP sent to email" });
});
app.post("/login", async (req, res) => { const { email, password } = req.body;
  const { data, error } = await supabase.auth.signInWithPassword({ email, password }); res.json(data);
});
// Frontend (React - Vite) import axios from "axios";
import { useState } from "react"; export default function Auth() {
  const [email, setEmail] = useState("");
  const [password, setPassword] = useState(""); const register = async () => {
    await axios.post("http://localhost:5000/register", { email, password }); alert("OTP sent");
  };
  const login = async () => {
    const res = await axios.post("http://localhost:5000/login", { email, password });
    console.log(res.data);
  };
  return (
    <>
      <input placeholder="email" onChange={(e) => setEmail(e.target.value)} />
      <input placeholder="password" onChange={(e) => setPassword(e.target.value)} />
      <button onClick={register}>Register</button>
      <button onClick={login}>Login</button>
    </>
  );
  }
```

2) Step 2: Set up Role-Based Access (Admin, Customer, Service Provider Dashboards)

This step manages role-based access control, redirecting users to their respective dashboards based on their roles.

Code Snippet:

```
// Backend
app.post("/add-role", async (req, res) => { const { user_id, role } = req.body;
  await supabase.from("users").insert([{ id: user_id, role }]); res.json({ message: "Role added" });
});



// Frontend
const handleLogin = async () => {
  const res = await axios.post("/login", { email, password }); const role = res.data.user.user_metadata.role;
  if (role === "admin") window.location = "/admin";
  else if (role === "provider") window.location = "/provider"; else window.location = "/customer";
};
```

3) Step 3: Set up Booking Management System

This step enables customers to book services and allows service providers to accept or reject requests based on availability.

Code Snippet:

```
// Frontend
const bookService = async () => {
  await axios.post("/book", { user_id: 1, service: "Plumber", date: "2026-03-25" }); alert("Service Booked");
};
// Backend
app.post("/book", async (req, res) => { const { user_id, service, date } = req.body;
  await supabase.from("bookings").insert([{ user_id, service, date, status: "pending" }]); res.json({ message: "Booked
  successfully" });
})
```

4) Step 4: Set up Real-Time Tracking & QR Verification System

This step integrates live location tracking and QR code verification to enhance transparency and ensure secure service delivery.

Code Snippet:

