BSCS-S23-08

03-134192-060 ALI HAIDER

03-134201-038 MUHAMMAD HAMMAD

Intelligent Delivery Services

In partial fulfillment of the requirements for the degree of

Bachelor of Science in Computer Science

Supervisor: Abdullah

Department of Computer Sciences

Bahria University, Lahore Campus

January 2024

C e r t i f i c a t e

We accept the work contained in the report titled.

"**Intelligent Delivery Services**"

written by

Ali Haider

Muhammad Hammad

as a confirmation to the required standard for the partial fulfilment of the degree of Bachelor of Science in Computer Science.

Approved by:

Supervisor: Abdullah

_____ (Signature)

January 10, 2024

DECLARATION

We hereby declare that this project report is based on our original work except for citations and quotations which have been duly acknowledged. We also declare that it has not been previously and concurrently submitted for any other degree or award at Bahria University or other institutions.

Enrolment	Name	Signature
03-134192-060	Ali Haider	
03-134201-038	Muhammad Hammad	

Date : January 10, 2024

Specially dedicated to
my beloved grandmother, mother and father
(Ali Haider)
my beloved grandmother, mother and father
(Muhammad Hammad)

ACKNOWLEDGEMENTS

We would like to express our gratitude to everyone who helped us finish this project successfully. We would like to thank my project supervisor, Mr. Abdullah, for his tremendous patience and important advice and direction during the research process.

In addition, we would also like to express my gratitude to our loving parent and friends who had helped and given me encouragement.

Ali Haider

Muhammad Hammad

Intelligent Delivery Services

ABSTRACT

The android app for car industry spare parts provides a wide range of goods and services associated with the automotive sector. These Android applications serve as online marketplaces where buyers may browse, evaluate, and buy different auto components. The android app offers a vast selection of auto parts, including electrical parts, brake pads, suspension parts, and engine parts. Consumers can quickly find the replacement components they require by searching by their car's make and model or by part number. Many android applications for automobile industry spare parts also include customer support services to aid clients in finding the appropriate parts for their vehicles. To help clients make educated purchasing decisions, they offer comprehensive product descriptions, specifications, and photos. Some of this android app offers services like installation, repair, and maintenance in addition to selling spare parts. Additionally, they could provide a range of payment methods, shipping and delivery options, and warranties on the goods they sell.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF SYMBOLS / ABBREVIATIONS

ADAS	Advanced Driver-Assistance Systems
SRS	System Requirements Specification
IDS	Intelligent Delivery Service

CHAPTER 1

INTRODUCTION

1.1 Background

Advancements in technology and changing consumer demands have caused a tremendous upheaval in the automotive industry in recent years. As vehicles become increasingly complex and technologically advanced, the demand for efficient procurement of spare parts and related services has intensified. In response to this demand, Android applications dedicated to the automotive spare parts sector have emerged as vital platforms bridging the gap between consumers and the automotive aftermarket. This literature review and (SRS) delve into the functionalities and features of Android applications catering to the car industry spare parts, [1] providing a comprehensive understanding of their significance and the prerequisites for their effective implementation.

By offering an extensive catalogue of spare parts, including electrical, brake, suspension, and engine components, these applications cater to the diverse needs of vehicle owners, mechanics, and automotive businesses. In addition to offering spare parts, some Android applications go above and beyond by providing services such as installation, repair, and maintenance. This integrated approach aligns with the changing dynamics of the automotive industry, where convenience and comprehensive solutions are highly valued.

The application's catalogue should cover a wide array of auto components, including essential categories such as electrical, brake, suspension, and engine parts: Incorporating customer support features, such as live chat or helpline, can assist users in identifying suitable parts and resolving queries. Optional services like installation, repair, and maintenance would be seamlessly integrated into the application's offerings.

Finally, a review of the literature and a specification of the system requirements highlight the essential characteristics and capabilities of these applications, highlighting their importance in the changing automotive industry. Developers may take the future of the automotive spare parts industry into their hands by utilizing these data to produce apps that empower both businesses and consumers.

