

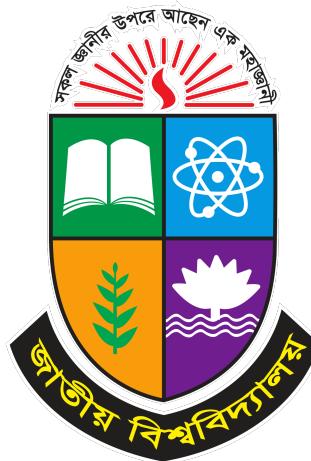
# A Web Based Home Service Application ONE.APP

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Registration No.: 18502002929

Session: 2018-19

BACHELOR OF SCIENCE  
IN  
COMPUTER SCIENCE AND ENGINEERING



DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING  
NATIONAL UNIVERSITY, BANGLADESH

The project titled “**A Web Based Home Service Application,ONE.APP**” submitted by Jannatul Ferdous, Roll No.18502002929, Session 2018-19, has been accepted as satisfactory in partial fulfillment of the requirement for the degree of Bachelor of Science in Computer Science and Engineering on October 24, 2024

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## **Declaration**

It is hereby declared that this thesis and any part of it has not been submitted elsewhere for the award of any degree or diploma.

Signature of the Candidate

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## **Dedication**

**THIS PROJECT IS DEDICATED  
TO  
MY PARENTS**

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## List of Abbreviations

<b>X-MAC/CA</b>	X-MAC/ Collision Avoidance
<b>ZeroMAC</b>	Zero MAC
<b>MCAS-MAC</b>	Multichannel Asynchronous Scheduled MAC Protocol
<b>CSMA</b>	Carrier Sense Multiple Access
<b>CSMA/CA</b>	Carrier Sense Multiple Access/ Collision Avoidance
<b>CTS</b>	Clear To Send
<b>RTS</b>	Request To Send
<b>FDMA</b>	Frequency Division Multiple Access
<b>TDMA</b>	Time Division Multiple Access
<b>BS</b>	Base Station
<b>WSN</b>	Wireless Sensor Network
<b>ID</b>	Identification Number
<b>IEEE</b>	Institute of Electrical and Electronics Engineers
<b>IP</b>	Internet Protocol
<b>ISA</b>	Instrumentation Systems and Automation society
<b>ISM</b>	Industrial, Scientific and Medical
<b>S-MAC</b>	Sensor-MAC

## List of Symbols

$\lambda$	Data arrival probability
$\mu$	Data transmission probability
$\tau$	Length of a slot
$\pi_0$	Probability of empty queue
$A_i$	Probability of $i$ packets arrive
$P_s$	Probability of success
$P_c$	Probability of collision
$S_P$	Duration of sender preamble
$S_d$	Duration of send data
$t_d$	Data transmission period
$E_s$	Expected energy to send a packet
$E_r$	Expected energy to receive a packet
$R_a$	Duration of receiver ACK period
$R_d$	Duration of receiver data period
$f_n$	Number of frequencies used in multichannel
$H_p$	Duration of sender hello message

## **Acknowledgment**

All praises are for the almighty Allah for giving me the strength, without which I could not afford to attempt this project work.

I would like to express my sincere and heartiest gratitude to my honorable project supervisor Supervisor Name, Associate Professor, Dhaka City College, Dhaka for his continuous motivation, guidance and keen encouragement which helped me throughout the time of my project work. Nothing is comparable to his keen advice and the freedom he provided for me in the project. I am grateful to him for his cooperation throughout my project work.

I would like to thank all the examiners for their precious time in understanding my work and their insightful comments. I would like to thank all of my friends and all teachers of the CSE department for their cooperation. Last but not least, I am grateful to my parents for their continuous support and cooperation.

## **Abstract**

The project abstract is the first thing that your examiner reads. The abstract is an important component of your project. The abstract is a summary of the whole project. It presents all the major elements of your work in a highly condensed form. Abstracts highlight major points of your project and explain why your work is important; what your purpose was, how you went about your project, what you learned, and what you concluded. The font size of the abstract will be 12, line spacing 1.5, and should be in one paragraph. The maximum sizes for abstracts submitted to National University Project are 150-350 words. The most common error in abstracts is failure to present results. The primary function of your project is not to tell readers what you did, it is to tell them what you discovered. Other information, such as the account of your research methods, is needed mainly to back the claims you make about your results. Approximately the last half of the abstract should be dedicated to summarizing and interpreting your results. An abstract is a short summary of a longer work. The abstract concisely report the aims and outcomes of your project, so that readers know exactly what your paper is about. Although the structure may vary slightly depending on your topics, your abstract should describe the purpose of your work, the methods you've used, and the conclusions you've drawn.

**Characteristics of an Effective Abstract:** while the content of an abstract may vary based on the specific discipline for which it is written, abstracts share several key features and should-

1. summarize the content or process of the paper; it is not an introduction,
2. refrain from adding new information not included in the paper,
3. follow the organization of the paper,
4. be written after the paper is complete
5. include keywords;

while not all professors require keywords in abstracts, keywords help readers to identify the main points of the paper in order to find additional articles and papers relevant to their research.

# Chapter 1

## Introduction

In a world where time is precious, **ONE.APP** emerges as a cutting-edge solution that simplifies how home services are accessed and delivered. Whether it's a routine cleaning, electrical repairs, plumbing, or other household tasks, ONE.APP is a one-stop platform that connects users with verified professionals, offering a seamless experience from booking to completion. The application is designed with both the customer and the service provider in mind, ensuring convenience, transparency, and efficiency at every step.

**ONE.APP** operates through a highly intuitive web-based platform, making it accessible from any device, at any time. Users can quickly explore a wide array of home services, check the availability of service providers, and book appointments with just a few clicks. By leveraging real-time scheduling and location-based matching, ONE.APP ensures that users receive timely services tailored to their specific needs. The app also integrates user reviews and ratings to help customers make informed decisions when selecting service providers.

In addition to the convenience for users, **ONE.APP** is equally beneficial for service providers. Through a dedicated provider dashboard, professionals can manage their profiles, track service requests, communicate with customers, and monitor payments. By providing an organized, feature-rich interface, ONE.APP enhances the operational efficiency of service providers, helping them grow their businesses while maintaining quality and customer satisfaction.

Security and trust are at the heart of ONE.APP. The platform offers secure payment options, protecting user transactions and personal data through encrypted connections. Moreover, all service providers undergo a thorough verification process, ensuring that only qualified and reliable professionals are featured on the app.

The home services industry is rapidly evolving, and **ONE.APP** stands at the forefront of this transformation. By bringing together advanced technology, a user-friendly design, and a network of trusted professionals, ONE.APP revolutionizes the way people manage and maintain their homes. Whether it's a quick fix or long-term maintenance, ONE.APP is the ultimate companion for hassle-free home services.

## 1.1 Motivation

The idea behind **ONE.APP** stems from the increasing demand for quick, reliable, and accessible home services in today's fast-paced lifestyle. As more people struggle to balance their professional and personal lives, finding trusted service providers for essential home maintenance tasks often becomes a time-consuming and stressful experience. The traditional methods of searching for service providers—through word of mouth or local advertisements—are often unreliable and outdated, leading to inconsistent service quality and communication issues.

**ONE.APP** was created to solve this problem by offering a digital platform where users can easily find, book, and manage home services in a transparent and efficient manner. We were motivated by the vision of transforming the home services industry through technology, creating a seamless bridge between service providers and customers. The aim was to eliminate the inefficiencies of the current system and provide an organized, trustworthy space where users can confidently hire professionals without the hassle of extensive research or trial and error.

By utilizing modern web technologies and applying best practices in user experience design, **ONE.APP** ensures that both customers and service providers benefit from the platform. The project is driven by a desire to simplify everyday life for busy individuals while empowering small businesses and independent contractors with a tool to grow their customer base, manage appointments, and maintain quality standards.

Ultimately, the motivation for **ONE.APP** is to create a world where home services are no longer a source of stress or uncertainty but are delivered with the reliability and convenience that today's consumers expect. We aim to be a part of a future where technology improves everyday living by making essential services more accessible, organized, and secure.

## 1.2 Main Contributions

The primary contribution of **ONE.APP** is its ability to revolutionize the home services industry by creating a streamlined, user-friendly platform that bridges the gap between customers and service providers. It addresses multiple pain points faced by both parties and introduces a comprehensive solution that improves the overall experience of booking and delivering home services. The key contributions of **ONE.APP** include:

### 1. Simplified Service Booking

**ONE.APP** allows users to quickly and easily find and book a wide range of home services, from cleaning and plumbing to electrical repairs and maintenance, all from a single platform. This eliminates the need to contact multiple service providers individually, saving time and reducing hassle for the customer.

### 2. Transparent and Secure Platform

The app offers transparency in terms of pricing, availability, and service provider profiles, allowing users to make informed decisions. Customers can view ratings, reviews, and certifications for service providers, ensuring they hire qualified professionals. Additionally, the app provides secure online payment options, protecting both users and service providers.

