A

Project Report

on

Mr. Taskmaster

submitted for partial fulfillment for the award of

BACHELOR OF TECHNOLOGY

DEGREE

in

Computer Science

By

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May 2024

DECLARATION

We hereby declare that this submission is our own work and that, to the best of our knowledge and belief, it contains no material previously published or written by another person nor material which to a substantial extent has been accepted for the award of any other degree or diploma of the university or other institute of higher learning, except where due acknowledgment has been made in the text.

Name:- Manvendra Kumar, Mayank Gupta, Naman Nagaria

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Date:-

CERTIFICATE

This is to certify that Project Report entitled “Mr. Taskmaster: an on-demand home services platform” which is submitted by Mayank Gupta, Manvendra Kumar, Naman Nagaria in partial fulfillment of the requirement for the award of degree B. Tech. in Department of Computer Science of Dr. A.P.J. Abdul Kalam Technical University, Lucknow is a record of the candidates own work carried out by them under my supervision. The matter embodied in this report is original and has not been submitted for the award of any other degree.

Date:

Mr. Sreesh Gaur
(Assistant Professor)

ACKNOWLEDGEMENT

It gives us a great sense of pleasure to present the report of the B. Tech Project undertaken during B. Tech. Final Year. We owe special debt of gratitude to Professor Sreesh Gaur, Department of Computer Science, KIET, Ghaziabad, for his constant support and guidance throughout the course of our work. His sincerity, thoroughness and perseverance have been a constant source of inspiration for us. It is only his cognizant efforts that our endeavors have seen light of the day.

We also take the opportunity to acknowledge the contribution of Dr. Ajay Kumar Srivastava, Head of the Department of Computer Science, KIET, Ghaziabad, for his full support and assistance during the development of the project. We also do not like to miss the opportunity to acknowledge the contribution of all the faculty members of the department for their kind assistance and cooperation during the development of our project.

Last but not the least, we acknowledge our friends for their contribution in the completion of the project.

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ABSTRACT

This project report describes the creation of an on-demand home services application that connects homeowners with service providers. The app makes it easy to book various services like cleaning, plumbing, and electrical work. Users can search for services, view profiles and reviews of providers, and book appointments. Key features include real-time tracking, secure payments, and a rating system to ensure a smooth user experience.

The development process included market research and user feedback to tailor the app to users' needs. Advanced algorithms match users with suitable professionals based on their needs and location. The report covers the entire development lifecycle, from concept and design to testing and deployment, highlighting the challenges faced and solutions implemented.

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LIST OF ABBREVIATIONS

SDK	Software Development Kit
XML	eXtensible Markup Language
IDE	Integrated Development Environment
APK	Android Package
ADB	Android Debug Bridge
VCS	Version Control System

CHAPTER 1
INTRODUCTION

1.1 Introduction

The project aims to develop an innovative Android application catering to the burgeoning demand for on-demand home services. In today's fast-paced world, individuals are increasingly seeking convenient solutions to meet their household needs efficiently. This application serves as a comprehensive platform, allowing users to seamlessly access a wide array of home services, ranging from cleaning and maintenance to repairs and renovations. By harnessing the power of mobile technology, the application aims to revolutionize the way users engage with domestic services, offering unparalleled convenience, transparency, and reliability. Through this project, we endeavor to address the evolving needs of modern consumers, enhance their quality of life, and establish a prominent presence in the dynamic home services market.

1.2 Project Category

This project falls under the category of **"Android Application Development"** with a focus on on-demand service platforms. It leverages modern technology to facilitate seamless connections between users and home service providers, enhancing convenience and efficiency in managing household tasks.

1.3 Objectives

The project aims to develop an easy-to-use app for booking home services.

The main objectives of our proposed system are as follows:

- Making Booking Easy
- Build Trust and Safety
- Help Service providers
- Improvement with feedback

1.4 Structure of the report

Preliminary Pages:

Declaration: Statement of authenticity by the author(s) regarding the work presented in the report.

Certificate: Confirmation of the completion of the project under specified supervision.

Acknowledgement: Recognition of individuals or organizations that contributed to the project.

Abstract: Brief summary highlighting the objectives, methodology, and key findings of the report.

List of Figures: Enumeration of all figures (diagrams, charts, etc.) included in the report.

List of Tables: Compilation of all tables included in the report for quick reference.

List of Abbreviations: Catalog of abbreviations used throughout the report with their definitions.

Chapter 1: Introduction:

Introduction to Project: Overview of the On-demand Home Services application.

Project Category: Classification of the project within the field of research or application.

Objectives: Clear statement of the project's goals and objectives.

Structure of the Report: Outline of how the report is organized and what each chapter covers.

Chapter 2: Literature Review:

Literature Review: Comprehensive analysis of existing literature related to Android application, On-demand home services platforms.

Research Gaps: Identification of gaps in current research that the project aims to address.

Problem Formulation: Definition and articulation of the specific problem being tackled by the project.

Chapter 3: Proposed System:

Proposed System: Description of the designed On-demand Home services application.

Unique Features of the System: Highlighting innovative aspects and functionalities of the proposed system.

Chapter 4: Requirement Analysis and System Specification:

Feasibility: Assessment of the feasibility (technical, economic, operational) of the proposed system.

Software Requirement Specification Document: Detailed specifications including data, functional, performance, maintainability, and security requirements.

SDLC Model to be Used: Selection and justification of the Software Development Life Cycle (SDLC) model.

System Design: Detailed design aspects including data flow diagrams, use case diagrams, and database design (ER diagrams).

Chapter 5: Implementation, Testing, and Maintenance:

Introduction to Languages, Tools, and Technologies Used: Overview of technologies employed for system implementation.

Testing Techniques and Test Cases Used: Description of methodologies and test cases used for system validation.

Chapter 6: Results and Discussions:

Description of Modules with Snapshots: Detailed breakdown of system modules with visual representations.

Key Findings of the Project: Presentation and analysis of project outcomes and findings.

Brief Description of Database with Snapshots: Overview of the project's database structure with visual aids.

Chapter 7: Conclusion and Future Scope:

Conclusion: Summary of project achievements, implications, and contributions.

Future Scope: Potential areas for further research, development, or enhancement of the proposed system.

References: Comprehensive list of all sources referenced or cited throughout the report to acknowledge scholarly contributions.

Appendices: Includes additional materials such as research paper acceptance proof, published research paper, or patent publication proof, if applicable.

CHAPTER 2

LITERATURE REVIEW

2.1 Literature Review

Reference	Year	Author(s)	Key Findings
[1]	2020	Hegde Sharaj Bhaskar Shyamala, Krishnamoorthy Rao, Padmanabha Bhandarakar, Prateek Prakash Vetekar, Geetha Laxmi	The rising demand for home services in Asia is driven by an aging population, but other consumer groups also benefit from new offerings. Services can be provided in person or unattended, with unattended reception boxes being convenient for customers and cost-effective for logistics providers
[2]	2023	Miss. Pallavi Shejwal, Rohit Mane, Sahil Thorat, Diapk More, Gaurav Suryawanshi	The research concludes that the Home Service app "Fixify" effectively addresses the challenge of finding trustworthy service providers with its diverse services, secure payments, and user-friendly features like provider ratings and pricing. This highlights the importance of technology in improving service quality in the household repairs and maintenance industry.
[3]	2023	Prof. Mr. A.T. Bhosale, Mr. G.V Kale, Mr. S.S. Dange, Mr. A.D. Mane, Mr. T.D. Sawant	The proposed At-Your-Service Mobile Application provides an alternative for skilled workers to find job opportunities. This app connects skilled workers with customers needing services such as electrical work, plumbing, automotive repair, and other home services. The system's

			implementation, including development and testing, takes 90 days. Revenue is primarily generated from commissions and quarterly membership fees from the skilled workers.
[4]	2022	Kesar Gadiya, Tanishq Kundiya, Avadooth Dhumal, Akshad Kalashetti, Prof. Sunil Sonawane	The Booking Home and Individual Services application offers frequently used home services, adapting to the changing needs of users. The system can easily expand to include more services and payment methods. Currently, it provides services like handyman, babysitter, driver, and technician, and can extend to include mobile and computer repair, laundry, and catering. The payment system, which now supports PayPal, can also be expanded to include Visa payments.
[5]	2018	Neha Verma, Sarita Kansal, Huned Malvi	Cab applications have significantly eased daily life, with some apps providing drivers within five minutes of booking. Passengers expect a safe and comfortable journey and these app-based services should honor that expectation. Investing in safety measures is crucial, as fulfilling social responsibility will benefit these companies in the long run.
[6]	2016	Mrs. Prachi Sasankar, Mrs. Usha Kosarkar	Android, as a comprehensive, open, and free mobile device platform, has quickly become the most popular mobile operating system due to its

			powerful functionality and excellent user experience. This article provides a detailed introduction to the Android application framework and the working principles of Android applications. Finally, a music player on the Android platform is presented as an example to illustrate this mechanism.
[7]	2022	Sharma Sagar, Gosai Dron, Gaikwad Ritesh, Baviskar Jay	Android, being a full, open, and free mobile device platform, has swiftly evolved into the most popular mobile operating system due to its robust features and superior user experience. This article thoroughly explains the Android application framework and the principles behind Android applications. Additionally, it uses a music player on the Android platform as a practical example to demonstrate these concepts.
[8]	2016	Akshay Singh, Sakshi Sharma, Shashwat Singh	This paper explores Android's integration with XML, JSON, and API using Java, detailing the development environment setup and the emulator. It discusses Android Application Development's focus, versioning, and the advantages of the Android software environment for developers. Looking ahead, Android promises vast possibilities with its continuous evolution, fostering a new era of open-source sharing and mobile innovation.
[9]	2022	P.Neelaveni, Tarun.S, Santosh.M, Vignesh.R	In the modern era of rapid technological advancement, people

			increasingly seek convenience and efficiency to meet their quality of life expectations. This system offers a solution for home services, efficiently connecting service providers with individuals seeking assistance, thereby ensuring regular job opportunities and fair compensation, ultimately leading to job satisfaction.
[10]	2016	Sheetal Bandekar, Avril D'Silva	The 'Domestic Android Application for Home Services' utilizes cutting-edge technologies such as Android SDK, Eclipse, Java, and MySQL for development. Offering electrical, plumbing, and carpentry services, it stands out from 'FacilityKart' by dynamically assigning the nearest service provider using GPS, enhancing its dynamism, effectiveness, and efficiency.