1.2 Problem Statements

In today's fast-paced environment, the increasing reliance on e-commerce and online purchasing has led to a significant rise in the demand for efficient and timely delivery services for various products, including mechanical components for automobiles. As businesses strive to meet the expectations of their customers, the need for cost-effective delivery systems with unique functionalities and features has become crucial.

The challenge lies in providing dependable, efficient, and reliable delivery services for replacement components and on-site repair assistance to drivers facing automotive troubles while on the road [1]. Many companies are operating in this space, focusing on convenience, and among them is our Android application. As the demand for delivery services and mechanical assistance continues to grow, the Android application must remain flexible and adaptable to accommodate various automotive models and evolving customer needs. Ensuring that the services provided through the app are not fixed and can meet the ever-changing demands of the market requires a proactive approach to innovation and technology integration.

Therefore, the problem at hand is to design, develop, and maintain an Android application that offers prompt and effective delivery of replacement components and on-site repair assistance for drivers worldwide. This solution must incorporate cost-effectiveness, reliability, efficiency, and user-friendliness while keeping the inventory up-to-date and adaptable to the dynamic automotive landscape. By addressing these challenges, the Android application aims to be a dependable and indispensable tool for individuals and businesses seeking efficient delivery and mechanical services in today's fast-paced world.

1.3 Aims and Objectives

The primary aim of our Android application providing delivering things and mechanical services is to address the growing demand for prompt and effective delivery in today's fast-paced environment driven by e-commerce and online purchasing. Our objectives revolve around offering cost-effective, timely, and reliable delivery systems with unique functionalities and features to meet the needs of drivers and businesses worldwide. Specifically, our aims and objectives are as follows:

1- To offer a wide range of spare parts and repairing services
2- To provide network of experienced mechanics and repair shops
3- To evolve into a user-friendly platform
4- To provide secure and efficient delivery of spare parts

In summary, our aims and objectives revolve around providing efficient, reliable, and user-friendly delivery services and mechanical assistance through our Android application. By focusing on technology, innovation, and customer satisfaction, we aim to become a leading solution in the ever-growing market of delivering things and mechanical services.

1.4 Scope of Project

The project's goal is to develop an Android application that focuses on providing efficient and reliable delivery services for replacement components and on-site repair assistance for automotive troubles. The application aims to cater to the increasing demand for prompt and effective delivery services, particularly in the context of the growing e-commerce and online purchasing trends. The primary target audience for this application includes drivers on the road who may encounter automotive issues and individuals seeking convenience and quick access to replacement arts and mechanical services.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction:

Advancements in technology and changing consumer demands have caused a tremendous upheaval in the automotive industry in recent years. As vehicles become increasingly complex and technologically advanced, the demand for efficient procurement of spare parts and related services has intensified. In response to this demand, Android applications dedicated to the automotive spare parts sector have emerged as vital platforms bridging the gap between consumers and the automotive aftermarket.

By offering an extensive catalo of spare parts, including electrical, brake, suspension, and engine components, these applications cater to the diverse needs of vehicle owners, mechanics, and automotive businesses. Incorporating customer support features, such as live chat can assist users in identifying suitable parts and resolving queries. Product descriptions and specifications should accompany each component.

In conclusion, Android applications for car industry spare parts have revolutionized the way vehicle components are sourced and services are accessed within the automotive aftermarket [1]. This literature review and system requirements specification outline the critical features and functionalities of such applications, shedding light on their significance in the evolving automotive landscape.

2.2 Evolution Of Intelligent Delivery Services:

Evolution of the Android App: "Intelligent Delivery Services" for Car Industry Spare Parts.

2.2.1 Version 1.0 – Inception

The journey of the "Intelligent Delivery Services" app began with a simple concept - to create a platform that facilitates the online purchase of automotive spare parts. The initial version focused on providing a user-friendly interface where customers could browse, compare, and purchase various auto components directly from their Android.