```
// Frontend
import { useEffect, useState } from "react"; import axios from "axios";
export default function QR() { const [qr, setQr] = useState(""); useEffect(() => {
    axios.get("/generate-qr/123").then((res) => setQr(res.data.qr));
  }, []);
  return <img src={qr} alt="QR Code" />;
}// Backend
import QRCode from "qrcode"; app.get("/generate-qr/:id", async (req, res) => {
  const qr = await QRCode.toDataURL(req.params.id); res.json({ qr });});
```

G. Result

The Service at Your Home – Web Based Service Platform was functionally tested across all its major modules to ensure smooth operation and proper interaction between system components. The results confirm that the system performs all intended functionalities effectively, providing a secure, efficient, and user-friendly experience.

Functional Results:

- Service Booking and Management Module: The system successfully allows customers to search, select, and book household services such as plumbing, electrical work, and cleaning. Service providers can view incoming requests and accept or reject bookings based on availability. The booking process is smooth, and all booking details are updated and stored in real time.
- Authentication and Verification Module: The system ensures secure user registration and login through OTP verification. Additionally, service providers are allowed to offer services only after admin approval. The QR code-based verification feature enables customers to confirm the identity of service providers before service begins, ensuring safety and trust.
- Real-Time Tracking and Notification Module: The platform effectively tracks the live location of service providers, allowing customers to monitor their movement and estimated arrival time. Automated notifications are sent to service providers for scheduled tasks, reducing missed appointments and improving service reliability.