### 3. Efficient Service Provider Management

For service providers, **ONE.APP** offers a dedicated dashboard that enables them to manage their profiles, view and accept service requests, schedule appointments, and track payments. This boosts their operational efficiency, helps them reach a broader audience, and ensures a steady workflow.

### 4. Personalized User Experience

**ONE.APP** enhances the user experience by offering personalized service suggestions based on user preferences and previous bookings. Customers can track their service history, communicate directly with service providers, and receive real-time updates on the status of their requests.

## 5. Trust and Verification

A key differentiator for ONE.APP is its emphasis on trust. All service providers undergo a rigorous verification process to ensure they meet the required standards of professionalism and expertise. This provides peace of mind for users who may be hesitant to invite unknown service professionals into their homes.

## 6. Bridging the Digital Divide for Local Service Providers

ONE.APP empowers small businesses and independent contractors who may not have a strong digital presence. By offering an easy-to-use platform, it helps them expand their customer base, manage their business more effectively, and compete with larger service companies.

Through these features, **ONE.APP** contributes to transforming the home services sector by offering a reliable, transparent, and convenient solution for all parties involved. It makes the process of accessing home services as simple as ordering a meal or booking a ride, redefining the standard for home service applications.

### 1.3 Research Objectives

The development of **ONE.APP** is rooted in thorough research aimed at addressing real-world challenges within the home services industry. The objectives of this research are focused on identifying the gaps in the current system, understanding user needs, and leveraging technology to improve service accessibility, reliability, and efficiency. The following research objectives guide the design and development of the application:

**Analyze the Current Home Services Market** The first objective is to study the existing market for home services, including how customers currently access these services and the challenges they face. This involves identifying inefficiencies, such as inconsistent service quality, lack of transparency, and difficulty in finding reliable professionals. The goal is to map out the pain points that customers experience and understand the trends shaping the demand for home services.

**Evaluate User Needs and Expectations** Understanding the needs of both users and service providers is a key research objective. This includes analyzing

customer preferences for booking and managing home services, preferred payment methods, and the criteria they use to evaluate service quality. For service providers, the research explores their requirements for managing appointments, tracking payments, and gaining visibility in the market. By identifying these needs, **ONE.APP** can be tailored to provide an optimal user experience for both parties.

**Examine Existing Solutions** A comprehensive review of existing platforms and competitors is essential to understanding what works and where improvements can be made. This research objective involves analyzing the strengths and weaknesses of other home service apps, as well as identifying opportunities to innovate and offer features that go beyond what is currently available. The goal is to learn from existing solutions while crafting a unique offering that differentiates **ONE.APP** in the market.

**Explore the Role of Technology in Enhancing Service Delivery** Another key objective is to investigate how modern web technologies can enhance the process of booking and delivering home services. This involves exploring how technologies like real-time scheduling, location-based matching, secure payment gateways, and user-friendly interfaces can create a seamless experience for both customers and service providers. Research in this area ensures that **ONE.APP** leverages the latest innovations to offer a state-of-the-art platform.

**Assess Trust and Security Concerns** Trust is a critical factor in the home services industry, where customers need to feel confident about letting service providers into their homes. This research objective seeks to examine how verification processes, user reviews, secure payments, and customer support can foster a sense of safety and trust within the platform. It also involves evaluating potential security threats and ensuring that **ONE.APP** meets the highest standards for data protection and secure transactions.

**Measure the Impact of Digital Transformation on Local Service Providers** The final objective is to explore how a digital platform like **ONE.APP** can impact small businesses and independent service providers who may lack digital presence or resources. The research will investigate how digital tools can

empower these providers to expand their customer base, manage their operations more efficiently, and compete in the marketplace. This objective highlights **ONE.APP**'s commitment to supporting local businesses and fostering economic growth through digital innovation.

## 1.4 Organization of Project

This project book is organized into several chapters that outline the development, design, and implementation of the web-based home service application. Each chapter builds on the previous one, offering a comprehensive view of the process from conceptualization to final product. Below is an overview of how the project is structured:

### 1. Introduction

This chapter provides an overview of the home services industry and the motivation behind creating the application. It introduces the key objectives and sets the stage for the rest of the project by explaining the need for a digital platform that connects service providers with customers in an efficient and reliable manner.

### 2. Literature Review

In this chapter, existing home service platforms are analyzed to identify the strengths and weaknesses of current solutions. The literature review covers topics such as user experience design, service provider management, security concerns, and the use of technology to streamline the service delivery process. This research serves as a foundation for the decisions made during the development of the application.

### 3. System Design and Architecture

This section outlines the technical structure of the application. It covers the architecture of the platform, including the front-end and back-end components, database design, and the integration of third-party services. It also details the technologies used, such as React for the user interface, Redux Toolkit for

state management, and the backend frameworks and databases chosen for the project.

#### **4. Features and Functionality**

Here, the core features of the application are discussed in detail. This chapter explains the functionality available to both users and service providers, such as booking services, scheduling appointments, tracking orders, managing profiles, and handling payments. It also discusses additional features like service ratings, secure payment systems, and user notifications.

#### **5. Implementation**

This chapter documents the development process, from setting up the development environment to writing the code for various modules of the application. It provides a step-by-step breakdown of how the different components were built and integrated. Challenges encountered during the development phase and the solutions adopted are also discussed in this section.

#### **6. Testing and Validation**

This chapter focuses on the testing strategies used to ensure the reliability and functionality of the application. It includes unit tests, integration tests, and user acceptance testing (UAT). The chapter also discusses how feedback from initial user trials was incorporated into the final version of the app.

#### **7. Results and Discussion**

In this chapter, the effectiveness of the application is evaluated. Key performance metrics, such as user satisfaction, service provider adoption, and system performance, are analyzed. The results are compared with the initial project objectives to determine how well the application meets its intended goals.

#### **8. Conclusion and Future Work**

The final chapter summarizes the key findings and contributions of the project. It also outlines potential areas for future development, such as the addition of new features, expansion into other service categories, or the use of artificial intelligence to improve service recommendations. The chapter reflects on the

lessons learned throughout the project and suggests directions for ongoing improvement.

## 1.5 Summary

This project focuses on developing a web-based home service application that simplifies the process of connecting customers with professional service providers. The app offers features like easy booking, secure payments, and verified professionals, addressing key challenges in the home services industry. Service providers can manage appointments and payments efficiently, while users enjoy a seamless booking experience.

Built with modern web technologies like React and Redux Toolkit, the application prioritizes user experience and system reliability. Extensive testing ensured its functionality and responsiveness. The project successfully delivers a digital solution that streamlines home services, benefiting both customers and service providers, with future potential for expansion and innovation.

# Chapter 2

## Literature Review

### 2.1 Overview of my project

The home services industry plays a vital role in maintaining residential spaces, yet many customers face challenges when trying to find reliable service providers. This project presents a web-based application designed to bridge the gap between customers and professionals, offering a streamlined platform for booking a variety of home services.

**ONE.APP** is built with the goal of enhancing user experience and operational efficiency for both customers and service providers. The application allows users to easily browse and book services such as cleaning, plumbing, electrical work, and more, all from a single interface. By incorporating features like secure payment processing, real-time scheduling, and customer reviews, the app fosters a sense of trust and reliability.

On the service provider side, the application provides a dedicated dashboard that enables professionals to manage their appointments, communicate with customers, and track payments efficiently. This not only simplifies their workflow but also enhances their visibility in a competitive market.

The project leverages modern web technologies, including React for the front end and Redux Toolkit for state management, ensuring a responsive and user-friendly design. Comprehensive testing and validation processes were implemented to guarantee the app's performance and reliability.

Overall, this project aims to transform the home services sector by creating a user-centric platform that makes accessing and delivering services simpler, more efficient, and more trustworthy.

### **2.1.1 Applications**

The web-based home service application has a wide range of applications that benefit both consumers and service providers. Below are some of the key applications of the platform:

#### **1. Home Service Booking**

The primary application of the platform is to provide a seamless way for customers to book various home services, including cleaning, plumbing, electrical work, and maintenance. Users can easily find and hire professionals based on their specific needs and preferences.

#### **2. Service Provider Management**

The application serves as a comprehensive management tool for service providers. It allows them to create and manage profiles, schedule appointments, track earnings, and communicate with customers, thereby enhancing their operational efficiency.

#### **3. User Reviews and Ratings**

By enabling users to leave reviews and ratings, the application fosters a transparent environment that helps other customers make informed decisions. This feature also incentivizes service providers to maintain high standards of quality and professionalism.

#### **4. Secure Payment Processing**

The platform integrates secure payment gateways, allowing customers to complete transactions easily and safely. This application ensures that both customers and service providers have a secure financial interaction, increasing trust in the platform.

#### **5. Real-Time Notifications**

Users receive real-time notifications about their bookings, appointment confirmations, and service updates. This application keeps customers informed and engaged throughout the service process, enhancing their overall experience.

## 6. Market Insights and Analytics

The application can provide valuable insights and analytics to service providers regarding customer preferences, peak service times, and performance metrics. This data can help businesses refine their offerings and improve their marketing strategies.