2.2.1.1 Key Features

Large product categories, including electrical parts, brake pads, suspension parts, and engine parts. Standard delivery and basic shipping services.

2.2.2 Version 2.0 - Enhanced User Experience

Building on user feedback, version 2.0 aimed to enhance the overall user experience. The app underwent a significant design overhaul, introducing an intuitive navigation system.

2.2.2.1 Key Features

Enhanced product categories, offering a wider selection of auto parts. Intuitive user interface for seamless navigation. Introduction of customer support services to assist users in finding the right parts.

2.2.3 Version 3.0 - Comprehensive Information Hub

Recognizing the need for informed purchasing decisions, version 3.0 focused on providing users with detailed product information. This included comprehensive product descriptions, specifications.

2.2.3.1 Key Features

In-depth product descriptions, specifications. Customer support services expanded to provide expert advice. Integration of user reviews for each product.

2.2.4 Version 4.0 - Full-Service Platform

Going beyond just selling spare parts, version 4.0 transformed "Intelligent Delivery Services" into a full-service platform. The app started offering additional services such as installation, repair, and maintenance. This marked a significant shift from being a mere marketplace to becoming a one-stop solution for all car-related needs.

2.2.4.1 Key Features

Added services like installation, repair, and maintenance. Integration of booking services for appointments with certified technicians. Enhanced customer support to assist with service-related inquiries.

2.3 Demand of Intelligent delivery Services

The demand for intelligent delivery services application, driven by various factors:

2.3.1 E-commerce Growth

In recent years, the e-commerce sector has grown significantly especially with the convenience of online shopping. As more people shop online, the need for efficient and timely delivery services increases.

2.3.2 Convenience

Consumers today value convenience and expect goods and services to be delivered quickly and efficiently. Intelligent delivery applications can provide the convenience that customers seek.

2.3.3 Urbanization

As more people move to urban areas, there is a need for efficient last-mile delivery solutions to navigate congested city streets.

2.3.4 Reliability

Ensure that the delivery and mechanical services are dependable and efficient. Timeliness and accuracy are key.

2.3.5 User Experience

The app should be user-friendly, making it easy for both customers and service providers to use.

2.3.6 Innovation

Continuously improve and innovate to stay ahead of the competition. Consider incorporating emerging technologies like AI for route optimization or predictive maintenance for vehicles.

2.1 Services provided By Intelligent Delivery Services

An intelligent delivery services consultant provides a range of services and expertise to businesses and organizations looking to develop and optimize their delivery and mechanical services, especially through Android applications. Here are the key services such as consultant can offer:

2.1.1 Spare Parts Delivery

Offering an efficient and wide range of spare parts of automobiles and ensuring a wide range of components are available.

2.1.2 Mechanical Services

Providing the on-site delivery of spare parts and the mechanical services like installation and maintenance etc.

2.1.3 Chat Page

Customers and the service providers can easily chat with each other for booking appointment. It helps in establishing a network of mechanics between customers.

2.1.4 Quality Assurance

Implement quality control measures to ensure that all replacement components are of high quality and meet quality standards.

2.1.5 Customer Experience Enhancement

Focus on enhancing the user experience within the application, making it easy for users to browse, order their deliveries or service requests.

2.2 Intelligent Delivery services qualitative Benefits:

Intelligent delivery services offer a wide range of qualitative benefits to both businesses and consumers. These benefits include following.

2.2.1 Convenience

Intelligent delivery services provide a high level of convenience to consumers. They can order replacement components or mechanical services with just a few taps on their mobile devices, saving them time and effort.

2.2.2 Reliability

Businesses can rely on these services to ensure their products or services reach customers on time and in good condition. This reliability builds trust with customers.

2.2.3 Cost-Effectiveness

Businesses can optimize their supply chain and delivery processes, reducing operational costs in the long run. Additionally, consumers can save on transportation costs when obtaining replacement components through the app rather than physically traveling to a store.

2.2.4 Emergency Assistance

The ability to provide on-site repair assistance for drivers facing automotive trouble, accidents, or engine failures offers a critical safety net, ensuring drivers can get help when they need it most.