- Invoice Generation and Issue Reporting Module: After service completion, the system generates invoices that can be downloaded by customers for record-keeping. The issue reporting mechanism allows customers to submit complaints directly to the admin, ensuring quick resolution and improved service quality. All reports and service data are stored efficiently for future reference.

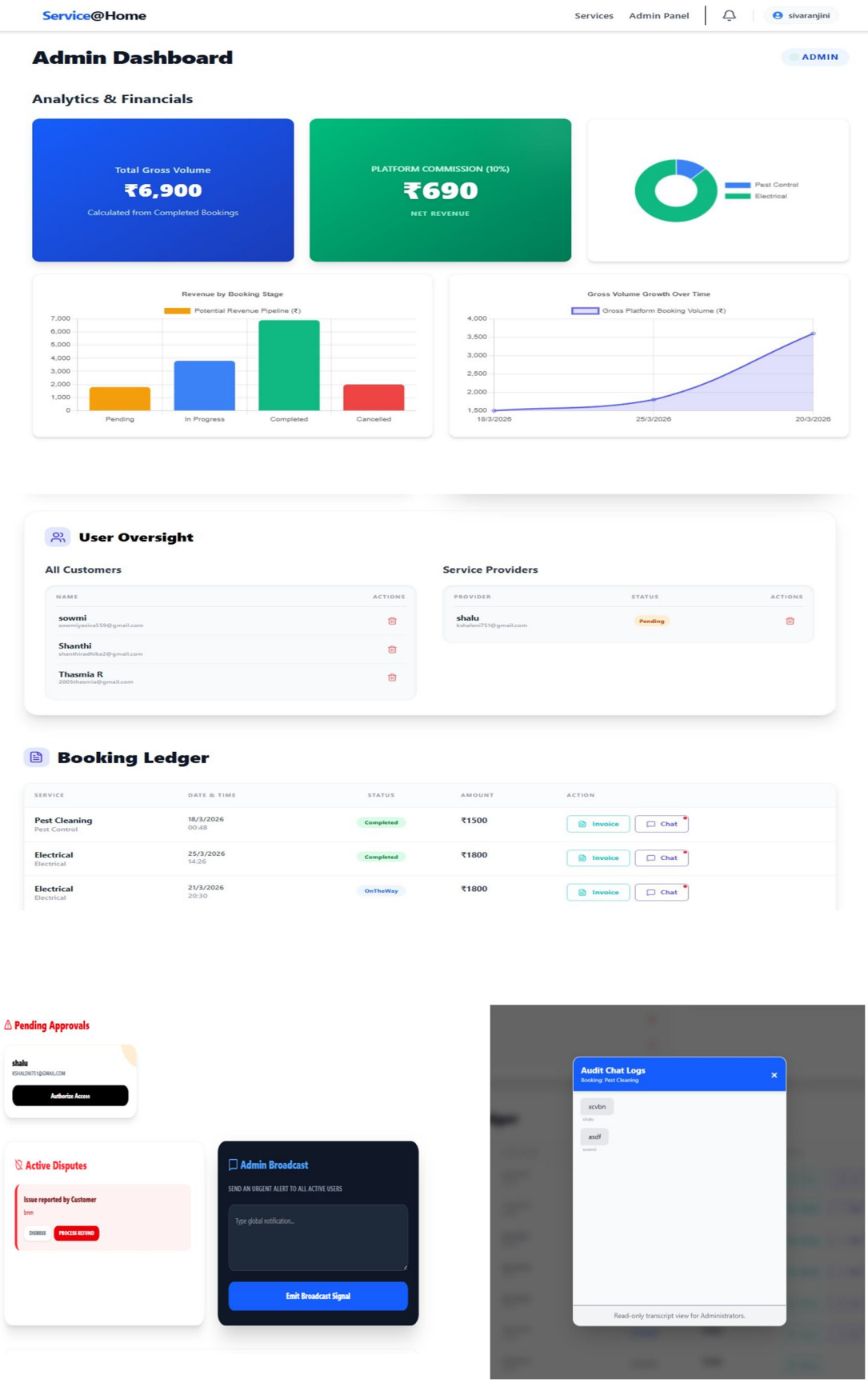


Fig 5.5 Admin Dashboard

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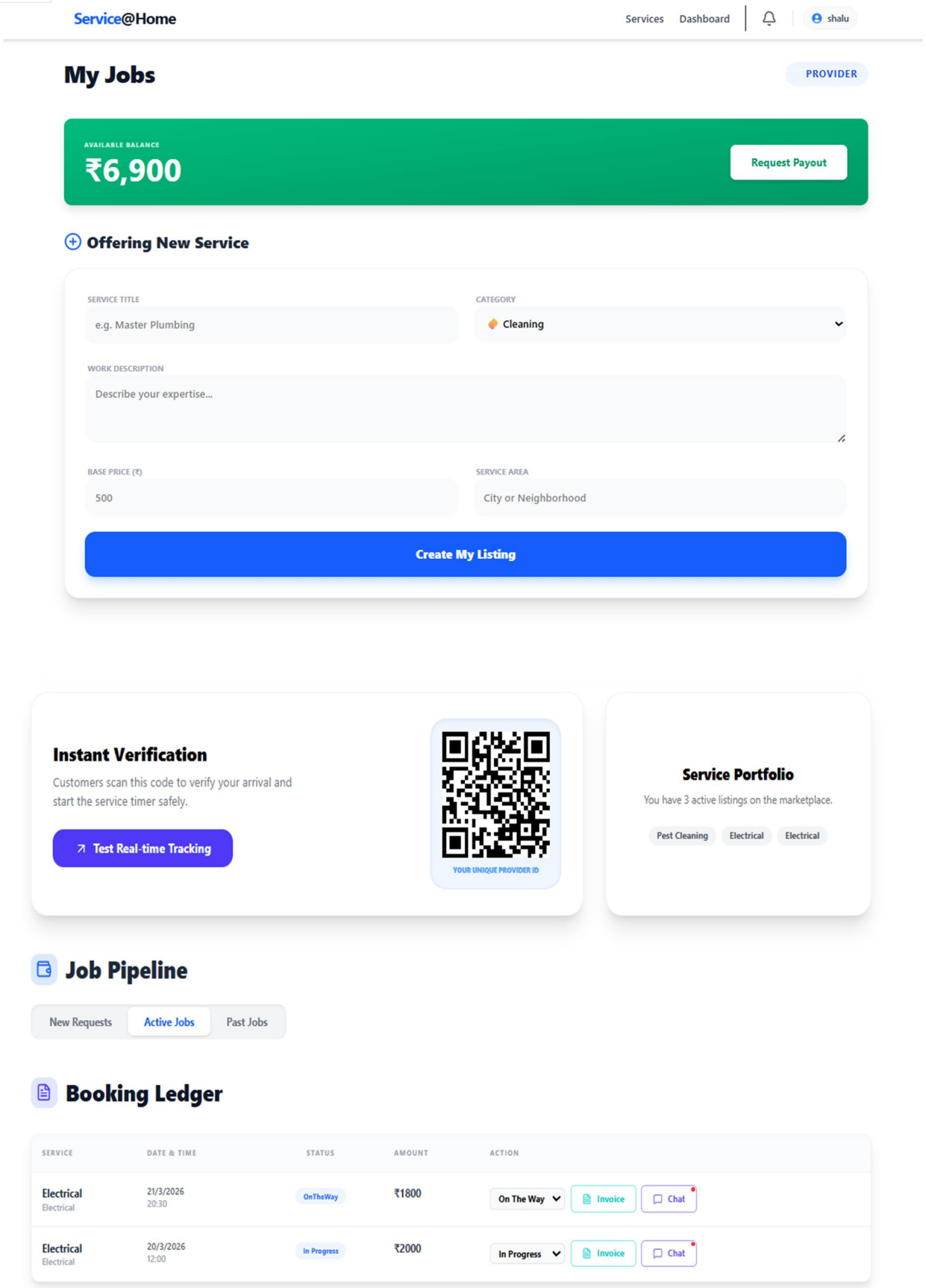


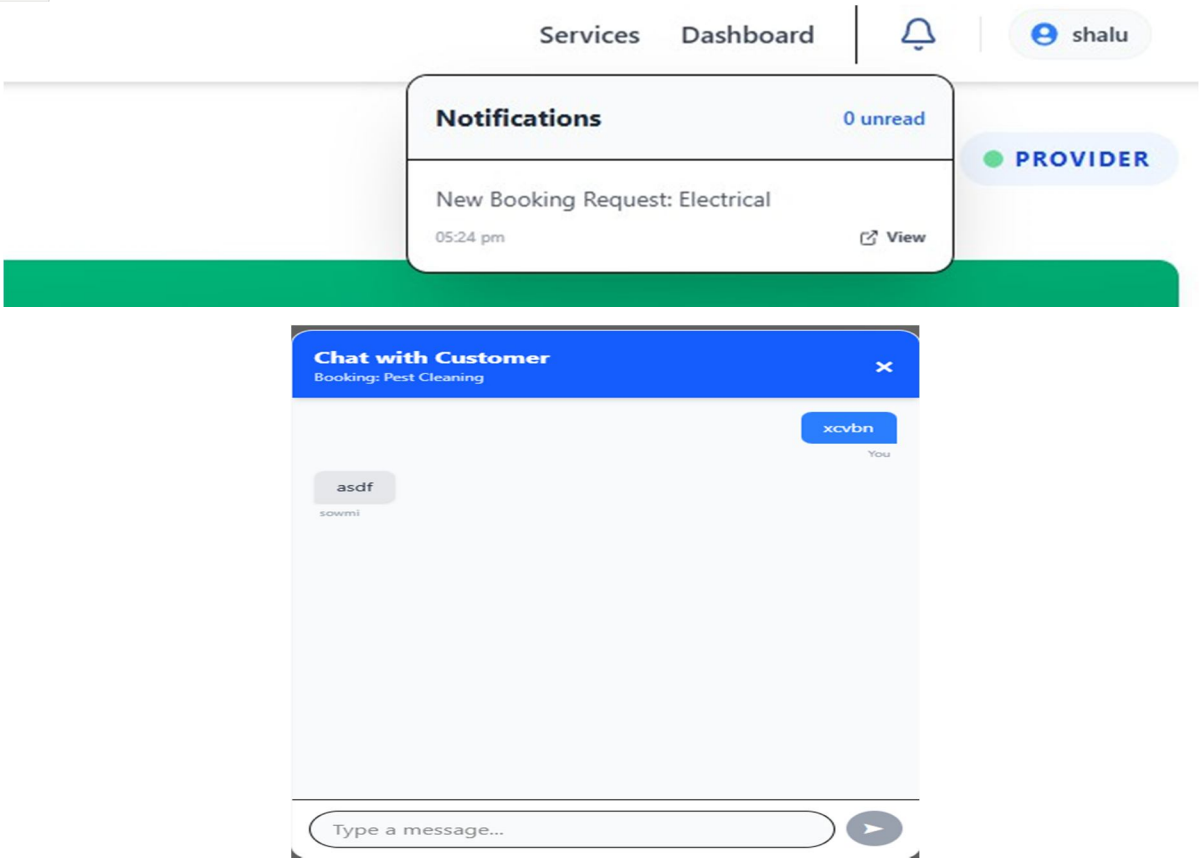
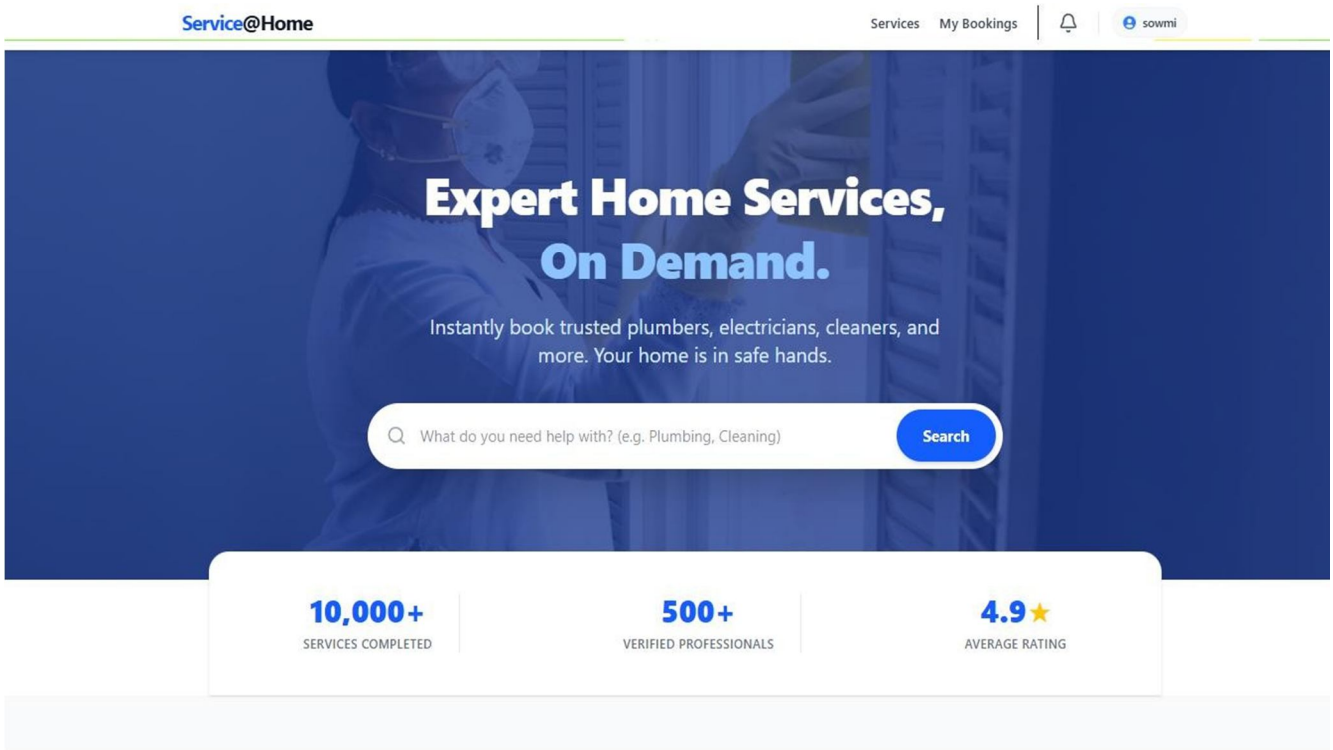


Fig 5.6 Service Provider Dashboard



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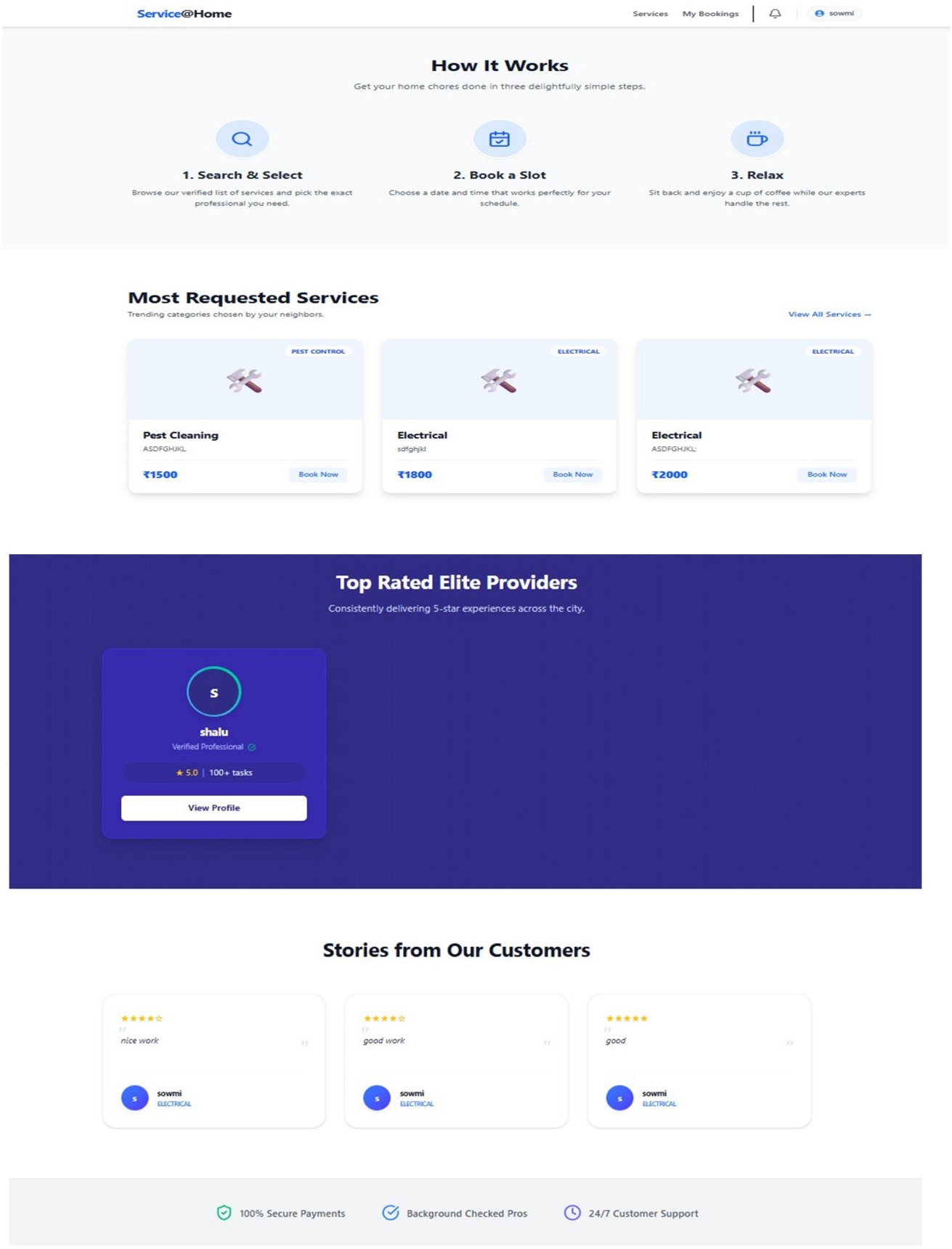
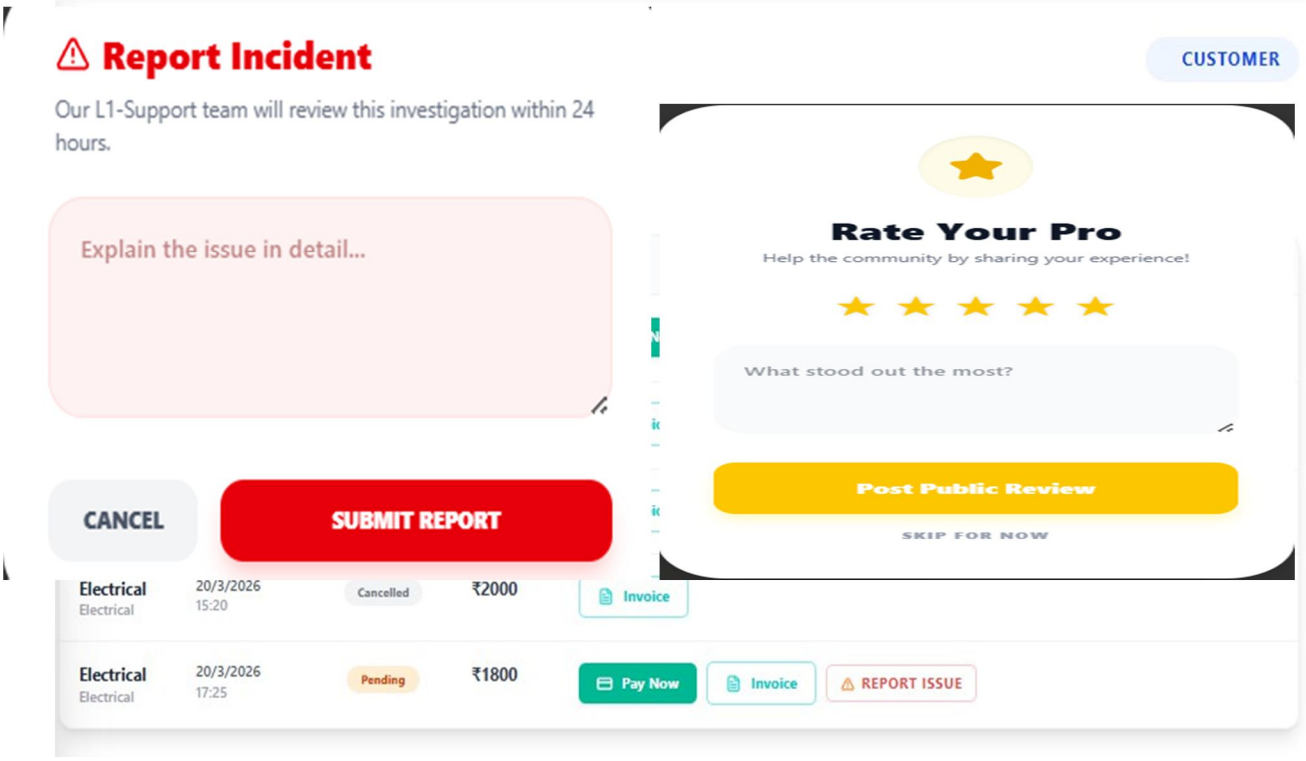
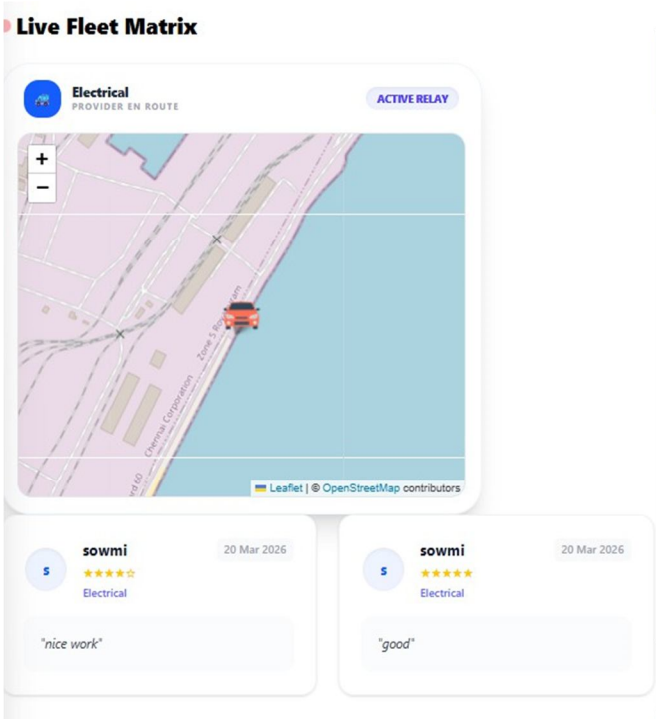
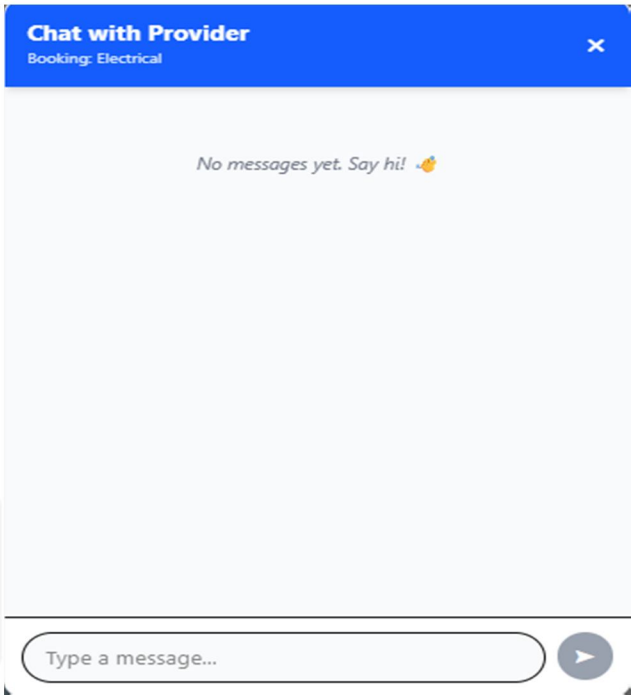



Report Incident
Our L1-Support team will review this investigation within 24 hours.
Explain the issue in detail...
CANCEL
SUBMIT REPORT
CUSTOMER
Rate Your Pro
Help the community by sharing your experience!
What stood out the most?
Post Public Review
SKIP FOR NOW
Electrical
Electrical
20/3/2026
15:20
Cancelled
₹2000
Invoice
Electrical
Electrical
20/3/2026
17:25
Pending
₹1800
Pay Now
Invoice
REPORT ISSUE


Live Fleet Matrix
Electrical
PROVIDER EN ROUTE
ACTIVE RELAY
Leaflet | © OpenStreetMap contributors
sowmi
20 Mar 2026
Electrical
"nice work"
sowmi
20 Mar 2026
Electrical
"good"


Chat with Provider
Booking: Electrical
No messages yet. Say hi!
Type a message...

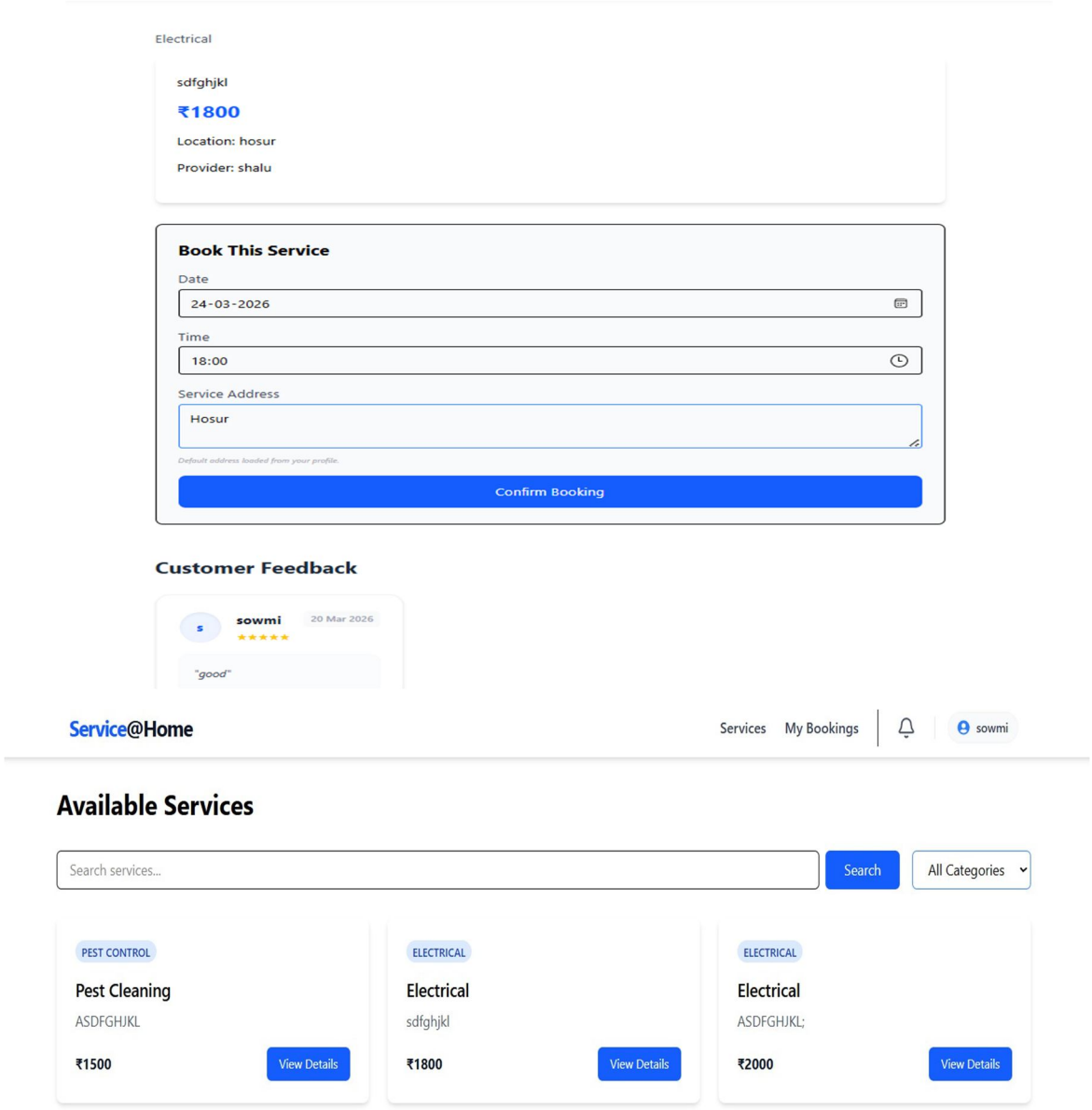


Fig 5.7 Customer Dashboard

Performance and Usability Results

