

**SUBIDHA: A COMPREHENSIVE HOME SERVICE PLATFORM FOR
SEAMLESS WORKER-CUSTOMER COLLABORATION**

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FINAL YEAR DESIGN PROJECT REPORT

This Report Presented in Partial Fulfillment of the Requirements for the
Degree of Bachelor of Science in Computer Science and Engineering

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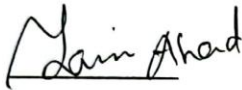
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APPROVAL

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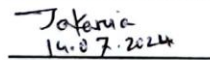
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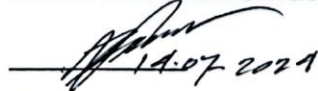
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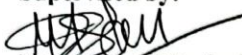
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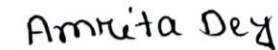
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ABSTRACT

Service industry has been revolutionized by digital technology by introducing online platforms to facilitate the access to different services. “Subidha” is a web-based platform which we designed as our final year project to ease the access of home services. This platform possesses a variety of features to support Service Providers as well as Service Customers. Some of them are Service Categorization, Location based search, Service Selection, Order Placement, Payment, Customer Feedback, Real-time chat support etc. Subidha operates via user accounts where service providers as well as customers can create their profiles by entering necessary details. Service providers can display their prior work history with sample work and personal information, and customers can make informed decisions on the basis of service ratings and reviews. The use of geolocation technology also enables customers to easily request a service by simply selecting their current location, and service providers who are already in the area can then respond and offer their services to the customer. This is not only convenient for customers, but also allows service providers to be more accessible and offer additional services as social changes unfold. In addition to a real-time chat feature, Subidha also comprises a secure online payment gate so that all transactions for services are as seamless as possible.

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LIST OF ACRONYMS

SWOT	Strengths, Weaknesses, Opportunities, and Threats.
BDT	Bangladeshi Taka
AWS	Amazon Web Services
UI	User Interface
UX	User Experience
API	Application Programming Interface
SSL	Secure Socket Layer
HTML	Hyper Text Markup Language
CSS	Cascading Style Sheets
JS	JavaScript
N/A	Not Applicable
DFD	Data Flow Diagram
ERD	Entity Relationship Diagram
MERN	MongoDB, Express.js, React.js, Node.js
JWT	JSON Web Token
HTTP	Hypertext Transfer Protocol
REST	Representational State Transfer
JSON	JavaScript Object Notation
CRUD	Create, Read, Update, Delete
ODM	Object Data Modeling
CDN	Content Delivery Network
OTP	One-Time Password

PCI	Payment Card Industry
NoSQL	Not Only SQL

CHAPTER 1

Introduction

1.1 What is Subidha – Web base home service system?

Subidha, our innovative web-based project, aims to revolutionize the home service industry by providing a comprehensive platform for connecting customers with skilled workers. In response to the growing demand for reliable home services, Subidha offers a wide array of features tailored to streamline the process of finding, booking, and managing various services. With functionalities such as categorization, location-based searching, service selection, seamless ordering, secure online payments, customer reviews, and real-time chat support, Subidha prioritizes user convenience and satisfaction. Both customers and workers can easily create accounts, providing essential information for personalized service delivery. Workers can showcase their expertise through work samples, detailed profiles, and customer reviews, fostering transparency and trust within the platform. For customers, Subidha's location-based booking system ensures accessibility to nearby services, while the integrated review feature facilitates informed decision-making. By offering online payment options through Subidha accounts, the platform further enhances convenience and security for all parties involved. Through Subidha, we aim to simplify the home service experience, empowering users and service providers alike in achieving their goals efficiently and effectively.

1.2 Motivation

The motivation behind Subidha stems from the recognition of the inefficiencies and challenges present in the traditional home service industry. With the rise of digitalization and the increasing reliance on online platforms for various needs, there exists a clear opportunity to modernize and streamline the process of accessing home services.

The primary objective of Subidha is to address this need by providing a user-friendly and efficient platform that connects customers with skilled workers seamlessly. By offering features such as categorized service listings, location-based search functionalities, real-time chat support, and secure online payment options, Subidha aims to simplify the entire service booking and delivery process. Additionally, the platform seeks to promote transparency and trust by allowing both customers and workers to create detailed profiles, including work samples and customer reviews. Through Subidha, we aspire to empower both service seekers and providers, ultimately enhancing the overall home service

experience for all stakeholders involved.

1.3 Objectives

The ultimate goal of Subidha is to this end: to provide an interactive, easy-to-use platform that quickly — and, more importantly, effectively — connects customers with skilled workers. This is realized with features like categorized service listings, location-based search capabilities, real-time chat support and secure online payment options that collectively take the hassle out of the entire book-to-delivery process. The platform also seeks to foster transparency and trust by giving clients and workers a space to create detailed profiles that include work samples, and previous customer reviews. The larger goal is to empower service seekers and providers alike, thereby going about the business of elevating the overall home service experience for all those involved.

1.4 Expected Outcomes

The anticipated results for Subidha are multi-facteted with the potential to address a variety of challenges, enhance the customer and worker experience, and more. For starters, Subidha hopes to open up reliable home services to customers who previously would have struggled to find trustworthy service providers. The more workers who can show off their experience, skills, samples of previous work, and customer reviews, the more Subidha believes it is empowering and helping to enhance the visibility of workers, theoretically creating more job opportunities and more money to be made. What's more is the creation of a transparent feedback and rating system that allows both parties to keep one another honest, requiring that they're both accountable to one another. In keeping each party accountable, both are more likely to raise the standard for how quality their service is.

By providing app users with features like real-time chat and service filtering based on their location, Subidha seeks to maximize the performance of its service, optimizing the speed and efficiency of the booking process, which is always of tantamount importance for users. Integrating the options for secure online payments guarantees a seamless transaction every time, only enhancing the user experience further. The platform will surely revolutionize the industry of home services, creating a trusted network that the brand hopes will result in a more satisfied customer and a more trustworthy worker which, ultimately, is all we really need.

1.5 Project Management and Finance

Project Management:

▪ Project Objectives:

- To develop a home service website for book and provide service.
- To give a one stop solution for users.
- The platform also seeks to foster transparency and trust by giving clients and workers a space to create detailed profiles that include work samples, and previous customer reviews.

▪ Project Timeline:

- Phase 1: Project Planning and Research (2-4 weeks)
- Phase 2: Design and Prototyping (6-8 weeks)
- Phase 3: Front-End Development (8-12 weeks)
- Phase 4: Back-End Development (10-14 weeks)
- Phase 5: Testing (4-6 weeks)
- Phase 6: Deployment (2-4 weeks)
- Phase 7: Post-Launch and Marketing (6-8 weeks)

Resource Planning:

▪ Equipment and Tools:

- Development and Testing Servers
- High-performance Computers for Development Team Design Software
- (e.g., Adobe Creative Suite)
- Collaboration Tools (e.g., Slack, Trello, or project management software)
- Version Control System (e.g., Git)
- Testing Tools (e.g., Selenium for automated testing)

▪ Software and Technologies:

- Front-End Technologies (HTML, CSS, JavaScript, React)
- Back-End Technologies (Node.js, Express.js)
- Database Management System (MongoDB)
- Server Hosting (e.g., AWS, Azure, or Google Cloud)

- Payment Gateway Integration (e.g., Bkash, Nagad, PayPal, Visa Card, Master Card)
- Security Software and SSL Certificates
- **Data and Content:**
 - Users and Service Providers Data: Provided by users and service providers databases/APIs.
 - Service Images: Provided by service providers or choose from website stores.
 - User Documentation: Prepared by the technical writing team.
- **Training and Skill Development:**
 - Ensure that the development team has the necessary training and skills in development, security, and database management.
 - Provide additional training on specific technologies and tools as needed.

Risk Management:

SWOT analysis involves assessing the Strengths, Weaknesses, Opportunities, and Threats of a project. Here's a SWOT analysis for the home service platform:

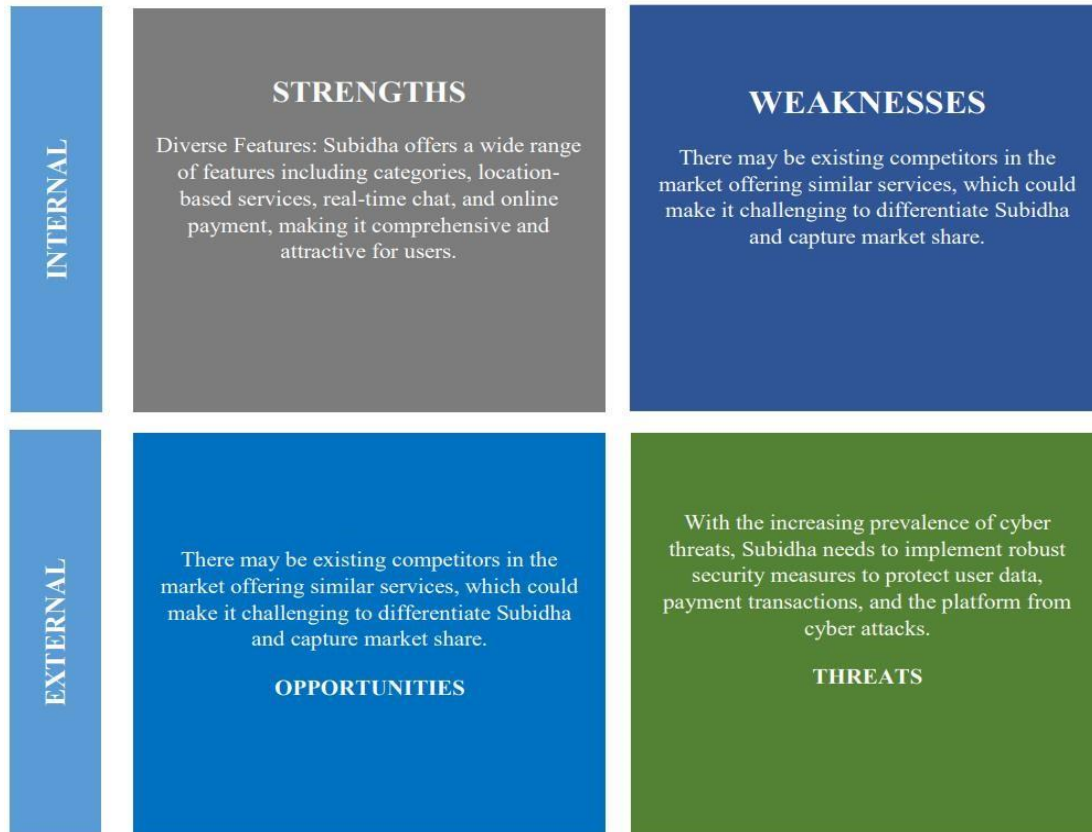


Figure 1.5.1: SWOT Analysis

Figure 1.5.1: SWOT Analysis provides an evaluation of the strengths, weaknesses, opportunities, and threats associated with the Subidha project. It identifies internal factors (strengths and weaknesses) such as unique service offerings and operational challenges, as well as external factors (opportunities and threats) such as market trends and competitive pressures. This analysis offers insights into the strategic positioning and potential risks of the Subidha initiative, guiding decision-making and planning for its development and implementation.

Communication Plan:**▪ Stakeholder Meetings:**

- **Purpose:** Update stakeholders on project requirements gathering progress and gather feedback.
- **Participants:** Team members, and stakeholders.
- **Frequency:** Bi-weekly or as specified in the project plan.

▪ Change Control Meetings:

- **Purpose:** Discuss and approve any changes to the project scope or requirements.
- **Participants:** Supervisor, and team members.
- **Frequency:** As needed when change requests arise.

Finance plays a crucial role in the development and sustainability of Subidha, our home service website project. Initial costs for Subidha will include expenses related to software development, website hosting, domain registration, and marketing efforts to promote the platform to both customers and service providers. The development costs will involve hiring skilled developers to build and customize the website, as well as integrating necessary features such as location-based service filtering, real-time chat, and secure online payment functionalities. Additionally, ongoing expenses such as server maintenance, software updates, and customer support will need to be budgeted for to ensure smooth operation of the platform. Marketing expenses will encompass digital advertising, social media promotion, and possibly partnerships with local businesses to increase brand awareness and user acquisition. Here's a probable cost breakdown:

Table 1.5.1 Estimated Cost Breakdown for Project Components

SN	Components	Estimated Cost (BDT)
1	Website Development	120,000-140,000
2	Mobile App Development	160,000-180,000
3	Database Setup (MongoDB)	40,000-50,000
4	Server Hosting (Annual)	15,000-20,000
5	Domain Registration (Annual)	2,000-3,000
6	SSL Certificate (Annual)	3,000-5,000
7	UI/UX Design	60,000-70,000
8	Marketing and Advertising	70,000-90,000
9	Payment Gateway Integration	20,000-30,000
10	Customer Support Setup	35,000-45,000
11	Real-Time Chat System	25,000-35,000
12	Push Notifications Service	15,000-20,000
13	Quality Assurance and Testing	50,000-60,000
14	Maintenance and Updates (Annual)	45,000-55,000
15	Contingency	20,000-30,000
	Total Estimated Cost	670,000-785,000

Table 1.5.1 provides a detailed breakdown of the estimated costs for various components of the project, including website development, Mobile App Development, Database Setup (MongoDB), UI/UX Design etc. The total estimated cost is summarized at the bottom.

1.6 Report Layout

Developing a thorough report layout for " Subidha - Web-based home service system " entails organizing several parts to highlight the specifics of the project, its stages of development, its features, and its results. An outline for the report layout may be seen below:

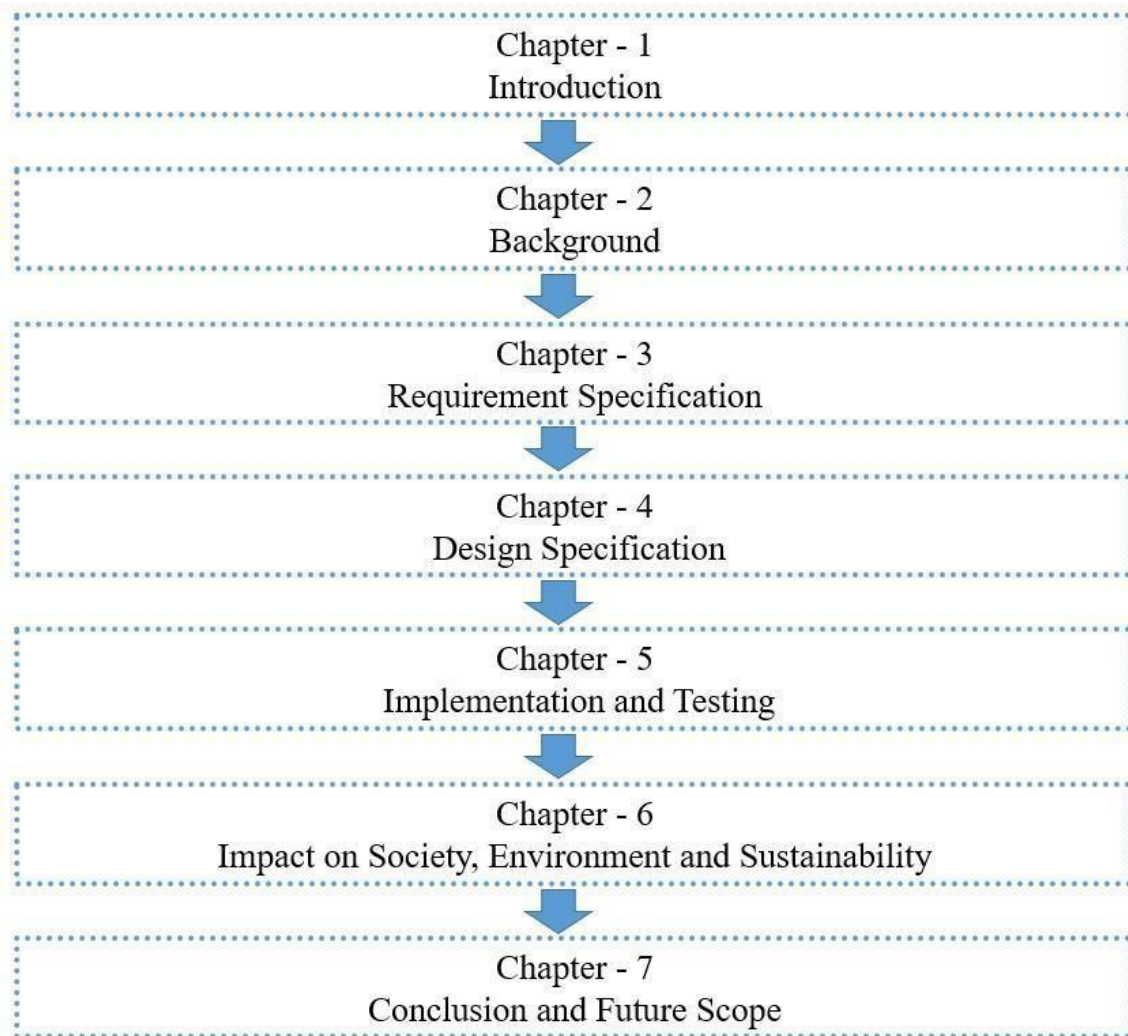


Figure 1.6.1: Report Layout of This Project.

CHAPTER 2

Background

2.1 Terminologies

Subidha will require the following terms and functionalities to help ensure clear and user-friendly communication:

Service Categories: Different types of home services that may be called (e.g., plumbing, cleaning, electrical work, handyman services).

Geolocation: The process or technique of identifying the geographical location of a user.

User Profiles: Pages with basic information about individual users (workers and customers) on the platform.

Work Samples: Pictures and/or videos showing the quality of a worker's past work.

Customer Reviews: Feedback ratings and comments left by the customer. Each review has a star rating and comment.

Real-time Chat: A service that allows workers and customers to communicate instantly for the purpose of asking questions and coordinating additional details about an accepted bid.

Online Payment System: A built-in payment platform through which we can send or receive money and settle debts.

2.2 Related Works

TaskRabbit: A major player in the gig economy, TaskRabbit offers on-demand tasks such as furniture assembly, handyman services, and even running last-minute errands. They're big on flexibility and transparency when it comes to pricing.

Handy: This is an expert when it comes to home maintenance and repair services, as they deal with everything from plumbing, electrical work, and all things cleaning. One of the most attractive features is the fact that professionals are all vetted, their work approved, and they're there to set things right if things go wrong.

Angi: The site connects homeowners with pre-screened contractors for home renovation and repair projects, such as HVAC, roofing, landscaping, and all things inside and out. They go in-depth on professional profiles, reviews from the homeowner that hired them, and cost estimates for our project.

Sheba.xyz: Serving customers in the Middle East and Southeast Asia, Sheba.xyz provides a wide range of home services including cleaning, handyman repairs, pest control, and beauty treatments. This company has a user-friendly app and they allow for local payment options.

Houzz: Home design and renovation with an added feature to connect homeowners with service professionals for construction, remodelling, landscaping, and maintenance. Use it for design inspiration, contractor reviews, and to follow our project from conception to completion.

Networx: Also in Australia and, oddly, New Zealand, this is a platform devoted to connecting homeowners with qualified tradespeople. Use it to get quotes in plumbing, electrical, carpentry, we name it. They pride themselves on transparency, and offer fixed fee quotes.

Sears Home Services: we're already shopping for appliances, so what could be easier than having them installed or repaired by the brand? The flipside is that we might pay for the name, and availability could be more limited.

2.3 Comparative Analysis

Table 2.3.1 Comparative Analysis of Subidha and Competitors

Feature	Subidha	TaskRabbit	Handy	Angi	Sheba.xyz	Houzz
Primary Focus	On demand and scheduled home services	On demand tasks	Home maintenance & repair	Home improvement & renovation	Diverse home services	Design inspiration & service connection
Target Audience	Busy individuals & families, diverse needs	Busy individuals, small tasks	Homeowners, property managers	Homeowners, larger projects	Homeowners, diverse needs	Design enthusiasts, homeowners
Service Categories	Wide range, on demand & scheduled	Diverse tasks, primarily on-demand	Specific maintenance & repair	Renovation, remodeling, repairs	Diverse, regional variations	Design inspiration, product discovery, some services

Vetting Process	Rigorous verification process planned	Background checks & ratings	Vetted & insured professionals	Extensive screening & licensing	Verified service providers	Primarily user reviews
Pricing	Transparent, variable based on service & location	Hourly or fixed-price	Transparent, hourly rates	Varied based on project & contractor	Transparent, upfront estimates	Varied based on product & service
Payment Options	Secure online payment through	Secure online payment	Secure online payment	Varied, may require premium	Secure online payment	Secure online payment
	Subidha account			membership		
Customer Reviews & Ratings	Yes, for both workers & services	Yes, for Taskers	Yes, for service providers	Yes, for contractors	Yes, for service providers	Yes, for designers & professionals
Realtime Chat	Yes, for communication with workers	Yes, for communication with Taskers	Limited, through mobile app	N/A	Yes, for communication with service providers	N/A
Location	Global focus planned	Primarily operates in North America & select European countries	Primarily operates in North America	Primarily operates in North America	Operates in Middle East & Southeast Asia	Global platform

Table 2.3.1 provides a comparative analysis of Subidha and its competitors, highlighting the primary focus, target audience, service categories, vetting process, pricing, payment options, customer reviews and ratings, real-time chat features, and geographical locations of each platform.

2.4 Scope of the Problem

Searching for home service providers can be time-consuming, unreliable and nontransparent. Customer trust, worker quality, and security are major challenges that Subidha addresses via:

A single, comprehensive platform for convenient service discovery and booking

- A wide variety of service categories to meet different customer needs
- Connect customers with verified and reviewed service providers

- Increased transparency through online profiles, work samples, and customer reviews
- Seamless customer-worker interaction via real-time communication
- Convenient and secure online payment for added trust and ease of use

2.5 Challenges

- **Market competition:** Building a user base in a crowded market with established players.
- **Service provider verification:** Ensuring onboarding and maintaining the quality and reliability of service providers.
- **Safeguarding user trust:** Building and maintaining trust in the security and transparency of the platform.
- **Addressing diverse service categories:** Catering efficiently to various service needs, while maintaining quality standards.
- **Customer satisfaction on a consistent basis:** For long-term success, the service must be consistently high-quality.
- **Scalability:** Ensuring the platform can support significant growth in user volume and maintain the same level of performance.
- **Technical considerations:** Designing and building a secure and scalable platform with diverse and important features.

CHAPTER 3

Requirement Specification

3.1 Business Process Modeling

In this section, we provide an overview of the key business processes involved in our project. These processes encompass various activities and interactions between different stakeholders to achieve the project's objectives.

3.1.1 User Registration

Description: The user registration process involves capturing essential information from users to create accounts within the system.

Activity Diagram:

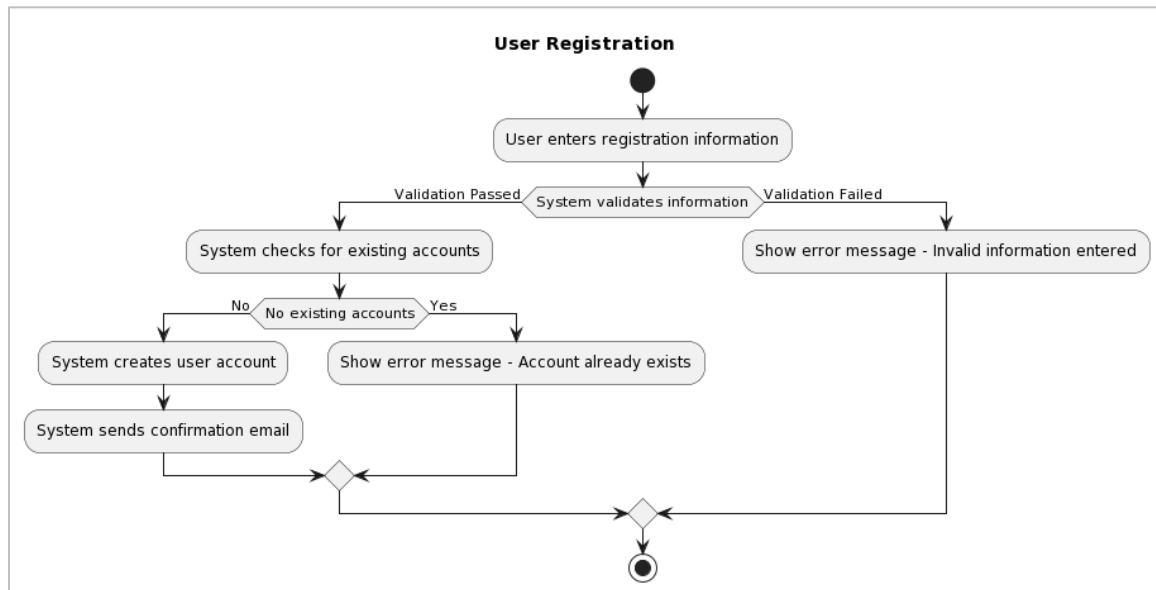


Figure 3.1.1.1: User registration activity diagram

Figure 3.1.1.1 illustrates the user registration activity diagram, detailing the sequential steps a user follows to register on the platform. This includes entering personal information, validating data, creating an account, and receiving confirmation. The diagram highlights the flow of actions and decisions involved in the registration process, ensuring a clear understanding of the system's functionality.

Activities:

1. User enters registration information.
2. System validates information and checks for existing accounts.
3. System creates a user account and sends a confirmation email.

Roles and Responsibilities:

- User: Provides registration information.
- System: Validates information and creates user accounts.

Performance Metrics:

- Number of successful registrations.
- Registration completion rate.

3.1.2 Service Listing and Management

Description:

Service listing and management enable workers to create, edit, and manage their service offerings within the system.

Activity Diagram:

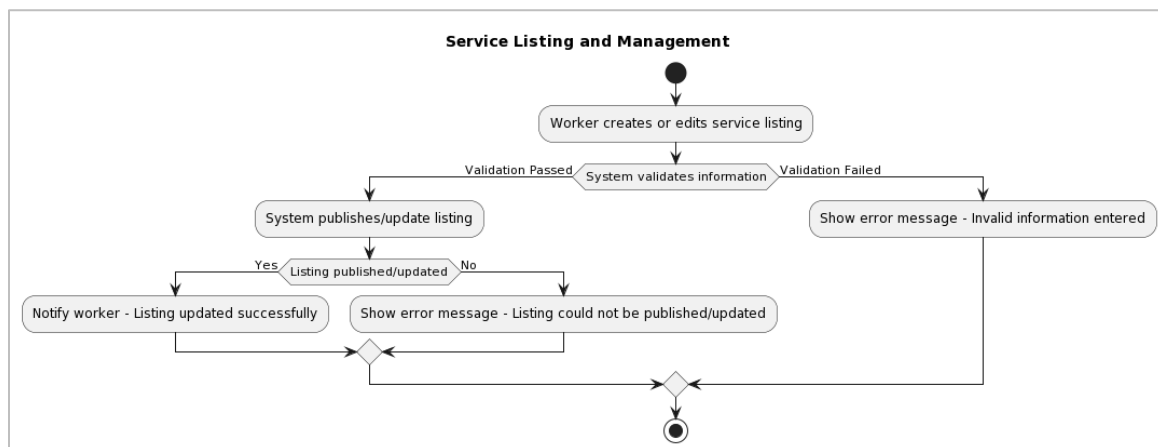


Figure 3.1.2.1: Service listing and management activity diagram

Figure 3.1.2.1 illustrates the service listing and management activity diagram, depicting the sequence of actions involved in adding, updating, and managing services on the

platform. It includes steps such as entering service details, verifying information, listing the service, and handling updates or removals. The diagram provides a clear overview of the workflow, ensuring effective management of service listings within the system.

Activities:

1. Worker creates or edits a service listing.
2. System validates information and publishes/update the listing.

Roles and Responsibilities:

- Worker: Provides service information.
- System: Validates and publishes/update service listings.

Performance Metrics:

- Number of services listed.
- Average listing views.
- Worker engagement with listing management.

3.1.3 Service Booking and Order Management

Description:

Service booking and order management facilitate the booking process between customers and workers, as well as the management of service orders.

Activity Diagram:

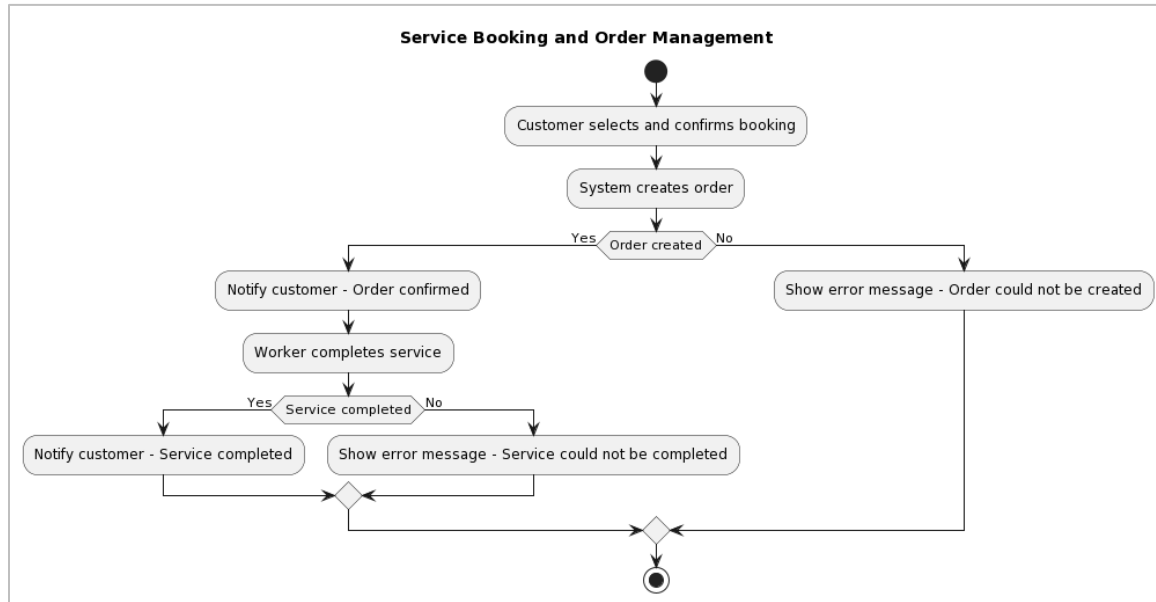


Figure 3.1.3.1: Service booking and order management activity diagram

Figure 3.1.3.1 illustrates the service booking and order management activity diagram, detailing the process from selecting a service to managing the order. This includes steps such as searching for a service, checking availability, confirming the booking, processing payment, and tracking the order status. The diagram provides a clear representation of the workflow, ensuring both users and service providers can efficiently handle bookings and order management within the system.

Activities:

1. Customer selects and confirms booking.
2. System creates an order and notifies the involved parties.
3. Worker updates the order status upon service completion.
4. System notifies the customer upon service completion.

Roles and Responsibilities:

- Customer: Initiates booking and provides necessary details.
- Worker: Completes the service and updates order status.
- System: Manages orders and notifications.

Performance Metrics:

- Number of bookings.
- Order completion rate.
- Customer satisfaction with the booking process.

3.1.4. Payment Processing**Description:**

Payment processing involves securely handling payment transactions between customers and the system.