TABLE 2.1 Literature Review

2.2 Research Gaps

Reference	Year	Author(s)	Research Gap
[1]	2020	Hegde Sharaj Bhaskar Shyamala, Krishnamoorthy Rao, Padmanabha Bhandarakar, Prateek Prakash Vetekar, Geetha Laxmi	The research gap lies in investigating the specific challenges and opportunities within the burgeoning home services sector, particularly in Asian markets experiencing a surge in demand due to demographic shifts. While highlighting the convenience of unattended service delivery options, such as reception boxes,

			and the interests of stakeholders in new services and cost savings, there remains a need to delve deeper into factors influencing consumer preferences and service provider dynamics within this evolving landscape.
[2]	2023	Miss. Pallavi Shejwal, Rohit Mane, Sahil Thorat, Diapk More, Gaurav Suryawanshi	The research gap lies in exploring the specific challenges and opportunities within the burgeoning home services sector, particularly in Asian markets experiencing a surge in demand due to demographic shifts. While highlighting the convenience of unattended service delivery options, such as reception boxes, and the interests of stakeholders in new services and cost savings, there remains a need to delve deeper into factors influencing consumer preferences and service provider dynamics within this evolving landscape.
[3]	2023	Prof. Mr. A.T. Bhosale, Mr. G.V Kale, Mr. S.S. Dange, Mr. A.D. Mane, Mr. T.D. Sawant	The research gap lies in evaluating the effectiveness and scalability of the proposed At-Your-Service Mobile Application in addressing the challenges faced by skilled workers in accessing job opportunities and connecting with customers for home services. While the system's implementation timeline and revenue model are outlined, further investigation is needed to understand its impact on job accessibility, service quality, and user satisfaction, as well as potential barriers to adoption and long-

			term sustainability.
[4]	2022	Kesar Gadiya, Tanishq Kundiya, Avadooth Dhumal, Akshad Kalashetti, Prof. Sunil Sonawane	The research gap lies in exploring the specific challenges and opportunities within the expanding home services sector, particularly regarding the scalability and adaptability of booking applications to meet evolving user needs. While the current system offers a range of services and payment methods, further investigation is needed to understand how it can effectively accommodate additional services, enhance payment options, and maintain user satisfaction amidst changing market dynamics and technological advancements.
[5]	2018	Neha Verma, Sarita Kansal, Huned Malvi	The research gap lies in investigating the specific challenges and opportunities within the burgeoning home services sector, particularly in Asian markets experiencing a surge in demand due to demographic shifts. While highlighting the convenience of unattended service delivery options, such as reception boxes, and the interests of stakeholders in new services and cost savings, there remains a need to delve deeper into factors influencing consumer preferences and service provider dynamics within this evolving landscape.
[6]	2016	Mrs. Prachi Sasankar, Mrs. Usha Kosarkar	The research gap exists in exploring the implications of Android's rapid evolution and widespread adoption, particularly in terms of its impact on user experience

			and developer practices. While the article provides detailed insights into the Android application framework and principles, there is a need for further examination of how these aspects influence the development of innovative features and the overall ecosystem of Android applications.
[7]	2022	Sharma Sagar, Gosai Dron, Gaikwad Ritesh, Baviskar Jay	The research gap lies in delving deeper into the specific challenges or limitations within the rapid evolution of Android as the dominant mobile operating system, particularly in terms of addressing potential gaps in its robust features and user experience. While the article provides a comprehensive overview of the Android application framework and principles, further investigation is needed to understand how these aspects impact user satisfaction and developer engagement.
[8]	2016	Akshay Singh, Sakshi Sharma, Shashwat Singh	The research gap lies in exploring the comprehensive functionality of Android in conjunction with XML, JSON, and APIs, alongside Java, and detailing the creation of a development environment and emulator (AVD). While addressing the focus of Android Application Development and its evolution through different versions and SDK advancements, the paper emphasizes developers' utilization of open-source APIs. It underscores the advantages of

			the Android software environment for developers and anticipates a broad future scope for Android, highlighting its transformative impact on open-source software sharing and the widespread adoption of mobile devices. However, the paper lacks a detailed examination of potential challenges or limitations within the Android development landscape, presenting an opportunity for further research in this area.
[9]	2022	P.Neelaveni, Tarun.S, Santosh.M, Vignesh.R	The research gap lies in addressing the increasing demand for quality of life and efficiency in home services amidst rapid technological advancement. This system offers a solution by efficiently connecting service providers with users seeking home services, potentially providing regular job opportunities, fair compensation, and job satisfaction.
[10]	2016	Sheetal Bandekar, Avril D'Silva	The research gap lies in the utilization of state-of-the-art technologies like Android SDK, Eclipse, Java, and MySQL for the development of the "Domestic Android Application for Home Services." This application offers electrical, plumbing, and carpentry services, distinguishing itself from existing solutions like "FacilityKart" by employing GPS to dynamically assign the nearest service provider based on the user's location, thus enhancing its dynamism and efficiency.

2.3 Problem Formulation

The problem formulation of the project revolves around addressing the inefficiencies and inconvenience inherent in accessing home services through traditional methods. Despite the increasing demand for on-demand services, users often encounter challenges such as difficulty in finding reliable service providers, lack of transparency in pricing and service quality, and inconvenience in scheduling appointments. This project seeks to tackle these issues by developing an intuitive Android application that streamlines the process of booking home services. By leveraging technology, including AI-driven recommendations, blockchain-enabled trust mechanisms, and augmented reality features, the application aims to provide users with a seamless and transparent platform for accessing a wide range of home services. The overarching goal is to enhance user experience, improve service quality, and ultimately revolutionize the way individuals engage with domestic services in today's fast-paced world.

CHAPTER 3
PROPOSED SYSTEM

3.1 Proposed System

Proposed System for Customers:

1. User Registration and Authentication: Customers can create accounts by providing necessary details like name, email, and password. They can then log in securely to access the platform.
2. Service Listings and Search: Customers can browse through a comprehensive list of available services such as cleaning, plumbing, and electrical work. They can search for specific services based on their requirements and preferences.
3. Booking and Scheduling: Customers can select their desired service, choose a convenient time slot, and book appointments with service providers. The system will handle scheduling conflicts and provide confirmation notifications to customers.
4. Secure Payments: Customers can make secure online payments for services rendered, using various payment methods like credit/debit cards or digital wallets.
5. Rating and Review System: After the service is completed, customers can rate and leave feedback for the service provider. This helps maintain service quality and builds trust within the community.
6. Profile Management: Customers can manage their profiles, including personal information, preferences, and service history. They can also view their upcoming and past bookings.
7. Notifications and Alerts: The system will send timely notifications and alerts to customers regarding booking confirmations, reminders, and updates on service status.

Proposed System for Service Providers:

1. Service Provider Registration and Authentication: Service providers can create accounts by providing necessary details like name, email, and password. They can then log in securely to access the platform.
2. Service Offerings and Availability: Service providers can list the services they offer, along with their availability schedule. They can specify details like service types, pricing, and service areas.

3. Booking Management: Service providers can view incoming booking requests, accept or reject them based on their availability, and manage their appointment schedule.

4. Real-Time Updates: Service providers receive real-time updates on new bookings, changes in appointment status, and customer feedback.

5. Earnings and Payments: Service providers can track their earnings, view payment history, and receive payouts securely through the platform.

6. Profile Management: Service providers can manage their profiles, including updating their service offerings, availability, and contact information.

7. Notifications and Alerts: The system will send timely notifications and alerts to service providers regarding new booking requests, changes in appointment status, and other important updates.

3.2 Unique Features of this system

Unique Features of the Proposed System:

1. Built-in Chat: Customers and service providers can chat directly within the app for easy communication and coordination.

2. Customizable Services: Customers can personalize their service packages according to their preferences, ensuring a tailored experience.

3. Predictive Maintenance Alerts: The system sends alerts to customers for proactive maintenance of appliances and systems based on usage patterns.

4. Community Recommendations: Customers can share positive experiences and recommend trusted providers to others within the app.

CHAPTER 4
REQUIREMENT ANALYSIS AND SYSTEM SPECIFICATION

4.1 Feasibility Study

4.1.1 Technical Feasibility

1. Compatibility with Existing Technology: The proposed system leverages widely used technologies such as Android Studio, Kotlin/Java programming languages, and the Android SDK, ensuring compatibility with existing development tools and frameworks. This compatibility streamlines the development process and allows for seamless integration with other systems or platforms.