## 7. Expansion into Related Services

The platform has the potential for expansion into additional areas, such as offering home improvement services, maintenance packages, or even subscription models for regular services. This adaptability allows the application to grow with the market.

## 8. Support for Local Economies

By connecting local service providers with customers, the application supports small businesses and contributes to local economies. It empowers service professionals by providing them with a digital platform to reach a wider audience.

In summary, the web-based home service application serves multiple purposes, from simplifying the booking process for users to providing valuable tools for service providers. Its applications enhance the overall efficiency and reliability of home services, making it a valuable resource in the industry.

### 2.1.2 Classification

The web-based home service application can be classified based on various criteria, including the types of services offered, user roles, and the operational framework. This classification helps in understanding the structure and functionality of the application. Below are the key classifications:

#### 1. By Type of Services Offered

- **Cleaning Services:** Includes residential and commercial cleaning, deep cleaning, carpet cleaning, and specialized cleaning services.
- **Repair and Maintenance Services:** Covers plumbing, electrical work, HVAC maintenance, appliance repair, and general handyman services.

- **Home Improvement Services:** Encompasses painting, landscaping, remodeling, and renovation services.
- **Health and Wellness Services:** May include home healthcare, elder care, and wellness treatments offered in-home.

## 2. By User Roles

- **Customers:** Individuals or households looking to book home services. They use the application to find and hire service providers, manage bookings, and make payments.
- **Service Providers:** Professionals or companies offering home services. They utilize the platform to manage their profiles, accept bookings, and communicate with customers.
- **Administrators:** Users responsible for overseeing the platform's operations. They manage user accounts, handle customer inquiries, and ensure the smooth functioning of the application.

## 3. By Operational Framework

- **On-Demand Services:** Users can book services as needed, allowing for immediate or same-day service availability.
- **Subscription-Based Services:** Offers regular or recurring services for customers who require ongoing maintenance or assistance.
- **Marketplace Model:** Connects multiple service providers to customers, allowing for comparison and selection based on ratings, reviews, and pricing.

## 4. By Geographic Scope

- **Local Services:** Focused on providing services within a specific geographic area or community, promoting local service providers.
- **Regional Services:** Extending services to a broader region, allowing for more diverse service offerings and provider options.

## 5. By Technology Utilization

- **Mobile Application:** A dedicated mobile app for users to access services on-the-go, providing convenience and ease of use.
- **Web Application:** A responsive web platform accessible from desktops and laptops, offering full functionality for both customers and service providers.

By classifying the application in these ways, it becomes easier to understand its various components and how they work together to provide a comprehensive solution for home services. This classification also aids in future enhancements and the potential expansion of the application into new service categories or markets.

## 2.2 Related Research Works

The development of the web-based home service application is informed by existing research in various fields, including service management, user experience design, and technology adoption in home services. This section highlights key studies and publications that provide a foundation for the project's objectives and features.

### 1. Service Quality and Customer Satisfaction

Research has shown that the quality of service directly impacts customer satisfaction and loyalty. Studies such as those by Parasuraman et al. (1988) emphasize the importance of service quality dimensions (tangibles, reliability, responsiveness, assurance, and empathy) in creating a positive customer experience. This understanding informs the design of the application, ensuring it meets users' expectations.

### 2. Trust in Online Services

The role of trust in online transactions has been extensively studied, particularly in e-commerce. Research by Mayer et al. (1995) highlights the importance of perceived trustworthiness and security in influencing users' willingness to engage with online platforms. Incorporating features such as secure payment gateways, verified reviews, and clear communication channels is crucial to building trust in the home services application.

### **3. Technology Acceptance Model (TAM)**

The Technology Acceptance Model, developed by Davis (1989), provides insights into how users adopt new technologies. It posits that perceived ease of use and perceived usefulness significantly affect users' intentions to use technology. This model guides the design of the application's user interface to ensure it is intuitive and meets users' needs, ultimately promoting higher adoption rates.

### **4. User Experience Design**

Research on user experience (UX) design, such as the work by Norman (2013), emphasizes the importance of creating user-centered designs that enhance usability and satisfaction. Principles from UX research inform the application's interface and functionality, ensuring it is accessible and enjoyable for both customers and service providers.

### **5. Market Trends in Home Services**

Recent studies on market trends reveal a growing demand for digital solutions in the home services industry. Reports from organizations like IBISWorld and Statista indicate a significant shift toward online platforms for service bookings, driven by changing consumer behavior and the need for convenience. Understanding these trends is essential for positioning the application effectively in the market.

### **6. Impact of Digital Platforms on Small Businesses**

Research by Zeng et al. (2020) explores how digital platforms empower small businesses by enhancing visibility, improving customer engagement, and streamlining operations. This insight reinforces the application's goal of supporting local service providers and facilitating their growth in a competitive market.

### **7. Challenges in Service Delivery**

Various studies have addressed the challenges faced by service providers, including scheduling conflicts, payment issues, and communication barriers. Research by Bitner (1990) highlights the significance of managing service delivery

processes to ensure a positive experience. Addressing these challenges through the application's design is critical to its success.

By building upon this related research work, the home service application not only aims to fulfill a market need but also integrates established theories and best practices to create a robust and effective solution for customers and service providers alike.

### **2.3 Summary**

When writing each chapter summary, aim for clarity and conciseness while capturing the essence of the content. Focus on the most important points and avoid unnecessary detail. Each summary should provide readers with a clear understanding of the chapter's contribution to the overall project. When writing each chapter summary, aim for clarity and conciseness while capturing the essence of the content. Focus on the most important points and avoid unnecessary detail. Each summary should provide readers with a clear understanding of the chapter's contribution to the overall project. When writing each chapter summary, aim for clarity and conciseness while capturing the essence of the content.

## Chapter 3

### Proposed System

#### 3.1 Introduction

In today's fast-paced world, the demand for reliable and efficient home services has never been greater. From plumbing and electrical work to cleaning and home maintenance, homeowners often struggle to find trustworthy professionals who can meet their needs in a timely manner. This challenge not only affects the convenience of everyday life but also raises concerns about the quality and reliability of services provided.

To address these issues, this project introduces a web-based home service application designed to streamline the process of connecting customers with service providers. The application, which we will refer to as "the platform," serves as a digital marketplace where users can easily search for, book, and manage various home services, all while ensuring a high level of transparency and trust.

The motivation behind developing this application stems from the growing trend of digital transformation in the service industry. Research indicates that consumers increasingly prefer to utilize online platforms for service bookings due to the convenience, accessibility, and speed they offer. However, many existing solutions still fall short in delivering a user-friendly experience and ensuring service quality.

The primary objective of this project is to create a comprehensive and intuitive platform that caters to the needs of both customers and service providers. By integrating features such as real-time booking, secure payment processing, and user reviews, the application aims to enhance the overall experience for users while empowering service providers to manage their operations effectively.

This project book outlines the development process of the web-based home ser-

vice application, including the research conducted, system design, implementation, and testing phases. It also highlights the potential impact of the application on the home services industry, emphasizing its role in promoting transparency, efficiency, and trust in service delivery.

Through this endeavor, we aspire to revolutionize how home services are accessed and delivered, ultimately contributing to a more efficient and reliable marketplace for both consumers and service professionals.

### **3.2 Proposed System**

The proposed system is a web-based home service application designed to connect customers with service providers efficiently and effectively. The system aims to streamline the process of booking home services while ensuring a high level of user satisfaction and operational efficiency. Below are the key components and features of the proposed system:

#### **1. User-Friendly Interface**

The application features a clean, intuitive interface that allows users to easily navigate through various home services. Customers can quickly search for services, view provider profiles, and read reviews, enhancing their overall experience.

#### **2. Service Provider Profiles**

Service providers can create detailed profiles showcasing their qualifications, experience, and services offered. Profiles include customer ratings and reviews, enabling users to make informed decisions based on previous experiences.

#### **3. Booking and Scheduling System**

The application provides a robust booking system that allows users to schedule appointments in real-time. Customers can select their preferred service, choose a date and time, and receive instant confirmation of their booking.

#### **4. Secure Payment Gateway**

A secure payment processing system ensures that transactions between customers and service providers are safe and reliable. Users can pay for services

directly through the application using various payment methods, including credit/debit cards and digital wallets.

## **5. Real-Time Notifications**

Users receive real-time notifications regarding their bookings, service reminders, and updates on service provider status. This feature keeps customers informed and engaged throughout the service delivery process.

## **6. Rating and Review System**

The application incorporates a rating and review system, allowing customers to provide feedback on the services they receive. This feature not only helps build trust among users but also incentivizes service providers to maintain high standards.

## **7. Admin Dashboard**

An administrative dashboard is included for managing the overall operations of the application. Administrators can monitor user activities, manage service provider accounts, handle customer inquiries, and analyze performance metrics to improve the platform.

## **8. Analytics and Reporting**

The system provides analytics and reporting tools that give service providers insights into their performance, customer preferences, and market trends. This data-driven approach enables providers to make informed decisions and optimize their services.

## **9. Mobile Compatibility**

The application is designed to be responsive and mobile-compatible, allowing users to access the platform from smartphones and tablets. This ensures that customers can easily book services on-the-go, enhancing convenience.