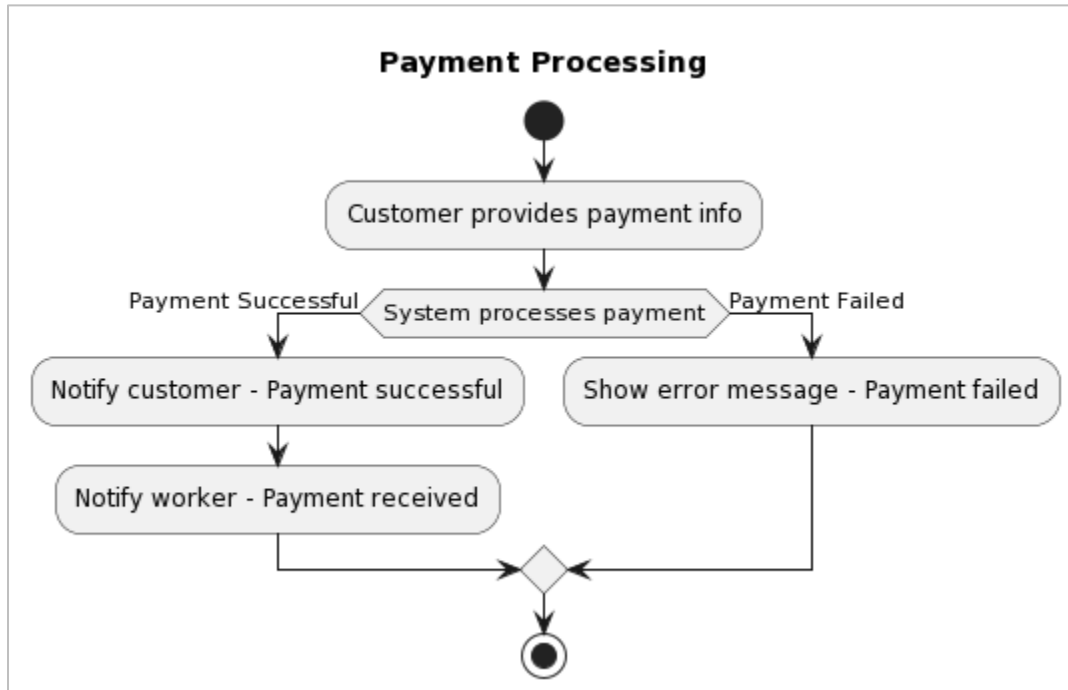
Activity Diagram:

Figure 3.1.4.1: Payment processing activity diagram

Figure 3.1.4.1 illustrates the payment processing activity diagram, outlining the steps involved in handling payments within the platform. This includes initiating the payment, verifying payment details, processing the transaction, and confirming payment completion. The diagram provides a detailed view of the payment workflow, ensuring secure and efficient processing of payments for services rendered on the platform.

Activities:

1. Customer provides payment information.
2. System securely processes the payment through a payment gateway.

Roles and Responsibilities:

- Customer: Provides payment information.
- System: Processes payments securely through a payment gateway.

Performance Metrics:

- Payment success rate.
- Transaction processing time.
- Security compliance.

3.1.5. Customer Review and Rating Management

Description:

Customer review and rating management allow customers to provide feedback on completed services, which is then published on the worker's profile.

Activity Diagram:

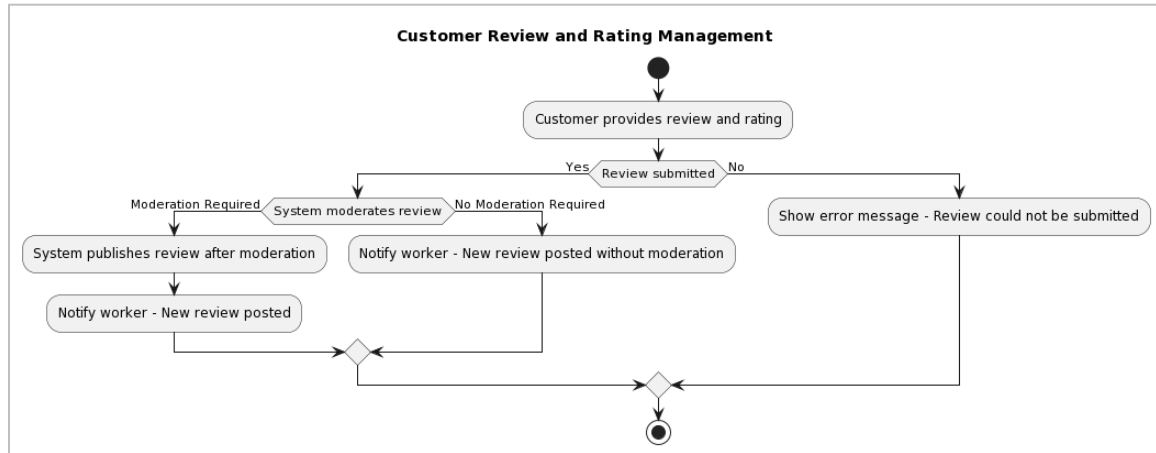


Figure 3.1.5.1: Customer review and rating management activity diagram

Figure 3.1.5.1 illustrates the customer review and rating management activity diagram, detailing the process by which users can provide feedback on services. This includes submitting a review, rating the service, moderating content, and displaying the reviews on the platform. The diagram ensures a comprehensive understanding of the workflow involved in managing customer reviews and ratings, contributing to service quality and user satisfaction.

Activities:

1. Customer submits a review and rating for a completed service.
2. System optionally moderates the review content.
3. System publishes the review on the worker's profile.

Roles and Responsibilities:

- Customer: Provides reviews and ratings.
- System: Moderates and publishes reviews (optional).

Performance Metrics:

- Number of reviews submitted.
- Average rating score.
- Customer engagement with the review system.

3.1.6. Real-time Chat Communication

Description:

Real-time chat communication enables instant messaging between customers and workers for efficient communication.

Activity Diagram:

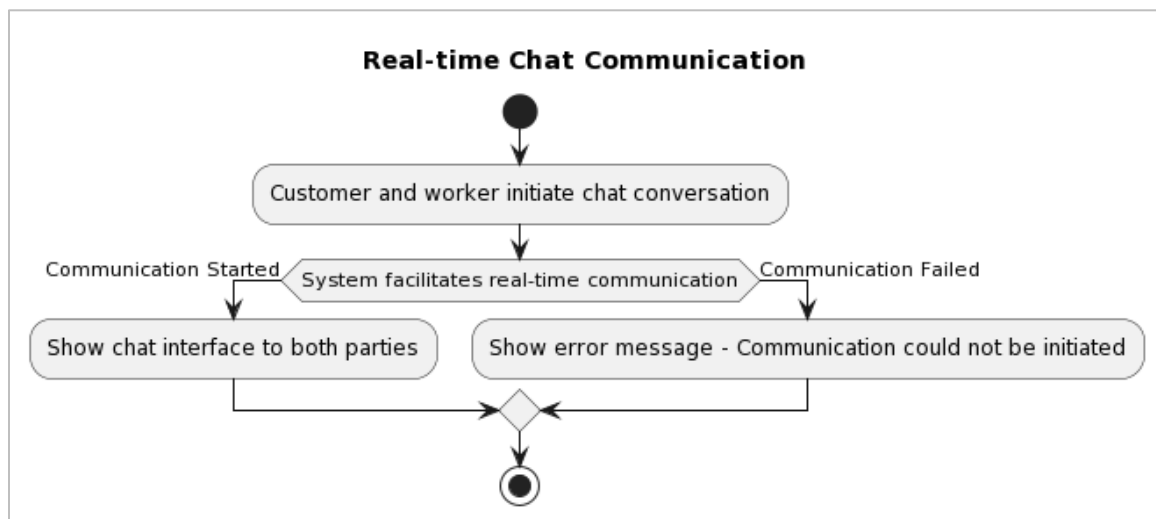


Figure 3.1.6.1: Real time chat communication activity diagram

Figure 3.1.6.1 illustrates the real-time chat communication activity diagram, outlining the process of initiating and managing real-time chats between users and service providers on the platform. This includes steps such as starting a chat session, exchanging messages, managing notifications, and ending the chat session. The diagram provides a visual representation of how real-time communication enhances user interaction and support within the Subidha platform.

Activities:

1. Customer and worker initiate a chat conversation.
2. System facilitates real-time message exchange.

Roles and Responsibilities:

- Customer: Initiates chat conversations.
- Worker: Engages in real-time communication.
- System: Facilitates message exchange.

Performance Metrics:

- Chat message delivery rate.
- User satisfaction with chat functionality.

3.1.7 Data Flow Diagram (DFD)

The DFD (Context Diagram) provides an overall view of the Subidha system, identifying the major interactions between the external entities (Customer, Admin, Service Provider) and the system.

Interactions:

- Customer interacts with the system to register, browse services, book services, make payments, provide reviews, and chat with service providers.
- Admin interacts with the system to manage user accounts, oversee service listings, monitor bookings, and manage payments.
- Service Provider interacts with the system to register, manage their profile, list services, receive bookings, receive payments, view reviews, and chat with customers.

DFD Diagram Level-0

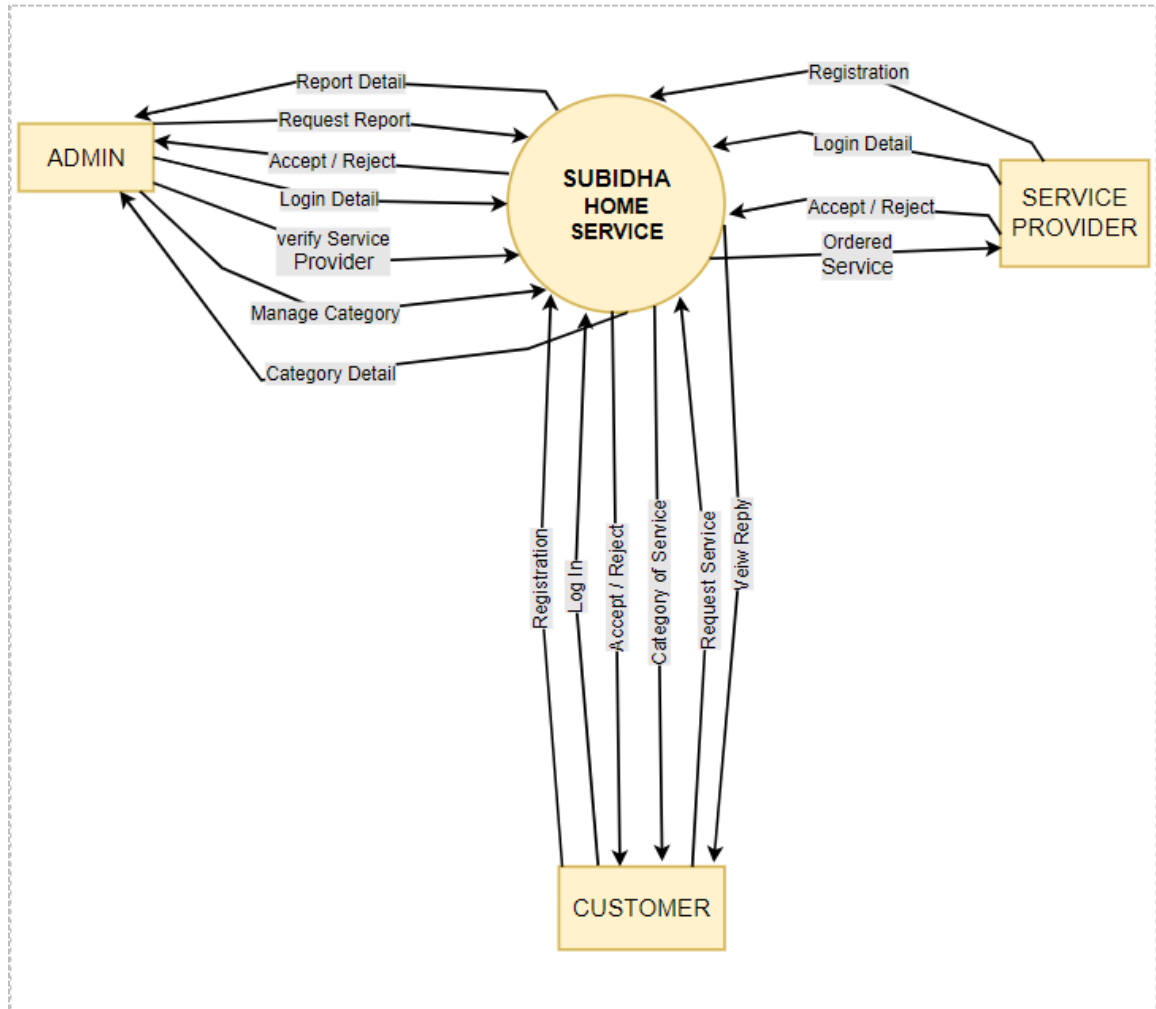


Figure 3.1.1: DFD Diagram Level 0

Figure 3.1.1 represents the Level 0 Data Flow Diagram (DFD) for the Subidha project, providing an overview of the system's major processes and their interactions. It illustrates the high-level flow of data and processes within the system, showing how external entities interact with the system and how data moves between them.

DFD Level 1 – Admin

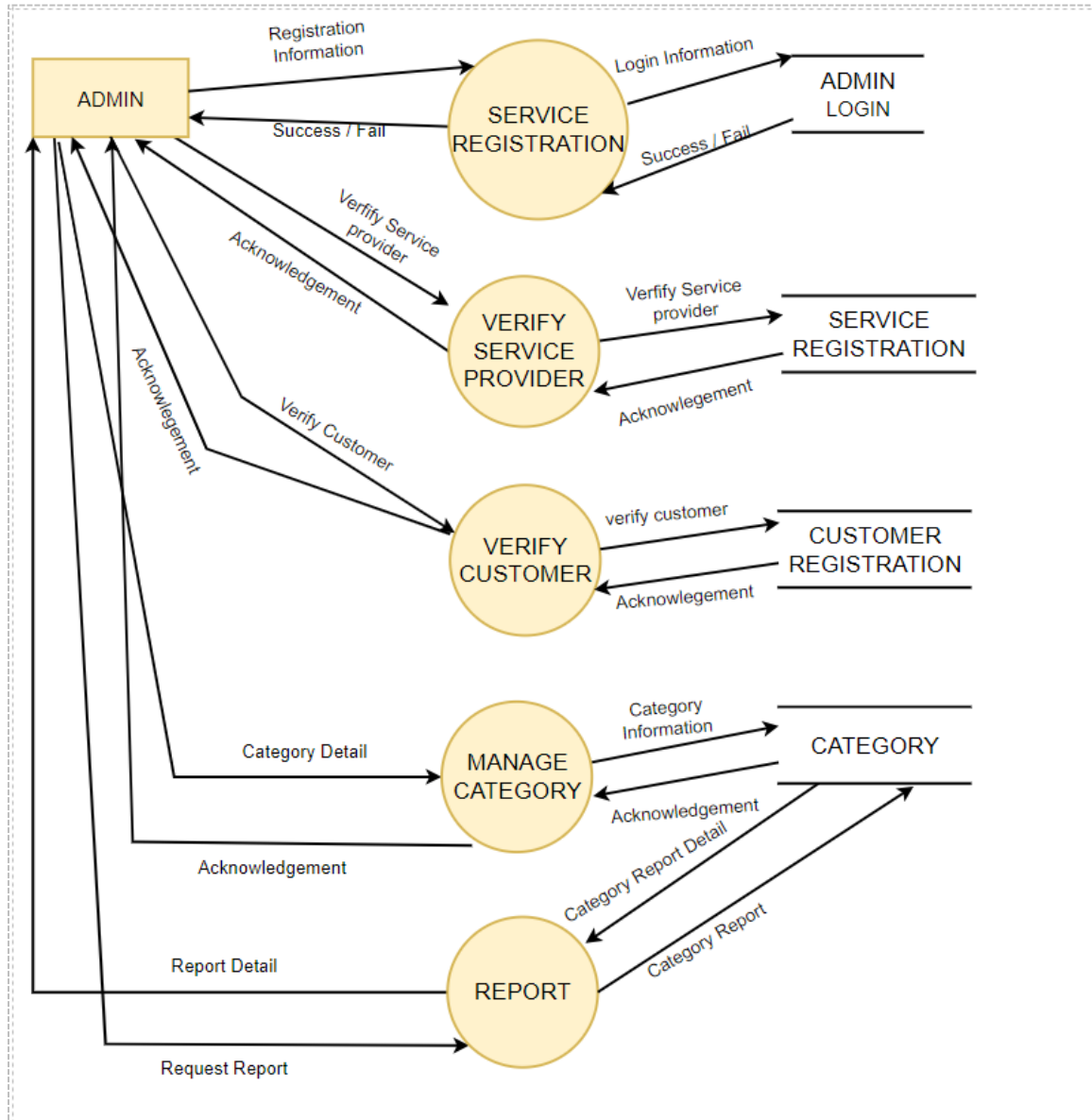


Figure 3.1.2: DFD Diagram Level 1 For Admin

Figure 3.1.2: DFD Level 1 – Admin provides a detailed view of the data flow and processes specific to administrative functions within the Subidha system. It delineates the interactions between the administrator and various subsystems or modules, including user management, content management, system configuration, and reporting. This diagram illustrates how administrative tasks are carried out, such as user account management, data entry and editing privileges, system monitoring, and generating reports.

DFD Level 1 – Provider

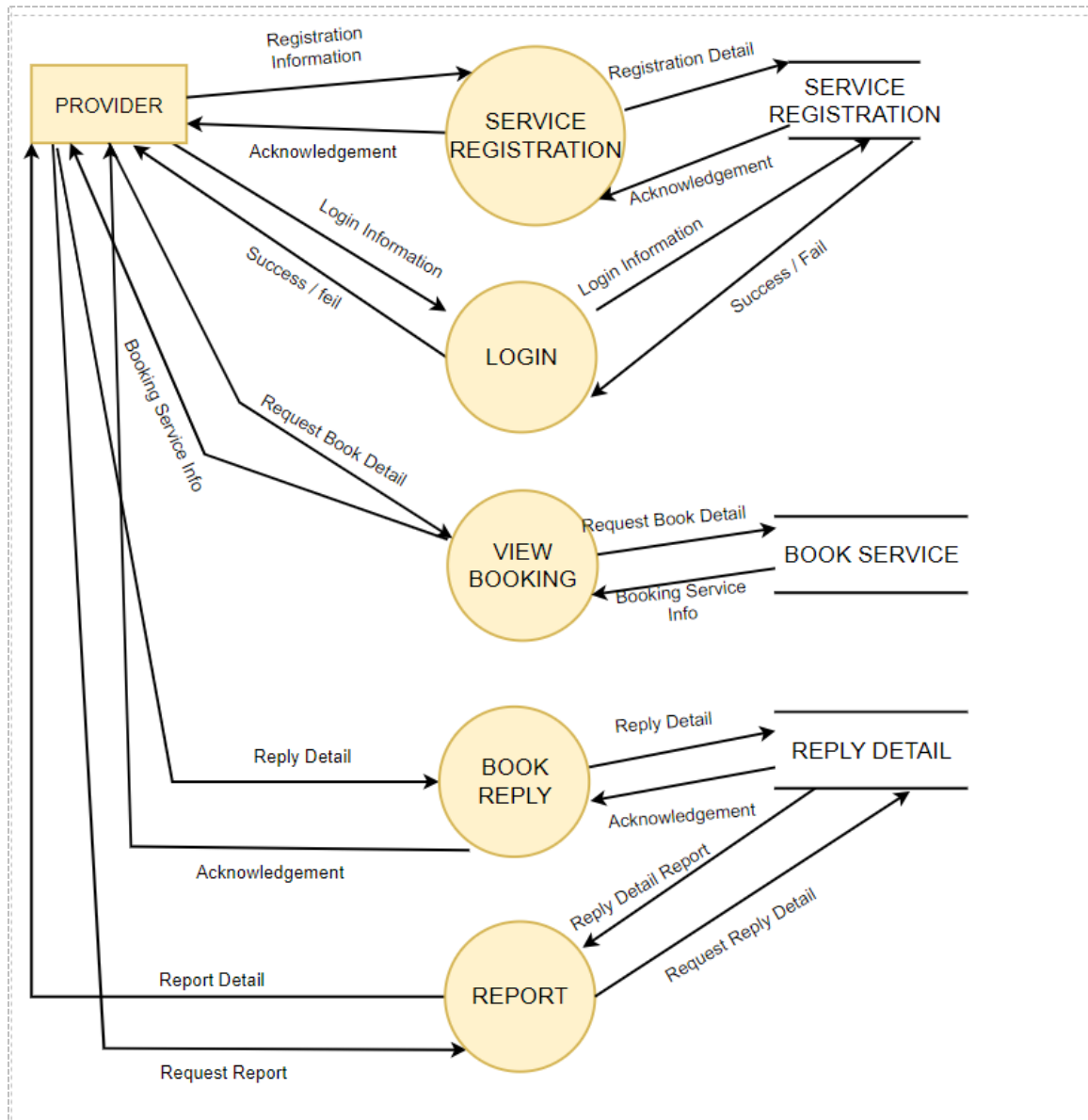


Figure 3.1.3: DFD Diagram Level 1 For Provider

Figure 3.1.3: DFD Diagram Level 1 for Provider outlines the detailed data flow and processes specific to service providers within the Subidha system. It illustrates how providers interact with the system, including tasks such as service listing, availability management, booking confirmation, order fulfillment, and customer communication. This diagram provides a structured overview of how providers engage with the platform to

deliver services efficiently and manage their interactions with customers.

DFD Level 1 – Customer

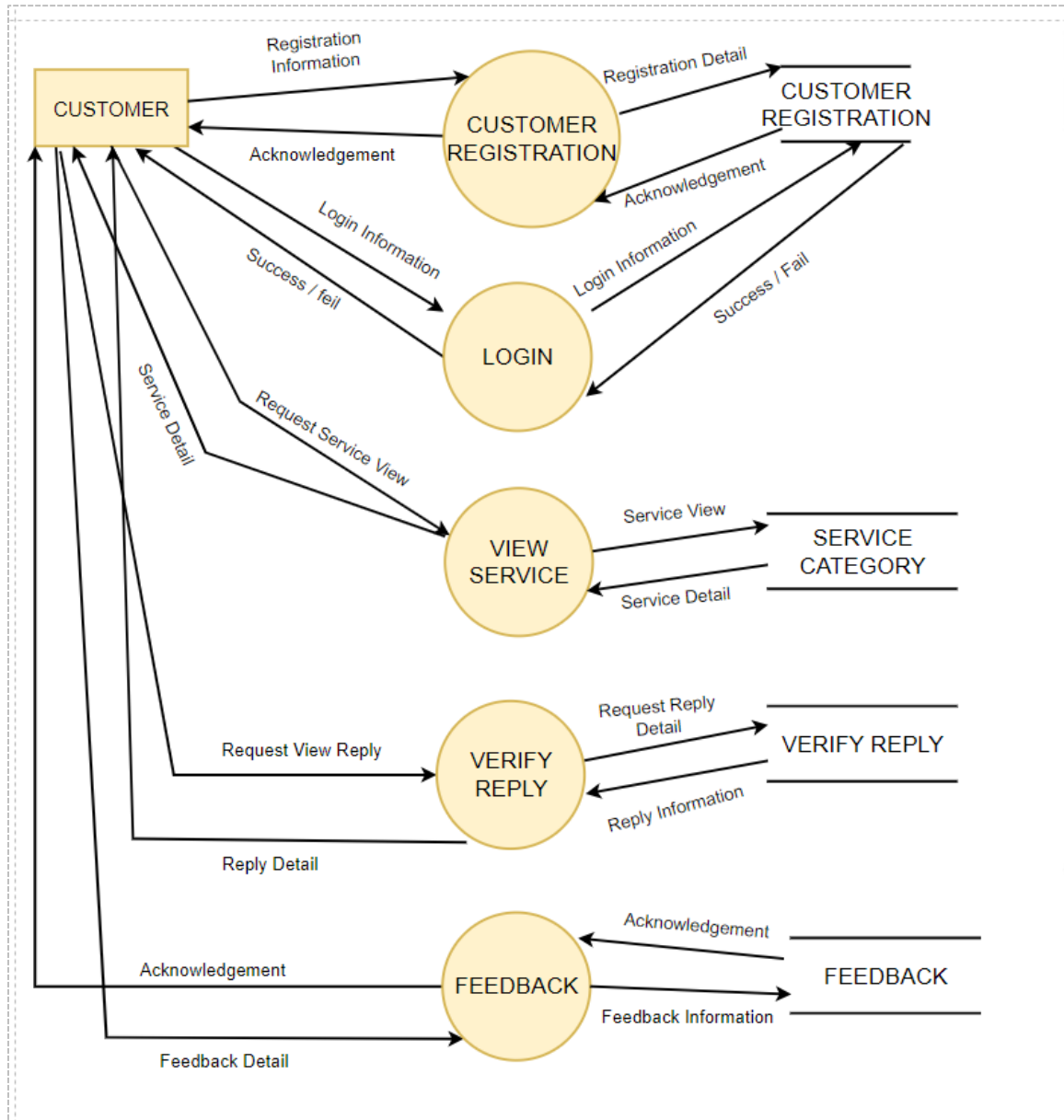


Figure 3.1.4: DFD Diagram Level 1 For Customer

Figure 3.1.4 DFD Level 1 – Customer illustrates the detailed data flow and processes specific to customers within the Subidha system. It depicts how customers interact with the

platform, including tasks such as service browsing, booking requests, payment processing, review submissions, and communication with service providers. This diagram provides a structured view of how customers navigate through the system to find services, book appointments, and manage their interactions with service providers.

3.2 Requirement Collection and Analysis

This method began with demand data analysis from Subidha. The effective functioning of the home service website requires a strong understanding of user and worker needs and expectations. To begin, identifying is key different user roles such as the customer and the worker and then laying out the privileges and responsibilities of each role. Stakeholder interviews and market research help us learn about user pain points and user preferences as well as existing industry practices. A set of well-defined non-functional and functional requirements, i.e., user registration, profile creation, service categorization, location-based service availability, booking mechanisms, payment integration, and review systems should be carefully identified and prioritized based on their importance and feasibility. As summarized in Table 1, non-functional requirements may include performance, security, usability, compatibility, and regulatory compliance which are identified to guarantee platform reliability, security, and user-friendliness. Use case modeling may help to visualize user-interactions and system functionalities, validating all essential use cases, their sequence diagrams, and associated expectations. The set of requirements should form a repository, which consists of a collection of processing objects that represent the system to be. Finally, documented and validated requirements should align with project positions and stakeholder expectations, to provide the basis for a subsequent design and construction phase to realize the Subidha project.

3.3 Use Case Modeling and Description

Subidha's success hinges on providing intuitive and efficient interactions for both customers and workers. To achieve this, we'll develop comprehensive use case models and descriptions outlining key user interactions within the platform.

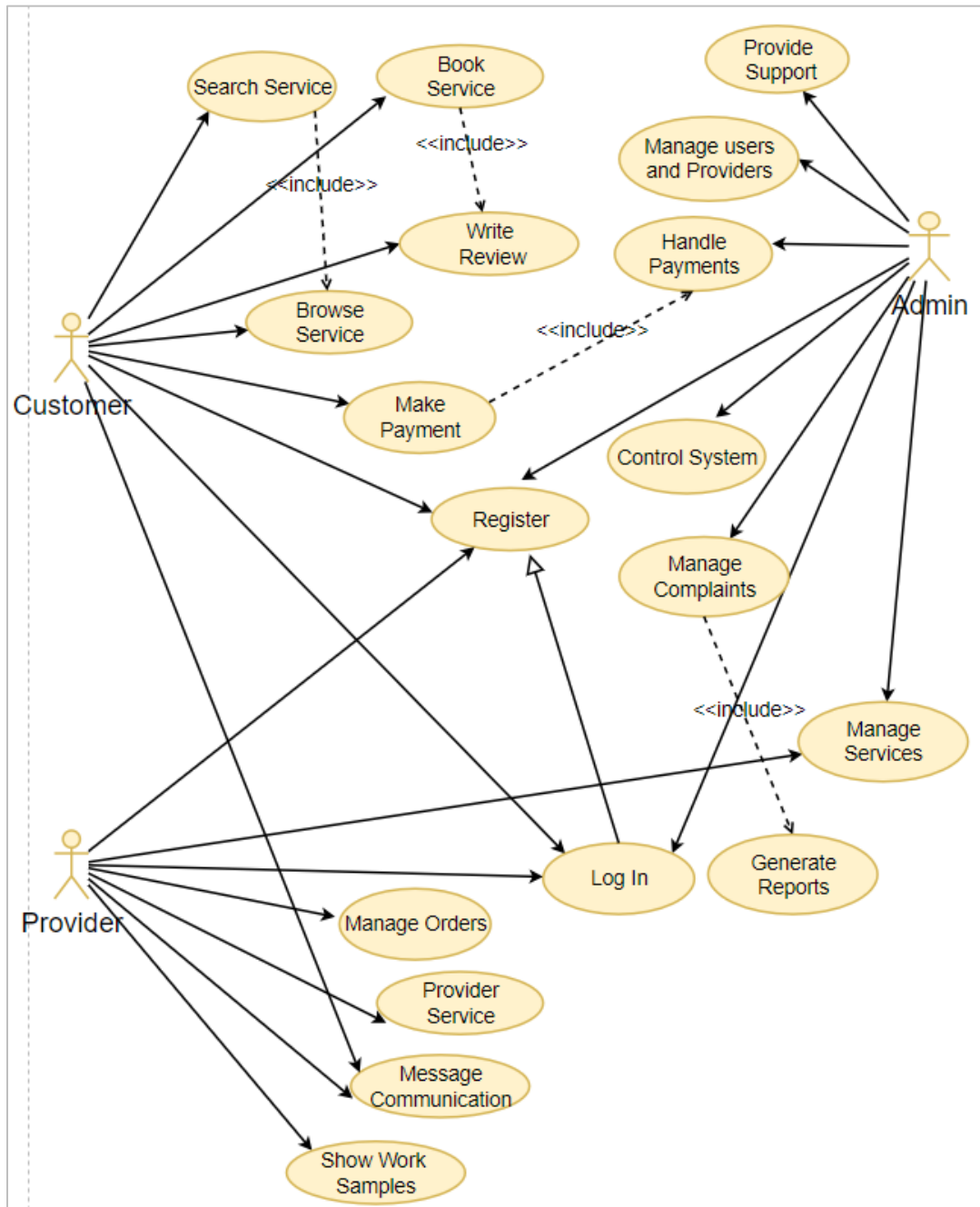


Figure 3.3.1: Use case diagram of Subidha functionalities

Use Case Modeling and Description for Subidha Website

Actors:

- **Customer:** Individuals seeking home services.
- **Worker:** Individuals providing home services.
- **Administrator:** Manages website content and user accounts (optional).

Use Cases:

3.3.1 Account Management:

Actors: Customer, Worker, Admin

Main Flow:

- **Customer/Worker:** Accesses the registration page.
- **Customer/Worker:** Provides required information (name, email, password, etc.).
- **System:** Validates information and creates account.
- **System:** Sends confirmation email to registered email address.

Alternative Flows:

- **Invalid information:** System prompts user to correct errors.
- **Email already exists:** System informs user and suggests alternatives.

3.3.2. Worker Profile Management:

Actor: Worker

Main Flow:

- **Worker:** Logs in to their account.
- **Worker:** Accesses profile editing section.
- **Worker:** Updates information (work experience, about me, etc.).
- **Worker:** Uploads work samples (optional).
- **System:** Saves profile updates.

Alternative Flows:

- **Invalid information:** System prompts worker to correct errors.
- **File upload error:** System informs worker and suggests troubleshooting steps.

3.3.3. Browse Services:

Actor: Customer

Main Flow:

- **Customer:** Accesses the service browsing page.
- **System:** Displays list of available services with categories and locations.
- **Customer:** Filters services based on criteria (category, location, etc.).
- **Customer:** Views details of individual services (descriptions, pricing).

3.3.4. Book Service:

Actor: Customer

Main Flow:

- **Customer:** Selects desired service and date/time.
- **System:** Displays available workers for the chosen service and time slot.
- **Customer:** Selects preferred worker based on profile information and reviews.
- **System:** Confirms booking and sends notification to both customer and worker.

Alternative Flows:

- **No available workers:** System suggests alternative dates/times or recommends contacting customer support.
- **Booking conflict:** System informs customer and suggests alternative options.

3.3.5. Online Payment:

Actor: Customer

Main Flow:

- **Customer:** Proceeds to checkout after booking service.
- **System:** Redirects customer to secure payment gateway.
- **Customer:** Enters payment information (credit card, etc.).
- **Payment gateway:** Processes transaction and sends confirmation to customer and system.
- **System:** Updates booking status and sends confirmation email to customer.

Alternative Flows:

- **Payment failure:** System informs customer and provides options to retry or contact support.

- **Transaction error:** System informs customer and suggests contacting customer support.

3.3.6. Customer Review:

Actor: Customer

Main Flow:

- **Customer:** Completes service and receives notification to leave a review.
- **Customer:** Accesses review section for completed service.
- **Customer:** Provides rating and optional written feedback about the worker.
- **System:** Stores review and displays it on worker's profile after moderation (optional).

Alternative Flows:

- **Customer chooses not to leave a review:** System acknowledges and closes the review option.

3.3.7. Real-time Chat (Optional):

Actors: Customer, Worker

Main Flow:

- **Customer/Worker:** Initiates chat conversation from their respective dashboards.
- **System:** Establishes real-time chat connection between participants.
- **Customer/Worker:** Exchange message regarding service details, scheduling, etc.

Alternative Flows:

- **Worker unavailable:** System informs customer and suggests alternative communication methods.
- **Technical issues:** System displays error message and prompts users to refresh or contact support.