2. Scalability and Performance: The system architecture is designed to be scalable, capable of handling a growing user base and increasing volumes of service requests without compromising performance. Utilizing cloud-based infrastructure and scalable databases enables the system to adapt to changing demands and maintain responsiveness even during peak usage periods.

3. Integration of Advanced Features: The feasibility of integrating advanced features such as real-time tracking, augmented reality visualization, and predictive maintenance alerts depends on the availability of relevant APIs, libraries, and development expertise. Conducting thorough research and prototyping can help assess the technical feasibility of implementing these features within the project timeline and resource constraints.

4.1.2 Economic Feasibility

1. Cost of Development: The economic feasibility of the project hinges on the initial investment required for development, including expenses for hiring developers, purchasing software licenses, and acquiring necessary hardware infrastructure. Conducting a comprehensive cost analysis to estimate development expenses and comparing them against the projected return on investment (ROI) will help determine the viability of the project from an economic standpoint.

2. Revenue Generation Opportunities: Evaluating potential revenue streams such as service fees, subscription plans, or commission-based models is essential to assess the economic feasibility of the project. Conducting market research to understand

customer preferences, pricing trends, and competitive landscape will provide insights into revenue generation opportunities and help formulate a sustainable business model.

3. Market Demand and Growth Potential: Analyzing market demand for on-demand home services and projecting future growth potential will help gauge the economic feasibility of the project. Factors such as demographic trends, consumer behavior, and market saturation should be considered to assess the viability of capturing a significant market share and sustaining business growth over time.

4.1.3 Operational Feasibility

1. User Adoption and Acceptance: Assessing the willingness of customers and service providers to adopt the new on-demand home services platform is crucial for operational feasibility. Conducting surveys, focus groups, or pilot tests to gather feedback and gauge user acceptance can help identify potential challenges and refine the platform to better meet user needs and expectations.

2. Availability of Service Providers: Ensuring an adequate pool of service providers available to meet customer demand is essential for operational feasibility. Conducting market research to identify potential service providers, evaluating their availability, qualifications, and service offerings, and establishing partnerships or recruitment strategies to onboard them onto the platform is necessary to ensure sufficient service coverage and timely fulfillment of customer requests.

4.2 Software Requirement Specifications

4.2.1 Data Requirement

The data requirements for the project encompass various categories essential for its functionality and user experience. Firstly, user data is crucial, including basic information such as name, contact details, and location, facilitating service bookings and effective communication between users and service providers. Service provider data is equally vital, encompassing qualifications, certifications, and reviews to ensure transparency and reliability in the selection process. Transaction data plays a pivotal role, recording details of service bookings, payments, and feedback to maintain a comprehensive service history and improve service quality over time. Geographic data is necessary to optimize service allocation and routing, utilizing addresses and coordinates to match users with nearby service providers efficiently. Lastly, preference data is essential for personalization, capturing user preferences and past service history

to tailor recommendations and enhance the overall user experience, ensuring satisfaction and loyalty to the platform.

4.2.2 Functional Requirement

The functional requirements of the project entail user registration and authentication for secure access, service booking functionalities allowing users to select and confirm services, and service provider management tools for administrators. A feedback and rating system allows users to provide input on service quality, and a notification system keeps users informed about booking status. Finally, an admin dashboard provides administrators with oversight and management capabilities for user accounts, service providers, and system performance

4.2.3 Performance Requirement

The performance requirements of the project demand a highly responsive and scalable system capable of handling concurrent user requests efficiently. This necessitates optimizing loading times for the application and minimizing latency during service bookings and interactions. The system should be able to accommodate a large number of users simultaneously without experiencing degradation in performance. Response times for user actions, such as booking confirmations and service provider selections, should be kept to a minimum to ensure a seamless user experience. Additionally, the application should be designed to scale horizontally to handle increasing user traffic and service demand effectively. Continuous monitoring and optimization of system performance are essential to meet user expectations and maintain high levels of satisfaction.

4.2.4 Maintainability Requirement

The project must prioritize maintainability to ensure long-term viability and adaptability. This involves designing clean, modular code with clear documentation to facilitate ease of understanding and modification by future developers. Implementing coding standards and best practices, conducting regular code reviews, and establishing version control practices will promote consistency and facilitate collaborative development efforts. Additionally, incorporating automated testing frameworks and continuous integration practices will streamline the testing and deployment process, enabling quick identification and resolution of issues. Regular updates and maintenance cycles should be planned to address evolving user needs, technological advancements,

and security vulnerabilities, ensuring the sustainability and relevance of the platform over time.

4.2.5 Security Requirement

Security is paramount in the project, necessitating robust measures to safeguard user data, financial transactions, and system integrity. This includes implementing encryption protocols to protect sensitive information during transmission and storage, as well as enforcing stringent authentication mechanisms to prevent unauthorized access to user accounts and system resources. Regular security audits and vulnerability assessments should be conducted to identify and address potential threats or weaknesses in the system. Furthermore, proactive measures such as intrusion detection systems and real-time monitoring are essential to detect and mitigate security breaches promptly. Overall, a comprehensive approach to security is crucial to instill user trust and confidence in the application.

4.3 SDLC Model used

The Software Development Life Cycle (SDLC) model used for the project is the Agile methodology. Agile is chosen for its iterative and incremental approach, allowing for flexibility and adaptability to changing requirements throughout the development process. This model enables frequent collaboration between developers, stakeholders, and end-users, facilitating rapid feedback and iteration cycles. By breaking down the project into smaller, manageable increments known as sprints, Agile promotes continuous improvement and delivery of working software, ensuring that features are delivered incrementally and prioritized based on user feedback and business needs. This approach is well-suited for dynamic projects like mobile application development, where requirements may evolve over time, and responsiveness to change is critical for success.

The development of our project follows the Agile SDLC model to ensure effective and efficient project development. The six steps involved are:

- **Requirements Analysis:** Gathering and prioritizing user and system requirements.
- **Planning:** Defining tasks, timelines, and resources needed for the project.
- **Design:** Creating the system architecture and detailed design specifications.
- **Develop:** Writing and compiling the code to build the system.
- **Release:** Deploying the system for user testing and feedback.

- **Track and Monitor:** Continuously observing system performance and making necessary improvements.

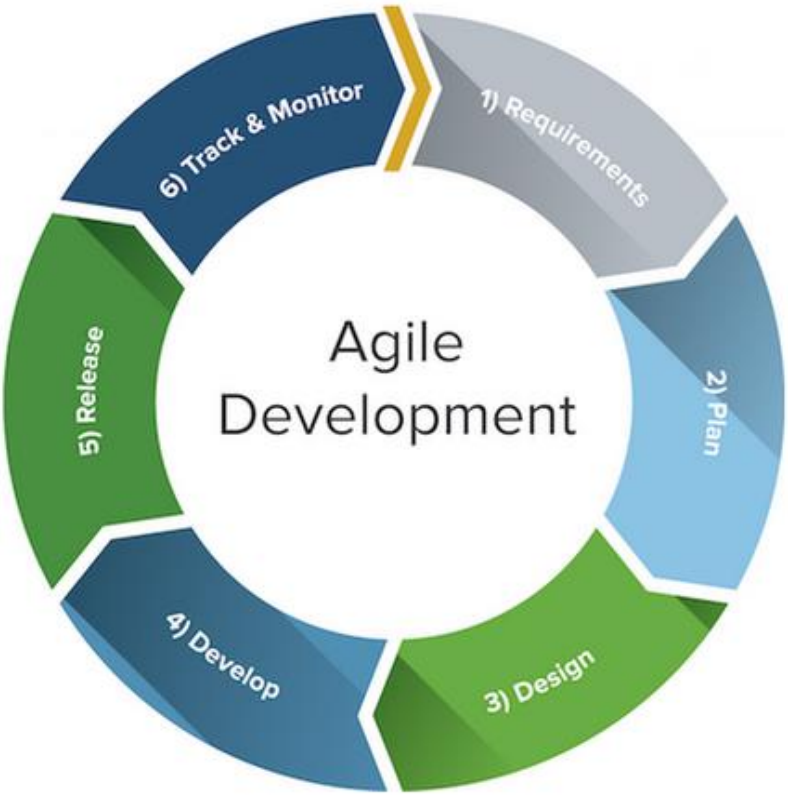

Fig 4.1 Agile (SDLC Model)

While Agile is known for its iterative and incremental approach, it is important to note that it does not follow a strictly sequential development process like the waterfall model. Instead, Agile emphasizes adaptability, responsiveness to change, and continuous improvement, making it an ideal choice for dynamic and innovative projects.