- The system performs real-time service management with minimal delay, allowing customers to book services and receive confirmations instantly. Features such as live tracking update the provider's location in real time, ensuring smooth and responsive performance.
- The web-based platform is fully responsive and user-friendly, functioning efficiently across desktops, laptops, and mobile devices. Its simple interface and intuitive design make it easy for users of all age groups to navigate and access services without technical difficulty.
- The system supports secure authentication and verification, including OTP-based registration and QR code-based provider validation. These features enhance system reliability and ensure safe interaction between customers and service providers.
- The platform efficiently handles notifications and reminders, ensuring that service providers are alerted about scheduled tasks, reducing missed appointments and improving overall service coordination.
- The invoice generation and issue reporting modules function effectively, allowing users to download invoices and report complaints easily. All service data, including bookings and feedback, is stored and managed efficiently, ensuring transparency and better service quality.

VI. CONCLUSION AND FUTURE ENHANCEMENT

A. Conclusion

The Service at Your Home – Web Based Service Platform is developed as a comprehensive and modern solution to address the challenges faced in accessing reliable household services. Traditional methods of finding service providers are often unstructured, time-consuming, and lack transparency, which leads to inefficiency and trust issues. This project successfully overcomes these limitations by providing a centralized, secure, and user-friendly digital platform where customers can easily search, book, and manage services in a convenient manner.