Sequence Diagram for User

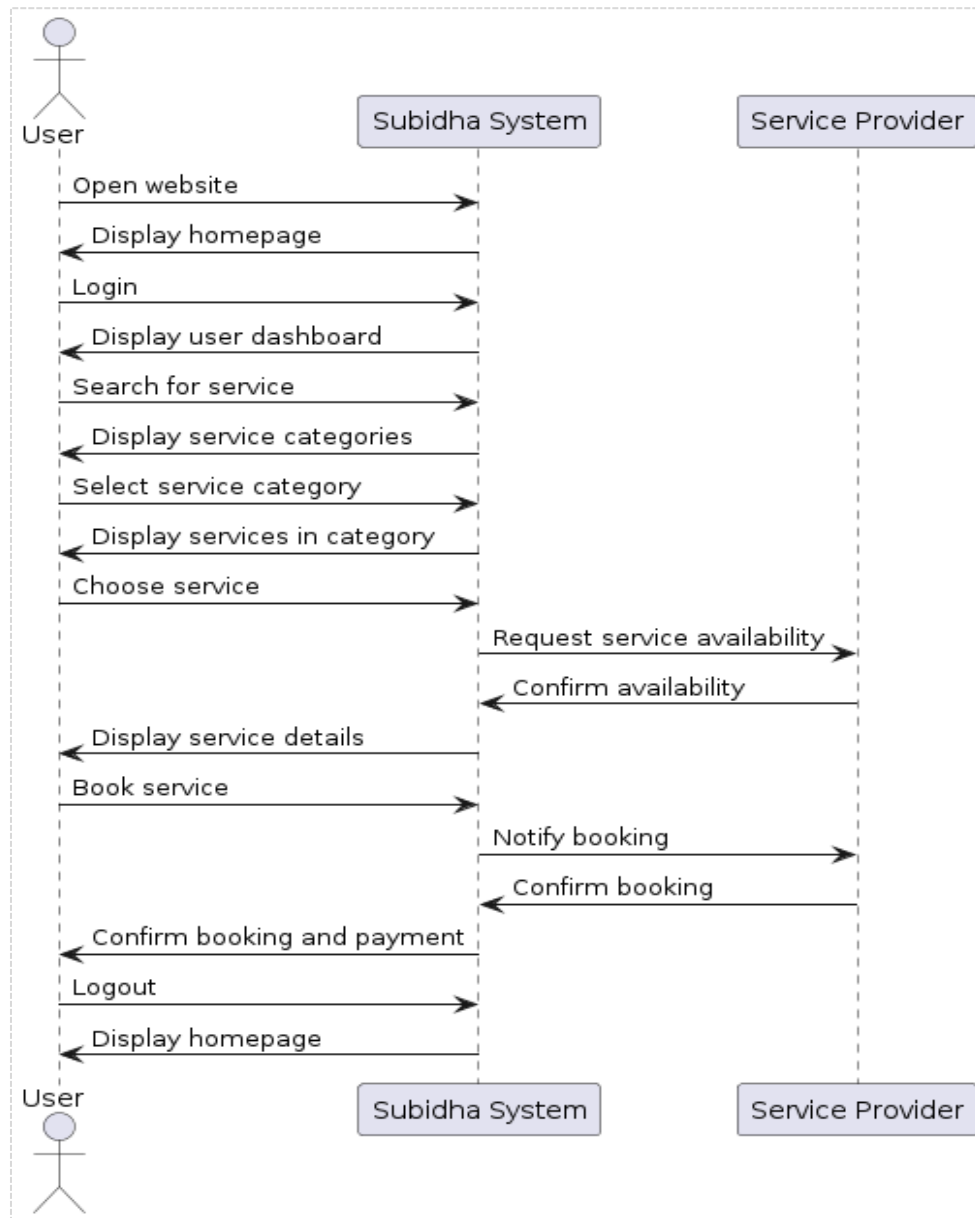


Figure 3.3.2: Sequence diagram for user

Figure 3.3.2: Sequence Diagram for User illustrates the sequence of interactions between a user and the Subidha system. It details the sequence of messages exchanged between the user interface, application server, and database components during typical user interactions such as browsing services, making bookings, and submitting reviews. This diagram provides a visual representation of the dynamic behavior and flow of operations from the user's perspective within the Subidha platform.

Sequence Diagram for Provider

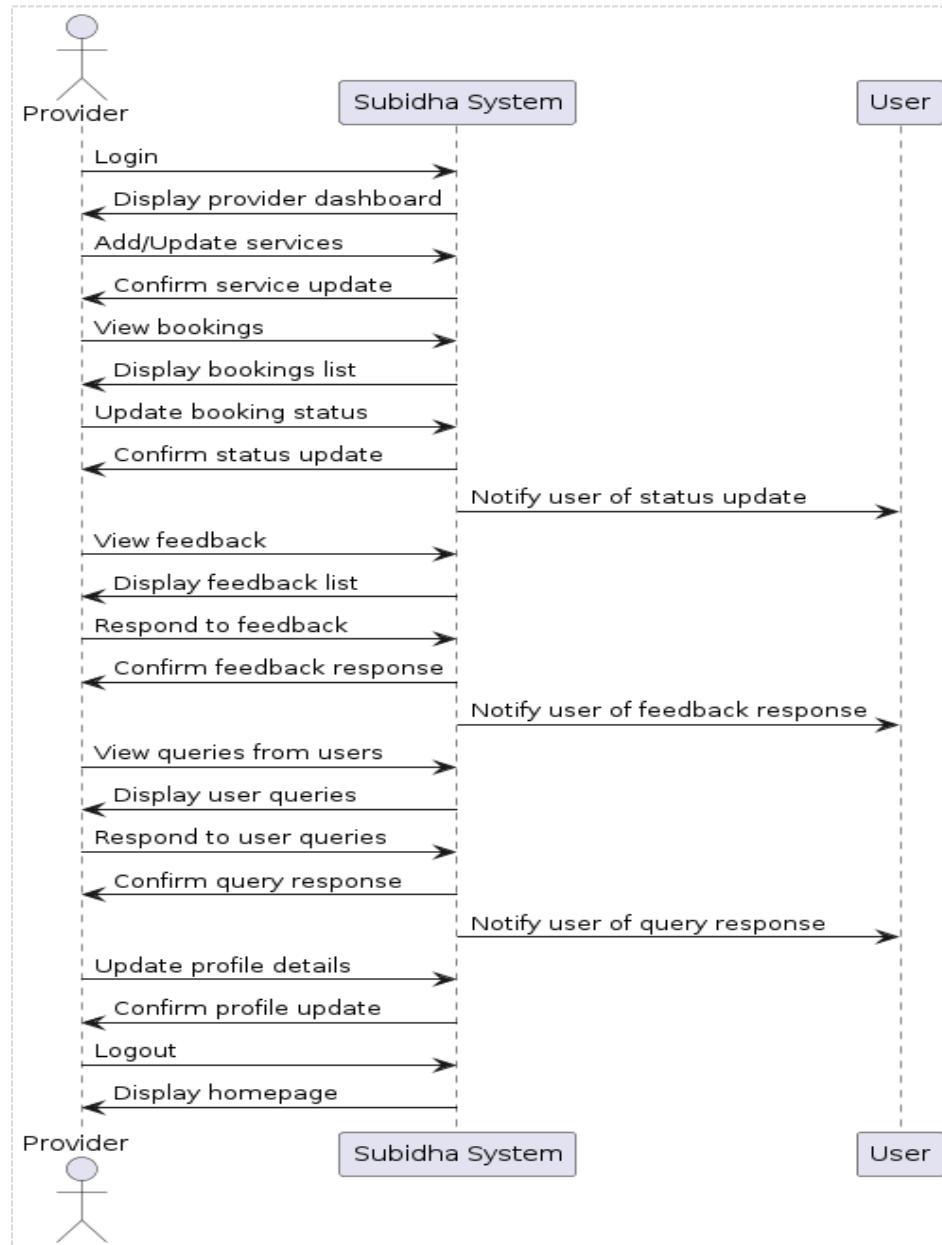


Figure 3.3.3: Sequence diagram for service provider

Figure 3.3.3: Sequence Diagram for Service Provider illustrates the sequence of interactions between a service provider and the Subidha system. It depicts the flow of messages exchanged between the service provider interface, application server, and database components during typical provider activities such as managing services,

handling bookings, and responding to customer inquiries. This diagram provides a visual representation of the dynamic behavior and interaction patterns from the service provider's perspective within the Subidha platform.

Sequence Diagram for Admin

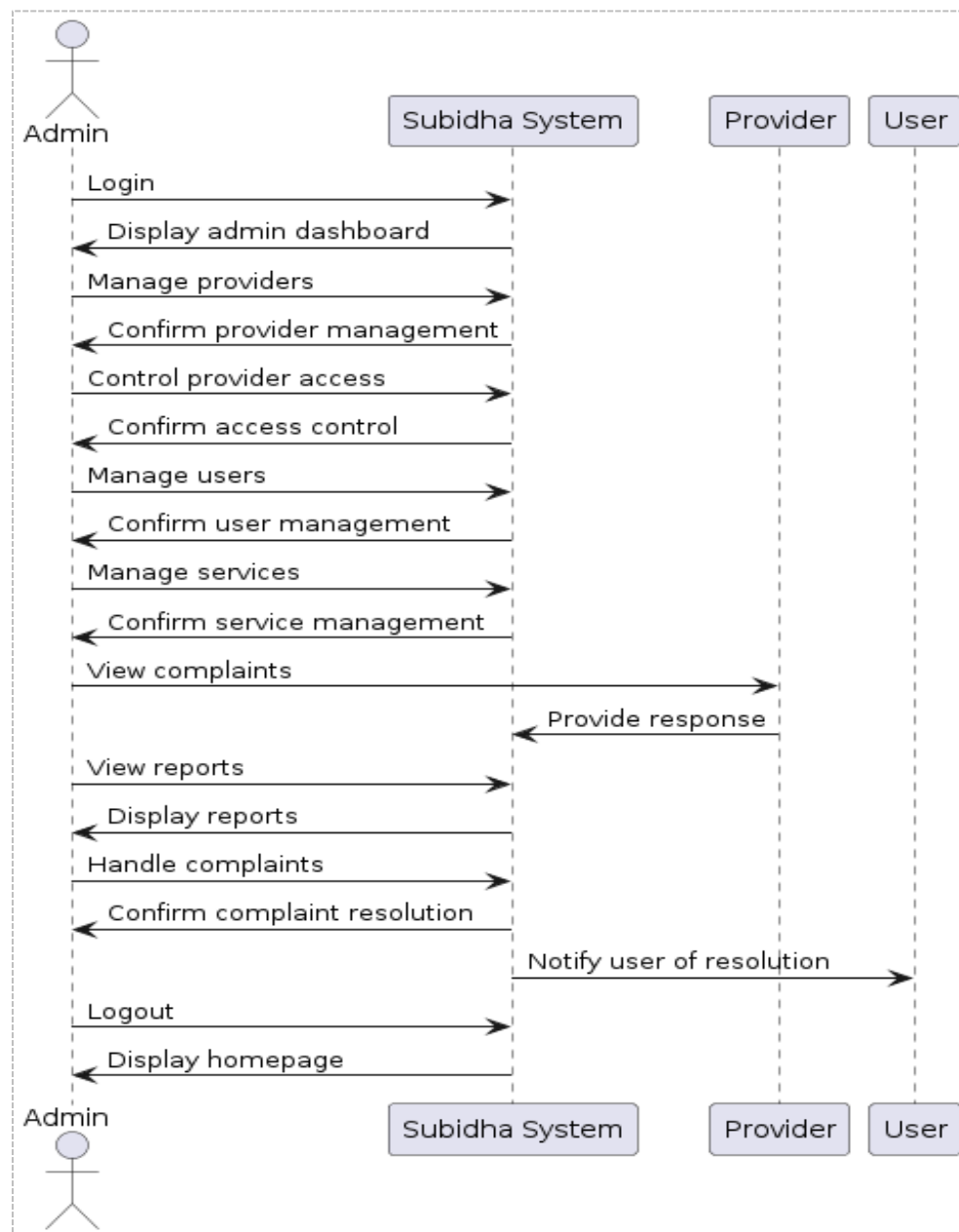


Figure 3.3.4: Sequence diagram for Admin

Figure 3.3.4: Sequence Diagram for Admin illustrates the sequence of interactions between an administrator (admin) and the Subidha system. It details the flow of messages exchanged between the admin interface, application server, and database components during typical administrative tasks such as user management, content moderation, system configuration, and generating reports. This diagram provides a visual representation of the dynamic behavior and interaction patterns from the admin's perspective within the Subidha platform.

Flow of Events:

Customer Selects Service Category:

- The customer navigates to the Subidha website's "Book Service" section.
- The system displays a list of available service categories (e.g., Plumbing, Electrical, Cleaning).
- The customer selects their desired service category.
- Customer Specifies Location:
 - The system prompts the customer to enter their location details (e.g., address, zip code).
 - The customer can optionally use geolocation to automatically populate their location.
 - The system filters the available services based on the customer's location.

Customer Selects Service:

- The system displays a list of available services within the chosen category and location.
- Each service includes details such as description, pricing, estimated duration, and worker ratings.
- The customer selects the specific service they want to book.
- Customer Selects Date and Time (Optional):
 - The system may offer the option to schedule the service appointment at a specific date and time (depending on service provider availability).
 - The customer selects their preferred date and time slot (if applicable).

Customer Chooses Worker (Optional):

- The system may allow the customer to choose a preferred worker based on their profile information and ratings (depending on service provider availability).
- The customer selects their preferred worker (if applicable).

Customer Reviews Order Details:

- The system displays a summary of the selected service, including:
 - Service category
 - Service details
 - Service provider (if chosen)
 - Date and time (if chosen)
 - Total cost
- The customer reviews the order details before proceeding.

Customer Confirms Order:

- The customer confirms their service booking.
- The system processes the order, creating a service request in the database.

System Sends Confirmations:

- The system sends a confirmation email or notification to the customer, summarizing the booked service, provider details (if applicable), and estimated time of arrival.
- The system may optionally notify the selected worker about the new service booking.

3.4 Logical Data Model

Identify entities and attributes:

- **Entities:** Worker, Customer, Category, Service, Order, Payment, Review, Chat
- **Attributes:** (Example attributes for each entity)
- **Worker:** ID, Name, Email, Phone, Location, Skills, Work samples, Ratings
- **Customer:** ID, Name, Email, Phone, Location, Order history, Reviews
- **Category:** ID, Name, Description
- **Service:** ID, Name, Description, Category, Price, Worker (optional)
- **Order:** ID, Customer, Worker, Service, Date, Time, Status, Payment details
- **Payment:** ID, Order, Method, Amount, Date
- **Review:** ID, Customer, Worker, Rating, Comment
- **Chat:** ID, User1, User2, Messages

Define relationships:

- **One-to-many:** Worker (one) has many Services (many)
- **Many-to-many:** Customer (many) can book Service (many) from Worker (many)
- **One-to-one:** Order (one) has one Payment (one)
- **Many-to-one:** Service (many) belongs to Category (one)
- **Many-to-many:** Customer (many) can leave Review (many) for Worker (many)
- **Many-to-many:** User (many) can participate in Chat (many) with other User (many)

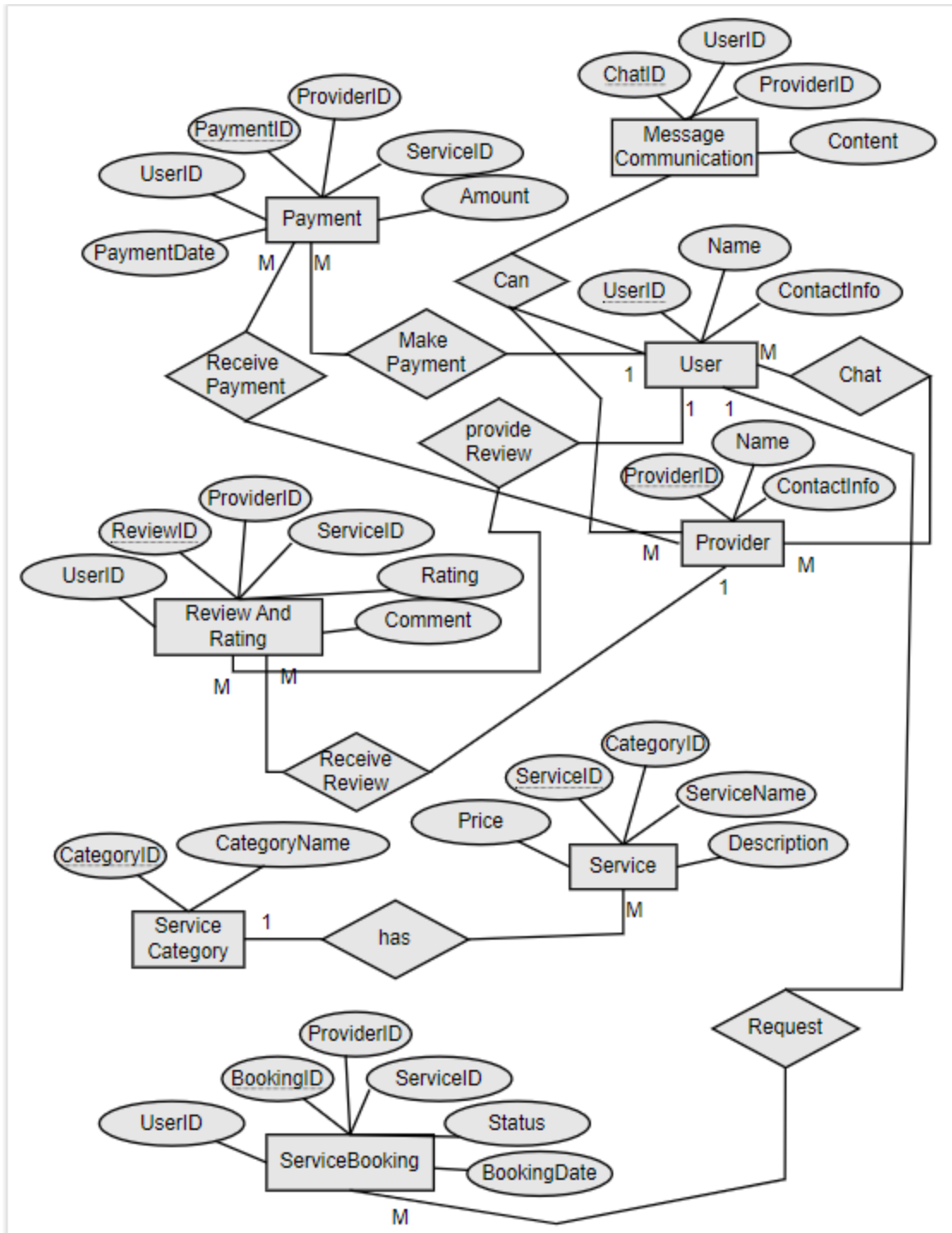


Figure 3.4.1: Entity Relationship Diagram (ERD) of Subidha

Figure 3.4.1: Entity-Relationship Diagram (ERD) of Subidha depicts the relationships between key entities in the Subidha system. It illustrates how entities such as Users, Services, Service Providers, Bookings, Reviews, and Payments are interconnected through various relationships such as associations and dependencies. This diagram provides a visual representation of the data model underlying Subidha, facilitating understanding of how different components interact and relate to each other within the system.

3.5 Design Requirement

In Subidha, the user interface design plays a crucial role in ensuring seamless interaction and navigation for both customers and workers. The interface must be intuitive, with clear and consistent navigation elements to facilitate easy access to the various features offered by the platform. For workers, their profile pages should be thoughtfully designed to prominently showcase their work samples, provide an "about me" section, and display customer reviews to build trust and credibility. Booking and scheduling functionalities should be seamlessly integrated, allowing customers to select services, specify their location, and choose preferred dates and times for service delivery. Real-time chat functionality should be implemented with a user-friendly interface, enabling instant communication between customers and workers to clarify service details and address any concerns. Payment integration should prioritize security and convenience, offering multiple payment methods and ensuring compliance with industry standards. Finally, the review and rating system should be intuitive for customers to submit feedback and for workers to respond, fostering transparency and accountability within the Subidha community. Overall, the design should prioritize usability, accessibility, and aesthetics to enhance the overall user experience and drive engagement on the platform.

CHAPTER 4

Design Specification

4.1 Front-end Design

For Front-end design of Subidha, We will want to focus on creating an intuitive and visually appealing user interface that facilitates seamless navigation and interaction. Here's a breakdown of the key components and features:

- **Landing Page:**
 - Display a landing page showcasing the various services offered by Subidha.
 - Include sections for popular categories, featured workers, and customer reviews to grab the user's attention.
 - Implement a search bar and filters to allow users to quickly find the services they need.
- **Service Categories:**
 - Organize services into categories and subcategories for easy browsing.
 - Each service listing should include relevant details such as service description, worker profiles, pricing, and customer reviews.
- **User Authentication and Profile Management:**
 - Provide a user-friendly sign-up and login interface for both customers and service provider.
 - Allow users and providers to manage their profiles, including updating personal information, viewing order history, and managing favorites.
- **Booking and Ordering:**
 - Enable customers to select services based on their location and preferred date/time.
 - Implement a booking system that sends notifications to both the customer and the service provider upon successful booking.
 - Include a checkout process for online payment, offering various payment methods for convenience.

- **Real-time Chat:**
 - Integrate a real-time chat feature to facilitate communication between customers and workers.
 - Ensure secure messaging and notifications for new messages.

- **Reviews and Ratings:**
 - Allow customers to leave reviews and ratings for services they have received.
 - Display average ratings and reviews on worker profiles to help customers make informed decisions.

- **Service Provider Dashboard:**
 - Service providers should have access to a dashboard where they can manage their profiles, including updating personal information, adding work samples, and viewing their service history.
 - Display a list of upcoming bookings, past services rendered, and any pending requests. Service providers should be able to accept or reject booking requests.
 - Include a real-time chat interface for communicating with customers about service details, scheduling, and any other inquiries.
 - Provide insights into performance metrics such as total earnings, number of completed bookings, and customer ratings.

- **2. Admin Panel:**
 - Allow administrators to manage user accounts, including creating, editing, and deleting accounts if necessary. This includes both customers and service providers.
 - Provide tools for administrators to add, edit, or remove services from the platform. They should be able to categorize services, set pricing, and manage service descriptions.
 - Display a dashboard showing all bookings made through the platform. Administrators should be able to view details of each booking, including the service provider assigned, status of the booking, and any customer notes.
 - Enable admin to monitor customer reviews and ratings. They should be able to remove inappropriate content or address any disputes between customers and service providers.
 - Include features for generating reports on key metrics such as total revenue, number

of bookings, user demographics, and service popularity. This data can help administrators make informed decisions about platform improvements and marketing strategies.

- o Allow administrators to configure system settings such as payment gateway integration, email notifications, and chat settings.



Figure 4.1.1: Class diagram of Subidha

Figure 4.1.1: Class Diagram of Subidha illustrates the class structure and relationships within the Subidha system. It depicts the classes representing key entities such as users, services, bookings, payments, and reviews, along with their attributes and associations. This diagram provides a visual representation of the object-oriented design of Subidha,

showcasing how classes interact to support functionalities such as user management, service provisioning, booking handling, and feedback management.

4.2 Back-end Design

The back-end design of Subidha will involve implementing the server-side logic, database management, and APIs using the MERN stack. Here's what we need to consider:

- **MongoDB Database:**

- Design a MongoDB database schema to store user information, service categorization, user bookings, user reviews, provider information, real-time chat data etc.
- Ensure data consistency, scalability, Integrity.

- **Express.js Server:**

- Set up an Express.js server to handle HTTP requests and responses.
- Setup routes for user authentication, service listings, bookings, payments, and chat functionality.
- Implement middleware for authentication, error handling, and request validation.

- **React.js Front-end Integration:**

- Integrate the front-end React components with the Express.js server using RESTful APIs.
- Implement client-side routing for smooth navigation between different pages and components.

- **Node.js Server:**

- Utilize Node.js for server-side JavaScript execution.
- Implement server-side logic for handling business rules, data validation, and integrating third-party services (e.g., payment gateways).

- **Real-time Communication:**

- Use Socket.io for implementing real-time chat functionality.
- Set up WebSocket connections to enable communication between customers and service provider.

- **Security Measures:**

- Implement JWT (JSON Web Tokens) for user authentication and authorization.

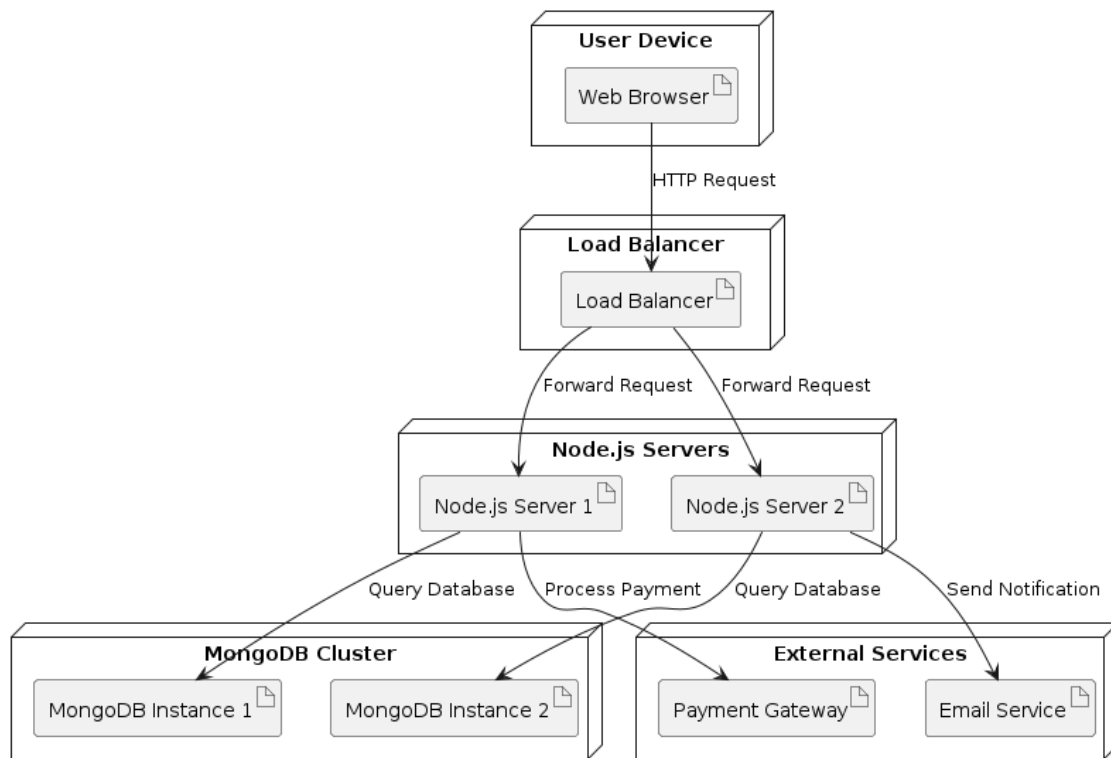


Figure 4.2.1: Deployment diagram

Figure 4.2.1: Deployment Diagram depicts the deployment architecture of the Subidha system, illustrating the distribution of software components across hardware nodes. It outlines how various system modules, including web servers, application servers, databases, and external services, are deployed within the infrastructure. This diagram provides a visual representation of the physical deployment environment, facilitating understanding of how components interact and ensuring efficient system operation and scalability.

4.3 Interaction Design and User Experience (UX)

4.3.1 Interaction Design

Subidha's interaction design focuses on creating a smooth and intuitive experience for both workers and customers.

- **Clear Navigation:** We'll design a user-friendly interface with clear menus and categories, making it easy for users to find the services they need or the specific worker profiles they're looking for.
- **Simple Workflows:** Booking a service, creating an account, and making payments will be streamlined processes with minimal steps and clear instructions.
- **Interactive Elements:** We will incorporate interactive features like clickable buttons, drop-down menus, and progress bars to provide users with real-time feedback and a sense of control during their interactions with Subidha.
- **Responsive Design:** The website will be to different screen sizes, ensuring a positive experience on desktops, laptops, tablets, and mobile phones.

4.3.2 User Experience (UX)

- **As a Customer:** Finding a reliable service provider becomes effortless. We can easily browse through categories, filter results by location and reviews, and book appointments with just a few clicks. online payments eliminate the hassle of cash transactions. Real-time chat allows us to clarify details with the worker before the service begins. After the service is complete, we can leave a review to help other customers make informed decisions.
- **As a Worker:** Subidha provides a platform to showcase our skills and experience. we can manage our profile, upload work samples, and get booked for jobs that match our expertise. Customer reviews will build our reputation and attract more clients. The real-time chat feature allows us to communicate directly with customers and address their inquiries promptly.

By focusing on clear interaction design and a positive user experience, Subidha aims to make life easier for both workers and customers, fostering a thriving online marketplace for home services.

4.4 Implementation Requirements

Subidha is a web-based home service platform we're developing using the MERN stack (MongoDB, Express.js, React.js, and Node.js). Here's a breakdown of the implementation requirements for each layer:

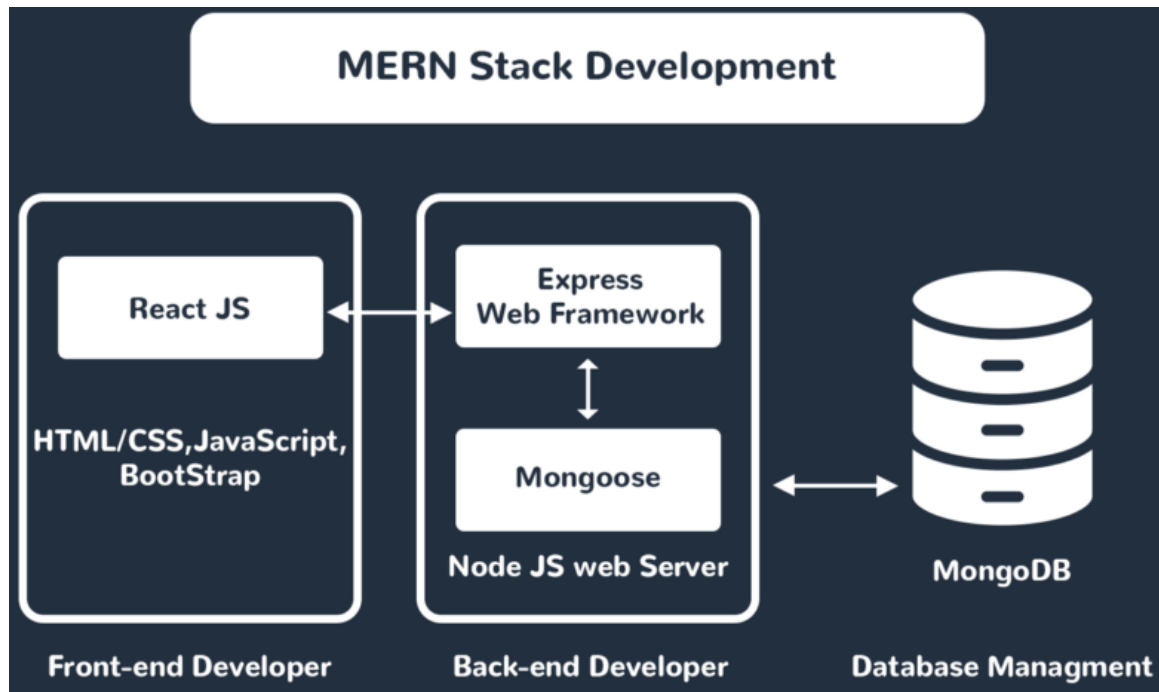


Figure 4.4.1: MERN Architecture.

Figure 4.4.1: MERN Architecture illustrates the architectural framework used in the Subidha system, based on the MERN stack (MongoDB, Express.js, React.js, Node.js). This diagram outlines how these technologies are integrated to develop and deploy web applications, showcasing MongoDB as the database, Express.js as the backend framework, React.js for the frontend user interface, and Node.js as the runtime environment. It provides a comprehensive overview of the technology stack employed in Subidha, emphasizing its benefits in building scalable and responsive web applications.

4.4.1 Backend (Node.js and Express.js):

- **API Development:**
 - Create a robust API using Express.js to handle all data interactions between the frontend and the database.