2.2.5 Reduced Downtime

For businesses with vehicles in their operations, quick access to replacement components can significantly reduce downtime, enabling them to get their vehicles back on the road faster.

In summary, intelligent delivery services offer a host of qualitative benefits that revolve around convenience, efficiency, reliability, and cost-effectiveness. These services not only cater to the demands of a fast-paced environment but also enhance the overall customer and business experience.

2.3 Intelligent Delivery Services Challenges:

While intelligent delivery services for the automotive industry, as described in the context provided, offer numerous benefits, they also face several challenges that need to be addressed to ensure their success and sustainability:

2.3.1 Logistics and Supply Chain Complexity

Managing a vast selection of auto parts and ensuring timely delivery can be challenging due to the complexity of the automotive supply chain. Coordinating with multiple suppliers and warehouses requires robust logistics management.

2.3.2 Quality Control

Ensuring the quality and authenticity of auto parts is essential to maintain customer trust. Counterfeit or substandard parts can lead to safety hazards and customer dissatisfaction.

2.3.3 Compatibility and Fitment

Matching the right replacement components with specific vehicle makes and models can be a complex task. The app must provide accurate fitment information to prevent customers from ordering incompatible parts.

2.3.4 Customer Support

Providing effective customer support to assist customers in finding the right parts, resolving issues, and addressing queries is critical. It requires trained staff and robust support systems.

2.3.5 Data Security

Strong data security procedures are required when handling customer data and financial transactions to guard against cyber threats and data breaches.

2.3.6 Competition

The market for auto parts is highly competitive, with many online and offline retailers. Standing out in a crowded market requires effective marketing.

2.3.7 Payment and Delivery Options

Providing a range of payment methods, shipping options, and reliable delivery services is crucial to meet diverse customer preferences.

2.3.8 Integration with Suppliers

Coordinating with multiple suppliers and ensuring seamless integration with their systems can be a technical challenge.

2.3.9 Scaling and Growth

Scaling the business to serve a wider geographic area or expanding the range of services can pose operational challenges.

2.4 Performance Requirements

The android application shall perform all the required tasks assigned correctly and efficiently. The response time of the application depends on device hardware and internet speed. Without an internet connection customers and service providers won't be able to use the application services.

2.5 Result and Review`s Implications

The results and review implications for the Android app for car industry spare parts, which serves as an online marketplace for automotive components and services, are essential to assess the app's performance and make improvements as needed. Here's a breakdown of the results and their implications:

2.5.1 Review Implications:

Reviews implications of Intelligent Delivery Services are given below as

2.5.1.1 Performance Optimization

Continuously monitor and optimize the app's performance, including response times, load times, and server reliability, to ensure a seamless user experience.

2.5.1.2 Inventory Management

Implement real-time or near real-time inventory updates to prevent issues related to overselling or displaying unavailable products.

2.5.1.3 Security Enhancements

Strengthen security measures to safeguard user data and payment information. Regularly assess and update security protocols.

2.5.1.4 Feedback Collection

Actively collect user feedback to identify areas for improvement and address any issues or concerns raised by customers.

2.5.1.5 Quality Control

Maintain strict quality control measures to prevent the sale of counterfeit or substandard auto parts, ensuring customer safety and satisfaction.

2.5.1.6 Maintenance and Updates

Regularly update product listings, specifications, and images to keep information accurate and up to date.

2.5.1.7 Continued Innovation

Explore opportunities for further innovation, such as integrating emerging technologies (e.g., AI for personalized recommendations) to enhance the app's functionality. Overall, reviewing the app's performance and addressing the implications will help maintain its competitiveness in the automotive spare parts marketplace, improve customer satisfaction, and drive business growth.

2.5.2 Results

Here are the results of the Intelligent Delivery services App.

2.5.2.1 User Engagement

The app has achieved high user engagement, with users actively browsing, evaluating, and making purchases of various auto components. This is a positive indicator of the app's appeal to its target audience.