4.4 System Design

4.4.1 Data Flow Diagram

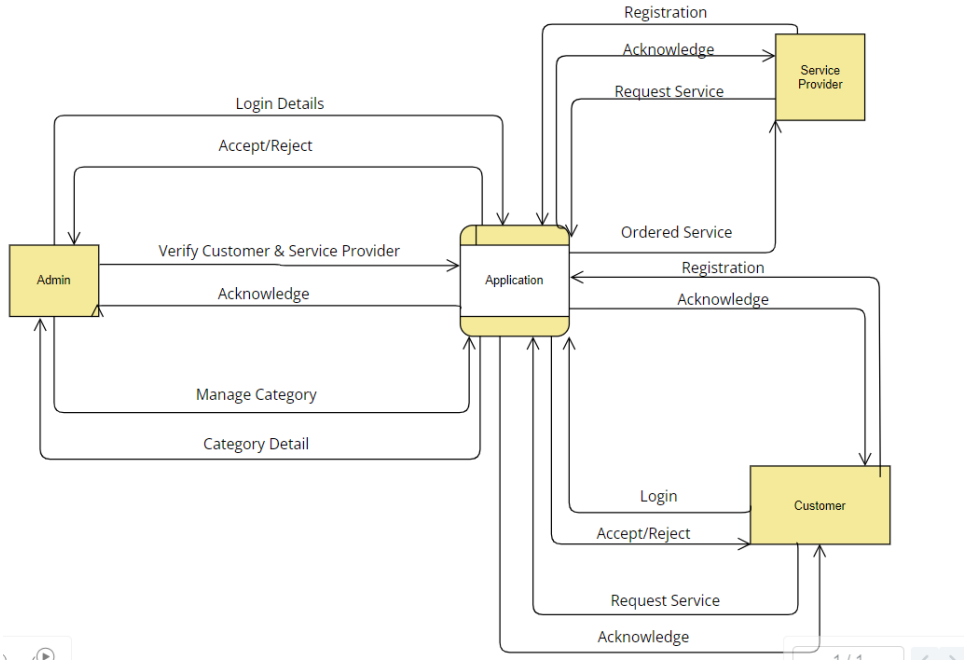

FIG 4.1 DFD Level 0

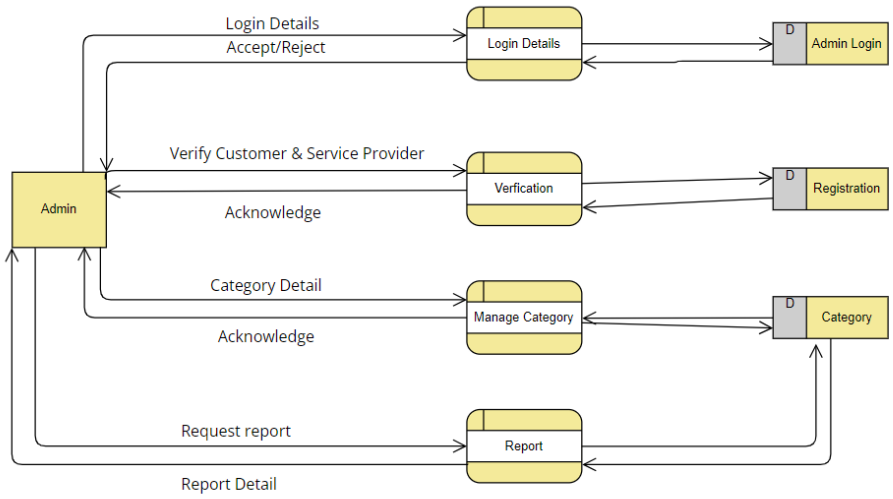

FIG 4.2 DFD Level 1 – Admin

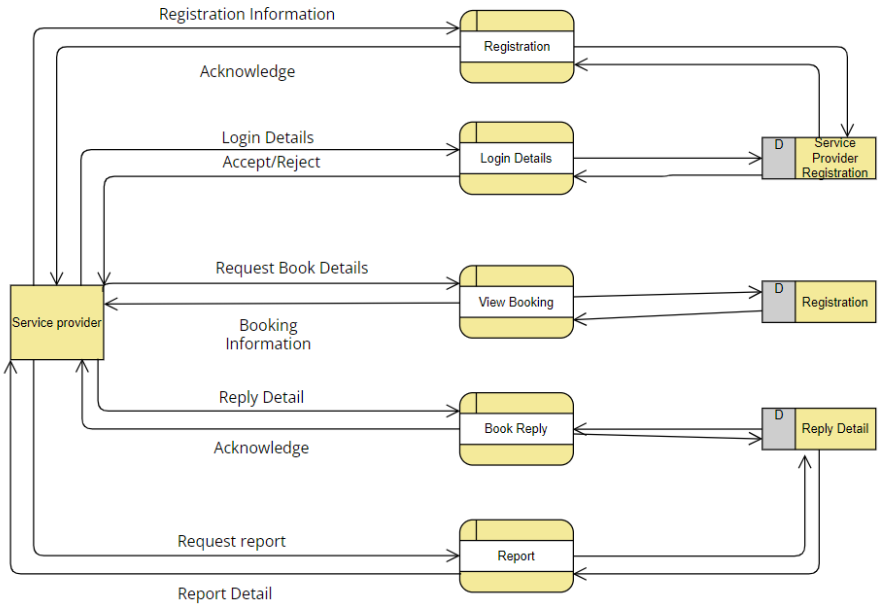

FIG 4.3 DFD Level 1 – Service Provider

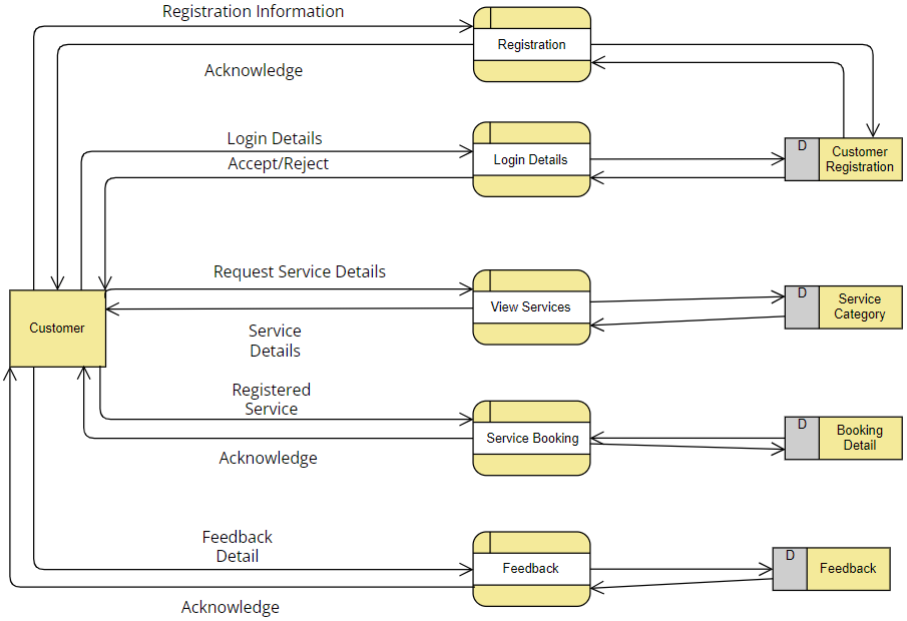

FIG 4.4 DFD Level 1 – Customer

4.4.2 Use Case Diagrams

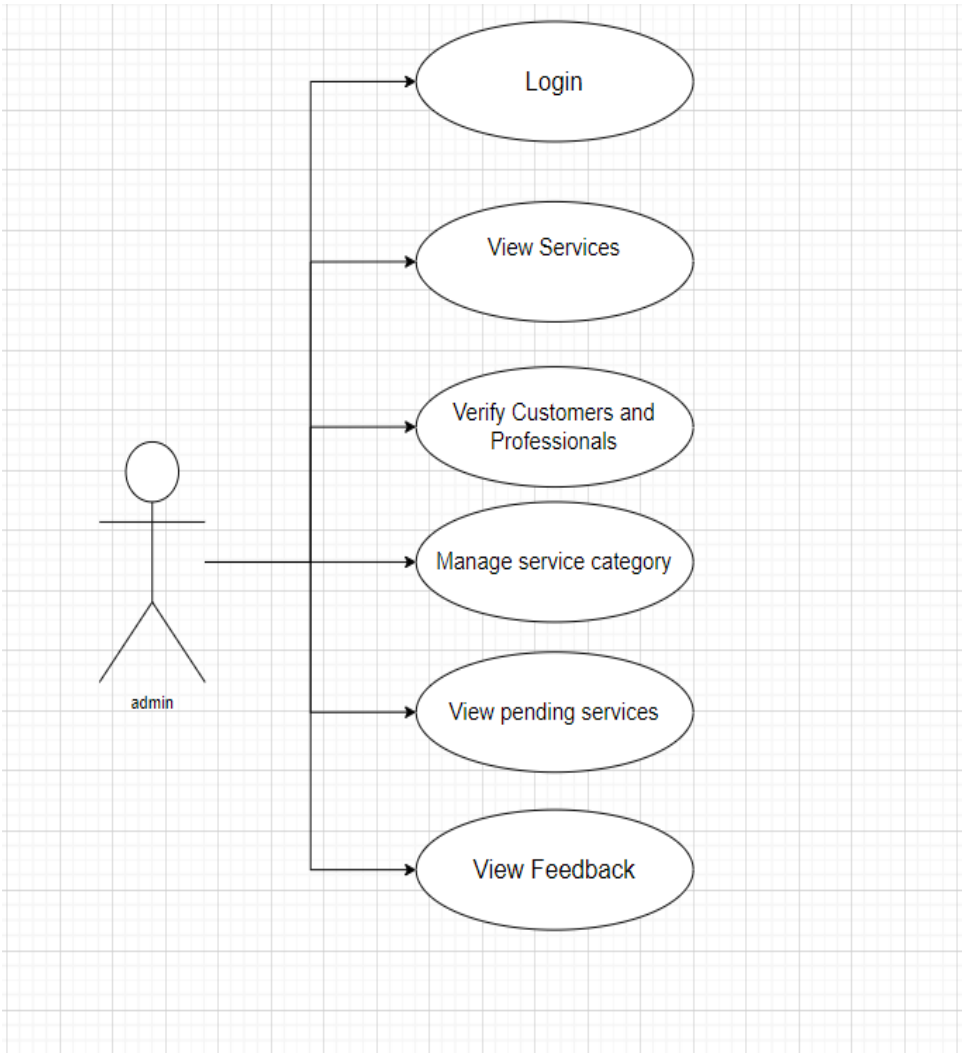

FIG 4.5 USE CASE – Admin

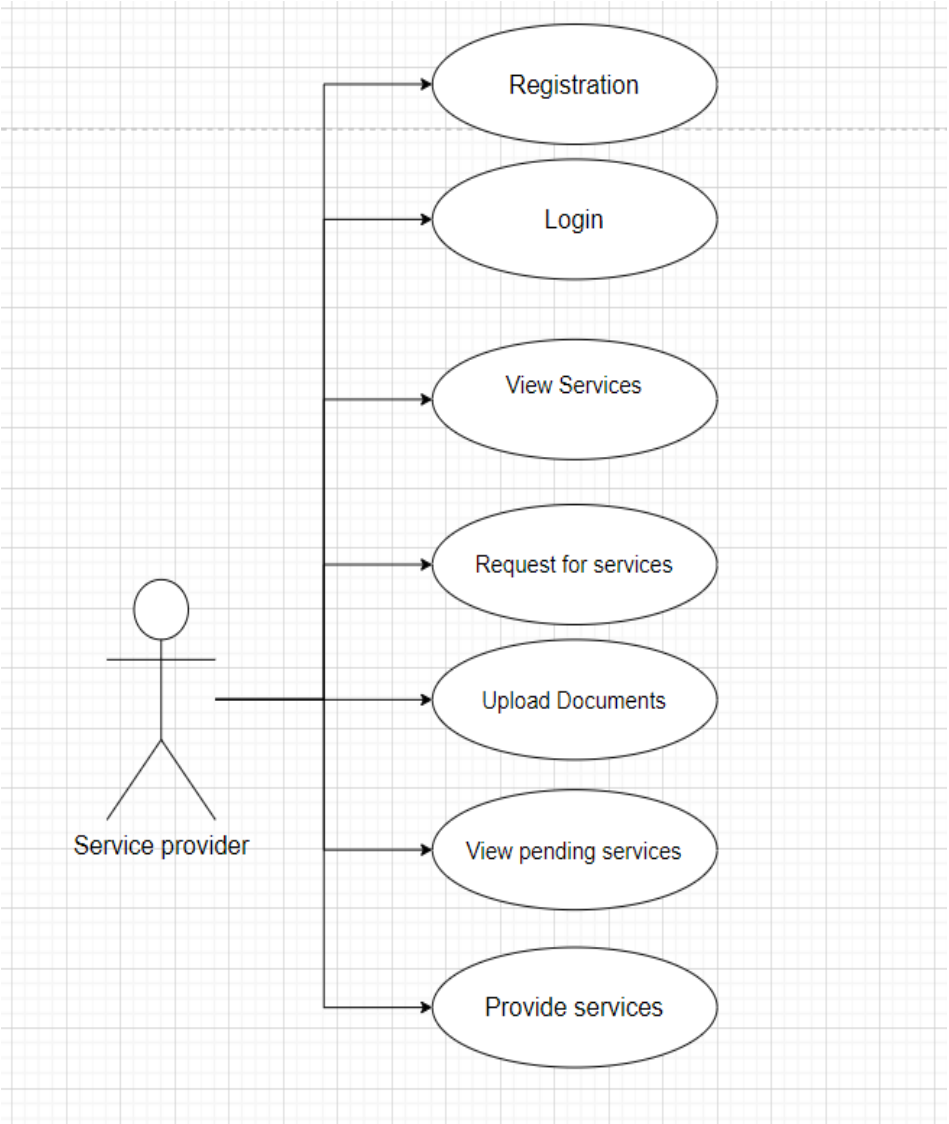

FIG 4.6 USE CASE – Service Provider

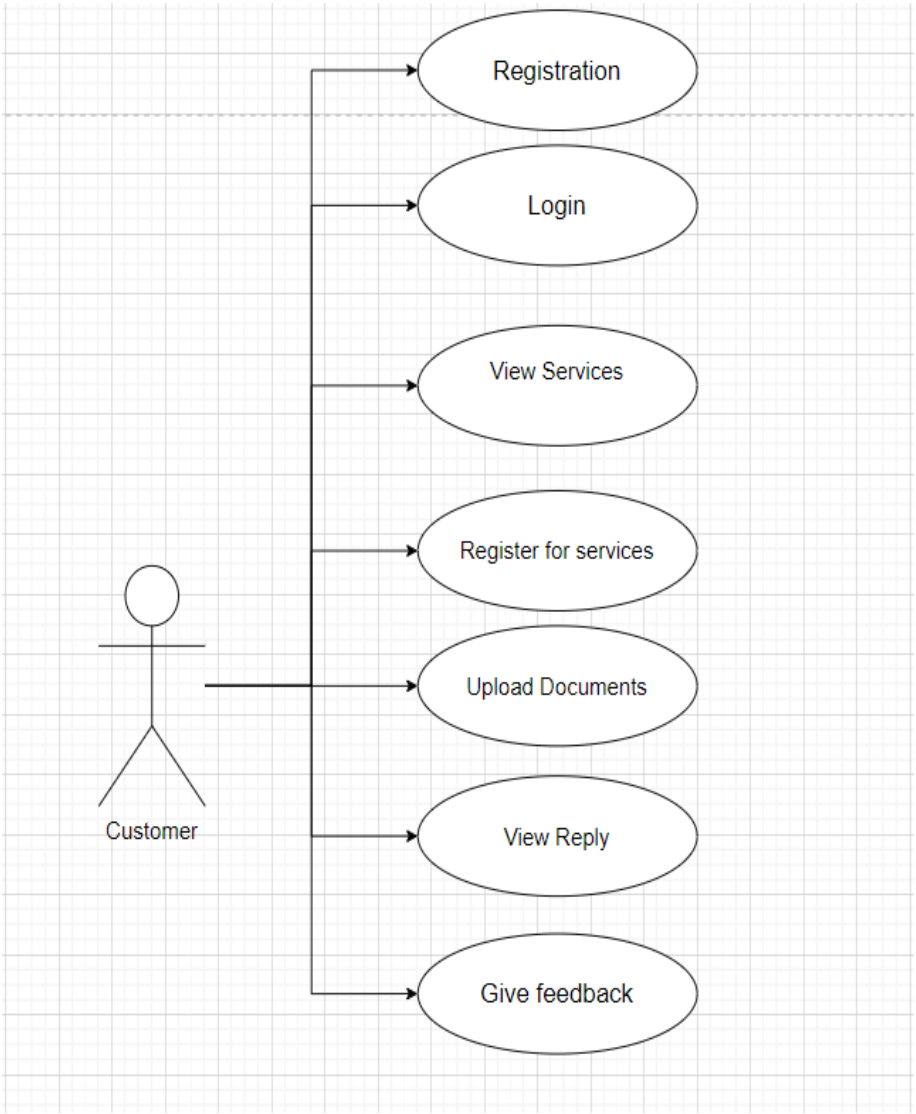

FIG 4.7 USE CASE – Customer

4.5 Database Design

4.5.1 E-R Diagram

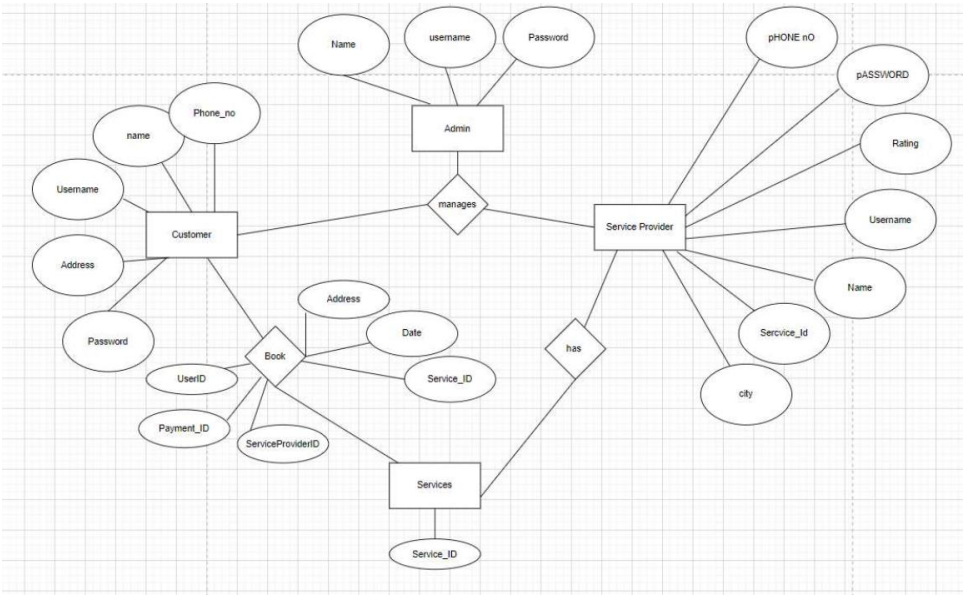

FIG 4.8 ER DIAGRAM

CHAPTER 5
IMPLEMENTATION

5.1 Introduction to languages, tools and technologies used for implementation

5.1.1 Language used:

Kotlin: Kotlin revolutionizes Android development by offering a concise, expressive, and interoperable alternative to Java. Endorsed by Google as an official language for Android, Kotlin simplifies development with its modern syntax, reducing boilerplate code and enhancing readability. Its seamless compatibility with existing Java codebases allows for a smooth transition and integration. With features like null safety, extension functions, and coroutines, Kotlin empowers developers to build robust, efficient, and maintainable Android applications, accelerating the development process and improving overall productivity.