- Define API endpoints for user registration (worker and customer), login, category management, service management (CRUD operations), order management (booking, cancellation, status updates), payment processing (integration with a payment gateway), review management, and real-time chat functionality.
 - Implement authentication and authorization mechanisms (e.g., JWT) to ensure secure access to user data and actions.
- **Database Management (MongoDB):**
 - Design a schema for storing user information (worker and customer profiles, including work samples, about me sections, and reviews), categories, services (descriptions, prices, etc.), orders (status, worker/customer details, service details), payment transactions, and chat messages.
 - Use Mongoose (an ODM - Object Data Modeling library for MongoDB) to interact with the database in a structured and efficient manner.
 - **Real-time Chat (Optional):**
 - Choose a suitable real-time messaging solution like Socket.IO or Pusher to enable real-time communication between workers and customers.
 - Integrate the chosen library with our backend to handle chat message creation, retrieval, and updates.

4.4.2 Frontend (React.js):

- **Component-based UI Development:**
 - Create reusable React components for user interface elements like headers, footers, navigation bars, user profiles, category listings, service details, order forms, payment options, review sections, and chat interfaces.
 - Utilize a CSS framework like Material-UI, Bootstrap, or Tailwind CSS to ensure a consistent and responsive design across different screen sizes.
- **State Management:**
 - Implement a state management library like Redux or Context API to manage application state effectively, especially for handling user authentication, order details, and chat functionality.

- **User Interaction and Data Fetching:**
 - Develop interactive components for users to register, login, browse categories and services, book orders, make payments, leave reviews, and interact with the real-time chat feature.
 - Use React's built-in fetch API or a library like Axios to make API calls to the backend for data fetching and manipulation.
- **Payment Integration:**
 - Integrate a secure payment gateway like Stripe, PayPal, or Paytm to enable online payments within the Subidha platform.
 - Ensure adherence to PCI compliance standards for handling sensitive payment data.

4.4.3 Deployment:

- Choose a suitable hosting platform like Heroku, AWS, or Google Cloud Platform to deploy our backend application.

Configure a frontend hosting service or a Content Delivery Network (CDN) to serve our React application static files.

CHAPTER 5

Implementation and Testing

5.1 Database Implementation

For Subidha, a web-based home service platform, we leverage the MERN stack for development. This translates to using MongoDB, a NoSQL document database, to store our application's data. This section details the planned database design and the collections (tables) that will be implemented.

5.1.1 Database Design Considerations

- **MERN Stack Integration:** Since MongoDB is a document-oriented NoSQL database, it aligns well with the flexible data structures required for user profiles, service details, and reviews within Subidha.
- **Scalability:** MongoDB's horizontal scalability allows us to easily add more servers as our user base grows, ensuring efficient data management.

5.1.2 Database Collections

The following core collections will be created within MongoDB to represent the different entities in our application:

- **Users Collection:** This collection stores user information for both customers and service providers. Each document will include fields such as:
 - `_id` (unique identifier for MongoDB)
 - `Uid`
 - `Username`
 - `SignupDate`
 - `LastLoginDate`
 - `status`
 - `email` (unique for user identification)
 - `phone` (optional)
 - `location` (e.g., city, zip code)
 - `role` (customer, provider or admin)
 - `isVerified` (boolean flag indicating email verification)
 - `photoURL`

- **Categories Collection:** This collection defines the various service categories offered on Subidha. Each document will include:
 - `_id`
 - `serviceName`
 - `icon`
 - `serviceOverView`
 - `faq`
 - `subCategories`

- **Services Collection:** This collection stores details about individual services offered by providers. Each document will include:
 - `_id`
 - `serviceName`
 - `image`
 - `description`
 - `details`

- **Reviews Collection:** This collection stores customer reviews for service providers. Each document will include:
 - `_id`
 - `customerId` (reference to the Users collection - customers)
 - `providerId` (reference to the Users collection - providers)
 - `serviceId` (optional reference to the Services collection)
 - `rating` (integer value)
 - `reviewText` (optional)

- **Orders Collection:** This collection stores booking information for services. Each document will include:
 - `_id`
 - `userId` (reference to the Users collection - customers)
 - `username`
 - `userPhotoURL`
 - `userPhone`
 - `location`

- fullAddress
- serviceName
- servicePhotoURL
- amount
- updatedAt
- serviceQuantity
- serviceManUID
- serviceManName
- bookingDate
- status

- **WorkSamples Collection:** This collection can store information and links to a provider's work samples (e.g., images, videos). Each document can include:

- `_id`
- `providerId` (reference to the Users collection - providers)
- `title` (optional)
- `link` (URL to the work sample)

- **Chats Collection:** This collection can store chat history between customers and providers for service-related communication. It can include:

- `_id`
- `roomId`
- `senderId` (linking to the Users collection - customers)
- `receiverId` (linking to the Users collection - providers)
- `seenStatus` (linking to the Services collection - optional)
- `timestamp` (of each message)
- `messages` (content of the message)

- **Provider Collection:** This collection stores detailed information about service providers. Each document will include fields such as:

- `_id` (Unique identifier for MongoDB.)
- `email` (The provider's email address.)
- `phone` (The provider's phone number.)
- `latitude` (Latitude coordinate for the provider's location.)

- longitude (Longitude coordinate for the provider's location.)
- name (The provider's name.)
- nidNumber (National ID number of the provider.)
- businessName (The name of the provider's business.)
- registrationNumber (Business registration number.)
- yearsOfExperience (The number of years the provider has been in business.)
- licenseNo (The provider's license number.)
- serviceCategory (The category of services the provider offers.)
- division (The division in which the provider operates.)
- district (The district in which the provider operates.)
- upazila (The upazila in which the provider operates.)
- photoURL (URL to the provider's profile photo.)
- nIDCardURL (URL to the provider's National ID card image.)
- uid (Unique identifier for the provider.)
- role (The role of the provider (e.g., "provider").)
- myServices An array of services offered by the provider, each containing:
 - serviceName (Name of the service.)
 - serviceCategory (Category of the service.)
 - amount (Cost of the service.)
 - title (Title of the service.)
 - details (Details about the service.)
 - selectedFileURL (URL to an image representing the service.)

- **Time Slots Collection:** This collection stores available time slots for service providers.

Each document will include:

- `_id` (Unique identifier for MongoDB.)
- `providerId` (Reference to the provider's unique identifier.)
- `slots`

An object that contains arrays of time slots for each day of the week:

- `sunday` (Array of available time slots for Sunday.)
- `monday` (Array of available time slots for Monday.)
- `tuesday` (Array of available time slots for Tuesday.)

- `wednesday` (Array of available time slots for Wednesday.)
- `thursday` (Array of available time slots for Thursday.)
- `friday` (Array of available time slots for Friday.)
- `saturday` (Array of available time slots for Saturday.)

5.2 Implementation of Front-end Design

Subidha's user interface will be crucial for providing a seamless and intuitive experience for both customers and service providers. Here's a breakdown of the key considerations for front-end design implementation:

Our landing page offers an insightful overview of our diverse service categories, including repair, cleaning, and wellness, tailored to meet our every need. Easily navigate through potential promotional offers, and discover the seamless convenience of booking services based on customer reviews and location. With Subidha, experience a hassle-free, reliable solution for all our home care requirements.

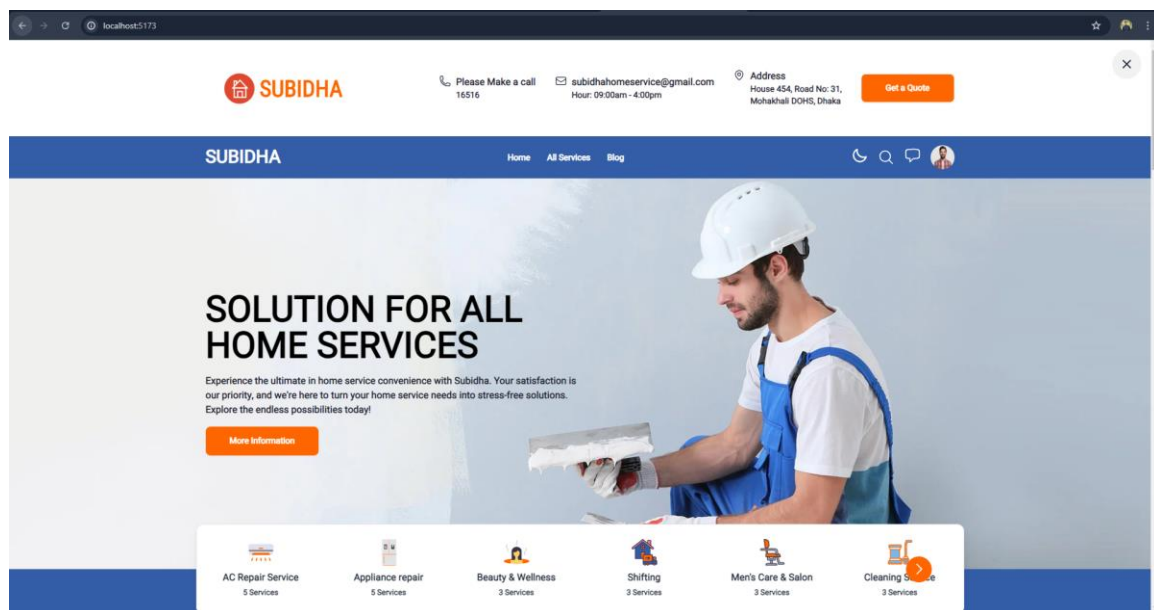


Figure 5.2.1: Home Page Navigation Section

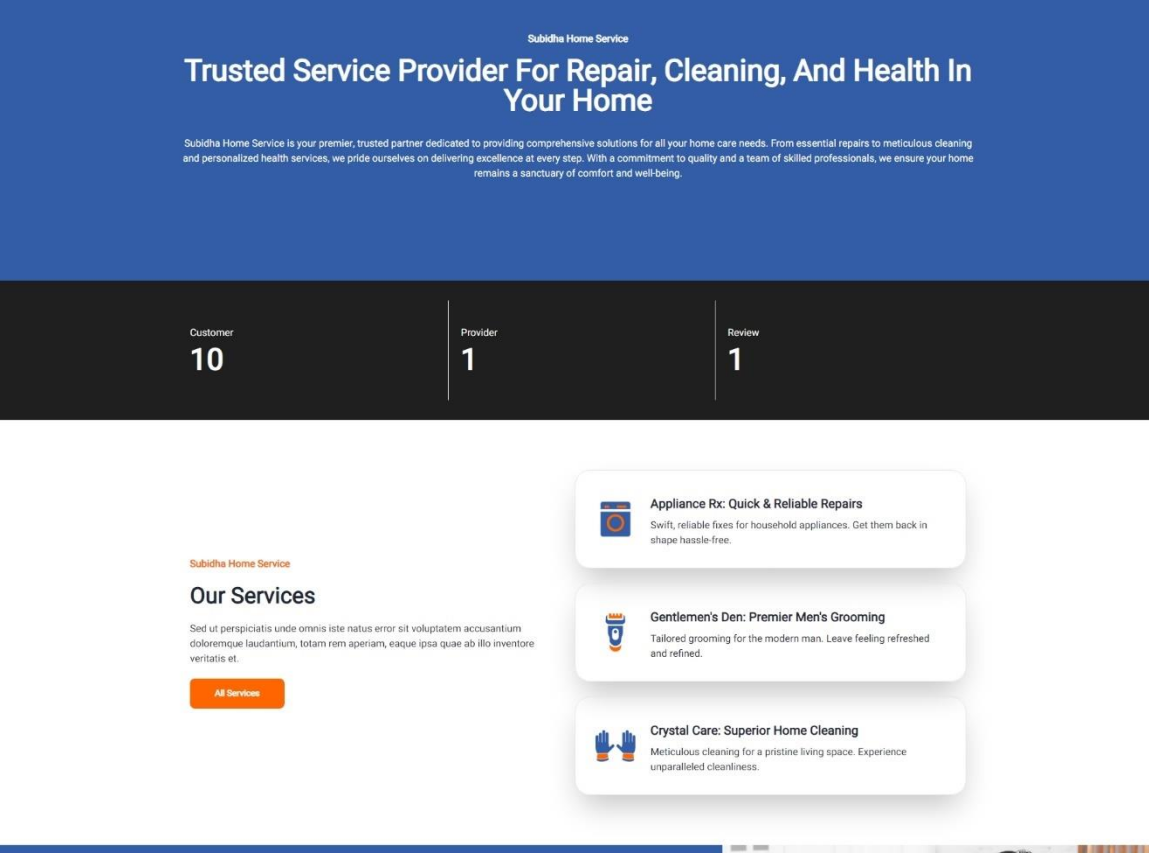


Figure 5.2.2: Home Page Service Section

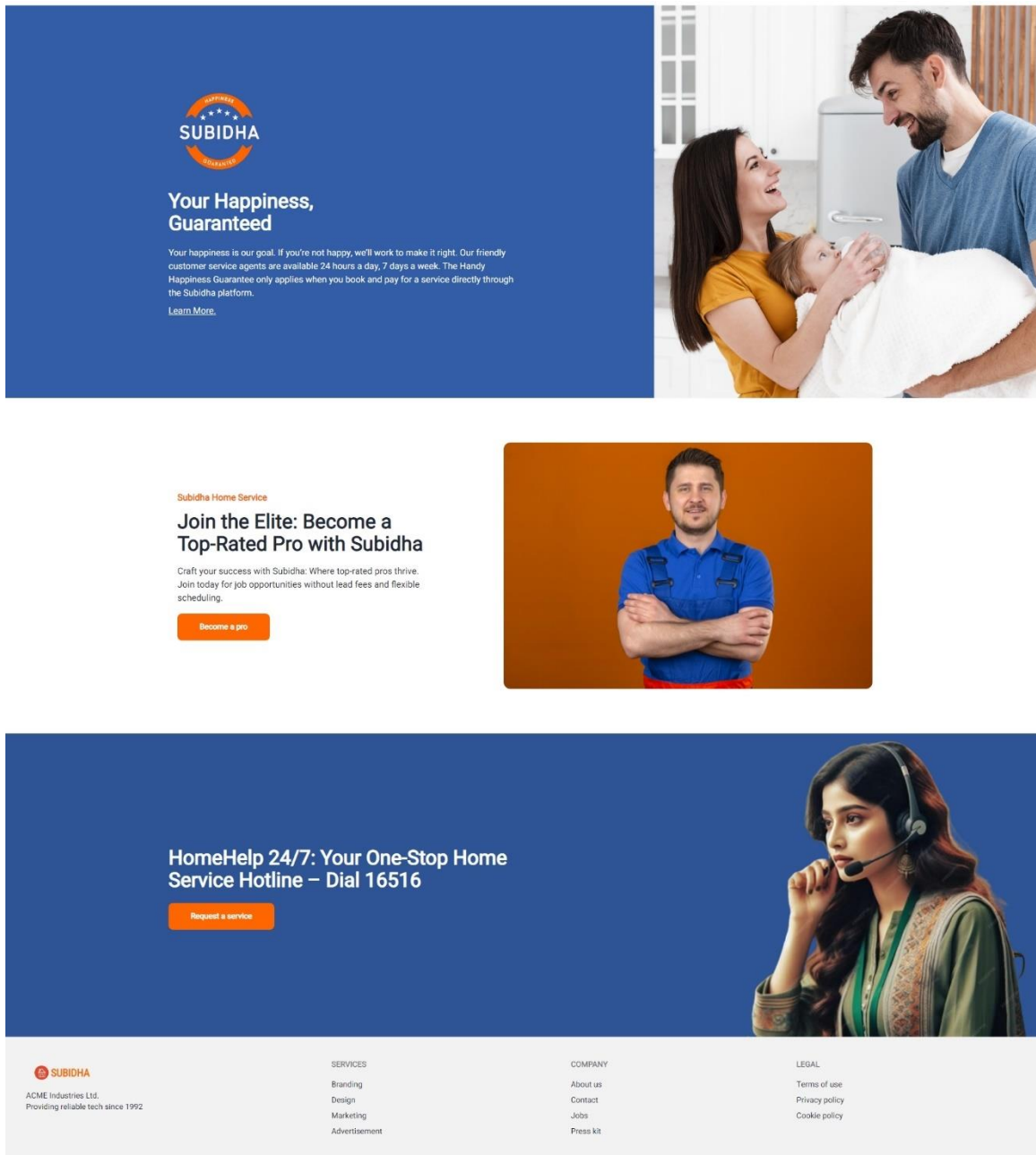


Figure 5.2.3: Home Page Footer Section

Subidha offers streamlined access with separate login and signup sections. Login allows users to enter email/phone number and password, or sign in with Google/Facebook. Signup captures name, email, and password with optional social logins for convenience.

The screenshot shows the SUBIDHA website's login interface. At the top, there is a header with the SUBIDHA logo, contact information (phone, email, address), and a 'Get a Quote' button. Below the header is a navigation bar with 'SUBIDHA', 'Home', 'All Services', 'Blog', and a 'Log In' button. The main content area is titled 'Log In' and contains a form with fields for 'Email' and 'Password'. A 'Log In' button is below the password field, with a link for 'Forgot your password?'. Below the login button is a link for 'Don't have an account? Sign Up'. An 'OR' separator is followed by a 'Phone Number' input field, and then buttons for 'Sign in with Google' and 'Sign in with Facebook'. The footer contains the SUBIDHA logo, 'ACME Industries Ltd.', 'SERVICES' (Branding, Design), 'COMPANY' (About us, Contact), and 'LEGAL' (Terms of use, Privacy policy).

Figure 5.2.4: Log In Page

The screenshot shows the SUBIDHA website's sign-up interface. It has the same header and navigation bar as the login page. The main content area is titled 'Sign Up' and contains a form with fields for 'Name', 'Email', and 'Password'. A 'Sign Up' button is below the password field, with a link for 'Already have an account? Log In'. An 'OR' separator is followed by a 'Sign in with Phone Number' button, and then buttons for 'Sign in with Google' and 'Sign in with Facebook'. The footer is identical to the login page.

Figure 5.2.5: Sign Up Page

Our app secures sign-ins with mobile number verification, adding an extra layer by confirming user identities. Verified numbers allow seamless access, ensuring a smooth, trustworthy authentication that enhances security and user convenience.

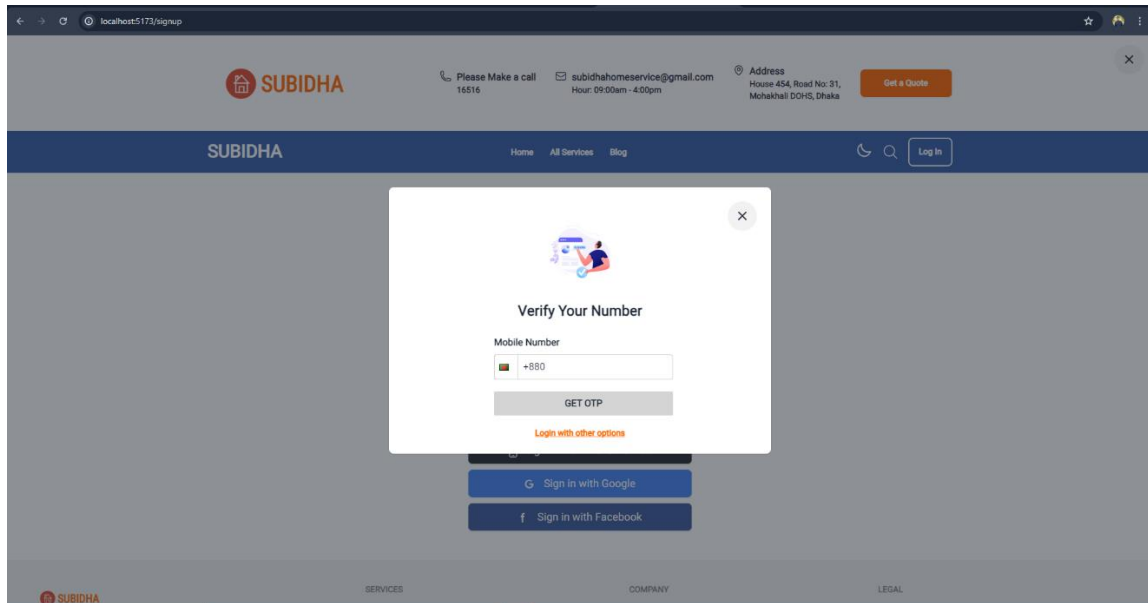


Figure 5.2.6: OTP verify page

Google reCAPTCHA boosts our app's security by validating user interactions with advanced CAPTCHA technology, preventing automated access and safeguarding against malicious activities.

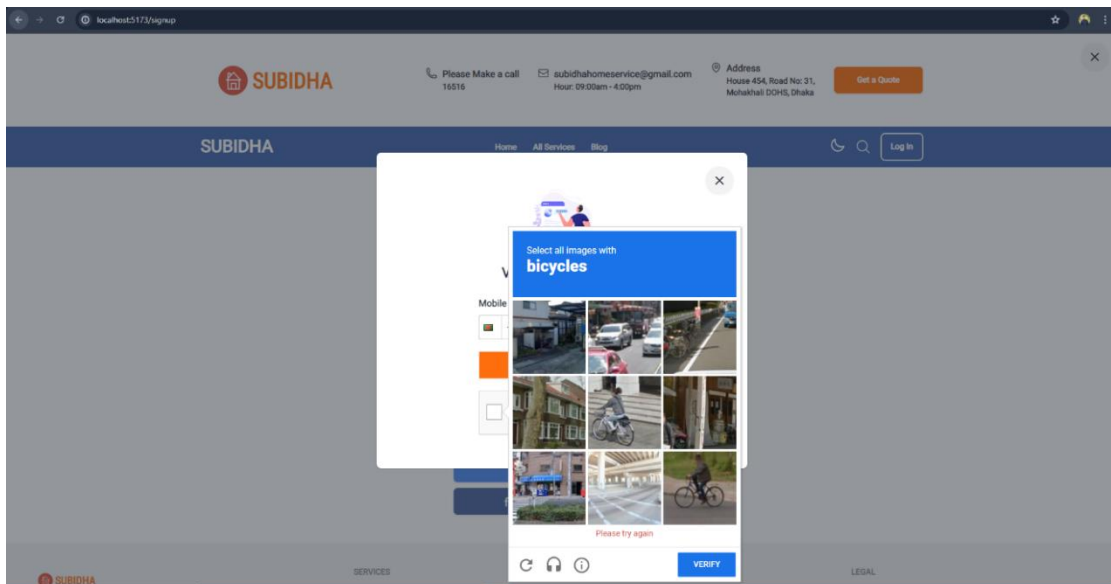


Figure 5.2.7: Google reCAPTCHA verify

When entering a PIN number, our application ensures security by limiting the frequency of OTP (One-Time Password) requests to once per minute. This measure enhances user safety by preventing excessive requests and potential misuse of OTPs, thereby maintaining a secure authentication process. This approach prioritizes user convenience while safeguarding against unauthorized access attempts, ensuring a reliable and protected user experience.

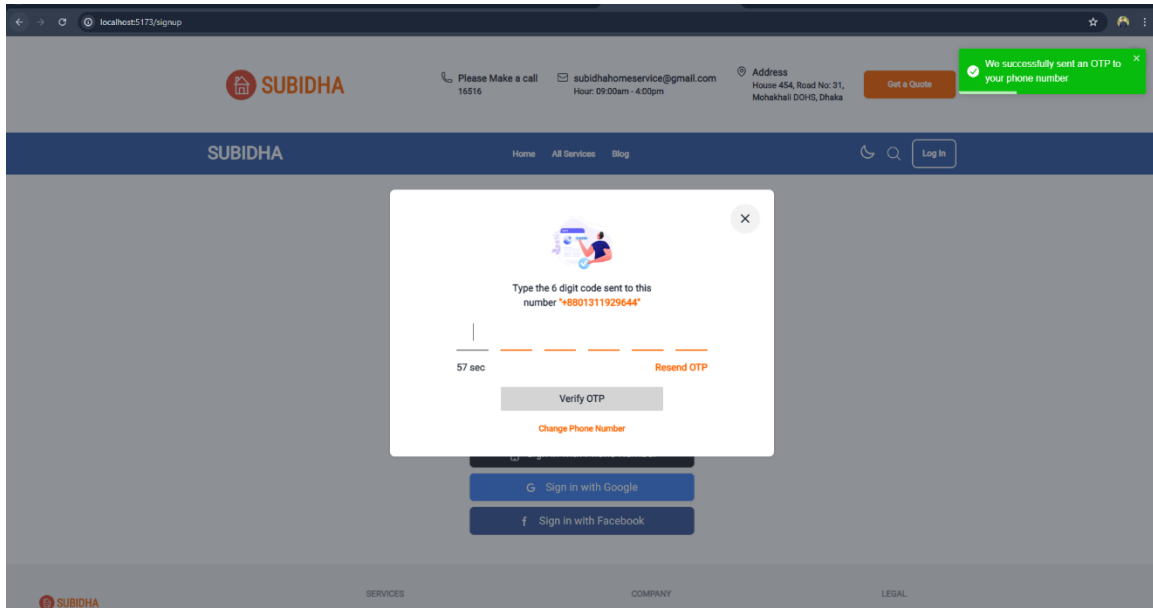


Figure 5.2.8: Send OTP Page

The Subidha All Services page offers a comprehensive overview of their service offerings. A navigation bar provides easy access to other website sections. The central area showcases service categories like appliance repair and cleaning, with visual icons and brief descriptions. Highlighted services are featured at the bottom, providing more details and likely buttons for further exploration.

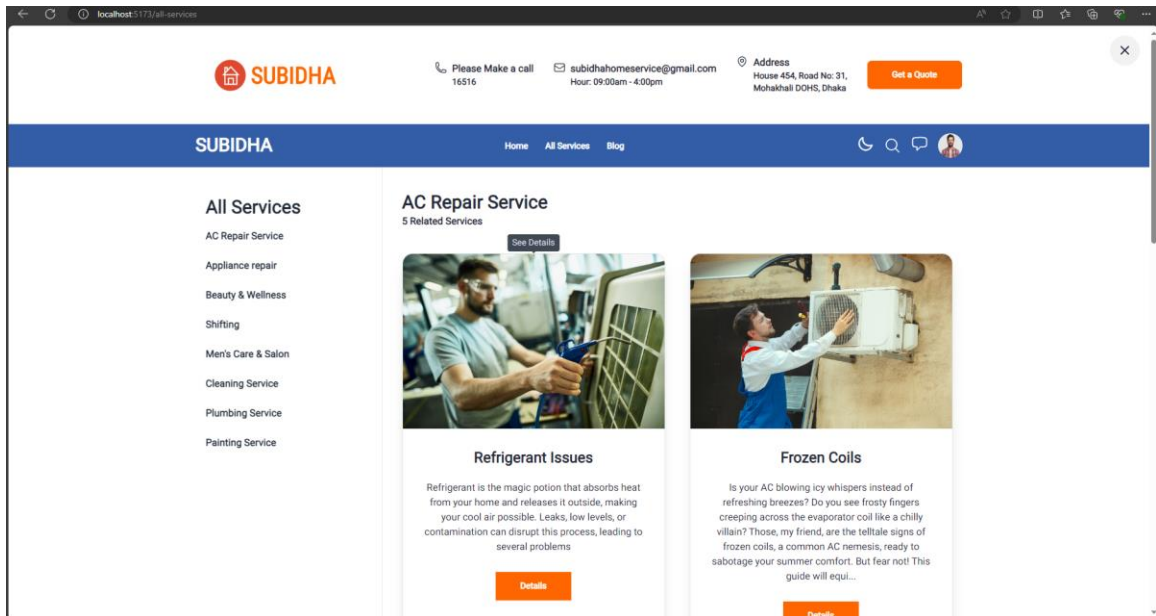


Figure 5.2.9: Service Category Page

The Subidha Service Details page delves into specifics of a chosen service, like dishwasher repair. A prominent banner showcases a relevant image. Key sections like "Service Overview" and "What's Included" outline the service details, potential exclusions, and cost. This transparency empowers users to make informed decisions.

Please Make a call

18516

subidhahomeservice@gmail.com

Hour: 09:00am - 4:00pm

Address

House 43A, Road No. 31, Mubashshir DCHS, Dhaka

Get a Quote

SUBIDHA

Home All Services Blog

Dishwasher Repair

Service Overview

FAQ

Details

Amrita Dey (provider)

Years Of Experience: 3 years

Amount: 699TK

Profile Chat

Book Appointment

Skip the dishwashing drama! We're here to tackle any dishwasher dilemma, from leaks and spraying issues to poor cleaning and noisy operation. Get your kitchen back in sync with our expert repair services.

Service Overview

What's Included?

- Diagnosis and troubleshooting
- Labor for repair or replacement of faulty parts
- Warranty on parts and labor (up to 90 days)
- Basic safety checks and cleaning

What's Excluded?

- Cost of replacement parts
- Additional labor for extensive repairs or modifications
- Transportation costs for hauling appliances
- Manufacturer's warranty coverage

Available Services

- Refrigerator repair (cooling issues, leaks, ice maker problems)
- Washing machine repair (leaks, drainage issues, spin cycle problems)
- Dryer repair (heating issues, not drying properly, lint buildup)
- Dishwasher repair (not cleaning dishes, water leaks, noise)
- Stove and oven repair (burners not working, heating problems, electrical issues)
- Microwave repair (not heating, turntable problems, electrical faults)
- Small appliance repair (toasters, blenders, coffee makers, vacuum cleaners)

FAQ

What does your appliance repair service include?	-
Our appliance repair service includes professional diagnosis, troubleshooting, expert repairs for common issues, replacement of faulty parts, safety checks, performance checks, and recommendations for extending the life of your appliance.	
What appliances do you service?	+
What is covered in the service charge?	+
Is there a warranty for the service?	+
What is not included in the service?	+
How much does appliance repair typically cost?	+
Do you offer emergency repair services?	+
How can I schedule an appliance repair service?	+

Details

Common Dishwasher Problems We Solve:
Don't let these issues leave you with a sink full of dishes:

- Leaking water
- Not spraying properly
- Dishes not getting clean
- Excessive noise or vibration
- Drain pump problems
- Clogged filters
- Faulty control panel

Our Dishwasher Repair Solutions:
We'll have your dishes sparkling clean again:

- Precise diagnosis and troubleshooting
- Expert repair or replacement of parts
- Knowledge of all major brands and models
- Fast and convenient service
- Competitive and transparent pricing
- Warranty on parts and labor

Ditch the dishwashing dread. Contact us today for reliable and affordable dishwasher repair!

Figure 5.2.10: Service Details Page

Booking Process: The booking process should be streamlined, allowing users to select a service, choose a date and time (considering provider availability), and submit any special requests.

subidha-home-service-43040.web.app/service-detail/6389263a232893d984d453a1/5

Booking Form

Schedule
Date and time selectors for scheduling appointments

June 2024

SU	MO	TU	WE	TH	FR	SA
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

You picked Jun 23, 2024.

Select your prefer time, expert will arrive by your selected time

8 - 9 AM 9 - 10 AM 10 - 11 AM 11 - 12 AM 12 - 1 PM
1 - 2 PM 2 - 3 PM 3 - 4 PM 4 - 5 PM

Contact Person
Expert will contact with the following person

John Doe Type the phone number of the contact person

Service Detail
Our service provider will contact you to confirm the following service

Dishwasher Repair 1 Unit

subidha-home-service-43040.web.app/service-detail/6389263a232893d984d453a1/5

Booking Form

Contact Person
Expert will contact with the following person

John Doe Type the phone number of the contact person

amritadey701@gmail.com

Address
Expert will arrive at the address given below

Dhaka Tangail
Delduar

Full address

Service Detail
Our service provider will contact you to confirm the following service

Dishwasher Repair 1 Unit

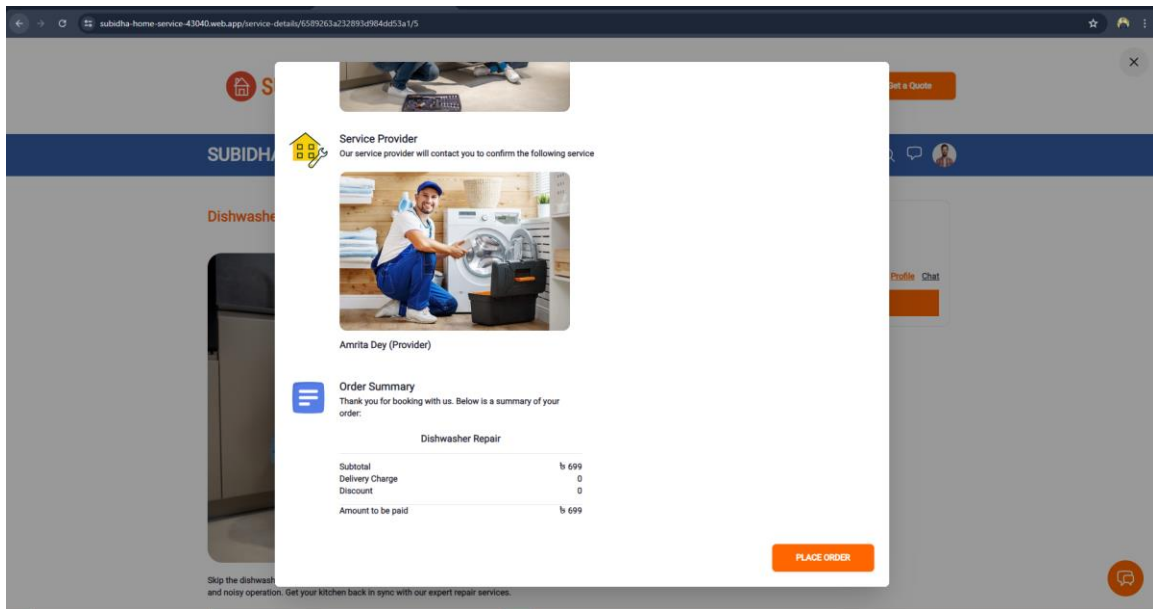


Figure 5.2.11: Service Booking Page

Enable real-time chat between customers and service providers within our application, facilitating instant communication and seamless interaction. This feature ensures efficient coordination, quick issue resolution, and enhanced customer satisfaction. By offering real-time chat capabilities, we empower direct and immediate communication, optimizing the service delivery process and fostering stronger relationships between users and providers.