The system integrates multiple advanced features that enhance both functionality and user experience. Customers can register securely using OTP verification, browse services, and book providers based on availability. The platform ensures safety and trust by allowing only admin-approved service providers to offer services. Features such as real- time tracking of service providers using live location allow customers to monitor service progress and estimate arrival time, improving transparency and reliability. Additionally, QR code-based verification ensures that the correct service provider is verified before the service begins, adding an extra layer of security.

The platform also improves coordination and efficiency through automated notifications and reminders, which help service providers stay informed about their scheduled tasks and reduce the chances of missed appointments. After service completion, the system generates downloadable invoices, allowing customers to maintain proper records. The inclusion of an issue reporting mechanism enables customers to directly communicate with the admin, ensuring quick resolution of complaints and continuous improvement in service quality.

Overall, the project demonstrates a practical and effective application of web technologies to solve real-world problems. It significantly improves convenience, enhances security, and builds trust between customers and service providers. The platform not only streamlines the service booking process but also ensures transparency and accountability at every stage. With its scalable design and advanced features, the system has strong potential for real-world implementation and future expansion, making it a reliable and efficient solution for household service management.

B. Future Scope

The Service at Your Home – Web Based Service Platform offers significant potential for future enhancements to improve its functionality, usability, and scalability. One of the key improvements is the development of a mobile application for Android and iOS, which would provide better accessibility, faster notifications, and a more personalized user experience. Additionally, implementing multi-language support can make the platform accessible to users from different regions, increasing its reach and usability.

Another important enhancement is the integration of secure online payment systems, including UPI, credit/debit cards, and digital wallets, enabling seamless and cashless transactions. The platform can also be improved by adding a rating and review system, allowing customers to provide feedback on service providers, which helps maintain service quality and build trust among users.

The system can further be enhanced by incorporating AI-based recommendations, suggesting suitable service providers based on user preferences, location, and past bookings. Advanced admin analytics dashboards can also be introduced to monitor system performance, user behavior, and service demand, enabling better decision-making and efficient management.

Overall, the platform has strong potential for expansion by adding more service categories, improving real-time communication features such as chat support, and integrating advanced technologies. With continuous improvements, the system can evolve into a highly efficient, scalable, and widely adopted solution for managing household services.

APPENDICES SOURCE CODE

Server.js