XML: XML (eXtensible Markup Language) plays a crucial role in Android development as it serves as the foundation for defining user interface layouts and resources. In Android, XML is used to describe the structure and appearance of user interface elements such as views, layouts, and drawable resources. It offers a declarative approach, allowing developers to specify UI components and their properties in a clear and organized manner. XML files are utilized in conjunction with Java or Kotlin code to create dynamic and interactive user interfaces for Android applications. By separating the presentation layer from the application logic, XML facilitates easier maintenance, customization, and localization of Android apps, contributing to a more efficient and structured development process.

5.1.2 Toolkit:

Android Studio: The official integrated development environment (IDE) for Android development, providing tools for coding, debugging, and testing Android apps.

Android Software Development Kit (SDK): The Android SDK includes libraries, tools, and APIs necessary for developing Android applications, enabling access to device features and functionalities.

Gradle: Gradle is a build automation tool used to compile, package, and deploy Android apps, managing dependencies and customizing the build process efficiently.

Emulator: Android developers use emulator for testing and debugging their applications, ensuring compatibility and performance across different screen sizes and versions of Android.

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5.1.3 Coding Environment:

Android Studio: Android Studio is the official integrated development environment (IDE) for Google's Android operating system. Built on JetBrains' IntelliJ IDEA software, Android Studio provides powerful tools for building, testing, and debugging Android applications. It features a rich layout editor, real-time code editing with smart code completion, and robust performance analysis tools. With seamless integration with various Android SDKs, emulators, and extensive support for version control, Android Studio is designed to streamline the development process and enhance productivity for developers.

CHAPTER 6

TESTING AND MAINTENANCE

6.1 Testing techniques and Test Cases Used

6.1.1 Testing Techniques:

Hybrid Approach is used. It can be effective when your project has a mix of well-defined and evolving requirements. You can combine aspects of both Agile and waterfall to suit your project's unique needs. This approach allows you to maintain a structured plan while accommodating changes and feedback as necessary. Careful planning and coordination between phases are crucial to make the hybrid model work effectively.

6.1.2 Testing Cases Used:

TABLE 6.1 Test Cases for User Registration

Scenario	Input	Output	Expected output	Result
Valid registration	Name, Email, Username, Password	POPUP: "Registered successfully"	POPUP: "Registered successfully"	PASS
Email verification	Email	POPUP: "Account activated"	POPUP: "Account activated"	PASS
Password Strength of less than 15 characters	Password	ACTION: Strong password Suggestion	ACTION: Strong password suggestion	PASS
Unique email address	Email (already registered)	WARNING: "Already registered"	WARNING: "Already registered"	PASS
Login after registration	Username or email, password	ACTION: Direct to homepage	ACTION: Direct to homepage	PASS
Missing required fields	-	WARNING: "Fill all required field"	WARNING: "Fill all required field"	PASS

TABLE 6.2 Test Cases for Password Strength

Scenario	Password Strength	Output	Expected output	Result
0	0	"Enter a password"	"Enter a password"	PASS
MIN – 1	7	"Password is too short"	"Password is too short"	PASS
8<=N<=15	8	Suggest Strong password	Suggest strong password	PASS
More than 15	15	Depends on module	-	PASS

TABLE 6.3 Test Cases for service booking

Scenarios	Input	Output	Expected output	Result
Invalid Time and Date	Time, Date	WARNING: "Invalid Time and Date"	WARNING: "Invalid Time and Date"	PASS
Unavailable Service Provider	Service Provider	WARNING: "Time slot is unavailable for service Provider"	WARNING: "Time slot is unavailable for service Provider"	PASS
Booking timeout	(too long to book a service)	POPUP: "Session timeout"	POPUP: "Session timeout"	PASS
Unavailable Service	Service	WARNING: "Sorry, This service is unavailable"	WARNING: "Sorry, this service is unavailable"	PASS
Multiple services	"ADD MORE SERVICES"	-	-	PASS
Booking confirmation	Complete booking details	MESSAGE: "Booking confirmed"	MESSAGE: "Booking confirmed"	PASS
Cancel Booking	-	MESSAGE: "Booking cancelled"	MESSAGE: "Booking cancelled"	PASS

CHAPTER 7

RESULTS AND DISCUSSIONS

7.1 Brief description of various modules of the system with snapshots

Sign Up Module: Creating a signup module involves implementing a system that allows new users to register and create accounts on your application. Using Firebase Authentication, you can streamline this process with various authentication methods, including email and password. First, set up a Firebase project in the Firebase Console and enable the "Email/Password" sign-in method. Then, add Firebase to your app by following the provided instructions to include the Firebase SDK and initialize Firebase in your project. This setup provides a foundation for integrating Firebase Authentication into your signup module.

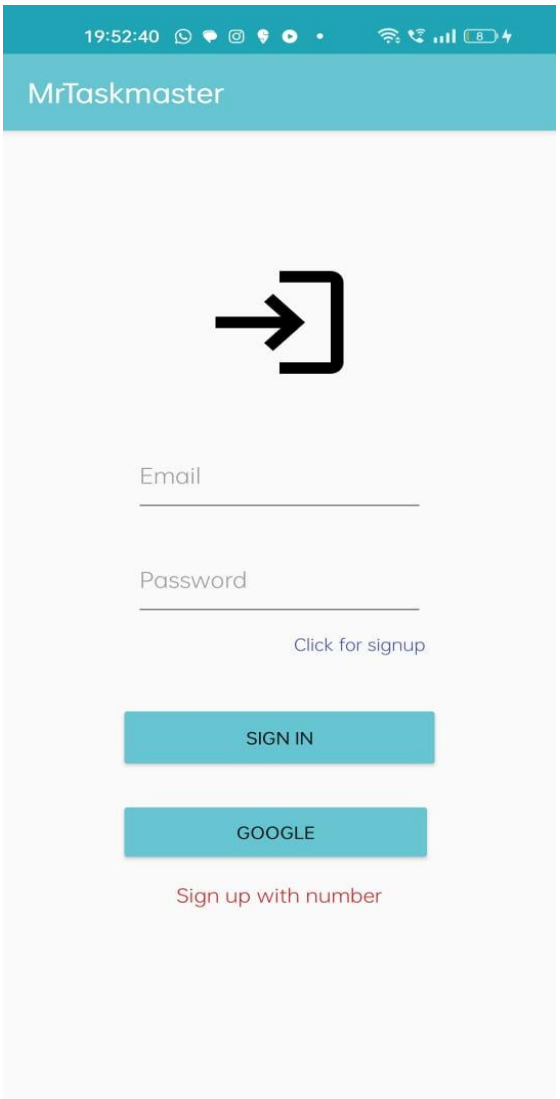
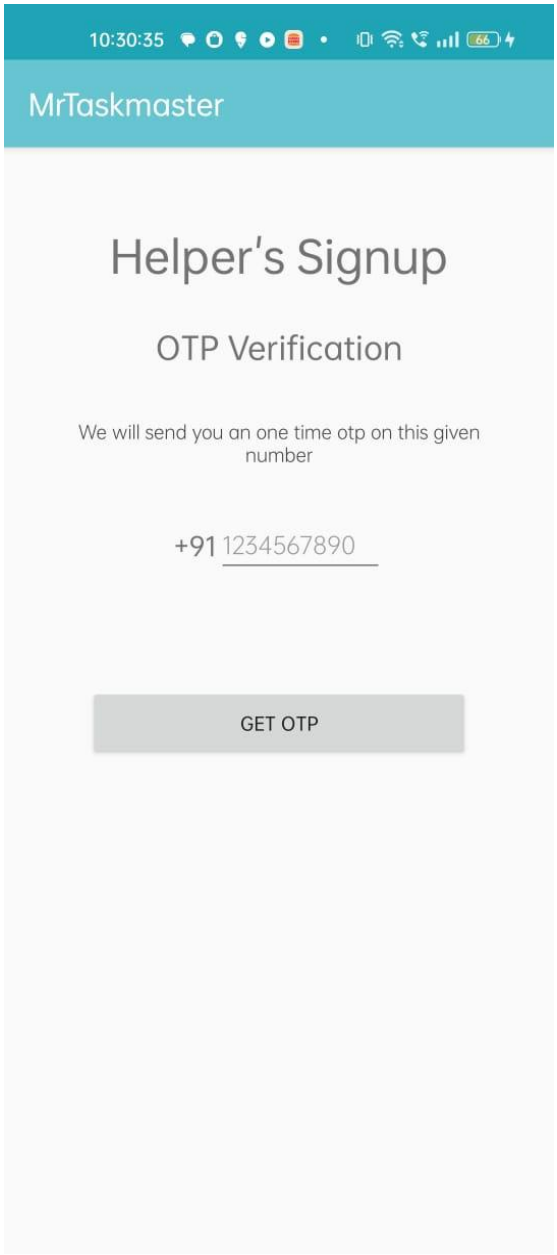


FIG 7.1 Login Module

OTP Verification: We implemented an OTP verification module to enhance security by generating a unique one-time password for user authentication. The OTP is sent to the user's registered mobile number via SMS and users must enter the received code within a specified time frame to verify their identity. This process ensures that only authorized users can access sensitive features and complete transactions.