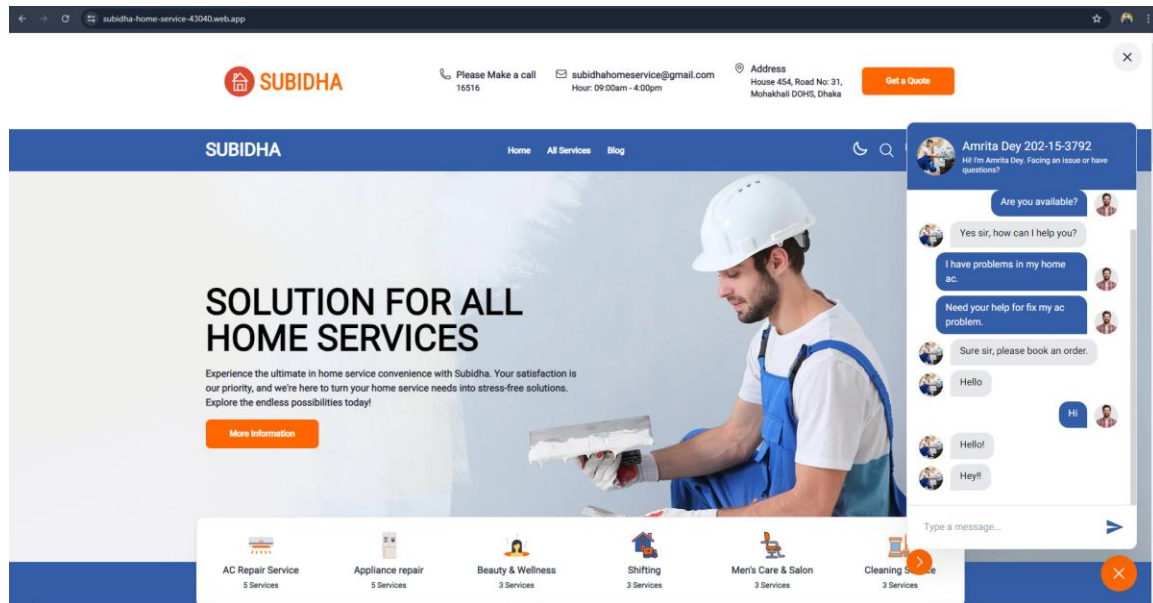


Figure 5.2.12: Real time chat communication (User side)

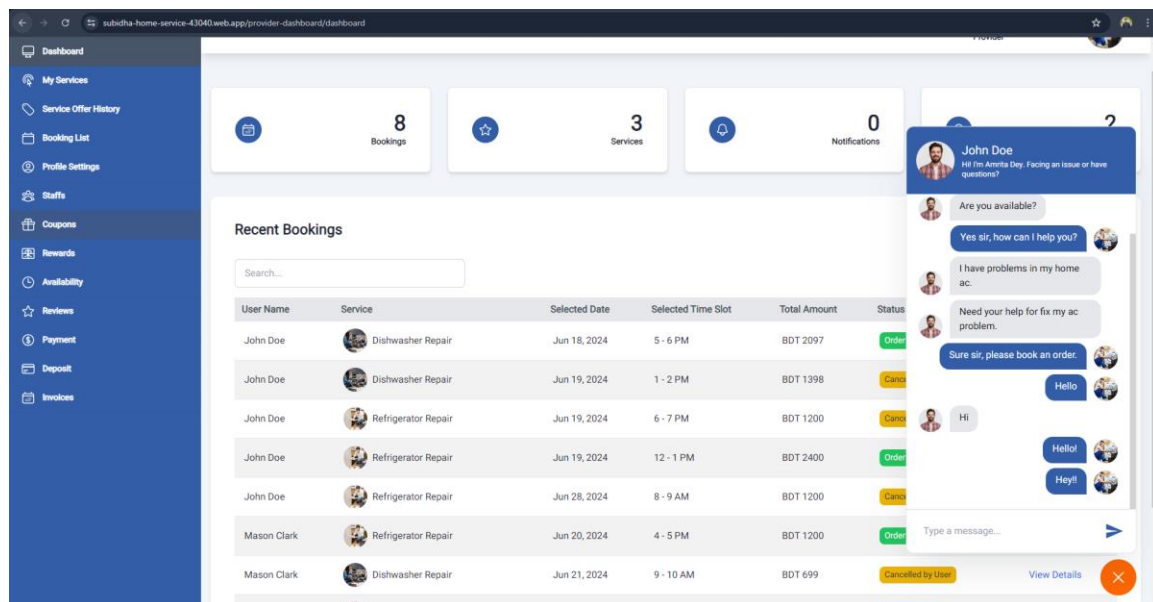


Figure 5.2.13: Real time chat communication (provider side)

The Subidha customer dashboard centralizes user account management. A navigation menu provides access to key features like booking management, reviews, and payment options. User information is readily available, and the main content area displays details relevant to the chosen section (e.g., bookings overview). This consolidated platform empowers users to manage their Subidha experience seamlessly.

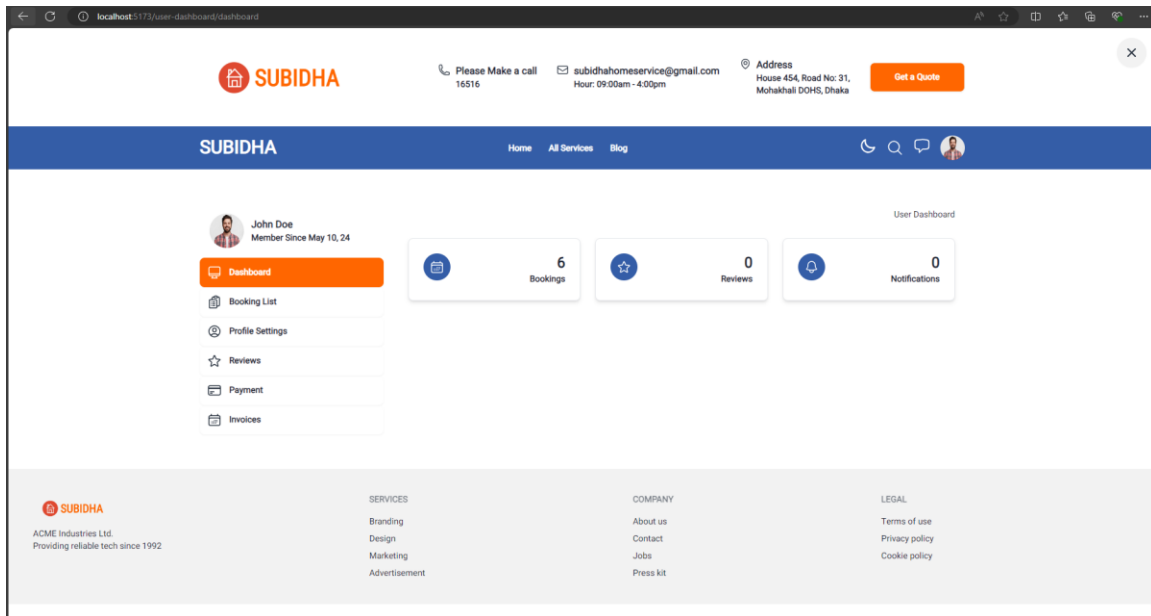


Figure 5.2.14: User Dashboard Page

Effortlessly manage customer bookings through our application, providing a streamlined process from booking to confirmation. Users can schedule services efficiently, view booking details, and receive timely updates, ensuring a smooth and organized experience.

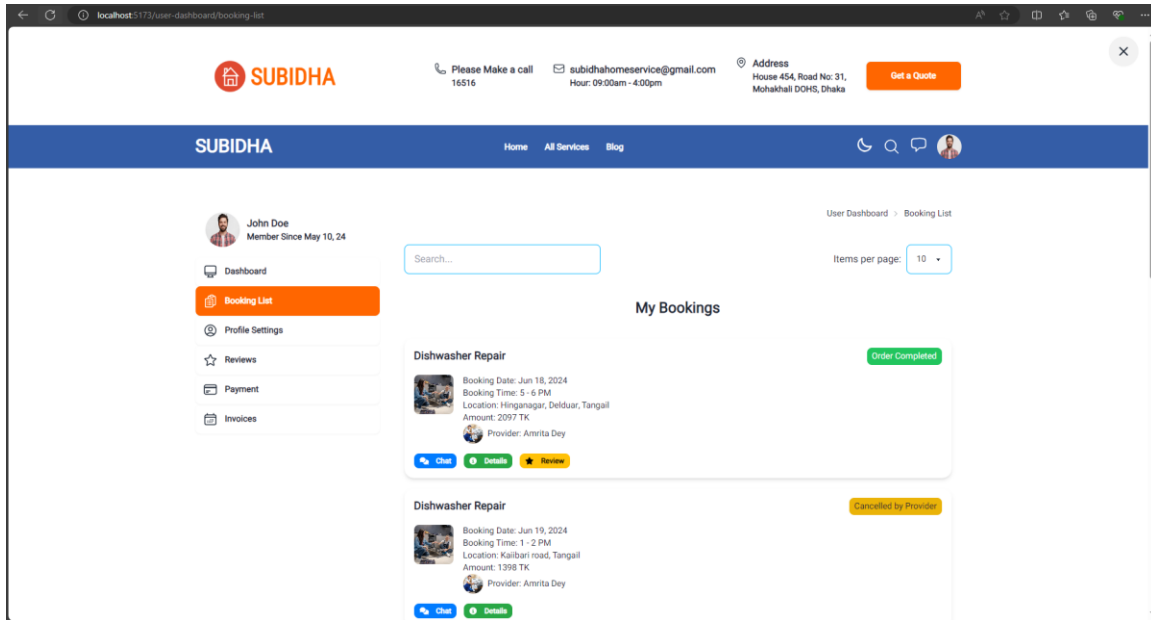


Figure 5.2.15: User Bookings Page

Access comprehensive booking details, including service specifics, scheduled times, and provider information, all conveniently displayed for user review and management.

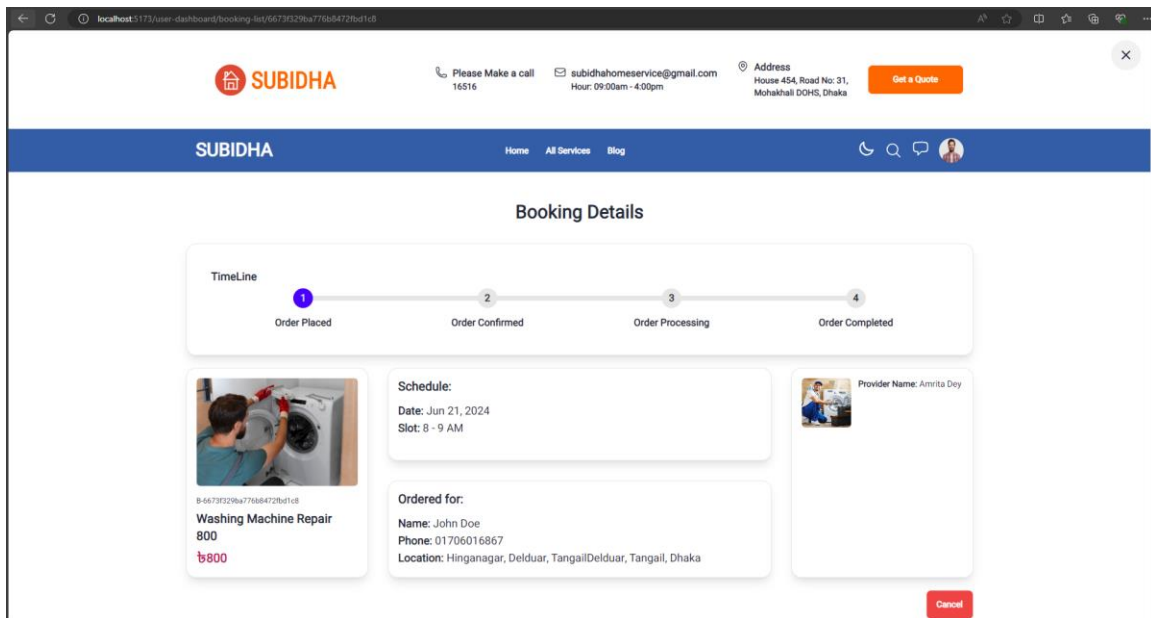


Figure 5.2.16: User Booking Details Page

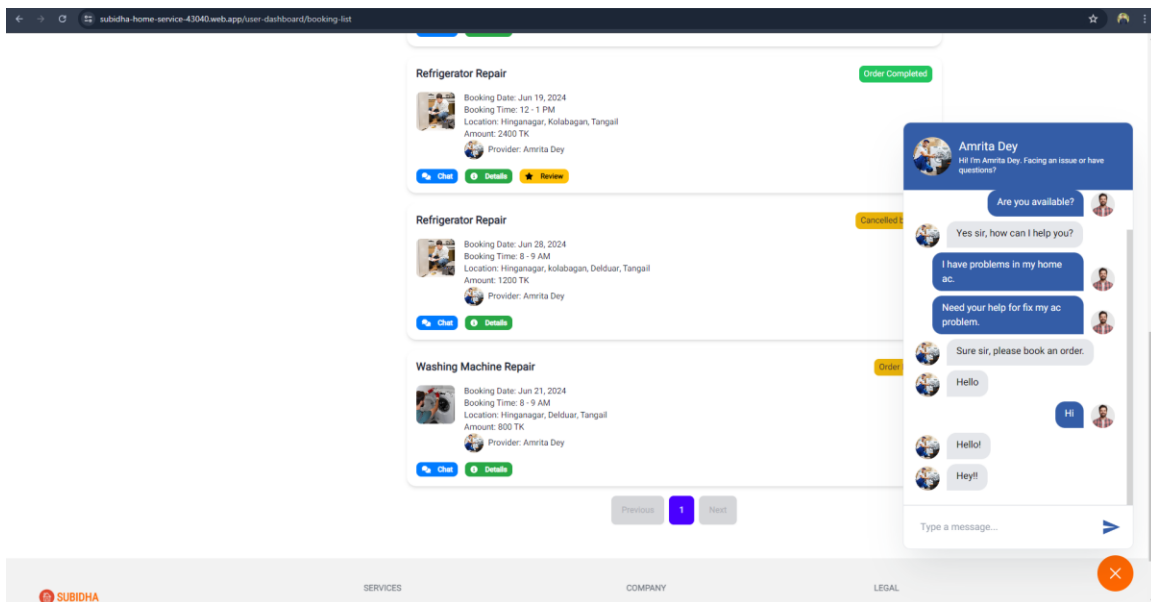


Figure 5.2.17: User and Provider chat Communication

SSLCOMMERZ is a trusted payment gateway solution that ensures secure and seamless online transactions. It supports various payment methods, including credit/debit cards and mobile banking, providing robust encryption and fraud prevention measures. Integrated with our application, SSLCOMMERZ facilitates reliable and efficient payment processing, enhancing user trust and transaction convenience.

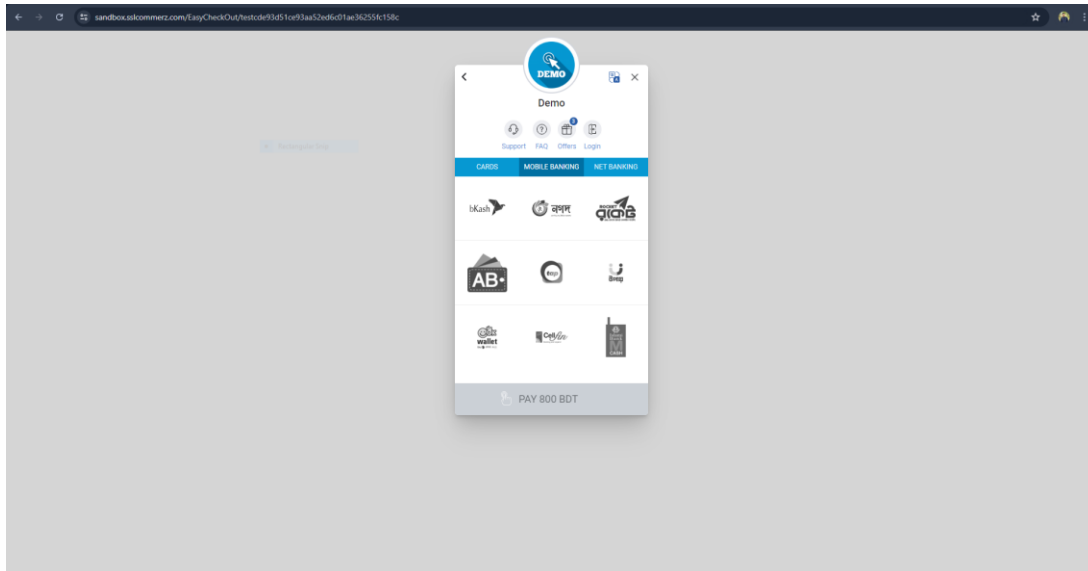


Figure 5.2.18: SSLCOMMERZ payment gateway Page



Figure 5.2.19: SSLCOMMERZ OTP Page

After a successful payment, our system automatically sends an invoice to the user's email address. This ensures that users receive immediate confirmation and a record of their transaction, promoting transparency and customer satisfaction.

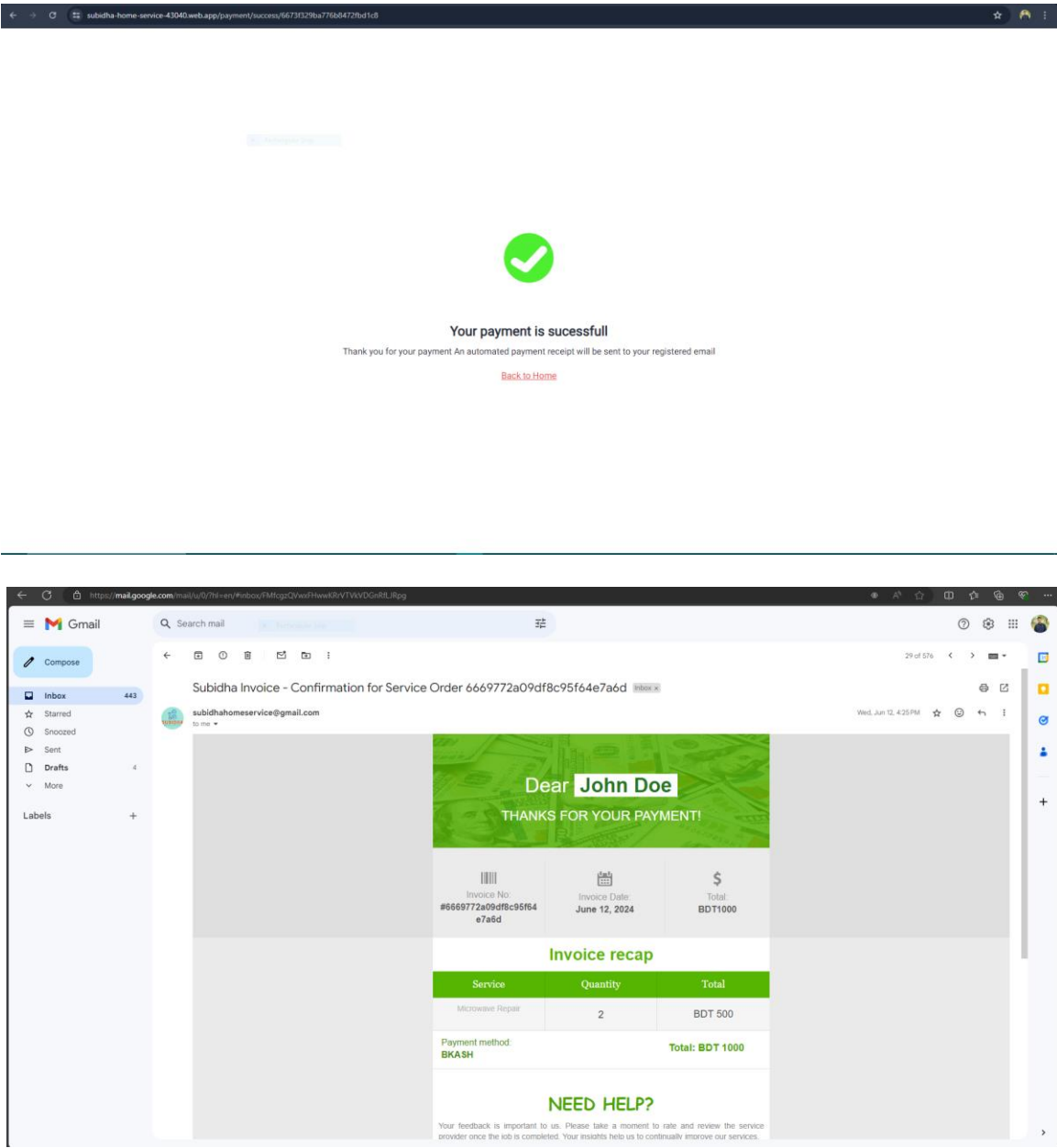
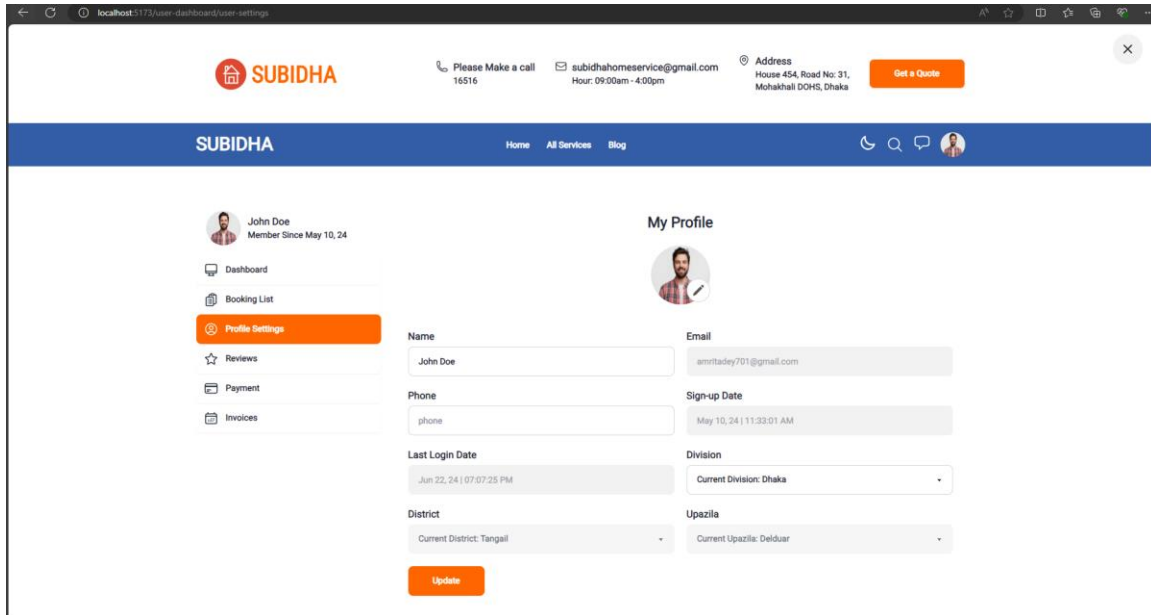


Figure 5.2.20: Payment Success Page

The user profile feature in our application allows users to manage personal information, preferences, and settings in one convenient place. It enables customization, updates, and security settings, enhancing user interaction and personalization within the platform.



The screenshot displays the SUBIDHA user profile page. At the top, the SUBIDHA logo is on the left, and contact information (phone, email, address) and a 'Get a Quote' button are on the right. A blue navigation bar contains 'Home', 'All Services', and 'Blog' links, along with icons for a moon, search, chat, and user profile. The main content area is titled 'My Profile' and features a sidebar with navigation links: Dashboard, Booking List, Profile Settings (highlighted in orange), Reviews, Payment, and Invoices. The profile details include a user card for John Doe (Member Since May 10, 24) and a form with fields for Name, Email, Phone, Sign-up Date, Last Login Date, Division, District, and Upazila. Each field has a current value and a dropdown arrow. An orange 'Update' button is at the bottom.

Field	Current Value
Name	John Doe
Email	amittadey701@gmail.com
Phone	phone
Sign-up Date	May 10, 24 11:33:01 AM
Last Login Date	Jun 22, 24 07:07:25 PM
Division	Current Division: Dhaka
District	Current District: Tangail
Upazila	Current Upazila: Delduar

Figure 5.2.21: User Profile Page

User reviews in our application enable customers to share feedback and experiences, helping others make informed decisions. This feature fosters transparency and trust, enhancing overall service quality and user satisfaction.

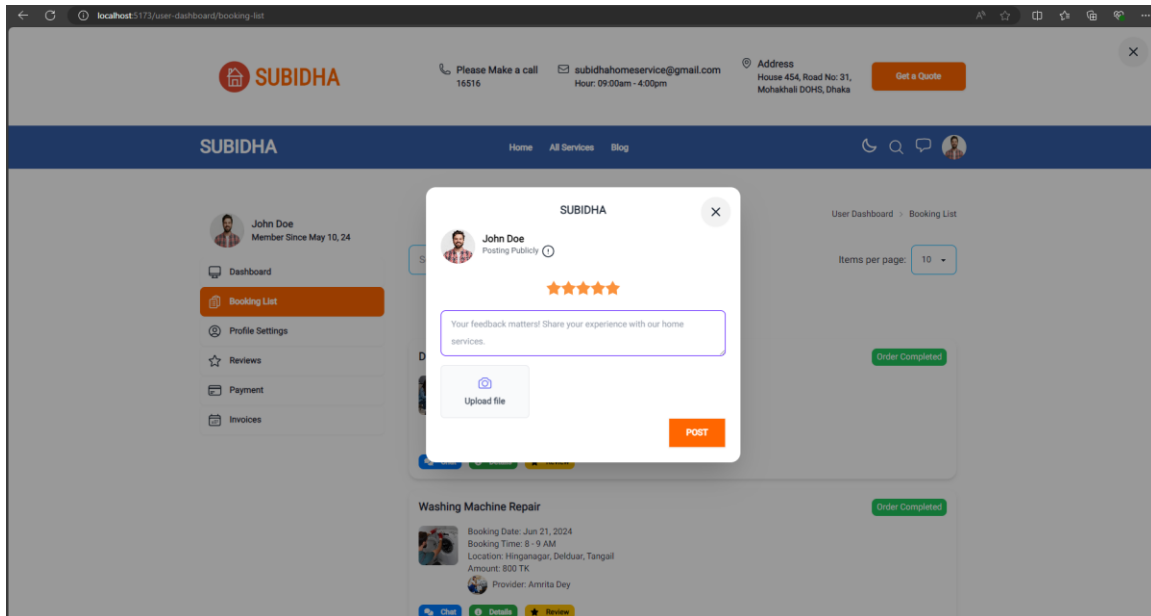


Figure 5.2.22: User Review Modal

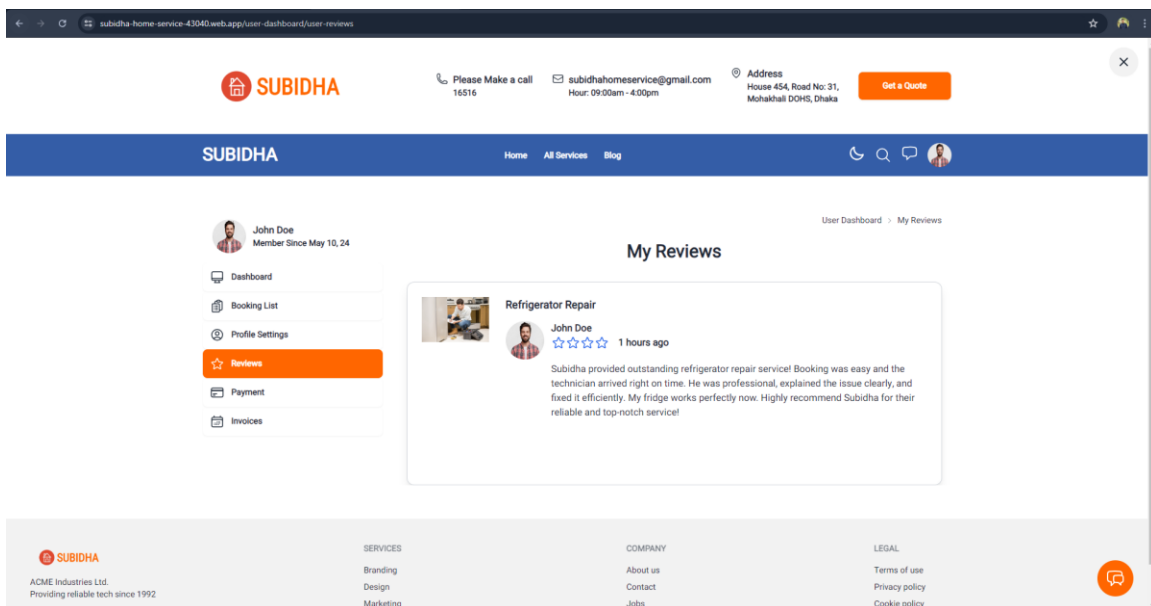


Figure 5.2.23: User Reviews Page

The user payment history feature displays a comprehensive record of past transactions, providing transparency and allowing users to track their financial interactions within the application.

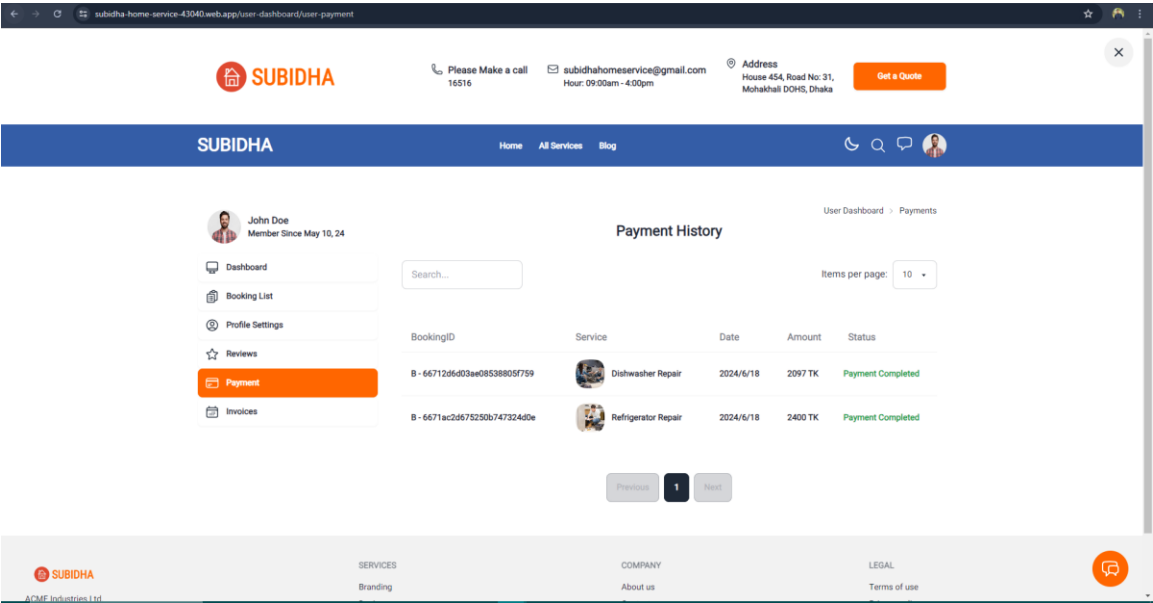


Figure 5.2.24: User Payment History

The user invoices feature allows users to conveniently download invoices in PDF format, providing a clear and accessible record of their transactions within the application.