## **10. Scalability and Future Enhancements**

The proposed system is built with scalability in mind, allowing for the addition of new features and services as the market evolves. Potential enhancements

could include the integration of AI-driven recommendations, subscription services, or expansion into new geographical areas.

### **3.3 Summary**

The proposed web-based home service application aims to create a seamless connection between customers and service providers, addressing the challenges faced in the current home services landscape. By leveraging modern technology and focusing on user experience, the system aspires to revolutionize how home services are accessed and delivered, fostering trust, convenience, and satisfaction for all users.

# Chapter 4

## Methodology

### 4.1 Methodology

Methodology in software development is a process or series of processes used in software development. Again, quite broad but that it is things like a design phase, a development phase, a testing phase. It is designed to describe the how of the life cycle of a piece of software. It is also codified communication. So we're actually setting a set of norms between us that say this is how we're going to work and this is how we're going to pass information between each of us in certain ways; whether that is documentation, whether that is discussion, whether that is drawings on paper.

#### 4.1.1 Agile Methodology

Agile methodology is a popular software development approach that emphasizes flexibility, collaboration, and iterative development. It is particularly well-suited for the development of multi-vendor web applications, which can involve complex features and functionality, as well as multiple stakeholders with varying needs and requirements.

Here are some key principles and practices of Agile methodology that can be applied to the development of multi vendor web applications:

- **Continuous collaboration with stakeholders:** Agile development

emphasizes collaboration between developers, product owners, and other stakeholders throughout the development process. This is particularly important for multi vendor web applications, which involve multiple vendors with different requirements and objectives.

- **Iterative development:** Agile methodology involves a series of short development cycles, or sprints, that allow for frequent feedback and

testing. This iterative approach can be particularly useful for multi vendor web applications, as it allows for changes to be made quickly and efficiently.

- **Prioritization of features and functionality:** Agile methodology involves prioritizing the most important features and functionality for development, based on input from stakeholders and other factors such as market demand and technical feasibility. This can be particularly important for multi vendor web applications, which may involve competing priorities and requirements from multiple vendors.

- **Continuous integration and testing:** Agile development emphasizes continuous integration and testing of code, to ensure that new features and functionality are integrated smoothly and efficiently. This can be particularly important for multi vendor web applications, which may involve complex integration of different vendors' software and systems.

- **Agile project management tools:** There are a variety of project management tools available that support Agile development, such as Jira, Trello, and Asana. These tools can be particularly useful for managing the complexity of multi vendor web application development, including tracking tasks and deadlines, prioritizing features, and communicating with stakeholders.

## 4.2 Design

The design of the web-based home service application focuses on creating an intuitive and user-friendly interface that enhances the user experience for both customers and service providers. The design encompasses various aspects, including user interface (UI) design, user experience (UX) considerations, system architecture, and database structure. Below are the key components of the design:

### 1. User Interface (UI) Design

- **Visual Aesthetics:** The UI features a clean and modern aesthetic with a consistent color scheme, typography, and iconography. This design approach enhances visual appeal and usability.
- **Responsive Layout:** The application is designed to be responsive, ensuring optimal viewing across various devices, including desktops, tablets,

and smartphones. This flexibility allows users to access the platform anytime, anywhere.

- **Navigation:** Intuitive navigation is crucial for enhancing user experience. A well-structured menu and search functionality enable users to easily find services and access essential features, such as bookings and account management.

## 2. User Experience (UX) Considerations

- **User-Centric Design:** The design process prioritizes the needs and preferences of users, ensuring that interactions are straightforward and efficient. User feedback and usability testing inform design decisions.
- **Streamlined Booking Process:** The application facilitates a simple and fast booking process. Users can select services, view provider availability, and complete bookings with minimal steps, enhancing convenience.
- **Feedback Mechanisms:** Users can provide feedback on services received, contributing to a dynamic review system. This feature encourages service providers to maintain high-quality standards.

## 3. System Architecture

- **Front-End Development:** Built with React, the front end of the application provides a dynamic and interactive user interface. Components are modular, allowing for easy updates and maintenance.
  - **Back-End Development:** The back end utilizes Node.js and Express.js to handle server-side logic, API requests, and database interactions. This architecture ensures efficient processing of user requests and data management.
4. **Database Structure Data Modeling:** The application employs a relational database (e.g., PostgreSQL) to manage data related to users, service providers, bookings, and payments. Key tables include:

- **Users:** Stores customer and service provider information, including profiles and contact details.
- **Services:** Contains details about various services offered, including descriptions, pricing, and availability.
- **Bookings:** Tracks appointments, including user IDs, service provider IDs, dates, and times.
- **Reviews:** Maintains customer feedback and ratings for service providers.

## 5. Security Features

- **Authentication and Authorization:** The application incorporates robust security measures, including user authentication and role-based access control, to protect user data and ensure secure interactions.
- **Data Encryption:** Sensitive data, such as payment information, is encrypted to enhance security and protect against unauthorized access.
- 

## 4.3 ER Diagram

An Entity-Relationship Diagram (ERD) is an essential tool for designing the database structure of your home service application. It helps to visualize the relationships between entities in the system. Below is a simplified description of the ERD for the web-based home service application:

### 4.3.0.1 Entities and Relationships

#### 1. User

- Attributes: `user_id`, `name`, `email`, `password`, `phone_number`, `address`, `role` (customer or service provider)
- Relationships:
  - A user can have many **Bookings**.

- A user (if service provider) can provide many **Services**.

- A user can leave many **Reviews**.

## 2. Service

- Attributes: `service_id`, `name`, `description`, `price`, `category`, `provider_id` (foreign key from **User**)

- Relationships:

- A service belongs to one **User** (service provider).

- A service can have many **Bookings**.

## 3. Booking

- Attributes: `booking_id`, `booking_date`, `service_date`, `status`, `customer_id` (foreign key from **User**), `service_id` (foreign key from **Service**)

- Relationships:

- A booking is made by one **User** (customer).

- A booking is for one **Service**.

## 4. Review

- Attributes: `review_id`, `rating`, `comment`, `date`, `customer_id` (foreign key from **User**), `service_id` (foreign key from **Service**)

- Relationships:

- A review is written by one **User** (customer).

- A review is for one **Service**.

## 5. Payment

- Attributes: `payment_id`, `amount`, `payment_date`, `booking_id` (foreign key from **Booking**), `payment_method`

- Relationships: A payment is associated with one **Booking**.

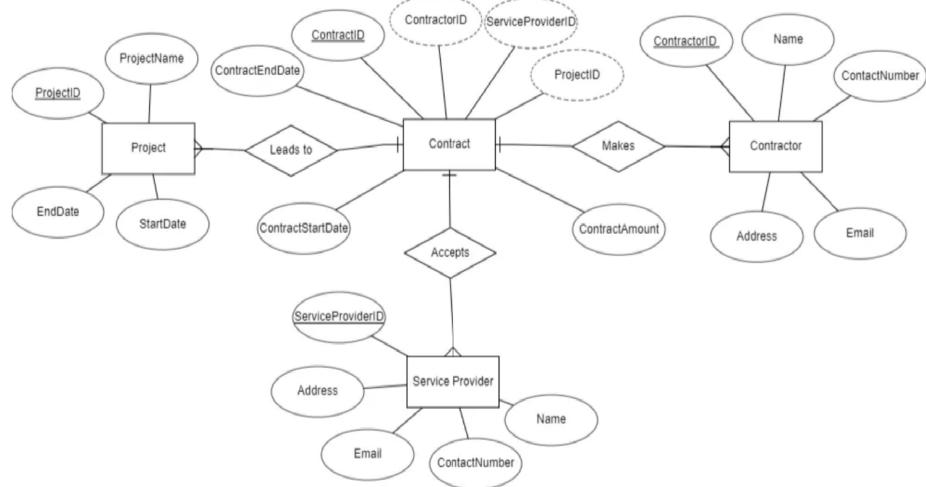


Figure 4.1: ERD

## 4.4 Data Flow Diagram

A Data Flow Diagram (DFD) visually represents how data flows through a system. It illustrates the interactions between external entities, processes, data stores, and data movement in the system. Below is an explanation of a typical for your web-based home service application.

### 4.4.0.1 System Design Overview

1. **Customer** → Register/Login → **User Data**
2. **Customer** Search Service **Service Data**
3. **Customer** Booking **Booking Data**
4. **Service Provider** Booking **Booking Data**
5. **Customer** → Payment → **Payment Data**
6. **Customer** Review **Review Data**
7. **Admin** Manage **User, Service, Booking, Payment, Review Data** The admin can view and manage the entire platform's operations, including user data, services, and bookings.