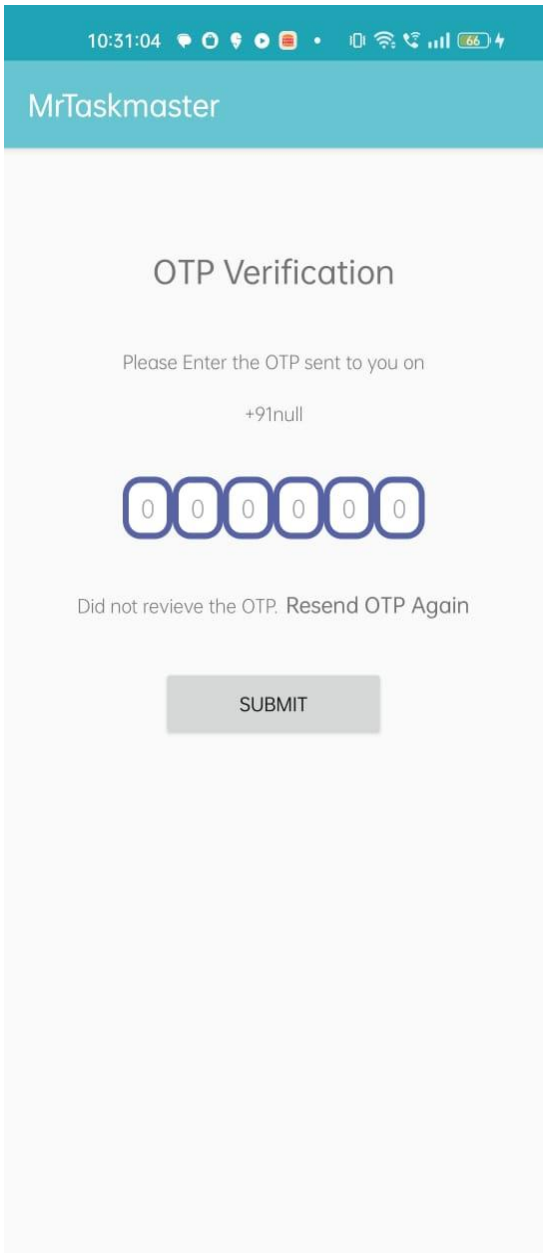


FIG 7.2(a) **FIG 7.2(b)**

Services Module: A services module encompasses various offerings provided by an application, such as user authentication, data storage, cloud messaging, and analytics. This module integrates different functionalities like Firebase Authentication for secure user login and registration, Firebase Cloud Messaging for push notifications, and Firebase Analytics for tracking user behavior and engagement. By consolidating these services into a single module, developers can efficiently manage and deploy comprehensive features, enhancing the overall functionality and user experience of the application.

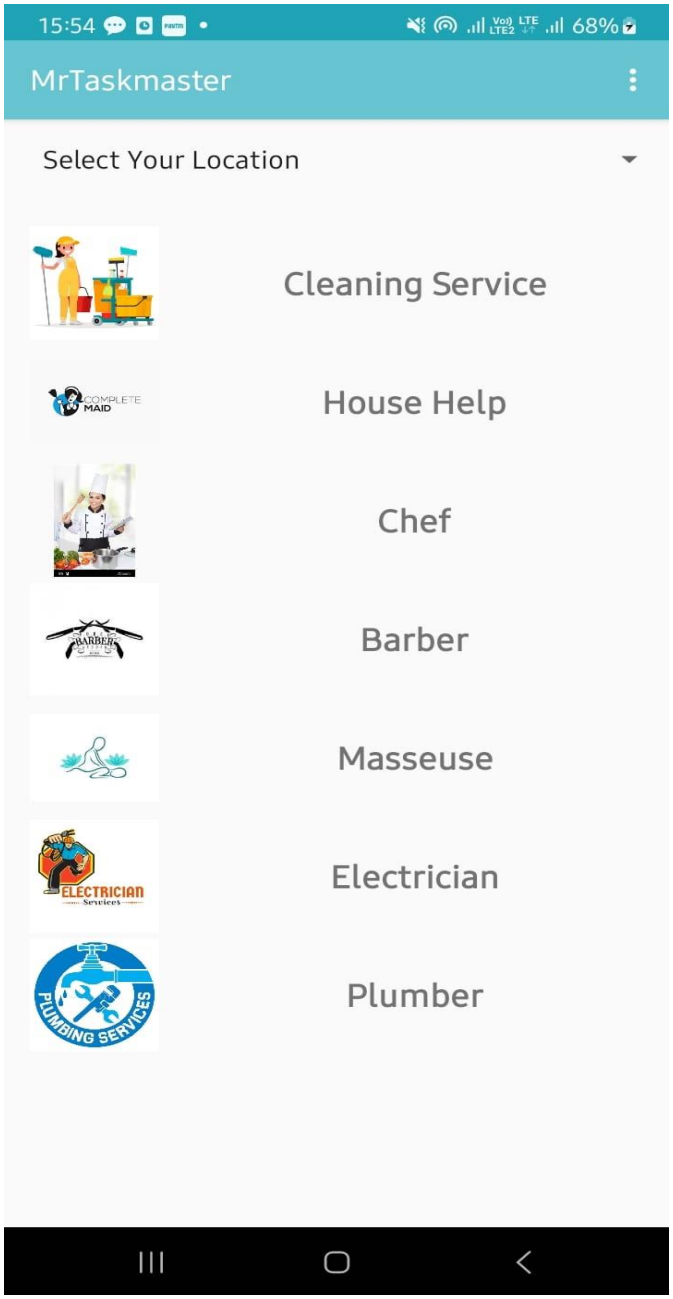


FIG 7.3 Services Module

Booking Module: A service booking module allows users to schedule and manage appointments or services through an application. This module typically includes features like a calendar interface for selecting available times, user authentication to ensure secure access, and integration with payment gateways for seamless transactions. It also provides notifications and reminders to both users and service providers, ensuring timely updates. By automating the booking process and maintaining detailed records, the service booking module enhances efficiency and user convenience, streamlining the overall service management.

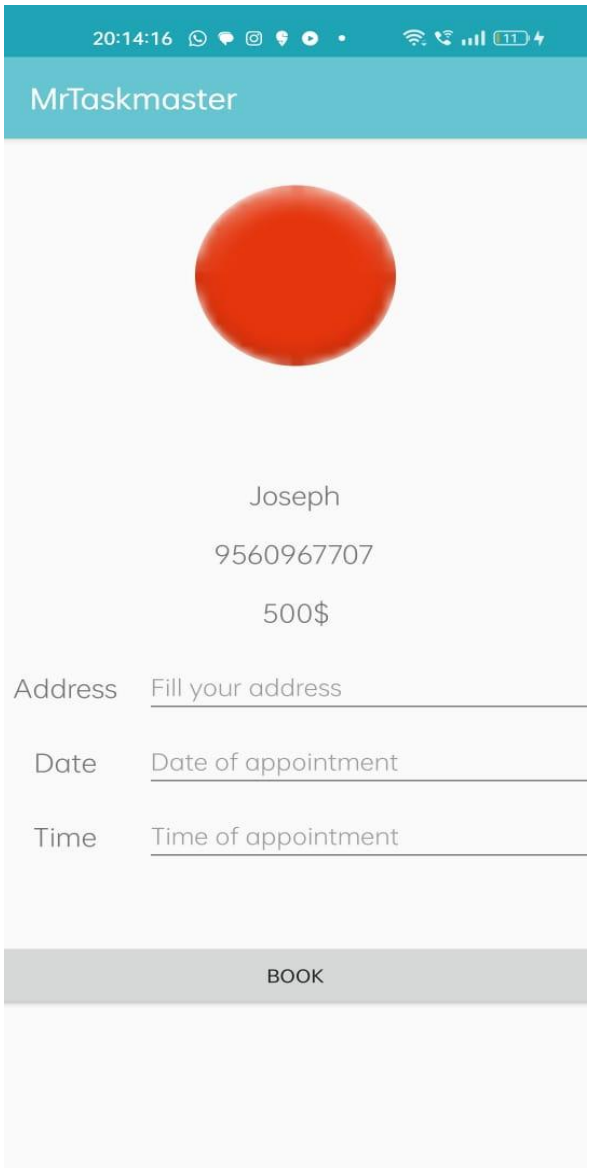


FIG 7.4 Booking Module

7.2 Key Findings of the Project

1. High Demand for Convenience: Users show a strong preference for the convenience offered by an on-demand home services app, valuing the ability to book services quickly and efficiently through a mobile platform.

2. Customization is Key: Users appreciate the ability to customize service packages according to their specific needs. Offering flexible options allows users to tailor services to their preferences, increasing overall satisfaction.

3. Technological Integration: The integration of advanced technologies like real-time tracking, chat functionality, and predictive maintenance alerts adds significant value, improving user experience and operational efficiency.

4. Sustainability Matters: There is a growing interest in eco-friendly service options among users. Providing green alternatives can differentiate the app in the market and attract environmentally conscious customers.

5. User Feedback Mechanisms: Incorporating user feedback mechanisms within the app allows for continuous improvement. Users can easily provide ratings, reviews, and suggestions, which are valuable for refining services and addressing any issues promptly.

6. Service Provider Support: Providing robust support for service providers, including profile management, performance tracking, and access to customer feedback, helps them improve their services and maintain high standards. This support is crucial for retaining quality service providers on the platform.