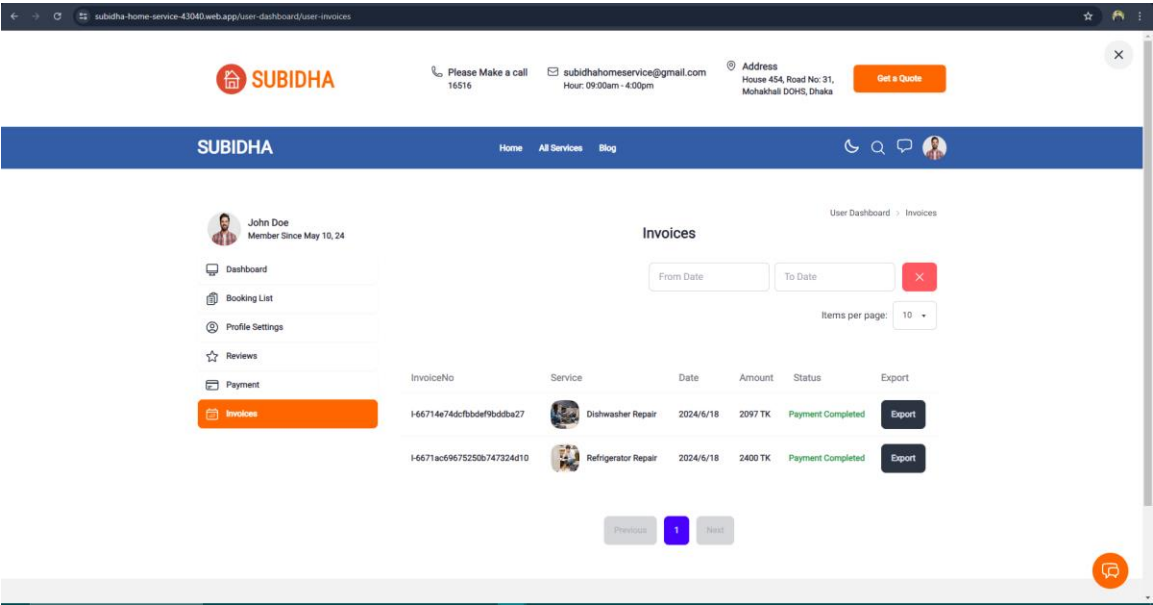


Figure 5.2.25: User Invoices

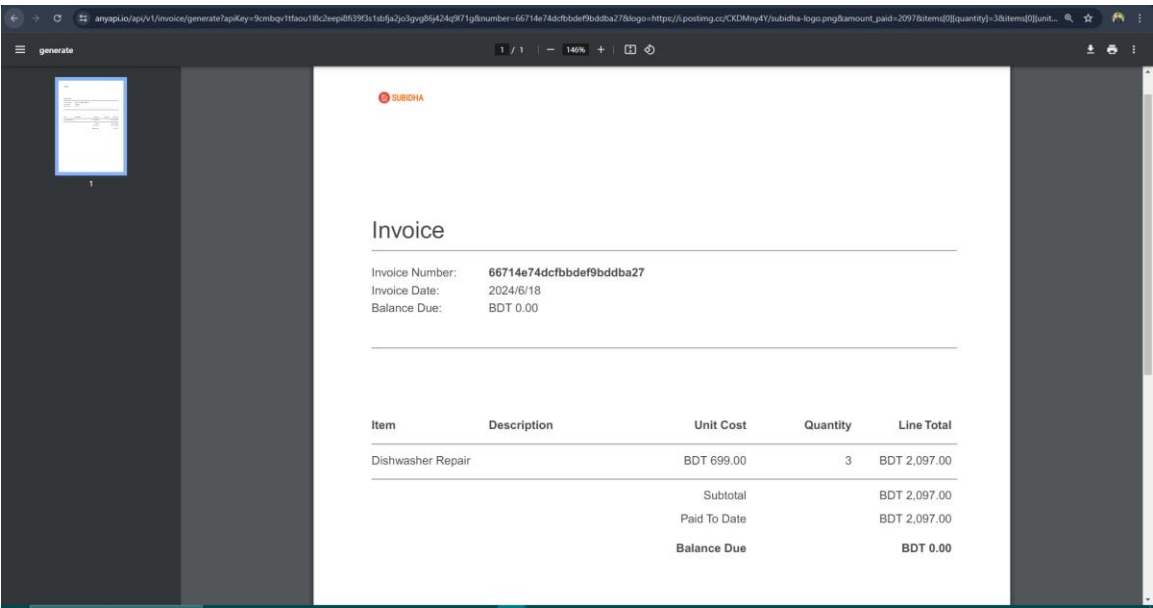


Figure 5.2.26: User Payment Invoice

Provider Dashboard: Providers should have a dedicated dashboard to manage their profile (including work samples, licenses), services offered, booking requests, schedules, earnings, and potentially manage staff (if applicable).

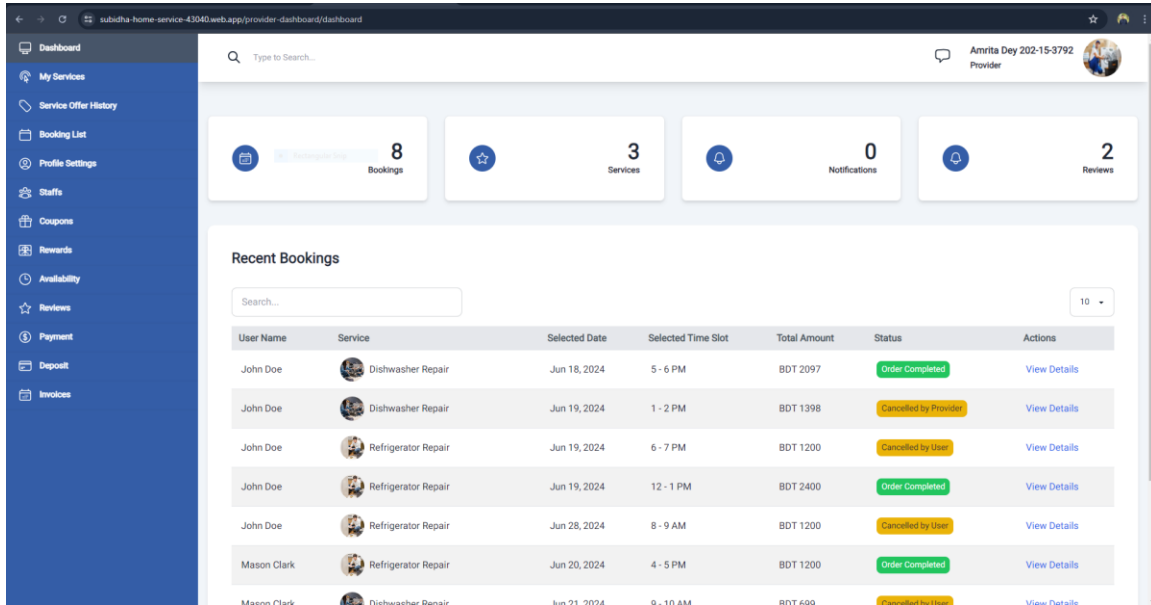


Figure 5.2.27: Provider Dashboard Page

The Provider Services Page showcases a comprehensive list of services offered by our providers, providing detailed descriptions and options for users to explore and select the services that best fit their needs.

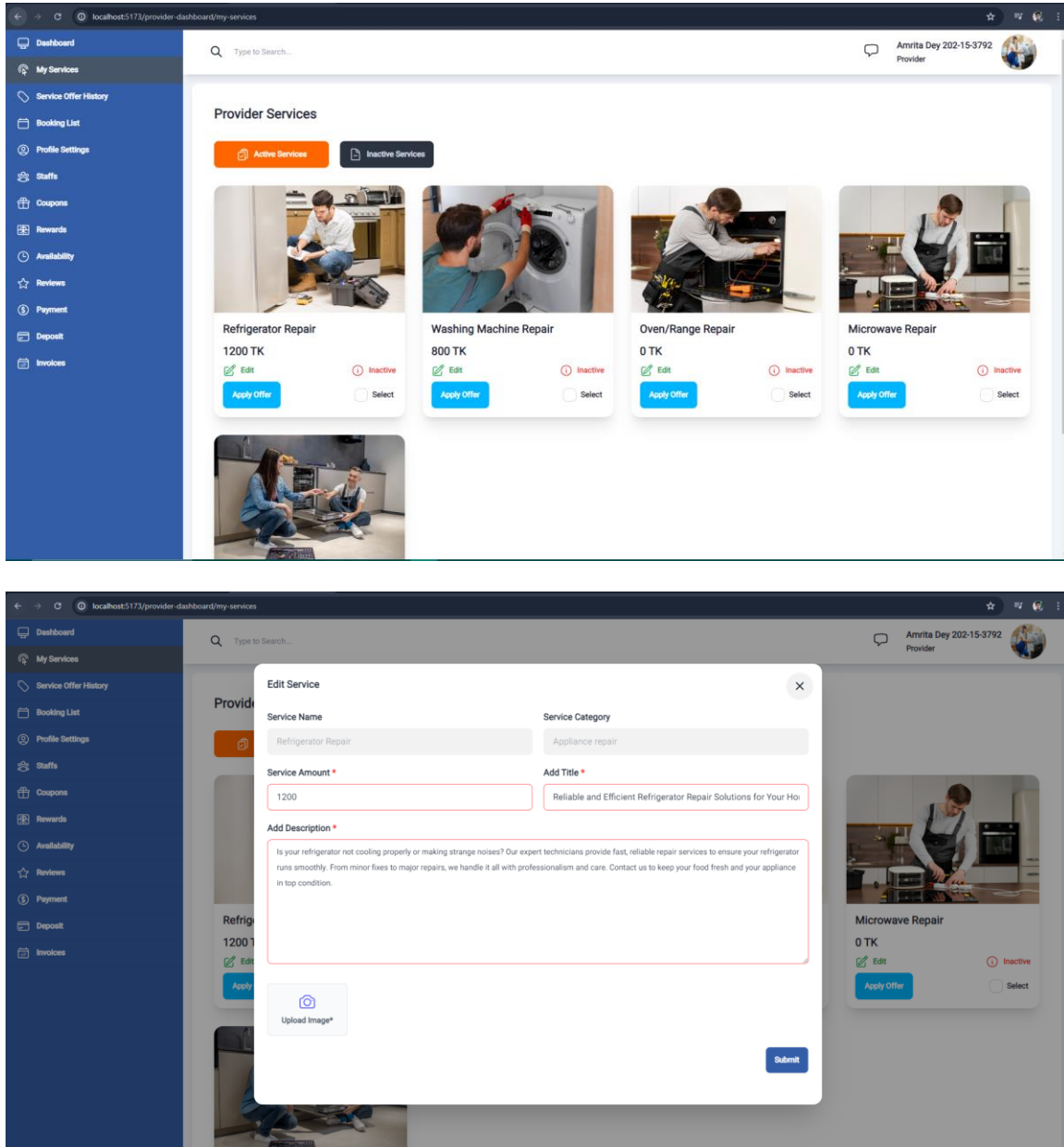


Figure 5.2.28: Provider Services Page

The Provider Bookings List displays a comprehensive overview of scheduled appointments and bookings made by customers with service providers. It includes details such as appointment dates, times, service types, and customer information, enabling providers to manage their schedules effectively and deliver timely services.

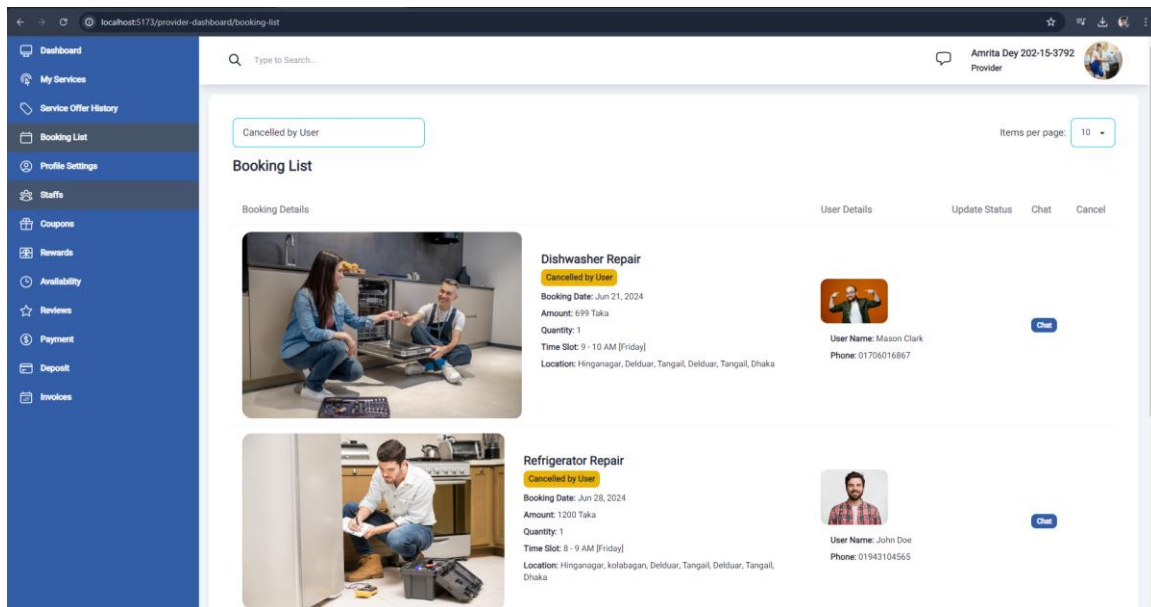
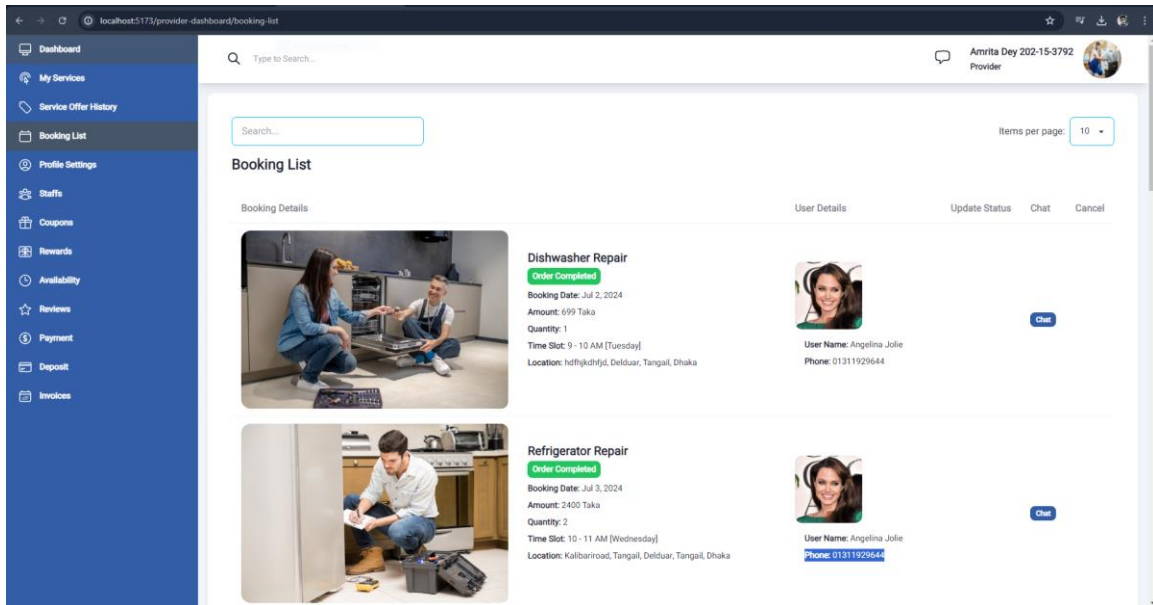


Figure 5.2.29: Provider Booking List

The Provider Profile Settings section allows service providers to manage their account information, service offerings, availability, and communication preferences. It provides a centralized interface for updating and customizing profiles, ensuring accurate representation and efficient communication with customers.

The screenshot shows a web application interface for a provider's profile settings. On the left is a dark blue sidebar with a list of navigation items: Dashboard, My Services, Service Offer History, Booking List, Profile Settings (highlighted), Staffs, Coupons, Rewards, Availability, Reviews, Payment, Deposit, and Invoices. The main content area has a light blue header with a search bar and a user profile section showing the name 'Amrita Dey 202-15-3792' and a profile picture. Below this, the 'My Profile' section contains a grid of form fields. The fields are: Name (text input with 'Amrita Dey 202-15-3792'), Email (text input with 'amrita15-3792@diu.edu.bd'), Phone (text input with 'phone'), Sign-up Date (text input with 'Jan 28, 24 | 04:20:38 PM'), Last Login Date (text input with 'Jul 07, 24 | 08:30:26 PM'), Division (dropdown menu with 'Dhaka' selected), District (dropdown menu with 'Tangail' selected), and Upazila (dropdown menu with 'Delduar' selected). A blue 'Update' button is located at the bottom left of the profile form.

My Profile	
Name	Amrita Dey 202-15-3792
Email	amrita15-3792@diu.edu.bd
Phone	phone
Sign-up Date	Jan 28, 24 04:20:38 PM
Last Login Date	Jul 07, 24 08:30:26 PM
Division	Dhaka
District	Tangail
Upazila	Delduar

Update

Figure 5.2.30: Provider Profile

The Provider Staffs feature enables service providers to manage their team members within the application. It allows providers to add, edit, and organize staff profiles, including roles, contact information, and availability, streamlining operational efficiency and client management.

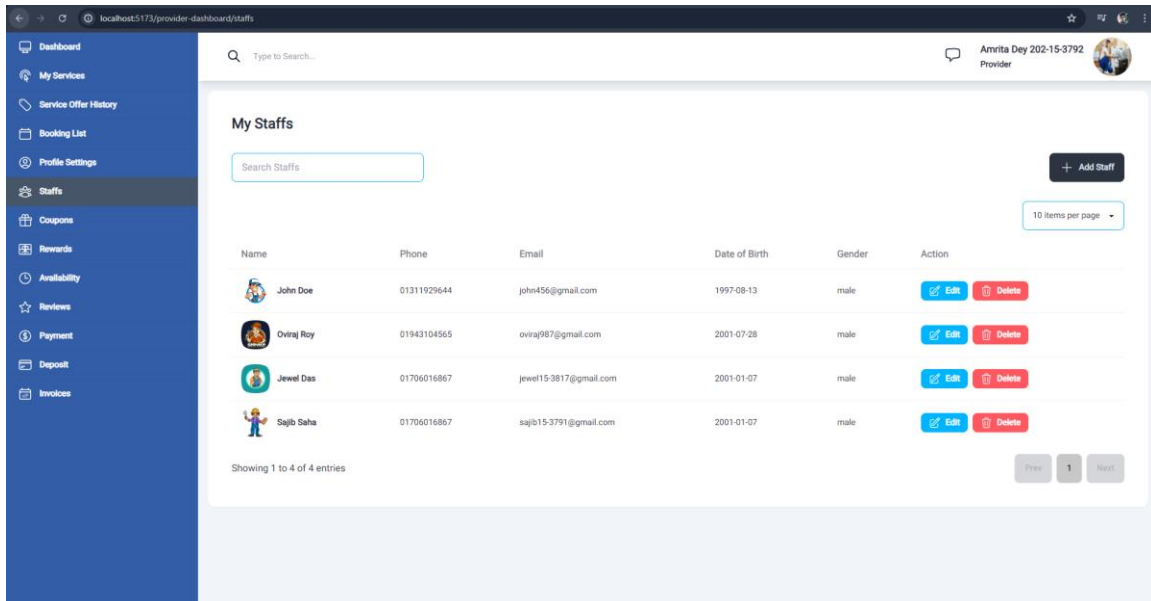


Figure 5.2.31: Provider Staffs

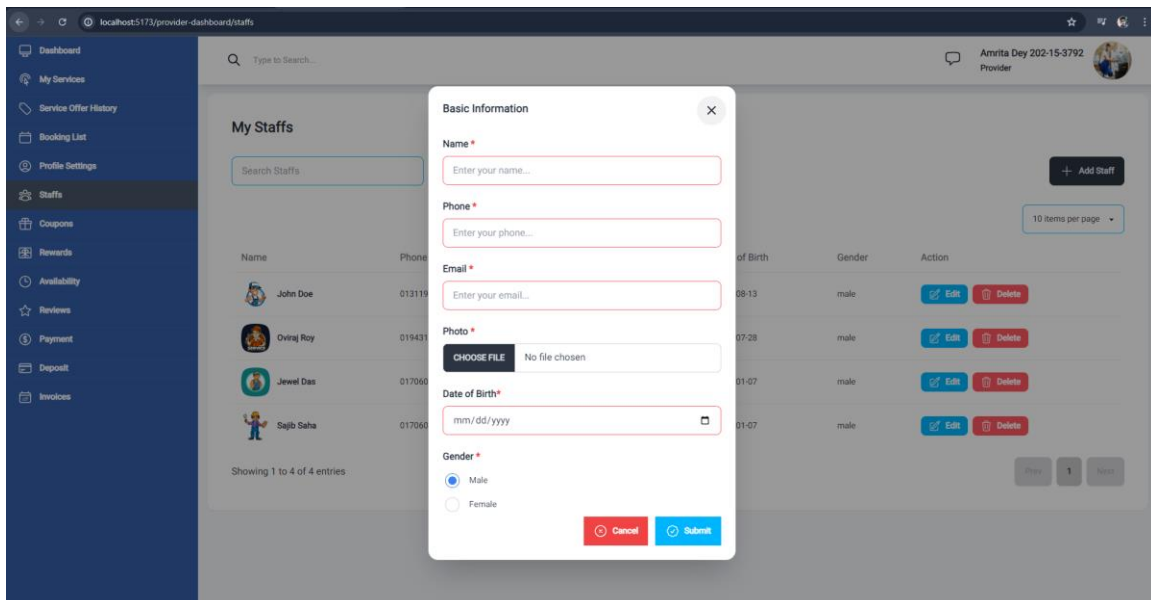


Figure 5.2.32: Add new staff Page

The Provider Available Timeslot feature allows providers to set and manage their availability for appointments within the application. It enables providers to define specific time slots when they are available to offer services, ensuring efficient scheduling and maximizing client accessibility.

The screenshot shows a web application interface for managing provider availability. On the left is a blue sidebar with a menu containing: Dashboard, My Services, Service Offer History, Booking List, Profile Settings, Staffs, Coupons, Rewards, Availability (highlighted), Reviews, Payment, Deposit, and Invoices. The main content area is titled 'Availability' and features a search bar at the top with the placeholder 'Type to Search...'. Below the title, there are radio buttons for 'All Days' and checkboxes for individual days of the week: Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, and Saturday. Each day has a 'From time' and 'To time' dropdown menu. For Sunday, both are set to 'Select Time'. For Tuesday, both are set to 'Select Time'. For Thursday, 'From time' is '08:00 AM' and 'To time' is '05:00 PM'. A blue 'Submit' button is located at the bottom left of the form. The top right of the page shows a user profile for 'Amrita Dey 202-15-3792' with a 'Provider' role and a profile picture.

Figure 5.2.33: Provider Availability

The Provider Reviews List displays customer feedback and ratings for service providers, offering transparency and valuable insights for potential clients. It helps users evaluate provider performance and make informed decisions based on others' experiences.

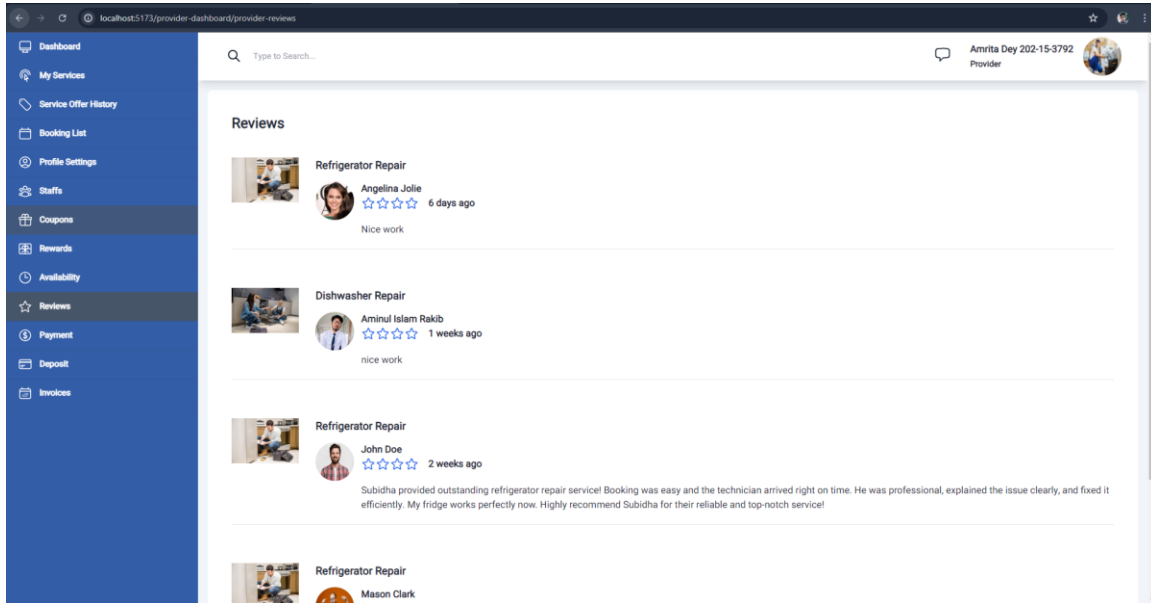


Figure 5.2.34: Provider Reviews

The Provider Payment History feature provides a detailed record of financial transactions related to service provision within the application. It enables providers to track earnings, view transaction details, and manage payment records efficiently.

BookingID	User	Service	Date	Amount	Status
B-66822ab74133a9eff82b4890	Angelina Jolie	Dishwasher Repair	2024/7/1	699 TK	Payment Completed
B-6681a19696446609cb389ce7	Angelina Jolie	Refrigerator Repair	2024/6/30	2400 TK	Payment Completed
B-667a70c5102b3693db7b63c	John Doe	Dishwasher Repair	2024/6/25	699 TK	Payment Completed
B-667a5e698c179921fc1c76dc	Aminul Islam Rakib	Dishwasher Repair	2024/6/25	1398 TK	Payment Completed
B-667a5d7abc179921fc1c76d9	Aminul Islam Rakib	Dishwasher Repair	2024/6/25	699 TK	Payment Completed
B-667a5c78c179921fc1c76d6	Aminul Islam Rakib	Refrigerator Repair	2024/6/25	1200 TK	Payment Completed
B-6672f329ba776b8472bd1c8	John Doe	Washing Machine Repair	2024/6/23	800 TK	Payment Completed
B-6673a36f83bc3d5d855de6f72	Mason Clark	Refrigerator Repair	2024/6/20	1200 TK	Payment Completed

Figure 5.2.35: Provider Payment History

The Provider Invoices feature allows service providers to access and manage invoices for their services rendered within the application. It facilitates easy viewing, downloading, and management of financial records, ensuring clarity and organization.

The screenshots show the 'Provider Invoices' interface. The top screenshot displays a list of invoices with the following data:

InvoiceNo	User	Service	Date	Amount	Status	Export
I-66822f24133a9eff82b4892	Angelina Jolie	Dishwasher Repair	2024/7/1	699 TK	Payment Completed	Export
I-6681a1e99644d09bc389ce9	Angelina Jolie	Refrigerator Repair	2024/6/30	2400 TK	Payment Completed	Export
I-667a710f10f2b3693db7b63e	John Doe	Dishwasher Repair	2024/6/25	699 TK	Payment Completed	Export
I-667a5e928c179921f1c176de	Aminul Islam Rakib	Dishwasher Repair	2024/6/25	1398 TK	Payment Completed	Export
I-667a5d9a8c179921f1c176db	Aminul Islam Rakib	Dishwasher Repair	2024/6/25	699 TK	Payment Completed	Export
I-667a5cf68c179921f1c176d8	Aminul Islam Rakib	Refrigerator Repair	2024/6/25	1200 TK	Payment Completed	Export
I-66797a561e8973b4811313c	John Doe	Washing Machine Repair	2024/6/23	800 TK	Payment Completed	Export
I-6673e78fba776b8472bd1c5	Mason Clark	Refrigerator Repair	2024/6/20	1200 TK	Payment Completed	Export

The bottom screenshot shows the same interface with a date picker calendar open, displaying July 2024. The calendar shows the following dates:

Su	Mo	Tu	We	Th	Fr	Sa
30	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	1	2	3

Figure 5.2.36: Provider Invoices

The Admin Dashboard Page is a centralized interface for administrators to monitor and manage various aspects of the application. It provides insights into user activities, financial metrics, system performance, and allows for efficient management of content and settings.

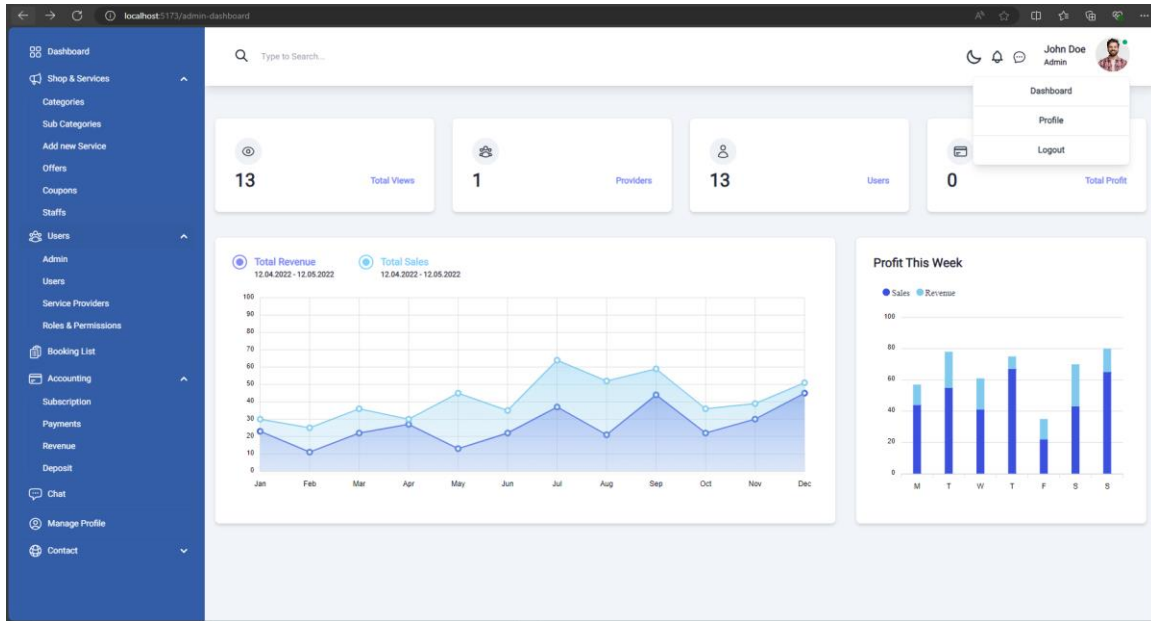


Figure 5.2.37: Admin Dashboard

The Admin All Category List displays a comprehensive view of all categories available within the system. It allows administrators to manage, add, edit, or delete categories as needed, ensuring organizational clarity and effective content management.