```
import express from "express"; import cors from "cors";
import { createClient } from "@supabase/supabase-js"; import QRCode from "qrcode";

const app = express(); app.use(cors()); app.use(express.json());

const supabase = createClient("YOUR_SUPABASE_URL", "YOUR_SUPABASE_KEY");

// Register (OTP via Supabase) app.post("/register", async (req, res) => { const { email, password } = req.body;
```

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```
  const { error } = await supabase.auth.signUp({ email, password }); if (error) return res.status(400).json(error);
  res.json({ message: "OTP sent to email" });
});

// Login
app.post("/login", async (req, res) => { const { email, password } = req.body;
  const { data, error } = await supabase.auth.signInWithPassword({ email, password }); if (error) return
  res.status(400).json(error);
  res.json(data);
});


// Book Service
app.post("/book", async (req, res) => { const { user_id, service } = req.body;
  await supabase.from("bookings").insert([{ user_id, service, status: "pending" }]); res.json({ message: "Service booked" });

});


// Generate QR
app.get("/qr/:id", async (req, res) => {
  const qr = await QRCode.toDataURL(req.params.id); res.json({ qr });
});


app.listen(5000, () => console.log("Server running on 5000"));
```

routes.js

```
import express from "express";
import { createClient } from "@supabase/supabase-js"; import QRCode from "qrcode";

const router = express.Router();


const supabase = createClient( "YOUR_SUPABASE_URL", "YOUR_SUPABASE_ANON_KEY"
);


router.post("/register", async (req, res) => { const { email, password } = req.body;

  const { data, error } = await supabase.auth.signUp({ email,
    password
  });


  if (error) {
    return res.status(400).json({ error: error.message });
  }
```



```
  res.json({
    message: "OTP sent to email", user: data.user
  });
});


router.post("/login", async (req, res) => { const { email, password } = req.body;

  const { data, error } = await supabase.auth.signInWithPassword({ email,
    password
  });


  if (error) {
    return res.status(400).json({ error: error.message });
  }


  res.json({
    message: "Login success", user: data.user,
    session: data.session
  });
});


router.post("/add-role", async (req, res) => { const { user_id, role } = req.body;

  const { error } = await supabase.from("users").insert([
    {
      id: user_id, role: role,
      approved: role === "provider" ? false : true
    }

  ]);


  if (error) return res.status(400).json(error);


  res.json({ message: "Role added" });
});


router.post("/approve-provider", async (req, res) => { const { user_id } = req.body;

  await supabase
    .from("users")
    .update({ approved: true })
    .eq("id", user_id);
```

```
  res.json({ message: "Provider approved" });
});

router.post("/book", async (req, res) => {
  const { customer_id, service, date } = req.body;

  const { error } = await supabase.from("bookings").insert([
    {
      customer_id, service,   date,
      status: "pending"
    }
  ]);

  if (error) return res.status(400).json(error);

  res.json({ message: "Service booked successfully" });
});

router.post("/accept-booking", async (req, res) => { const { booking_id, provider_id } = req.body;

  await supabase
    .from("bookings")
    .update({ provider_id, status: "accepted"
    })

    .eq("id", booking_id);

  res.json({ message: "Booking accepted" });
});

router.get("/qr/:provider_id", async (req, res) => { const { provider_id } = req.params;
  const qr = await QRCode.toDataURL(provider_id); res.json({ qr });
});

router.post("/report", async (req, res) => { const { user_id, issue } = req.body;
  await supabase.from("reports").insert([{ user_id, issue }]); res.json({ message: "Issue reported" });
});

export default router;
```

main.jsx

```
import React from "react";
import ReactDOM from "react-dom/client"; import App from "./App";

ReactDOM.createRoot(document.getElementById("root")).render(
  <React.StrictMode>
    <App />
  </React.StrictMode>
);
```

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App.jsx

```
import { useState, useEffect } from "react"; import axios from "axios";

export default function App() {
  const [email, setEmail] = useState("");

  const [password, setPassword] = useState(""); const [qr, setQr] = useState("");
  const [message, setMessage] = useState("");


  const register = async () => { try {
      const res = await axios.post("http://localhost:5000/api/register", { email,
        password
      });
      setMessage(res.data.message);
    } catch (err) {  setMessage("Error in register");
    }
  };

  const login = async () => { try {
      const res = await axios.post("http://localhost:5000/api/login", { email,
        password
      });
      setMessage("Login successful"); console.log(res.data);
    } catch (err) { setMessage("Login failed");
    }
  };

  const bookService = async () => {
    await axios.post("http://localhost:5000/api/book", { customer_id: 1,
      service: "Plumber", date: "2026-03-25"
    });
    alert("Service booked");
  };

  useEffect(() => { axios.get("http://localhost:5000/api/qr/123").then((res) => { setQr(res.data.qr);
    });
  }, []);

  const reportIssue = async () => {
    await axios.post("http://localhost:5000/api/report", {
      user_id: 1,
      issue: "Late service"
    });
    alert("Issue reported");
  };

  return (
    <>
      <h1>Service at Your Home</h1>
```


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```
      <h3>Authentication</h3>
      <input placeholder="Email" onChange={(e) => setEmail(e.target.value)} />
      <input placeholder="Password" onChange={(e) => setPassword(e.target.value)} />
      <button onClick={register}>Register</button>
      <button onClick={login}>Login</button>

      <p>{message}</p>

      <h3>Book Service</h3>
      <button onClick={bookService}>Book Plumber</button>

      <h3>QR Verification</h3>
      <img src={qr} alt="QR Code" />

      <h3>Report Issue</h3>
      <button onClick={reportIssue}>Report</button>
    </>
  );
}
```

App.css

```
body {
  font-family: Arial, sans-serif; background-color: #f5f7fa; margin: 0;
  padding: 0; display: flex;
  justify-content: center;
}

.container { width: 400px;
  background: #ffffff; padding: 20px; margin-top: 30px; border-radius: 10px;
  box-shadow: 0 4px 10px rgba(0, 0, 0, 0.1);
}
h1 {
  text-align: center; color: #2c3e50;
}

h3 {
  margin-top: 20px; color: #34495e;
}

input {
  width: 100%; padding: 10px; margin-top: 8px; margin-bottom: 10px;
  border: 1px solid #ccc; border-radius: 6px; outline: none;
}

input:focus {
  border-color: #3498db;
}

button {  width: 100%;
  padding: 10px; margin-top: 5px; margin-bottom: 10px;
```