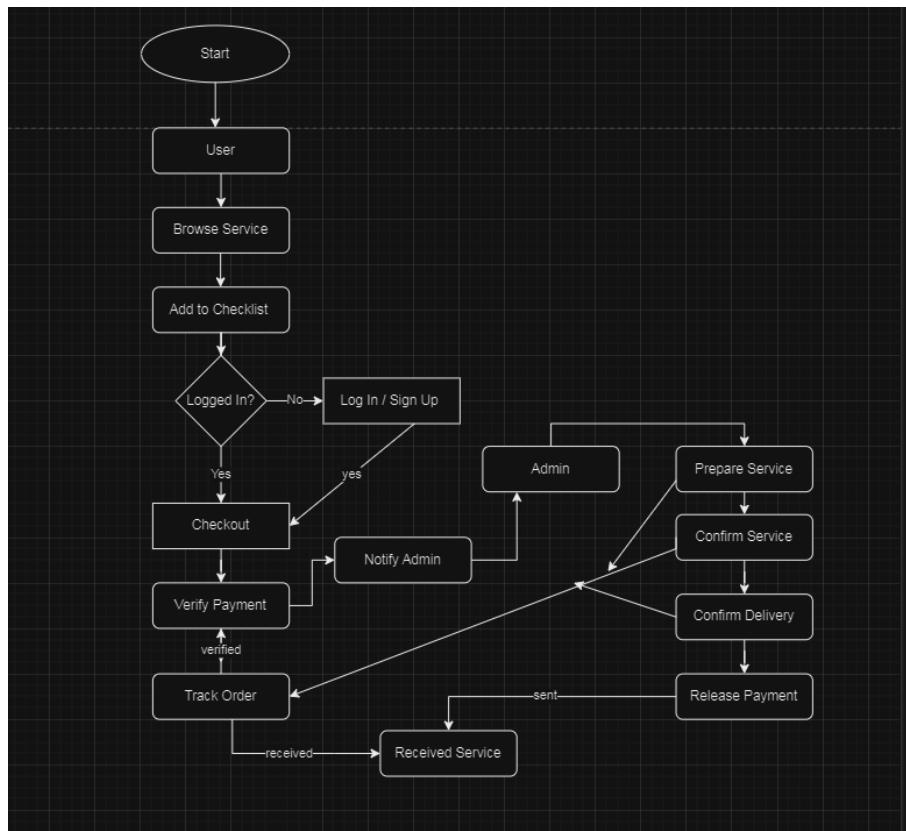


Figure 4.2: Flowchart

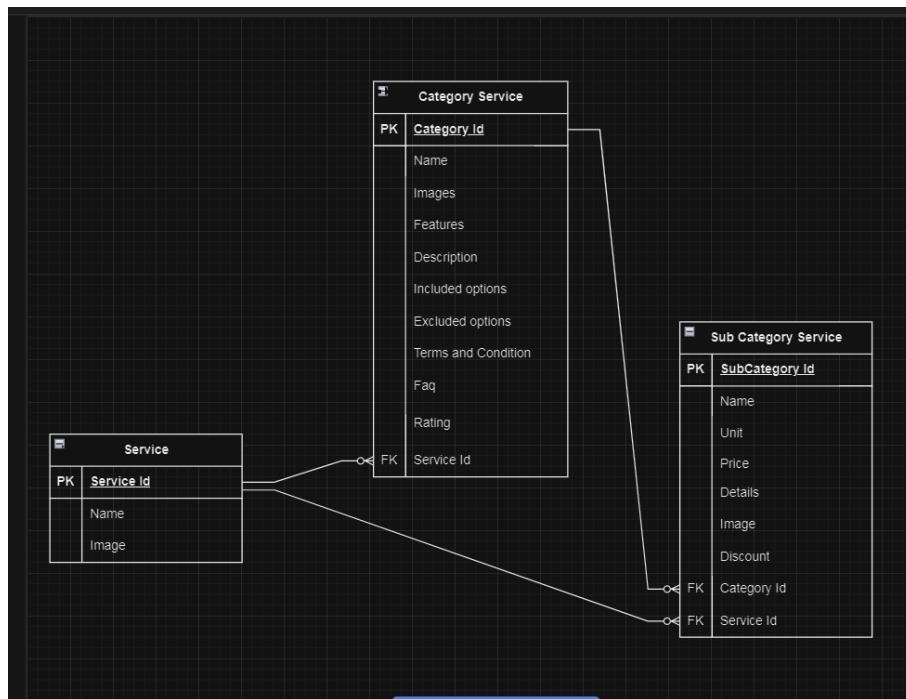


Figure 4.3: Data Modeling

## 4.5 Summary

In this chapter or section of your project in this way, you can provide readers with a clear and concise overview of the entire project, its methodology, findings, and implications. This helps to communicate the essence of your work effectively and enables others to grasp the key insights and contributions of your project. This project focuses on the development of a web-based home service application designed to bridge the gap between customers and service providers. The platform allows users to conveniently search for, book, and manage various home services, such as cleaning, repairs, and maintenance, while ensuring quality through a transparent review system.