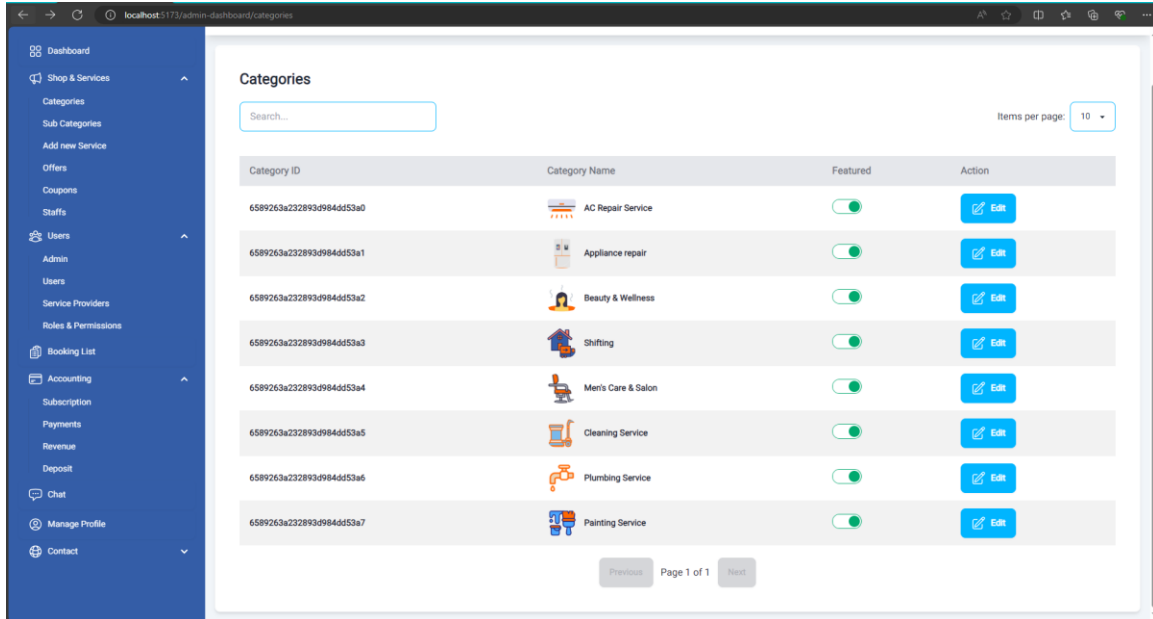


Figure 5.2.38: All Category Page

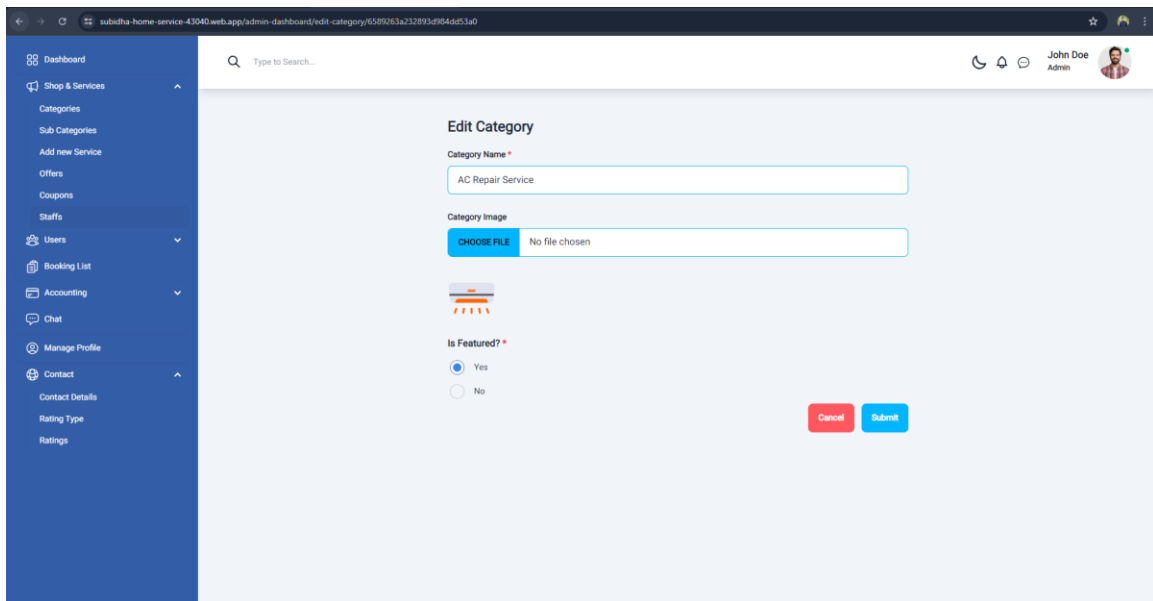


Figure 5.2.39: Edit Category Page

The Edit Subcategory Page provides administrators with a user-friendly interface to modify and update details of specific subcategories within the system. It enables seamless management of subcategory information, ensuring accurate and organized content administration.

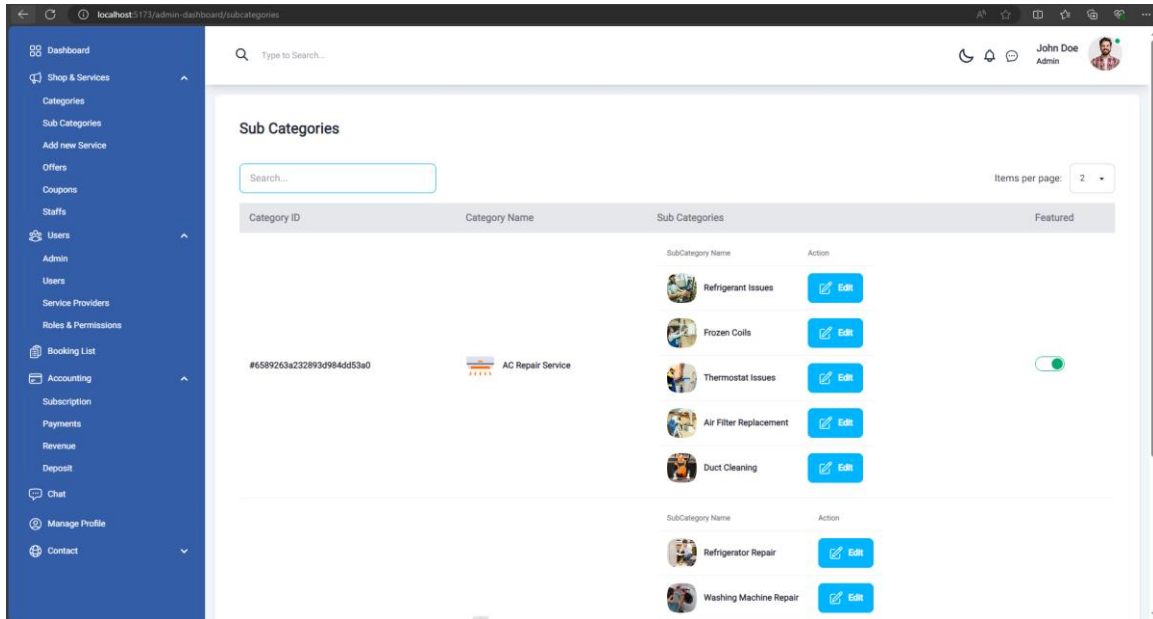


Figure 5.2.40: All Services Page

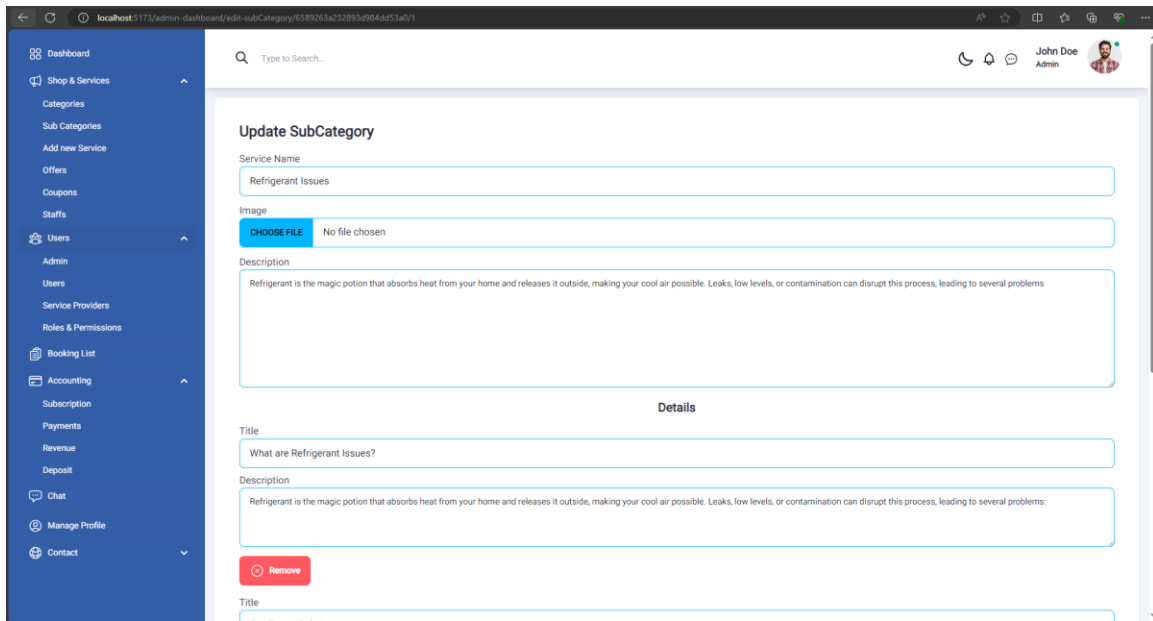
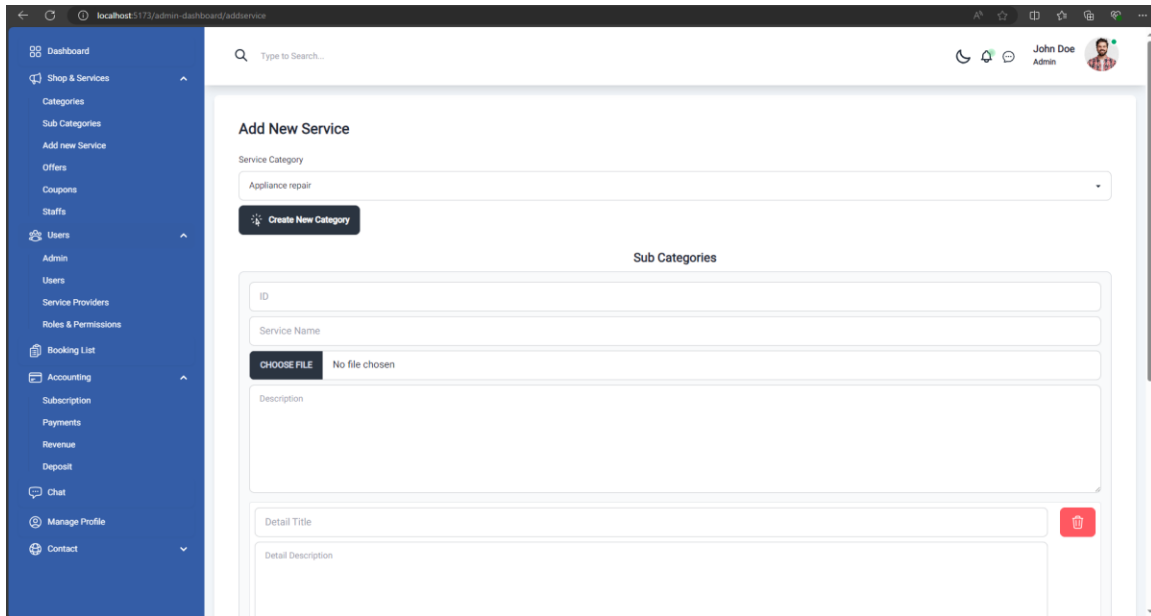


Figure 5.2.41: Edit Service Page

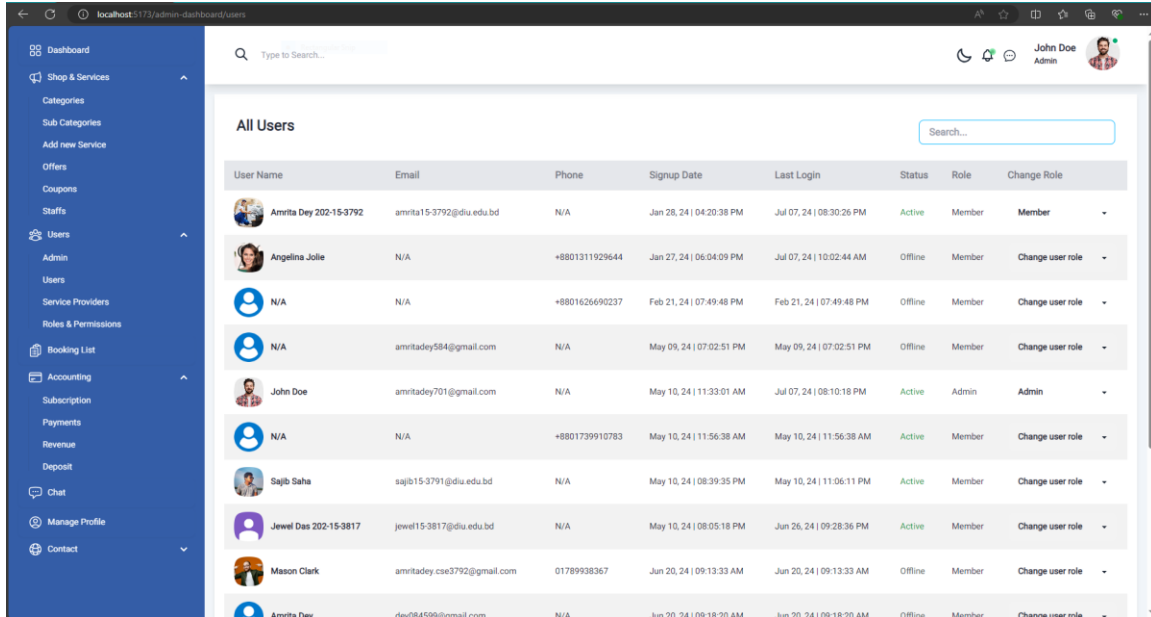
The Add New Service Page allows administrators or providers to create and publish new services within the system. It provides a straightforward interface for entering service details, such as description, pricing, and category assignment, facilitating efficient service management and expansion.



The screenshot displays the 'Add New Service' page within an admin dashboard. The left sidebar contains a navigation menu with items like Dashboard, Shop & Services, Categories, Sub Categories, Add new Service, Offers, Coupons, Staffs, Users, Admin, Users, Service Providers, Roles & Permissions, Booking List, Accounting, Subscription, Payments, Revenue, Deposit, Chat, Manage Profile, and Contact. The main content area is titled 'Add New Service' and features a 'Service Category' dropdown menu with 'Appliance repair' selected. Below this is a 'Create New Category' button. The 'Sub Categories' section includes a table with columns for ID, Service Name, and Description. The 'Service Name' column has a 'CHOOSE FILE' button and the text 'No file chosen'. The 'Description' column has a text area. The 'Detail Title' and 'Detail Description' fields are also visible at the bottom.

Figure 5.2.42: Add New Service

The All Users Page provides administrators with an overview of all registered users within the system. It includes details such as user profiles, roles, and activity logs, offering comprehensive insights for effective user management and support.



User Name	Email	Phone	Signup Date	Last Login	Status	Role	Change Role
Amrita Dey 202-15-3792	amrita15-3792@diu.edu.bd	N/A	Jan 28, 24 04:20:38 PM	Jul 07, 24 08:30:26 PM	Active	Member	Member
Angelina Jolie	N/A	+8801311929644	Jan 27, 24 06:04:09 PM	Jul 07, 24 10:02:44 AM	Offline	Member	Change user role
N/A	N/A	+8801626690237	Feb 21, 24 07:49:48 PM	Feb 21, 24 07:49:48 PM	Offline	Member	Change user role
N/A	amritadey584@gmail.com	N/A	May 09, 24 07:02:51 PM	May 09, 24 07:02:51 PM	Offline	Member	Change user role
John Doe	amritadey701@gmail.com	N/A	May 10, 24 11:33:01 AM	Jul 07, 24 08:10:18 PM	Active	Admin	Admin
N/A	N/A	+8801739910783	May 10, 24 11:56:38 AM	May 10, 24 11:56:38 AM	Active	Member	Change user role
Sajib Saha	sajib15-3791@diu.edu.bd	N/A	May 10, 24 08:39:35 PM	May 10, 24 11:06:11 PM	Active	Member	Change user role
Jewel Das 202-15-3817	jewel15-3817@diu.edu.bd	N/A	May 10, 24 08:05:18 PM	Jun 26, 24 09:28:36 PM	Active	Member	Change user role
Mason Clark	amritadey.cse3792@gmail.com	01789938367	Jun 20, 24 09:13:33 AM	Jun 20, 24 09:13:33 AM	Offline	Member	Change user role
Amrita Dey	dey084599@gmail.com	N/A	Jun 20, 24 09:18:20 AM	Jun 20, 24 09:18:20 AM	Offline	Member	Change user role

Figure 5.2.43: All Users

The All Providers Page displays a comprehensive list of all registered service providers within the system. It provides administrators with detailed profiles, service offerings, availability, and contact information, facilitating efficient provider management and support.

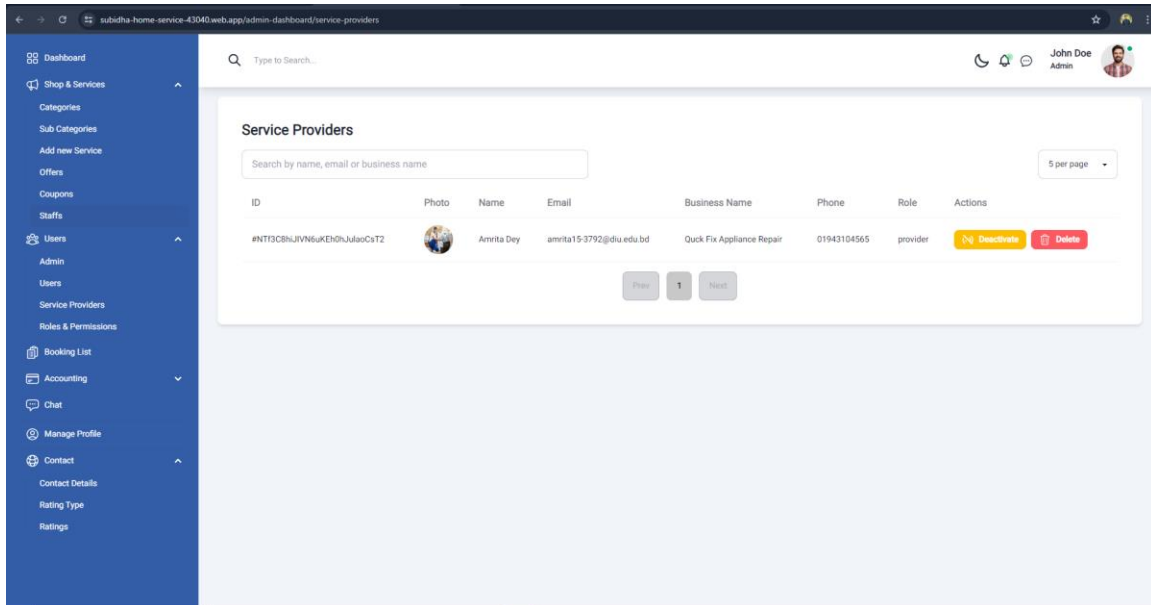


Figure 5.2.44: All Service Providers Page

The Roles and Permissions Page allows administrators to manage user roles and permissions within the system. It provides a centralized interface to assign, edit, or revoke roles, ensuring controlled access and security across different user levels and functionalities.

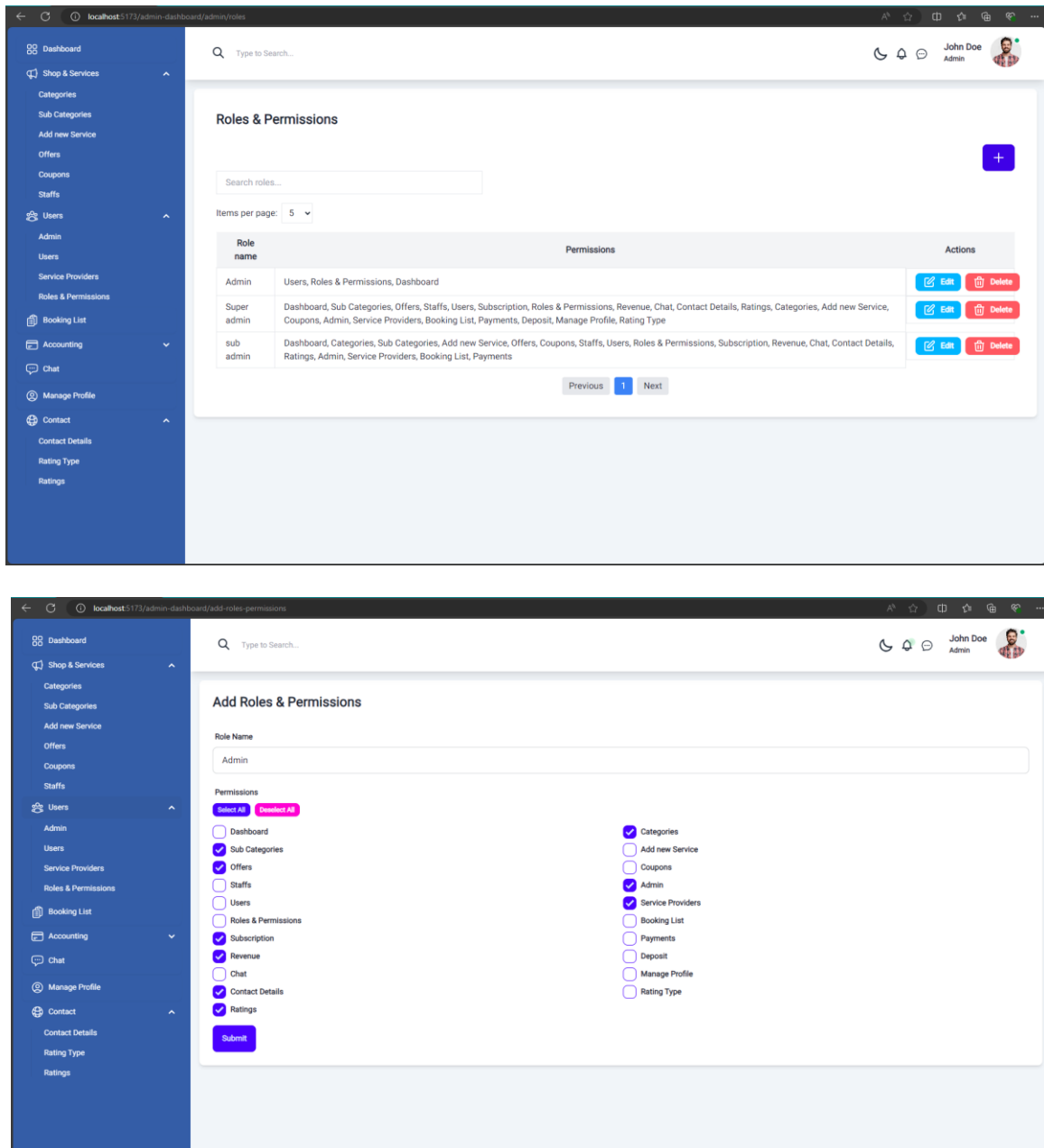


Figure 5.2.45: Admin Roles & Permissions

The All Bookings page on the admin side offers a comprehensive view of all bookings made within the system. It provides details such as booking dates, times, service types, and customer information, facilitating efficient management, scheduling, and customer support.

BookingID	User Photo	UserID	User Name	User Email	User Phone	Provider Photo	Provider ID
B-66822eb74133a9eff82b4890		ka7xdgkN5ixyP4gABElXvPjvkJ2	Angelina Jolie	amritadey701@gmail.com	01311929644		NTT3CBhJVN6uKehGhJul
B-6681a1969644d609bc389ce7		ka7xdgkN5ixyP4gABElXvPjvkJ2	Angelina Jolie	amritadey701@gmail.com	01311929644		NTT3CBhJVN6uKehGhJul
B-667a7a5c510f2b3693db7b63c		1VolAoiagWimVhtPjZPqBcSXC12	John Doe	amritadey701@gmail.com	01311929644		NTT3CBhJVN6uKehGhJul
B-667a5e698c179921f1c76dc		DQvdrnkFY1NwhQmVOrs79S1Gm2	Aminul Islam Rakib	amrita15-3792@diu.edu.bd	01311929644		NTT3CBhJVN6uKehGhJul
B-667a5e67a8c179921f1c76d9		DQvdrnkFY1NwhQmVOrs79S1Gm2	Aminul Islam Rakib	aminulislamrakib55@gmail.com	01311929644		NTT3CBhJVN6uKehGhJul
B-667a5c78b179921f1c76d6		DQvdrnkFY1NwhQmVOrs79S1Gm2	Aminul Islam Rakib	aminul.rakib22@gmail.com	01743014483		NTT3CBhJVN6uKehGhJul
B-6673f329ba776b8472bd1c8		1VolAoiagWimVhtPjZPqBcSXC12	John Doe	amritadey701@gmail.com	01706016867		NTT3CBhJVN6uKehGhJul
B-6673a80aba776b8472bd1c6		G3YGNyCu1gqItoLw1eLXloas0R2	Mason Clark	amritadey.cse3792@gmail.com	01706016867		NTT3CBhJVN6uKehGhJul
B-6673a36f83bc3dd855de87f2		G3YGNyCu1gqItoLw1eLXloas0R2	Mason Clark	amritadey.cse3792@gmail.com	01706016867		NTT3CBhJVN6uKehGhJul

Provider Name	Provider Email	Provider Phone	Service	Service Photo	Service Quantity	Unit Cost	Total Amount	Division	District	Upazila
Amrita Dey	amrita15-3792@diu.edu.bd	01943104565	Dishwasher Repair		1	699	699	Dhaka	Tangail	Delduar
Amrita Dey	amrita15-3792@diu.edu.bd	01943104565	Refrigerator Repair		2	1200	2400	Dhaka	Tangail	Delduar
Amrita Dey	amrita15-3792@diu.edu.bd	01943104565	Dishwasher Repair		1	699	699	Amrita Dey	Tangail	Delduar
Amrita Dey	amrita15-3792@diu.edu.bd	01943104565	Dishwasher Repair		2	699	1398	Dhaka	Tangail	Delduar
Amrita Dey	amrita15-3792@diu.edu.bd	01943104565	Dishwasher Repair		1	699	699	Dhaka	Tangail	Delduar
Amrita Dey	amrita15-3792@diu.edu.bd	01943104565	Refrigerator Repair		1	1200	1200	Dhaka	Tangail	Delduar
Amrita Dey	amrita15-3792@diu.edu.bd	01943104565	Washing Machine Repair		1	800	800	Dhaka	Tangail	Delduar
Amrita Dey	amrita15-3792@diu.edu.bd	01943104565	Dishwasher Repair		1	699	699	Dhaka	Tangail	Delduar
Amrita Dey	amrita15-3792@diu.edu.bd	01943104565	Refrigerator Repair		1	1200	1200	Dhaka	Tangail	Delduar

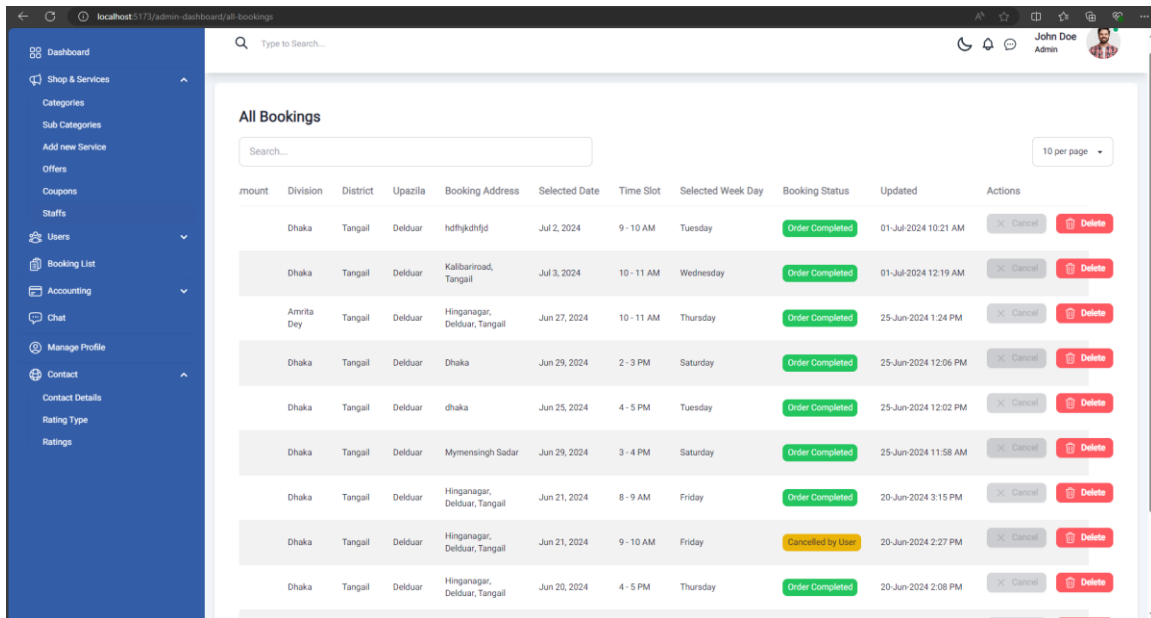


Figure 5.2.46: All Booking Page

5.3 Testing Implementation

An organized strategy is used in the testing implementation for " Subidha - Web-based home service system " to guarantee the platform's performance, security, usability, and usefulness. This is a summary of the testing protocols:

Testing Types:

- o Unit testing: Check that individual parts, features, and modules operate as intended.
- o Integrity testing: Examine how different modules interact with one another to make sure functionality and integration go smoothly.
- o System Testing: Verify that the behavior and general functionality of the system are by the specified criteria.
- o User Acceptance Testing (UAT): Involve stakeholders in scenario-based testing based on real-world scenarios to make sure the platform fulfills user demands.
- o Security testing: To find weaknesses and make sure there is a strong defense against attacks, conduct security assessments.
- o Performance testing: Check the responsiveness and stability of the system by measuring its performance under varied loads.

Testing Procedures:

- At first create comprehensive test cases covering all functionalities, edge cases, and user scenarios.
- After creation test case then execute test cases systematically, record results, and generate reports detailing passed/failed scenarios.
- Need to use bug tracking tools to log and monitor identified issues, assigning priorities and tracking resolutions.
- Now, we perform regression testing after bug fixes or new feature implementations to ensure existing functionalities remain unaffected.
- Finally Integrate user feedback from UAT into testing cycles to address user experience issues and enhance usability.

Testing Environments:

- Developers test individual components and functionalities in local development environments.
- Test integration and overall system functionalities in an environment mirroring the production environment.
- Involve actual users or stakeholders to perform UAT in a controlled testing environment.

Automation:

- Use frameworks for automated testing (such as Apache JMeter and Selenium) to run regression and repetitive tests.
- For smooth testing and deployment, including automated testing into continuous integration/continuous deployment (CI/CD) pipelines.

5.4 Test Results and Reports

The test reports and outcomes for "Subidha – Web based home service system" show that the system, integration, & unit testing were completed successfully. We exhibit strong functionality, adherence to security regulations, and favorable comments from users, ensuring a dependable and superior platform.

Unit Testing

Unit testing for all features of our web-based home service website, Subidha, involves creating test cases that cover each functionality comprehensively. Below we've detailed unit tests for each feature mentioned: categories, location-based service provider list, order service, payment, customer reviews, real-time chat, and accounts for workers and customers etc.

Table 5.4.1 Unit Testing for Accounts for Workers and Customers

Test Case ID	Test Description	Preconditions	Test Steps	Expected Result	Actual Result	Status
ACC001	Customer Registration	None	1. Navigate to the registration page. 2. Enter valid registration details. 3. Submit the registration form.	Customer account should be created.	Customer account created successfully.	Pass
ACC002	Worker Registration	None	1. Navigate to the worker registration page. 2. Enter valid registration details. 3. Submit the registration form.	Worker account should be created.	Worker account created successfully.	Pass

ACC003	Customer Login	Customer account exists	1. Navigate to the login page. 2. Enter valid login credentials. 3. Submit the login form.	Customer should be logged in.	Customer logged in successfully.	Pass
ACC004	Worker Login	Worker account exists	1. Navigate to the worker login page. 2. Enter valid login credentials. 3. Submit the login form.	Worker should be logged in.	Worker logged in successfully.	Pass
ACC005	Invalid Customer Login	None	1. Navigate to the login page. 2. Enter invalid login credentials. 3. Submit the login form.	Error message should be displayed.	Error message displayed: "Invalid credentials".	Pass
ACC006	Invalid Worker Login	None	1. Navigate to the worker login page. 2. Enter invalid login credentials. 3. Submit the login form.	Error message should be displayed.	Error message displayed: "Invalid credentials".	Pass
ACC007	Customer Profile Update	Customer logged in	1. Navigate to the profile page. 2. Update profile details. 3. Save changes.	Profile details should be updated.	Profile details updated successfully.	Pass

ACC008	Worker Profile Update	Worker logged in	1. Navigate to the profile page. 2. Update profile details. 3. Save changes.	Profile details should be updated.	Profile details updated successfully.	Pass
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Table 5.4.1 outlines the unit test cases for managing accounts of workers and customers within the Subidha system. Each test case includes specific actions to test functionalities such as registration, login, and profile updates. The table specifies the preconditions, test steps, expected results, actual results, and status for each test, ensuring comprehensive validation of account management features.