2.5.2.2 Customer Support

The inclusion of customer support services to assist clients in finding the right parts for their vehicles is beneficial. This feature enhances the user experience and helps build trust with customers.

2.5.2.3 Additional Services

Offering installation, repair, and maintenance services in addition to selling spare parts adds value to the app. It expands the range of services available to users and enhances customer loyalty.

2.5.2.4 Shipping and Delivery

The app offers various shipping and delivery options, allowing users to choose based on their needs. This flexibility improves customer satisfaction.

2.6 Activity Diagram

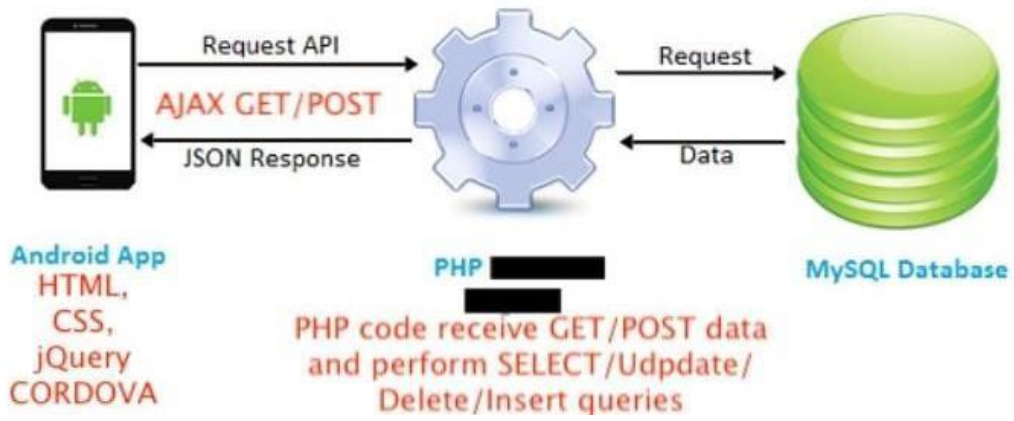

Fig 2.1 Activity Diagram of project [4]

2.7 Use Case Diagram

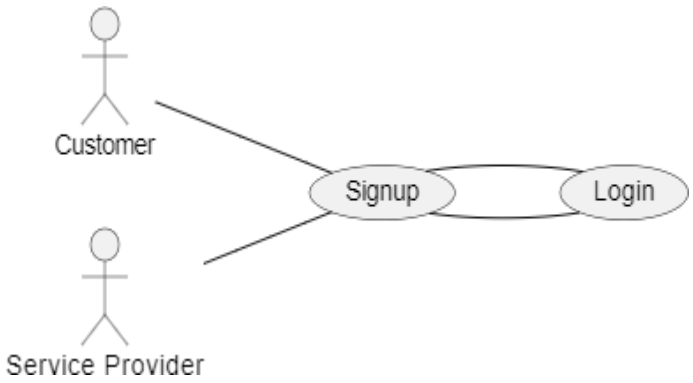

Fig 2.1 Use case Diagram of Front page. [4.1]