# Chapter 5

## Implementation

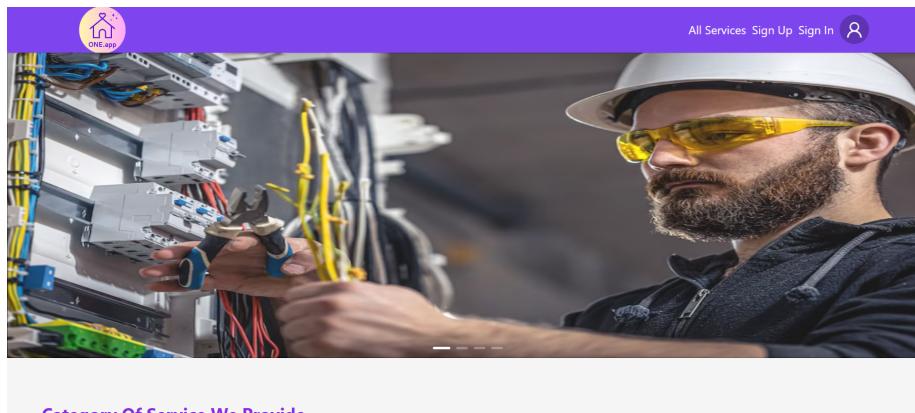


Figure 5.1: Banner

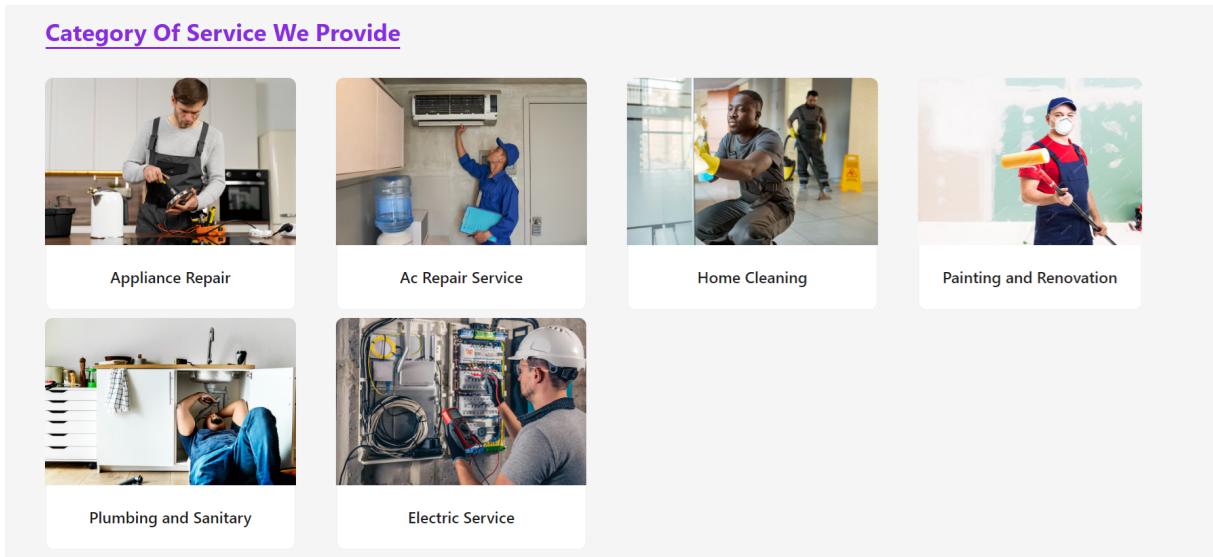


Figure 5.2: Service We Provide

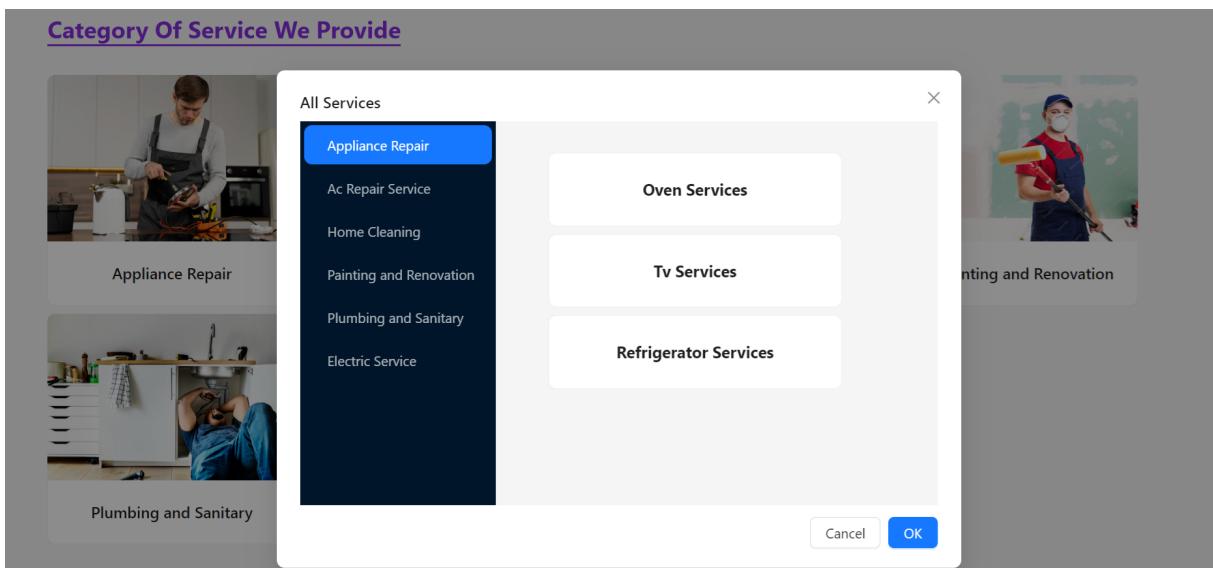
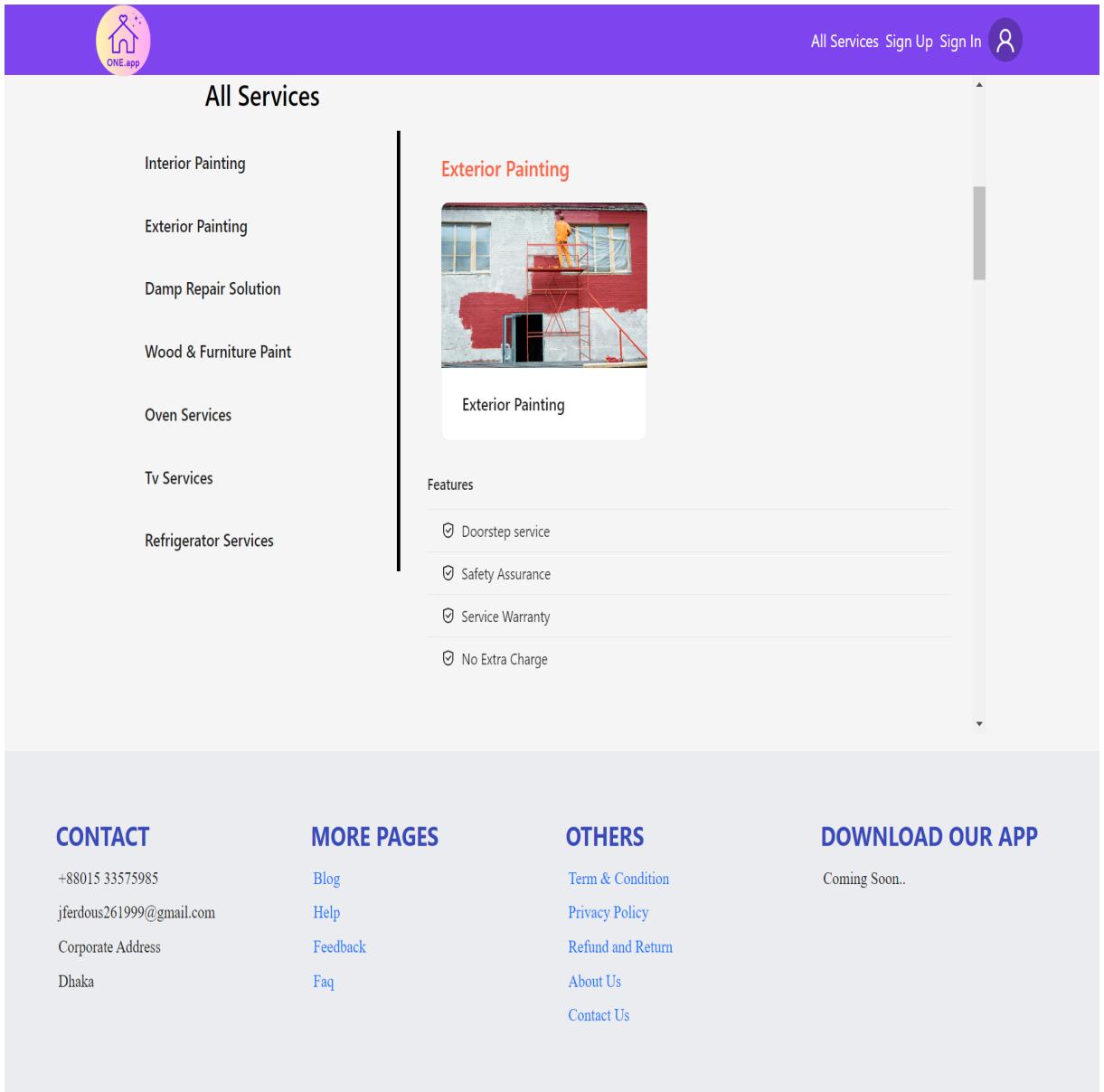


Figure 5.3: Service Modal

**More Of Our Services**

 A worker in orange protective gear and a yellow hard hat is painting a white wall with a roller.	 A worker in orange protective gear and a yellow hard hat is painting the exterior of a grey brick building with red paint, using a roller on a scaffolding.	 A close-up view of a hole in a light-colored wall, showing a blue damp repair solution being applied.	 A close-up of a hand holding a paintbrush, applying brown paint to a piece of wood.
Interior Painting	Exterior Painting	Damp Repair Solution	Wood & Furniture Paint
 A technician in a grey shirt and black overalls is working on an oven, with a multimeter probe inserted into the oven's interior.	 A close-up of a hand holding a black remote control, pointing it towards a television screen displaying a menu.	 A technician in a grey shirt and black overalls is standing next to a refrigerator, looking at it while holding a tool.	
Oven Services	Tv Services	Refrigerator Services	

Figure 5.4: Service Branch



The screenshot shows the 'All Services' page of the ONE.app mobile application. At the top, there is a purple header bar with the ONE.app logo on the left and navigation links 'All Services', 'Sign Up', 'Sign In', and a user icon on the right.

## All Services

Interior Painting

Exterior Painting

Damp Repair Solution

Wood & Furniture Paint

Oven Services

Tv Services

Refrigerator Services

**Exterior Painting**



Exterior Painting

Features

- Doorstep service
- Safety Assurance
- Service Warranty
- No Extra Charge

---

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**DOWNLOAD OUR APP**

Coming Soon..

Figure 5.5: All Service

The screenshot shows a service listing for "Exterior Painting" on the ONE.app marketplace. At the top, there's a purple header bar with the ONE.app logo, a search bar, and navigation links for "All Services", "Sign Up", "Sign In", and a user icon.

The main content area features a large image of a person in an orange jumpsuit painting a building's exterior. Below the image, the service title is "Exterior Painting" and it is categorized under "Painting and Renovation".

Key service details shown include:

- Warranty:** 4 years
- No Discount:**
- Total Rating:** 5 (Since 2023-10-31)

Two service options are listed in a dropdown menu:

- Weather Coat Anti Dirt Pa.. >
- Weather Coat Smooth.. >

The page is divided into several sections:

- Description:** A brief text explaining the service: "Find the best painting service only on ONE.app marketplace. So, why wait and look for a technician here and there. You can find many expert painting at one place. ONE.app offers you a platform to hire experts to repair your color right away!"
- Features:** A list of included services:
  - Doorstep service
  - Safety Assurance
  - Service Warranty
  - No Extra Charge
- Included:**
  - Complete repairing work
  - Damage Coverage
- Excluded:**
  - Price of additional materials or parts (if needed)
  - Transportation cost for carrying new materials/parts
  - Transportation cost for carrying new materials/parts
- Terms And Conditions:**
  - Service Booking:** You have to place order minimum 4 hours prior to the service delivery schedule
  - Repairing Supplies:** Repairing supplies will be carried by the cleaners
  - Safety Measures:** Customer will be solely responsible for their personal material and the safety of household resources.
- CONTACT:**
  - +88015 33575985
  - jferdous261999@gmail.com
  - Corporate Address
  - Dhaka
- MORE PAGES:**
  - Blog
  - Help
  - Feedback
  - Faq
- OTHERS:**
  - Term & Condition
  - Privacy Policy
  - Refund and Return
  - About Us
  - Contact Us
- DOWNLOAD OUR APP:**
  - Coming Soon..