Table 5.4.2: Unit Testing for Service Categories

Test Case ID	Test Description	Preconditions	Test Steps	Expected Result	Actual Result	Status
CAT001	Display Service Categories	Categories exist	1. Navigate to the home page. 2. Check the categories section.	All categories should be displayed.	All categories displayed successfully	Pass
CAT002	Add Service Category	Admin logged in	1. Navigate to the admin panel. 2. Add a new category 3. Save changes	The new category should appear in the categories list.	New category added successfully.	Pass

Table 5.4.2 outlines the unit test cases for managing service categories within the Subidha system. The test cases include actions such as displaying service categories and adding new service categories. Each test case lists the preconditions, test steps, expected results, actual results, and status, ensuring comprehensive validation of the service category functionalities.

Table 5.4.3 Unit Testing for Service Details

Test Case ID	Test Description	Preconditions	Test Steps	Expected Result	Actual Result	Status
SER001	Display Service Details	Service exists	1. Select a service. 2. Navigate to the service details page.	Service details should be displayed.	Service details displayed successfully.	Pass
SER002	Edit Service Details	Admin logged in	1. Navigate to the admin panel. 2. Select a service. 3. Edit details. 4. Save changes	Service details should be updated.	Service details updated successfully.	Pass

Table 5.4.3 presents the unit test cases for the service details management feature within the Subidha system. This includes validating the display of service details and the ability to edit them. Each test case outlines the necessary preconditions, step-by-step actions, expected outcomes, actual results, and test status to ensure that the service detail functionalities are working correctly and efficiently. This rigorous testing helps maintain the integrity and usability of the service details within the system.

Table 5.4.4 Unit Testing for Location-Based Provider List

Test Case ID	Test Description	Preconditions	Test Steps	Expected Result	Actual Result	Status
LOC001	Display Providers Based on Location	Service available	1. Select a Location. 2. Check the providers displayed.	Only providers available in the selected location should be displayed.	Providers displayed based on location successfully.	Pass

Table 5.4.4 details the unit test cases for displaying providers based on location within the Subidha system. The test case verifies that only providers available in the selected location are displayed to the user. It includes the preconditions, test steps, expected result, actual result, and test status, ensuring that the location-based provider listing functionality operates correctly and enhances user experience by providing relevant service provider options.

Table 5.4.5 Unit Testing for Order Service

Test Case ID	Test Description	Preconditions	Test Steps	Expected Result	Actual Result	Status
CRD001	Place an Order	Customer logged in	1. Select a service. 2. Add the service to the cart. 3. Proceed to checkout. 4. Confirm the order.	Order should be placed Successfully	Order placed successfully	Pass
CRD002	View Order History	Customer logged In	1. Navigate to the order history page. 2. Check the past orders.	Order history should be displayed.	Order history displayed successfully.	Pass

Table 5.4.5 presents the unit test cases for the order service functionality within the Subidha system. This includes actions such as displaying providers based on location. Each test case outlines the necessary preconditions, step-by-step actions, expected outcomes, actual results, and test status to ensure that the order service functionalities are working correctly and efficiently. This rigorous testing helps maintain the integrity and usability of the order service features within the system.

Table 5.4.6 Unit Testing for Customer Dashboard Overview

Test Case ID	Test Description	Preconditions	Test Steps	Expected Result	Actual Result	Status
DAS001	Display Dashboard Overview	Customer logged in	1. Navigate to the dashboard. 2. Check the overview section.	Dashboard overview should be displayed correctly.	Dashboard overview displayed correctly.	Pass

Table 5.4.6 outlines the unit test case for verifying the customer dashboard overview functionality within the Subidha system. The test case ensures that when a customer is logged in, navigating to the dashboard displays the overview section correctly. It lists the preconditions, test steps, expected result, actual result, and status, confirming that the dashboard overview is presented accurately to enhance user interaction and satisfaction.

Table 5.4.7 Unit Testing for Customer Bookings

Test Case ID	Test Description	Preconditions	Test Steps	Expected Result	Actual Result	Status
BL001	Display Booking List	Customer logged in	1. Click on the "Booking List" link. 2. Check the booking list section.	Booking list should be displayed correctly.	Booking list displayed correctly.	Pass

Table 5.4.7 outlines the unit test case for verifying the booking list functionality within the Subidha system. The test ensures that when a customer is logged in and accesses the "Booking List" section, the list of bookings is displayed correctly. It details the preconditions, test steps, expected result, actual result, and status, confirming that the booking list feature functions as intended, providing customers with accurate and accessible booking information.

Table 5.4.8 Unit Testing for Check Booking Status

Test Case ID	Test Description	Preconditions	Test Steps	Expected Result	Actual Result	Status
BL002	Check Booking Status	Customer logged in	1. Click on the "Booking List" link. 2. Locate a booking in the list. 3. Check the booking status.	Booking status should be displayed correctly.	Booking status displayed correctly.	Pass

Table 5.4.8 outlines the unit test case for verifying the booking status functionality within the Subidha system. This test case ensures that when a customer is logged in and accesses the "Booking List" section, they can locate a booking and verify its status. It includes preconditions, test steps, expected result, actual result, and status, ensuring that the booking status is accurately displayed to the customer. This testing guarantees that customers can track their bookings effectively, enhancing their experience with the platform.

Table 5.4.9 Unit Testing for Make Payment for Booking

Test Case ID	Test Description	Preconditions	Test Steps	Expected Result	Actual Result	Status
BL003	Make Payment for Booking	Customer logged in, Booking exists and requires payment	1. Click on the "Booking List" link. 2. Locate a booking that requires payment. 3. Click on the "Make Payment" button. 4. Enter payment details. 5. Confirm the payment.	Payment should be processed and confirmed.	Payment processed and confirmed successfully.	Pass

Table 5.4.9 details the unit test case for the make payment functionality related to bookings within the Subidha system. This test case verifies that when a customer is logged in and accesses the "Booking List" section, they can locate a booking that requires payment, enter payment details, and confirm the payment process. It includes preconditions, test steps, expected result, actual result, and status, ensuring that the payment for the booking is processed and confirmed successfully. This testing guarantees that customers can make payments seamlessly for their bookings, enhancing their transactional experience with the platform.

Table 5.4.10 Unit Testing for Payment Confirmation

Test Case ID	Test Description	Preconditions	Test Steps	Expected Result	Actual Result	Status
BL004	Payment Confirmation	Customer logged in, Payment processed	1. Click on the "Booking List" link. 2. Locate the booking for which payment was made. 3. Check the payment status for confirmation.	Payment status should be updated to "Paid".	Payment status updated to "Paid".	Pass

Table 5.4.10 outlines the unit test case for confirming payment status within the Subidha system. This test case verifies that when a customer is logged in and checks their "Booking List," they can locate a booking for which payment has been made and verify the payment status. It includes preconditions, test steps, expected result, actual result, and status, ensuring that the payment status is updated to "Paid" upon confirmation. This testing ensures transparency and accuracy in displaying payment statuses for customers, enhancing trust and reliability in financial transactions on the platform.

Table 5.4.11 Unit Testing for Booking Details

Test Case ID	Test Description	Preconditions	Test Steps	Expected Result	Actual Result	Status
BL005	View Booking Details	Customer logged in	1. Click on the "Booking List" link. 2. Click on a booking to view details.	Booking details should be displayed correctly.	Booking details displayed correctly.	Pass

Table 5.4.11 outlines the unit test case for viewing booking details within the Subidha system. This test case ensures that when a customer is logged in and accesses their

"Booking List," they can click on a specific booking to view its details. It includes preconditions, test steps, expected result, actual result, and status, ensuring that the booking details are displayed accurately to the customer. This testing verifies that customers can easily access and review the specifics of their bookings, enhancing their overall experience with the platform.

Table 5.4.12 Unit Testing for Customer Profile Settings

Test Case ID	Description	Preconditions	Steps	Expected Result	Actual Result	Status
UP001	Display Profile Information	Customer logged in	1. Click "Profile Settings". 2. Check profile information.	Profile info displayed correctly.	Profile info displayed correctly.	Pass
UP002	Update Profile Information	Customer logged in	1. Click "Profile Settings". 2. Update info (e.g., name, email). 3. Save changes.	Profile info updated successfully.	Profile info updated successfully.	Pass
UP003	Update Location	Customer logged in	1. Click "Profile Settings". 2. Update location. 3. Save changes.	Location updated successfully.	Location updated successfully.	Pass
UP004	Error Handling: Invalid Profile	Customer logged in	1. Click "Profile Settings". 2. Enter invalid profile info (e.g., invalid email). 3. Save changes.	Error message displayed.	Error: "Invalid email format".	Pass

UP005	Error Handling: Invalid Location	Customer logged in	1. Click "Profile Settings". 2. Enter invalid location info. 3. Save changes.	Error message displayed.	Error: "Invalid location format".	Pass
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Table 5.5.12 presents the unit test cases for customer profile functionalities within the Subidha project. These tests validate various scenarios related to customer profile management, including displaying profile information, updating profile details, updating location, and error handling for invalid profile and location information. Each test case specifies preconditions, steps, expected results, actual results, and status, ensuring that customer profile operations function correctly and error messages are appropriately handled. These tests contribute to ensuring a seamless user experience by verifying the accuracy and reliability of customer profile interactions.

Table 5.4.13 Unit Testing for Customer Review

Test Case ID	Test Description	Preconditions	Test Steps	Expected Result	Actual Result	Status
REV001	Display Reviews	Customer logged in	1. Click on the "Reviews" link. 2. Check the reviews section.	Reviews should be displayed correctly.	Reviews displayed correctly.	Pass
REV002	Submit New Review	Customer logged in	1. Click on the "Reviews" link. 2. Click on "Submit Review". 3. Enter review details. 4. Submit the review.	Review should be submitted successfully and displayed in the reviews list.	Review submitted successfully and displayed in the reviews list.	Pass

Table 5.4.13 presents the unit test cases for customer review management functionalities within the Subidha system. These test cases verify the ability to display existing reviews and submit new reviews. Each test case includes preconditions, test steps, expected results, actual results, and status, ensuring that customer reviews are managed effectively. This testing ensures that customers can view existing reviews accurately and submit new reviews seamlessly, contributing to user engagement and feedback on the platform.

Table 5.4.14 Unit Testing for Customer Payments

Test Case ID	Test Description	Preconditions	Test Steps	Expected Result	Actual Result	Status
PAY001	Display Payment Information	Customer logged in	1. Click on the "Payment" link. 2. Check the payment information section.	Payment information should be displayed correctly.	Payment information displayed correctly.	Pass

Table 5.4.14 outlines the unit test case for verifying customer payment functionalities within the Subidha system. This test case verifies that when a customer is logged in and accesses the "Payment" section, the payment information is displayed correctly. It includes preconditions, test steps, expected result, actual result, and status, ensuring that the payment information is accurately presented to the customer. This testing ensures that customers can view their payment details seamlessly, enhancing their experience with the platform.

Table 5.4.15 Unit Testing for Customer Invoice

Test Case ID	Test Description	Preconditions	Test Steps	Expected Result	Actual Result	Status
CINV001	Display Invoices	Customer logged in	1. Click on the "Invoices" link. 2. Check the invoices section.	Invoices should be displayed correctly.	Invoices displayed correctly.	Pass
CINV002	Download Invoice as PDF	Customer logged in	1. Click on the "Invoices" link. 2. Locate an invoice. 3. Click on "Download as PDF".	Invoice should be downloaded in PDF format.	Invoice downloaded in PDF format successfully.	Pass
CINV003	View Downloaded Invoice	Customer logged in, Invoice downloaded	1. Open the downloaded PDF file. 2. Verify the contents of the invoice.	Invoice contents should be displayed correctly in the PDF.	Invoice contents displayed correctly in the PDF.	Pass
CINV004	Filter Invoices by Date	Customer logged in	1. Click on the "Invoices" link. 2. Select a date range for filtering invoices. 3. Apply the filter.	Invoices within the selected date range should be displayed.	Invoices within the selected date range displayed correctly.	Pass

CINV005	Search Invoices	Customer logged in	1. Click on the "Invoices" link. 2. Enter search criteria (e.g., invoice number, service provider name). 3. Click on the search button.	Invoices matching the search criteria should be displayed.	Invoices matching the search criteria displayed correctly.	Pass
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Table 5.4.15 presents the unit test cases for customer invoice functionalities within the Subidha system. These tests verify the ability to display invoices, download them as PDFs, view downloaded invoices, filter invoices by date, and search invoices based on various criteria. Each test case includes preconditions, test steps, expected results, actual results, and status, ensuring that the customer invoice management features work correctly and efficiently. This testing guarantees that customers can manage their invoices effectively, enhancing user satisfaction and operational transparency.

Table 5.4.16 Unit Testing for Provider Dashboard Overview

Test Case ID	Test Description	Preconditions	Test Steps	Expected Result	Actual Result	Status
PDB001	Display Dashboard Overview	Provider logged in	1. Navigate to the dashboard. 2. Check the overview section.	Dashboard overview should be displayed correctly.	Dashboard overview displayed correctly.	Pass
PDB002	View Total Services Provided	Provider logged in	1. Navigate to the dashboard. 2. Check the "Total Services Provided" section.	Total services provided should be displayed correctly.	Total services provided displayed correctly.	Pass

PDB003	View Earnings	Provider logged in	1. Navigate to the dashboard. 2. Check the "Earnings" section.	Earnings should be displayed correctly.	Earnings displayed correctly.	Pass
PDB004	View Upcoming Appointments	Provider logged in	1. Navigate to the dashboard. 2. Check the "Upcoming Appointments" section.	Upcoming appointments should be displayed correctly.	Upcoming appointments displayed correctly.	Pass
PDB005	View Recent Reviews	Provider logged in	1. Navigate to the dashboard. 2. Check the "Recent Reviews" section.	Recent reviews should be displayed correctly.	Recent reviews displayed correctly.	Pass

Table 5.4.16 outlines the unit test cases for the provider dashboard overview functionality within the Subidha system. These test cases cover actions such as displaying the dashboard overview, viewing total services provided, earnings, upcoming appointments, and recent reviews. Each test case verifies the preconditions, test steps, expected results, actual results, and status, ensuring that the provider dashboard provides accurate and comprehensive information. This testing ensures that providers can effectively monitor their activities and performance metrics through the dashboard, facilitating better management and decision-making.

Table 5.4.17 Unit Testing for Provider Services

Test Case ID	Test Description	Preconditions	Test Steps	Expected Result	Actual Result	Status
PS001	Display Service List	Provider logged in	1. Navigate to the "Services" section. 2. Check the list of services.	List of services should be displayed correctly.	List of services displayed correctly.	Pass
PS002	Add New Service	Provider logged in	1. Navigate to the "Services" section. 2. Click on "Add Service". 3. Enter service title and description. 4. Submit the service.	New service should be added successfully and displayed in the list.	New service added and displayed successfully.	Pass
PS003	Edit Existing Service	Provider logged in	1. Navigate to the "Services" section. 2. Locate an existing service. 3. Click on "Edit". 4. Modify the service title and description. 5. Submit the changes.	Service should be updated successfully and displayed with the new details.	Service updated and displayed successfully.	Pass

PS004	Activate Service	Provider logged in	1. Navigate to the "Services" section. 2. Locate an inactive service. 3. Click on "Activate".	Service should be activated successfully and status should change to active.	Service activated successfully.	Pass
PS005	Deactivate Service	Provider logged in	1. Navigate to the "Services" section. 2. Locate an active service. 3. Click on "Deactivate".	Service should be deactivated successfully and status should change to inactive.	Service deactivated successfully.	Pass

Table 5.4.17 details the unit test cases for managing provider services within the Subidha system. These test cases cover functionalities such as displaying the list of services, adding new services, editing existing service details, activating and deactivating services. Each test case verifies the preconditions, test steps, expected results, actual results, and status, ensuring that provider service management functions correctly and efficiently. This testing ensures that providers can effectively manage their service offerings, maintaining service quality and availability on the platform.

Table 5.4.18 Unit Testing for Provider Staffs

Test Case ID	Test Description	Preconditions	Test Steps	Expected Result	Actual Result	Status
PST001	Display Staff List	Provider logged in	1. Navigate to the "Staffs" section. 2. Check the list of staffs.	List of staffs should be displayed correctly.	List of staffs displayed correctly.	Pass
PST002	Add New Staff	Provider logged in	1. Navigate to the "Staffs" section. 2. Click on "Add Staff". 3. Enter staff details (name, role, contact information). 4. Submit the details.	New staff should be added successfully and displayed in the list.	New staff added and displayed successfully.	Pass
PST003	Edit Existing Staff	Provider logged in	1. Navigate to the "Staffs" section. 2. Locate an existing staff. 3. Click on "Edit". 4. Modify the staff details. 5. Submit the changes.	Staff details should be updated successfully and displayed with the new details.	Staff details updated and displayed successfully.	Pass

Table 5.4.18 outlines the unit test cases for managing provider staff within the Subidha system. These test cases cover functionalities such as displaying the list of staff, adding new

staff, and editing existing staff details. Each test case verifies the preconditions, test steps, expected results, actual results, and status, ensuring that provider staff management operates smoothly and accurately. This testing ensures that providers can efficiently manage their staff details, enhancing operational efficiency within the platform.

CHAPTER 6

Impact on Society, Environment, and Sustainability

6.1 Impact on Society

The implementation of " Subidha - Web-based Home Service system" holds significant potential for impacting society in several positive ways:

- Subidha simplifies the process of finding reliable home service providers, saving users valuable time and effort.
- Customer reviews and verification processes encourage service providers to maintain high standards, leading to improved overall service quality.
- Subidha provides a platform for skilled individuals to reach new clients and expand their businesses, promoting economic opportunities.
- Subidha can create new job opportunities in the home service sector, contributing to local employment growth.
- Customer reviews and transparent pricing structures increase trust and accountability within the home service industry.
- Online payment options through Subidha accounts could promote financial inclusion by encouraging cashless transactions for both customers and service providers.
- Subidha fosters community engagement by connecting local service providers with customers in their area. This strengthens social ties and promotes a sense of belonging within neighborhoods and communities.

"Subidha - Web-based home service system (TMS)" ultimately benefits society by streamlining online service booking, improving user experiences, promoting diversity, and boosting overall productivity in the home service sector.

6.2 Impact on the Environment

"Subidha-A web-based home service system" can positively benefit the environment in several ways:

- Subidha can streamline service requests and bookings, potentially reducing wasted time and resources for both customers and service providers.
- By facilitating the booking of home services online, Subidha can help reduce the need

for unnecessary travel, leading to lower carbon emissions and less congestion on roads.

- Customer reviews can incentivize service providers to adopt environment friendly practices. Customers can choose service providers based on their review, ratings and price.
- Subidha platform promotes a paperless system for booking, communication, and potentially invoicing, minimizing paper consumption.
- Subidha can promote eco-friendly practices among service providers, such as using environmentally friendly cleaning products or adopting energy-efficient techniques, contributing to overall environmental sustainability.
- Using data analytics, the platform may provide online home service trends insights, assisting companies and organizations in making well-informed decisions that minimize environmental effects and maximize resource utilization.
- The platform optimizes resource utilization by matching service providers with customers in close proximity, thereby minimizing the need for travel and reducing fuel consumption.

6.3 Ethical Aspects

Subidha as a home service platform, connects customers and service providers. To ensure a trustworthy and ethical environment, we need to consider several key aspects:

- Ensuring strong security and privacy protocols to safeguard user data, such as payment information, home service preferences, and personal data.
- Ensure that workers registered on Subidha are treated fairly, including fair compensation, safe working conditions, and respect for their rights.
- Protect customer and service provider information by implementing robust data protection measures.
- Provide clear and accessible information about our practices, including pricing, terms of service, and dispute resolution mechanisms. Establish clear communication channels for customers and workers to address concerns and complaints.
- Promote diversity and inclusivity by prohibiting discrimination based on factors such as race, gender, religion, disability, or sexual orientation. Encourage a diverse pool of workers and customers, and foster a respectful and inclusive community where everyone feels valued and respected.
- Minimize Subidha's environmental footprint by implementing sustainable practices such as energy-efficient technologies, waste reduction strategies, and promoting eco-

friendly service providers. Educate users on environmentally responsible behaviors and encourage sustainable choices.

- Ensure that Subidha's technology is used ethically and responsibly, with safeguards against misuse, abuse, and exploitation. Respect user autonomy and autonomy, protect against algorithmic biases, and prioritize the well-being and rights of users and workers.

By implementing ethical principles into the creation and management of "Subidha," the platform may give priority to user privacy, equity, openness, accessibility, and ethical business practices, therefore cultivating a sense of trust and integrity among its stakeholders and users.

6.4 Sustainability Plan

Implementing a user-friendly platform for "Subidha - Web-based home service system" entails implementing methods to guarantee long-term sustainability, lessen the impact on the environment, and encourage moral and responsible behavior. This is an outline:

▪ Environmental Sustainability:

- Calculate Subidha's carbon footprint and invest in carbon offset projects to mitigate environmental impact.
- Encourage service providers registered on Subidha to offer environmentally friendly services. This may include options for eco-friendly cleaning products, energy-efficient home improvements, or sustainable landscaping practices.

▪ Responsible Data Handling:

- Develop and prominently display a comprehensive data privacy policy that outlines how user data is collected, stored, used, and protected.
- Implement robust security measures to protect user data against unauthorized access, disclosure, alteration, or destruction.
- Collect and retain only the minimum amount of data necessary to provide Subidha's services effectively.

▪ Social Responsibility:

- Ensure that Subidha's platform and services are accessible to individuals with disabilities by adhering to accessibility standards and guidelines.
- Engage with the local community through initiatives such as volunteering,

sponsorships, or partnerships with community organizations. Support local businesses and service providers that address social needs and enhance quality of life.

▪ **Continuous Improvement:**

- Establish mechanisms for collecting feedback from users, including workers and customers, to identify areas for improvement using feedback forms and surveys.
- Adopt an iterative development approach to continuously enhance Subidha's features, functionality, and user interface based on user feedback and data insights.
- Continually track and update stakeholders on privacy compliance, user happiness, and environmental impact data.

▪ **Ethical Business Practices:**

- Maintain transparency in Subidha's business practices, including pricing, terms of service, and policies. Communicate openly with users, workers, and stakeholders about any changes or updates to the platform.
- Ensure compliance with all applicable laws, regulations, and industry standards governing Subidha's operations. Stay informed about changes or updates to legal requirements.

▪ **Employee Engagement:**

- Establish clear and open communication channels to facilitate dialogue between management and employees.
- Develop a system for recognizing and rewarding employees for their contributions, achievements, and milestones. This can include employee of the month programs, performance bonuses, or other forms of recognition to motivate and incentivize employees.
- Implement wellness programs and initiatives to support employees' physical, mental, and emotional health,

CHAPTER 7

Conclusion and Future Scope

7.1 Discussion and Conclusion

Subidha has the potential to revolutionize the home service landscape in Bangladesh by offering a convenient, reliable, and user-friendly platform for both customers and service providers. Through features like location-based service discovery, verified profiles with work samples, secure online payments, and real-time chat, Subidha aims to bridge the gap between traditional service-finding methods and the demands of the modern user.

We've discussed how Subidha addresses core user needs for both customers (convenience, trust, transparency) and service providers (increased reach, efficient management). We emphasized the importance of data privacy, fair competition, non-discrimination, and dispute resolution mechanisms to ensure Subidha operates ethically. We've explored Subidha's potential positive impacts on society (increased convenience, job creation, transparency) and the environment (reduced travel, paperless system), while acknowledging the need for responsible resource consumption. We acknowledged potential challenges like scalability, data security, and fraud, and outlined plans to address them through robust technology, secure protocols, and verification procedures.

In conclusion, Subidha holds great potential to revolutionize the home service industry by offering a modern and efficient solution for service booking and delivery. By prioritizing user experience, transparency, and convenience, Subidha aims to establish itself as a leading player in the market, driving positive outcomes for both users and the broader community.

7.2 Scope for Further Developments

"Subidha - Web-based home service system " presents several prospects for additional development and improvement:

- Subidha can explore opportunities to expand its service offerings beyond traditional home maintenance tasks to include additional services such as home improvement, landscaping, and pet care.
- Implementing advanced algorithms and machine learning techniques can enable Subidha to offer personalized recommendations and tailored experiences for users based on their preferences and past interactions with the platform.
- Apply blockchain to improve trust and security in payments and data management

through transparent and safe transactions.

- Increase the platform's accessibility to a wider range of foreign users by adding new languages, currencies, and travel-related information particular to other regions.
- Exploring the use of AI-powered features like chatbots for enhanced customer service or recommendation systems for personalized service discovery.
- A dedicated mobile app for Subidha can significantly improve accessibility and user experience, allowing for on-the-go service booking and communication.
- Implementing stricter verification procedures for service providers, such as background checks and skill certifications, can further strengthen user trust.
- Collaborating with other businesses, such as home appliance manufacturers or home insurance providers, can create synergies and unlock new revenue streams for Subidha.

By adopting these chances for growth, "Subidha" may transform into a more inventive and all-encompassing home service platform that provides improved functionality, more accessibility, and a more satisfying user experience for users everywhere.

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Appendix A

Course Outcomes, Complex Engineering Problems (EP) and Complex Engineering Activities (EA) Addressing
Title: SUBIDHA: A COMPREHENSIVE HOME SERVICE PLATFORM FOR SEAMLESS WORKER-CUSTOMER COLLABORATION

Student ID: 202-15-3817 and 202-15-3792

CO Description for FYDP

CO	CO Descriptions	PO
Phase -I		
CO1	Integrate recently gained and previously acquired knowledge to identify a web based travel management problem for the Final Year Design Project (FYDP)	PO1
CO2	Analyze different aspects of the goals in designing a solution for this FYDP	PO2
CO3	Explore diverse problem domains through a literature review, delineate the issues, and establish this goals for the FYDP	PO4
CO4	Perform economic evaluation and cost estimation and employ suitable project management procedures throughout the development life cycle of the FYDP	PO11
Phase -II		
CO5	Design and develop technical solutions and system components or processes that meet specified requirements, ensuring compliance with public health and safety standards, as well as considering cultural, socioeconomic, and environmental factors in this FYDP	PO3
CO6	Choose and apply appropriate methodologies, resources, and contemporary engineering and IT technologies to address complex engineering processes, encompassing prediction and modeling, while adhering to relevant constraints in this FYDP	PO5
CO7	Analyze societal, health, safety, legal, and cultural considerations, along with associated responsibilities, in the context of professional engineering practice and the resolution of this problem, employing logical reasoning guided by contextual understanding.	PO6
CO8	Comprehend and evaluate the enduring sustainability and impact of professional engineering endeavors in addressing intricate engineering challenges within social and environmental frameworks.	PO7
CO9	Implement ethical principles and adhere to professional standards and norms in this FYDP	PO8

CO10	Capable of operating proficiently both individually and as a team member or leader across diverse teams and interdisciplinary settings in this FYDP.	PO9
CO11	Proficiently communicate with the engineering community and broader society regarding complex engineering endeavors, including the ability to comprehend and generate comprehensive reports and design documentation, as well as provide and receive clear instructions throughout this FYDP.	PO10
CO12	Acknowledge the importance of self-directed and life-long learning within the evolving landscape of technology, and possess the readiness and capability to engage in lifelong learning endeavors.	PO12

Addressing CO (1 to 8), Knowledge Profile (K), Attainment of Complex Engineering Problems (EP), and Attainment of Complex Engineering Activities (EA)

Addressing CO (1 to 8), Knowledge Profile (K), Attainment of Complex Engineering Problems (EP):

SN	EP Definition	Attainment	CO	Justification (with Knowledge Profile)	References
1.	EP1: Depth of Knowledge required	Yes	CO1, CO2, CO3, CO5, CO6, CO7 and CO8	In our project we covers Engineering Fundamentals (K3) through process modeling, data design, and front-end development, showcasing strong engineering principles application. The project tackles Specialist Knowledge (K4) by integrating front-end and back-end design, interaction design, and user experience (UX), utilizing HTML,CSS,Bootstrap,TailwindCSS, daisyUI ReactJS for the front end, and Javascript frameworks like NodeJS for the back end, demonstrating expertise in web-based travel management system development.	Page no: [3-5], Section: [1.5] Page no: [39-90], Section: [4.1, 4.2, 4.3, 4.4,5.1, 5.2, 5.3]
				The project applies engineering practice & design (K5) by integrating design requirements like user interface, security, scalability, customization, compatibility, accessibility, and	Page no: [38],

				reliability, ensuring a robust and user-centric home service system aligned with design principles. The project addresses engineering practice & technology (K6) by employing HTML, CSS, Tailwind, ReactJS, NodeJS, MongoDB emphasizing safe, scalable development .	Scetion: [3.5] Page no: [39-47], Section: [4.1, 4.2, 4.3, 4.4]
				We have studied existing work with similar goals (K8).	Page no: [9-11], Section: [2.2, 2.3]
2.	EP3: Depth of analysis required	Yes	CO2, and CO6	The project tackles EP-3 by prioritizing solutions like contemporary front-end design for enhanced user experience and selecting NodeJS for streamlined back-end development, addressing challenges such as user interaction optimization, platform accessibility, and scalability to provide a superior web-based home service system.	Page no: [9,12,39-43], Section: [2.1,2.5, 4.1, 4.2]
3.	EP4: Familiarity of Issues	Yes	CO8	The project fulfills EP-4 by integrating insights from home service into development, optimizing processes, enhancing user experience, ensuring data security, and contributing to industry efficiency and effectiveness, bridging Computer Science and Engineering with the home service domain for impact beyond CSE boundaries.	Page no: [11-12, 110-111], Section: [2.4, 6.2]

4.	EP6: Extends of stakeholders involved and conflicting	No	CO8	As part of our project, we have visited and met with stakeholders. The purpose is to understand how we can measure pain points of users and solve those issues. This meeting will guide us in determining the specific type of data we need to use for our analysis.	Page no: 26 Section: [3.2]
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Addressing CO11 with Complex Engineering Activities (EA) [Some or all of the following]:

SN	EA Definition	Attainment	CO	Justification	References
1.	EA1: Range of resources	Yes	CO11	The development of this system leverages a skilled team across domains, meticulous financial resource allocation for infrastructure, marketing, and development, and utilizes tools like firebase, Visual Studio Code, and various programming languages, frameworks, and databases for effective execution.	Page no: [45-47, 48-52], Section: [4.4, 5.1]
2.	EA4: Consequences for society and the environment	Yes		This projects emphasizes social impact and environmental sustainability by enhancing trip efficiency, promoting sustainable travel practices, and ensuring ethical considerations such as strong security, privacy, and transparent business practices, fostering societal well-being and environmental stewardship.	Page no: [110, 110-111, 112-113], Section: [6.1, 6.2, 6.4]

Addressing CO (4, 9, 10, and 12):

SN	COs	Attainment	Justification	References
1	CO4	Yes	The project captures CO4 by integrating financial management practices, including budgeting, resource allocation, cost management, and risk mitigation, ensuring efficient fund distribution, monitoring expenditures, and identifying optimization areas while maintaining quality.	Page no: [3-7], Section: [1.5]
2	CO9	Yes	The project upholds ethical practices by prioritizing user privacy, maintaining transparency in data usage, providing fair suggestions, respecting cultural sensitivities, and promoting accessibility, fostering trust, transparency, and integrity among stakeholders.	Page no: [111-112], Section: [6.3]
3	CO12	Yes	The project's implementation phase emphasizes lifelong learning through diverse testing protocols, automated frameworks, and CI/CD pipelines, ensuring ongoing improvement and adaptation to emerging tech trends, with results analysis refining the platform for enhanced effectiveness.	Page no: [48-52, 89-90, 91-109], Section: [5.1, 5.3, 5.4]

A COMPREHENSIVE HOME SERVICE PLATFORM FOR SEAMLESS WORKER-CUSTOMER COLLABORATION

ORIGINALITY REPORT

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