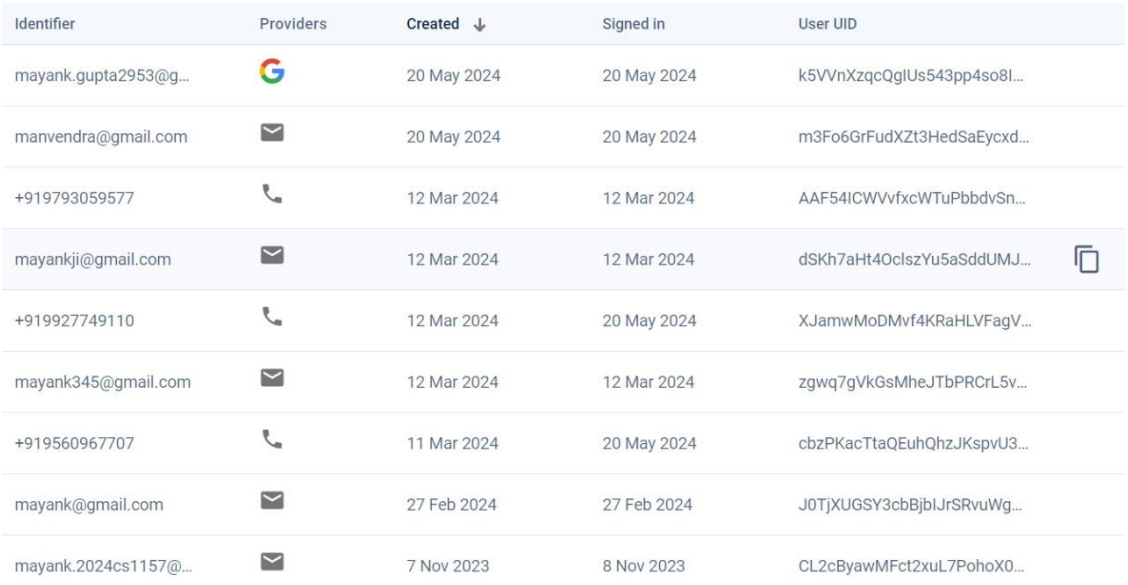
7. Market Competitiveness: The app's comprehensive feature set, including smart matchmaking, secure payments, real-time tracking, and customizable services, positions it competitively in the market. Continuous innovation and responsiveness to user needs are key to maintaining this competitive edge.

8. Customer Engagement: High levels of customer engagement are achieved through features like loyalty programs, community recommendations, and virtual consultations. These features not only enhance user experience but also foster a sense of community and repeat usage.

9. Emergency Response Capability: The ability to handle emergency service requests effectively, providing rapid response times and prioritizing urgent needs, is a significant value addition. This capability is particularly appreciated in scenarios involving critical home repairs.

7.3 Brief Description of database with snapshots

Firebase: Firebase is a comprehensive platform by Google that offers a suite of cloud-based tools to help developers build, improve, and grow their apps. It includes features like real-time databases for instant data syncing, authentication for secure user sign-ins, cloud storage, and hosting. Firebase also provides analytics to track user behavior and engagement, and cloud messaging for push notifications. Its Firestore database supports scalable and flexible document storage, making it ideal for complex data needs. Overall, Firebase streamlines app development and enhances functionality and user experience.



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manvendra@gmail.com		20 May 2024	20 May 2024	m3Fo6GrFudXZt3HedSaEycxd...
+919793059577		12 Mar 2024	12 Mar 2024	AAF54ICWVvfxcWTuPbbdvSn...
mayankji@gmail.com		12 Mar 2024	12 Mar 2024	dSKh7aHt4OclszYu5aSddUMJ...
+919927749110		12 Mar 2024	20 May 2024	XJamwMoDMvf4KRaHLVFagV...
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+919560967707		11 Mar 2024	20 May 2024	cbzPKacTtaQEuhQhzJKspvU3...
mayank@gmail.com		27 Feb 2024	27 Feb 2024	J0TjXUGSY3cbBjbIJrSRvuWg...
mayank.2024cs1157@...		7 Nov 2023	8 Nov 2023	CL2cByawMFct2xuL7PohoX0...

FIG 7.5 LoginDetails In Firebase

CHAPTER 8
CONCLUSION AND FUTURE SCOPE

8.1 Conclusion and Future Scope

An android application is developed that provides seamless access to a wide range of home services at users' fingertips. Through this project, we have successfully addressed the growing need for efficient and reliable solutions in the home services sector. By leveraging the power of mobile technology, our application offers users unparalleled convenience, allowing them to effortlessly book services, manage appointments, and track service providers' progress in real-time. Furthermore, the incorporation of advanced features such as AI-driven recommendations, blockchain-enabled trust mechanisms, and augmented reality for service previews ensures a highly personalized and secure user experience. With a steadfast commitment to innovation, quality, and customer satisfaction, our on-demand home services application is poised to revolutionize the way individuals engage with domestic services, ultimately enhancing their overall quality of life. As we continue to refine and expand our offerings in line with evolving market trends and user feedback, we are confident that our application will emerge as a market leader, setting new standards of excellence in the home services industry.

This Android application presents a promising future scope with opportunities for market expansion, service diversification, and integration with smart home technology. By gradually expanding to new regions and offering a wider range of services, the application can attract a larger user base and increase revenue streams. Implementing subscription models, AI-powered recommendations, and blockchain technology for trust and transparency can further enhance user experience and retention. Augmented reality features for service previews, partnerships with complementary businesses, and robust feedback mechanisms contribute to maintaining service quality and user satisfaction. Additionally, fostering community engagement through interactive features can cultivate a loyal user base and solidify the application's position in the market. Overall, continuous innovation and adaptation to market trends are crucial for ensuring the long-term success and sustainability of the on-demand home services application.

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GITHUB LINK:

https://github.com/mayank-g-u-p-t-a/Mrtaskmaster

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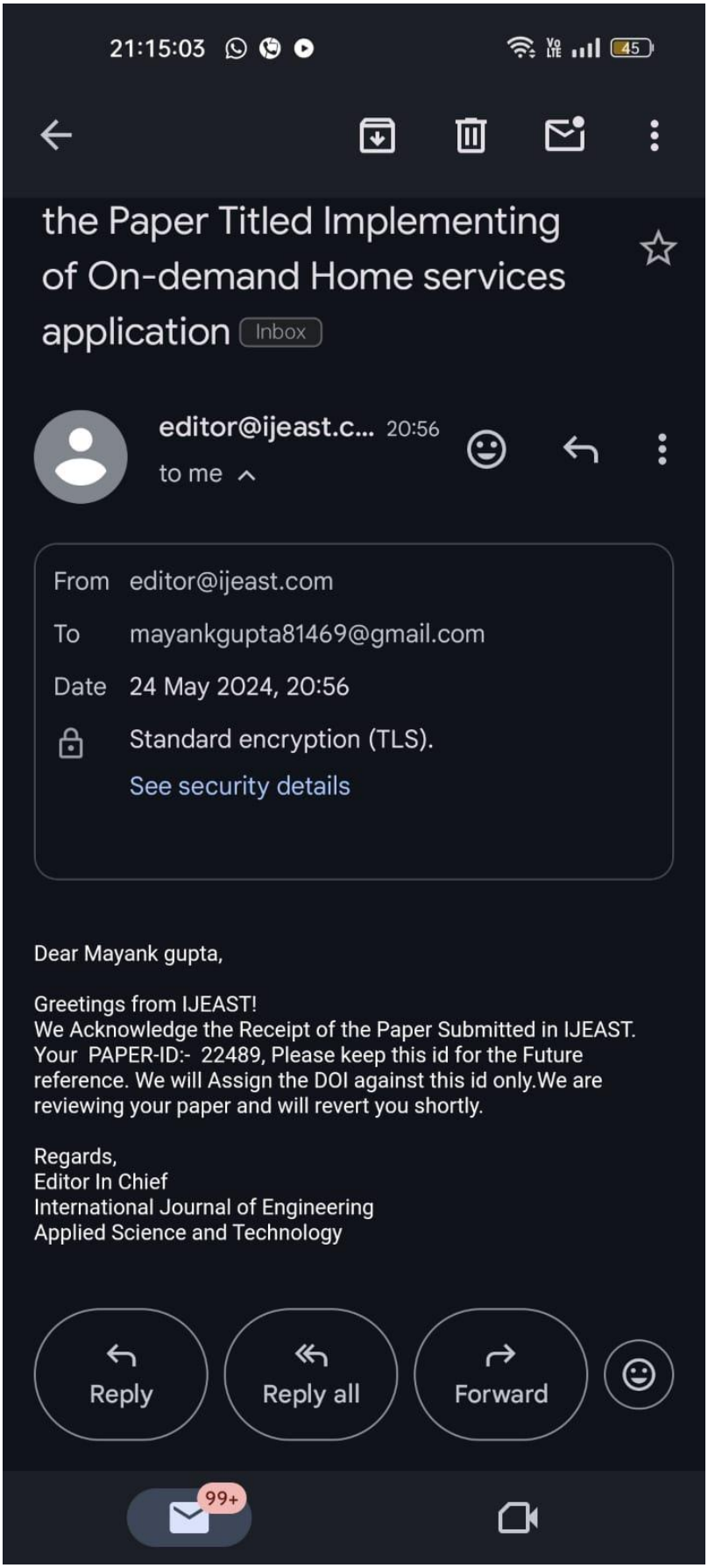

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Co-applicant / INVENTOR: **SREESH GAUR (CS) MANVENDRA KUMAR (2024CS1149) MAYANK GUPTA (2024CS1157) NAMAN NAGARIA (2024IT1189)**

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