Figure 5.6: Service Details

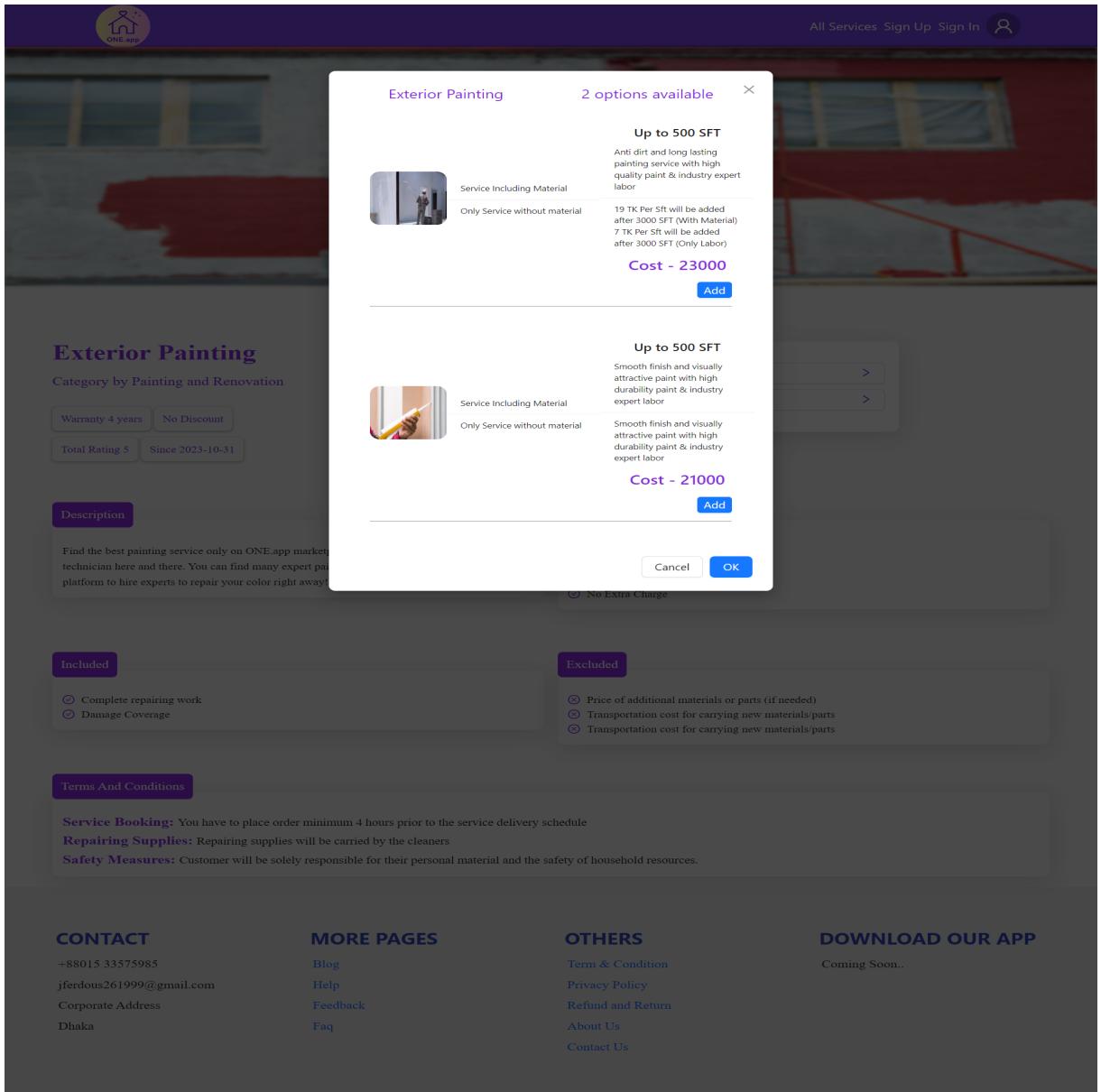


Figure 5.7: Package

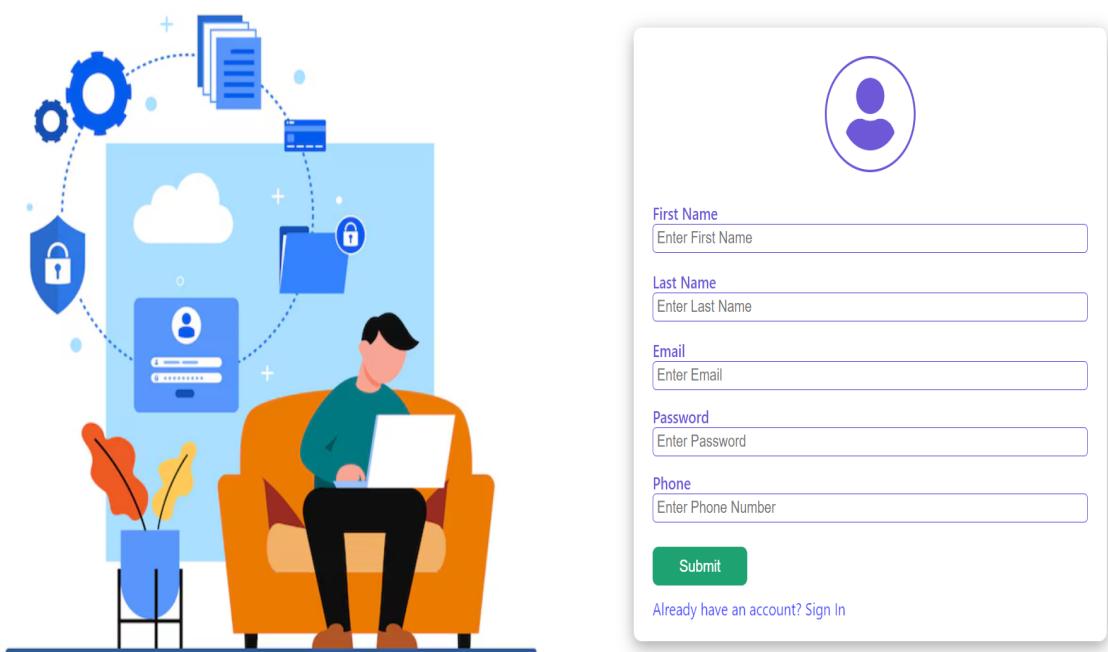


Figure 5.8: Sign Up

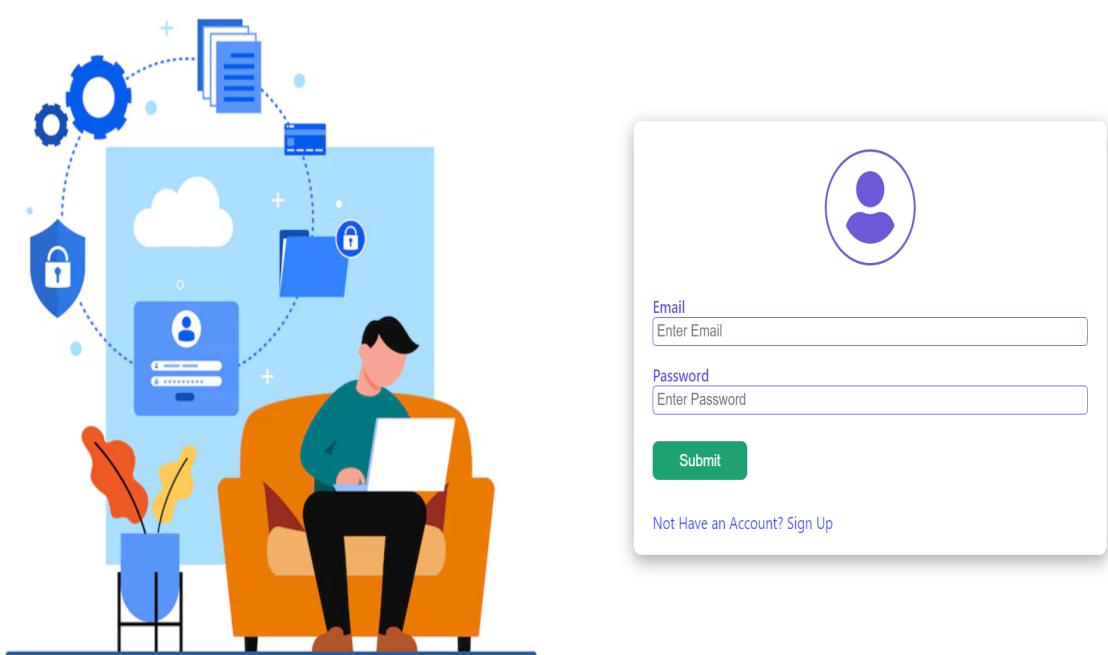


Figure 5.9: Login

The screenshot shows the 'Create Order' page of the ONE.app website. At the top, there's a purple header bar with the 'ONE.app' logo on the left and navigation links 'All Services', 'Sign Up', 'Sign In', and a user icon on the right. Below the header, the main form is divided into three sections: 'Schedule', 'Contact Person', and 'Address'. The 'Schedule' section contains fields for 'Select date' (with a calendar icon) and 'Select a slot' (with a dropdown arrow). The 'Contact Person' section has fields for 'Email' and 'Phone'. The 'Address' section includes fields for 'House No.', 'Road No./Name', 'Block', 'Sector', and 'Area'. A blue 'Place Order' button is located at the bottom of the address section. At the very bottom of the page, there are four columns: 'CONTACT' (with information like phone number, email, address), 'MORE PAGES' (with links to 'Blog', 'Help', 'Feedback', 'FAQ'), 'OTHERS' (with links to 'Term & Condition', 'Privacy Policy', 'Refund and Return', 'About Us', 'Contact Us'), and 'DOWNLOAD OUR APP' (with a 'Coming Soon...' message).