```
  background-color: #3498db; color: white;
  border: none; border-radius: 6px; cursor: pointer; transition: 0.3s;
}

button:hover {
  background-color: #2980b9;
}

p {
  color: green;
  text-align: center;
}

img {
  display: block; margin: 10px auto; width: 150px;
  height: 150px;
}
```

Supabase.js

```
const { createClient } = require('@supabase/supabase-js'); const fetch = require('cross-fetch'); require('dotenv').config();

const supabaseUrl = process.env.SUPABASE_URL;
const supabaseKey = process.env.SUPABASE_ANON_KEY;

if (!supabaseUrl || !supabaseKey) {
    console.error('Missing Supabase URL or Anon Key. Please set them in your .env file.');
}

const supabase = createClient(supabaseUrl, supabaseKey, { auth: {
        persistSession: false
    },
    global: { fetch: fetch
                                                                                    }
                                                                                });


module.exports = supabase;
```

Authmiddleware.js

```
const jwt = require('jsonwebtoken');
const supabase = require('../config/supabaseClient');

const protect = async (req, res, next) => { let token;

    if (
        req.headers.authorization && req.headers.authorization.startsWith('Bearer')
    ) {
        try {
            token = req.headers.authorization.split(' ')[1];
            const decoded = jwt.verify(token, process.env.JWT_SECRET);
```

```
            const { data: user, error } = await supabase
                .from('users')
                .select('id, name, email, role, is_provider_approved')
                .eq('id', decoded.id)
                .single();

            if (error || !user) {
                throw new Error('User not found');
            }

            // Map id to _id for controllers req.user = {
                ...user,
                _id: user.id
            };

            next();
        } catch (error) { console.error(error);
            res.status(401).json({ message: 'Not authorized, token failed' });
        }
    }

    if (!token) {
        res.status(401).json({ message: 'Not authorized, no token' });
    }
};

const authorize = (...roles) => { return (req, res, next) => {
        if (!roles.includes(req.user.role)) { return res.status(403).json({
                message: `User role ${req.user.role} is not authorized to access this route`,
            });
        }
        next();
    };
};
module.exports = { protect, authorize };
```

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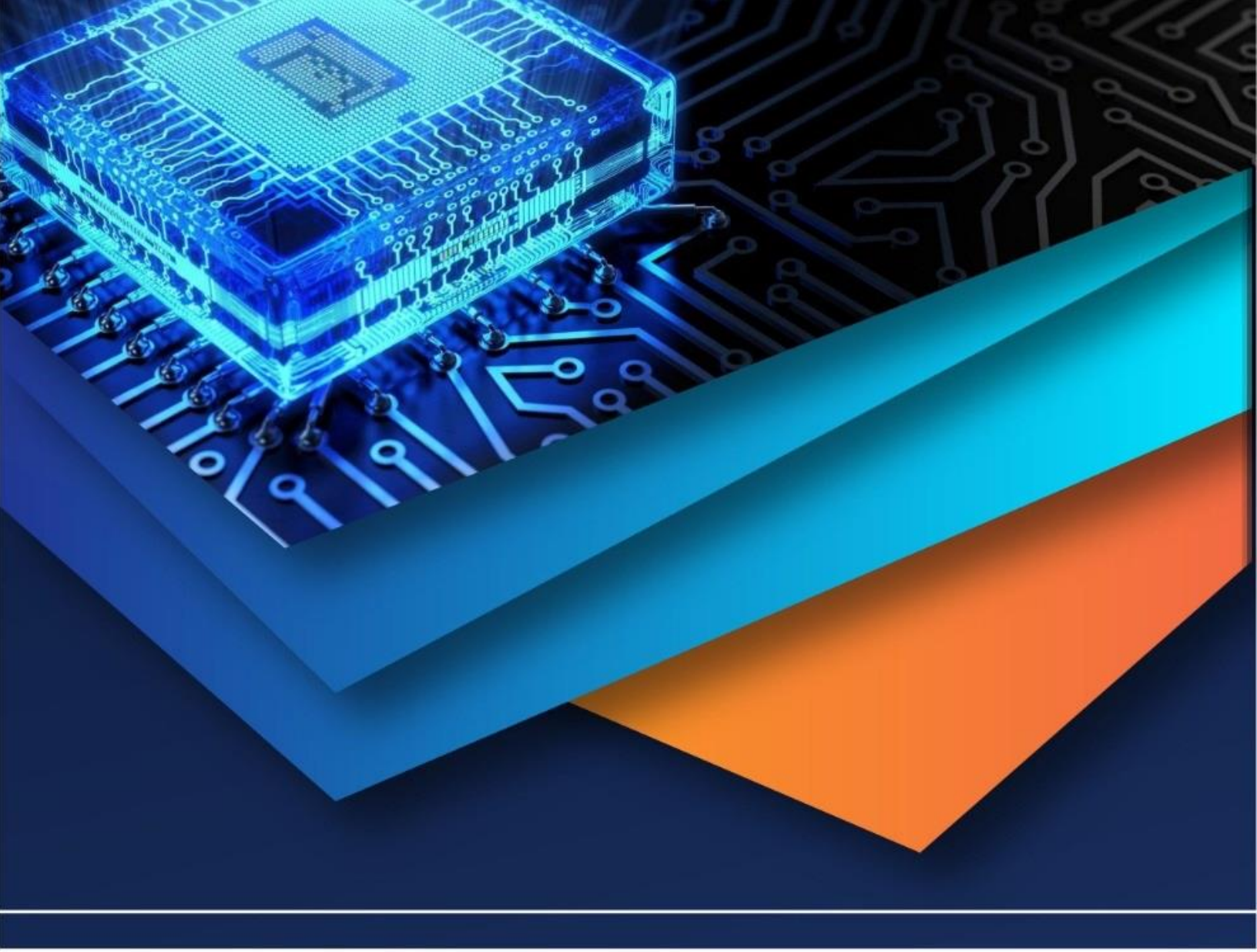

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