CONTACT		MORE PAGES		OTHERS		DOWNLOAD OUR APP	
+880 1648886671	<a href="#">Blog</a>	<a href="#">Term &amp; Condition</a>	<a href="#">mraful.alam7@gmail.com</a>	<a href="#">Help</a>	<a href="#">Privacy Policy</a>	<a href="#">Corporate Address</a>	<a href="#">Coming Soon...</a>
House-7, Block-D, Section-2, Mirpur,Dhaka	<a href="#">Feedback</a>	<a href="#">Refund and Return</a>		<a href="#">FAQ</a>	<a href="#">About Us</a>		<a href="#">Contact Us</a>

Figure 5.10: Order

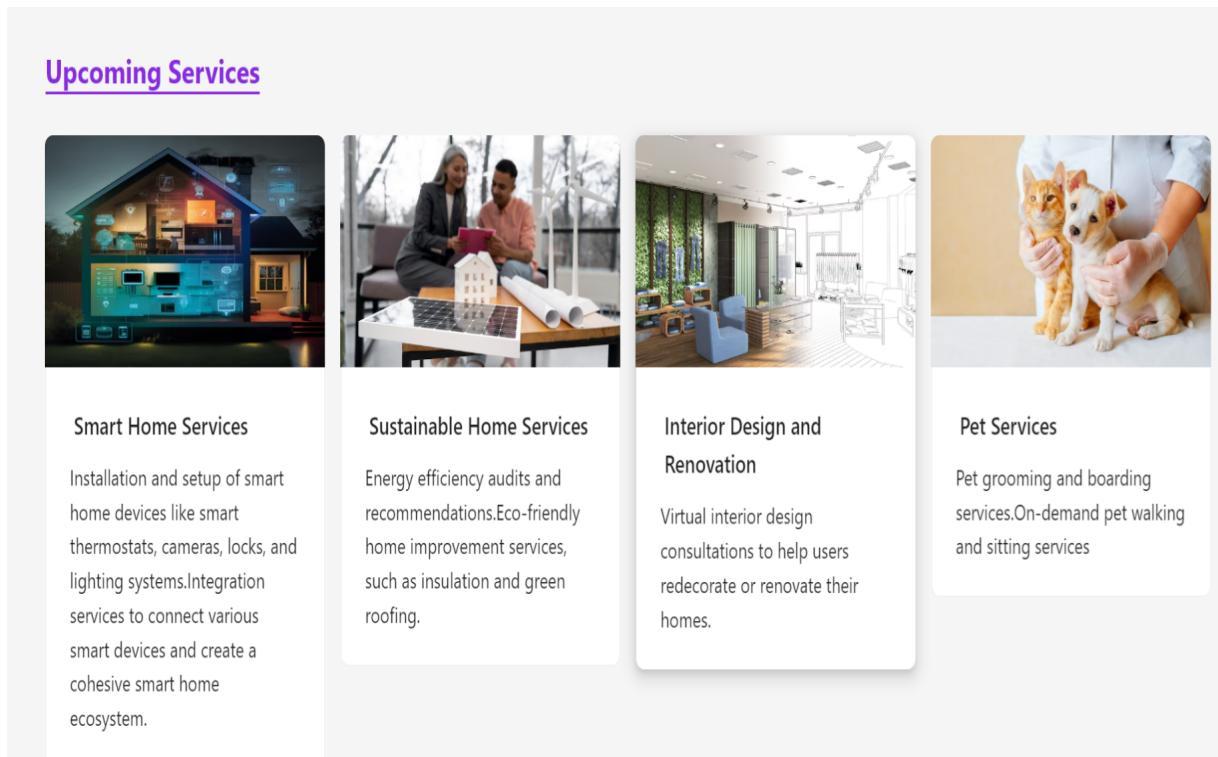


Figure 5.11: Upcoming Service

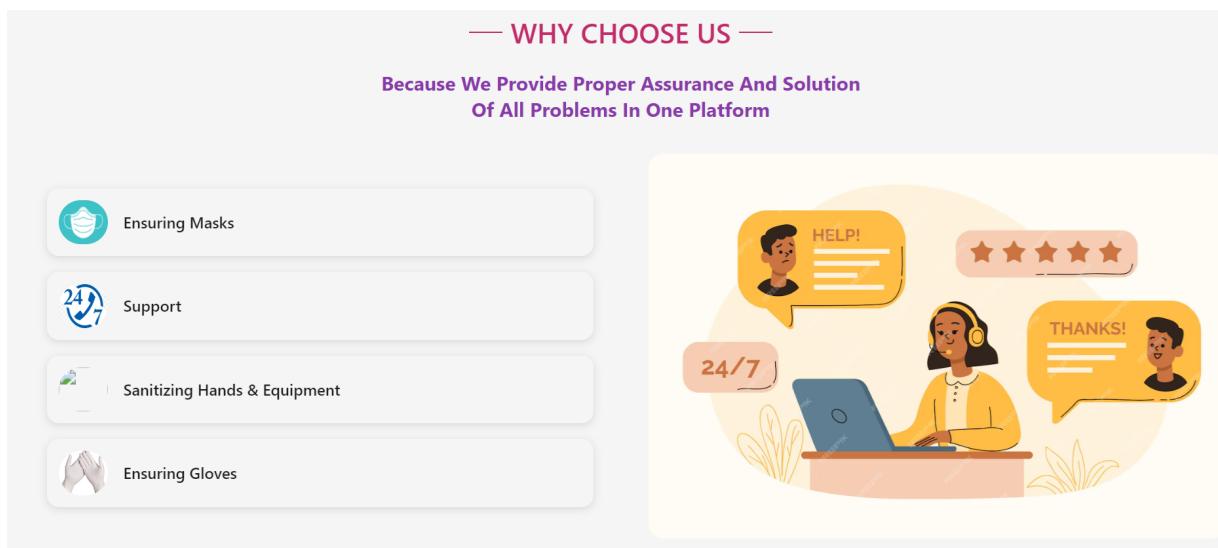


Figure 5.12: Support Section

# Chapter 6

## Conclusion and Future Work

### 6.1 Conclusion

The development of this web-based home service application addresses the increasing demand for reliable and accessible home services by providing a digital platform that connects customers with service providers. By focusing on user experience, operational efficiency, and security, the application simplifies the process of booking services, ensures transparency through reviews and ratings, and offers secure transactions.

Through the integration of real-time booking, a user-friendly interface, and a robust back-end system, this platform not only enhances convenience for users but also empowers service providers to manage their services effectively. The scalable design allows for future expansions, making it adaptable to evolving market needs and technological advancements.

In conclusion, this home service application has the potential to revolutionize how home services are accessed and delivered, offering a streamlined, efficient, and trustworthy solution for both customers and service providers.

### 6.2 Future Work

While the web-based home service application provides a comprehensive solution for connecting customers with service providers, there are several areas that can be enhanced and expanded in future iterations of the platform. Below are some potential directions for future development:

1. **Mobile Application Development**

Expanding the platform to include native mobile applications for iOS and Android would provide a more seamless experience for users. Mobile apps can leverage device-specific features such as push notifications, location-based services, and in-app communication for real-time updates and interactions.

## **2. AI-Driven Service Recommendations**

Implementing artificial intelligence and machine learning algorithms could personalize the user experience by suggesting services based on user behavior, preferences, and location. This would improve customer satisfaction and increase the chances of repeat bookings.

## **3. Subscription and Membership Models**

Introducing a subscription or membership model could offer users exclusive services, discounts, and priority bookings. This would create a new revenue stream and provide added value to customers who frequently use home services.

## **4. Enhanced Communication Tools**

Adding real-time chat or voice communication features between customers and service providers could improve coordination and address inquiries or issues before, during, and after service delivery. This would foster better communication and reduce misunderstandings.

## **5. Geographical Expansion**

The platform can be expanded to cover additional regions and countries, providing localized services in different areas. As the application grows, integrating multi-language support and currency conversion features will be crucial for reaching a global audience.

## **6. Advanced Analytics for Service Providers**

Developing more advanced analytics and reporting tools for service providers would enable them to track their performance, analyze customer feedback, and optimize their services. These tools could offer insights into customer behavior and market trends, helping providers make data-driven decisions.

## **7. Integration with Smart Home Systems**

Future versions of the application could integrate with smart home systems, allowing users to automate certain tasks such as scheduling maintenance for smart appliances. This would align the platform with the growing trend of smart home technologies.

## **8. Improved Security Features**

As the platform grows, enhancing security features such as two-factor authentication (2FA), fraud detection, and advanced encryption will be necessary to protect user data and ensure secure transactions.

## **9. Service Provider Training and Certification**

Introducing a training and certification program for service providers could help ensure that all providers meet a certain quality standard. This would build trust among users and differentiate the platform from competitors by guaranteeing high-quality service providers.