2.7.1 Use Case Diagram

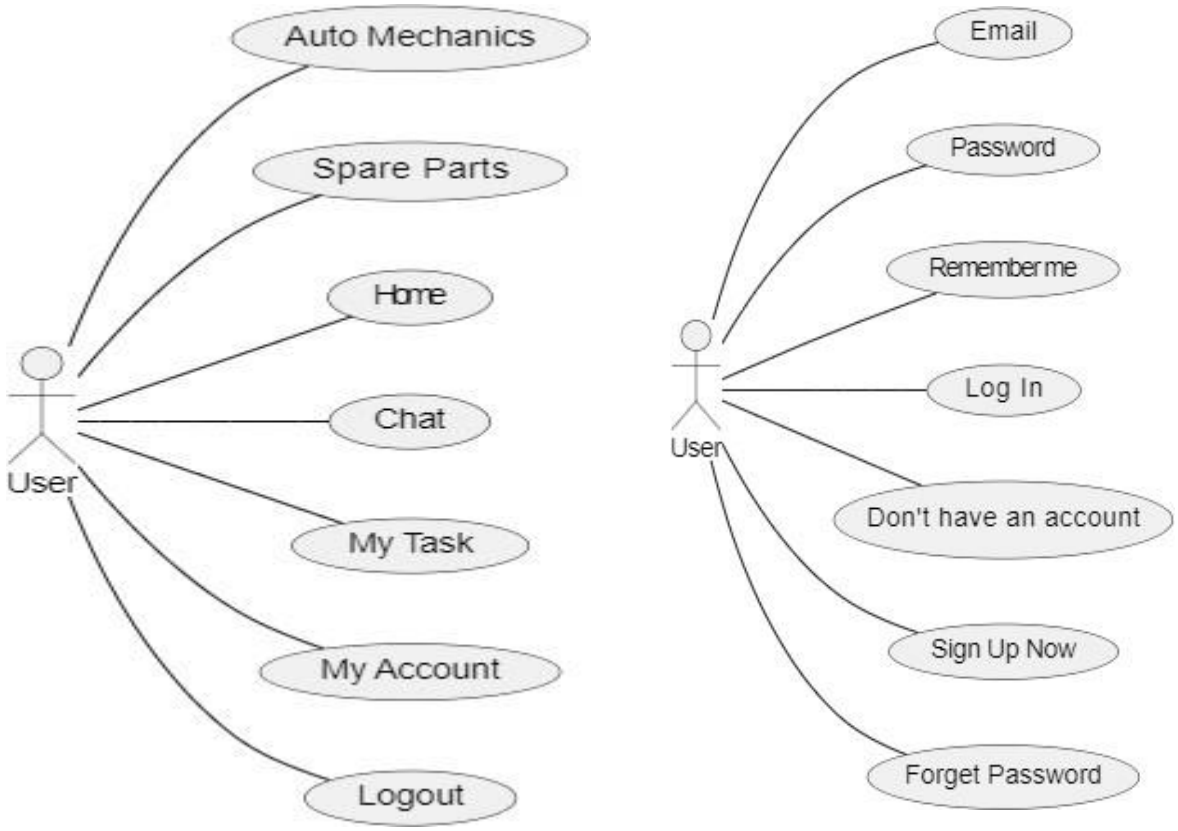

Fig 2.2 Use Case Diagram of Login and Login Page [4.2]

2.7.2 Use Case

2.6 Use Case of Service Provider [4.3]

2.7.3 Use Case

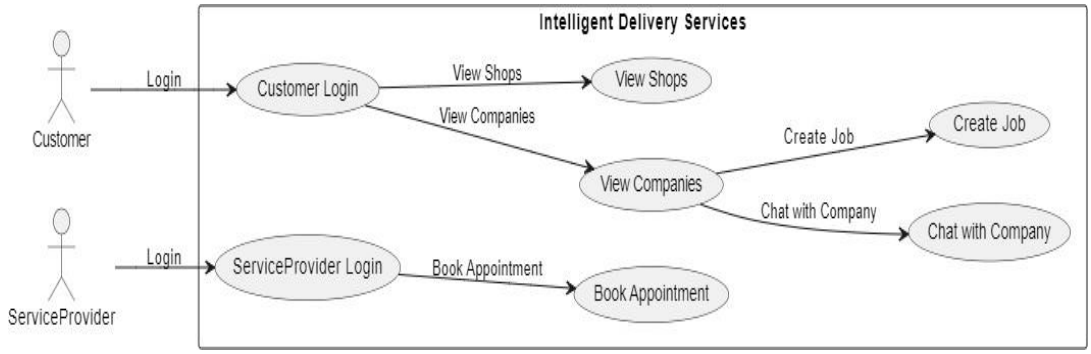

Figure 2.7 Use Case of whole project [4.4]

2.7.4 Use Case

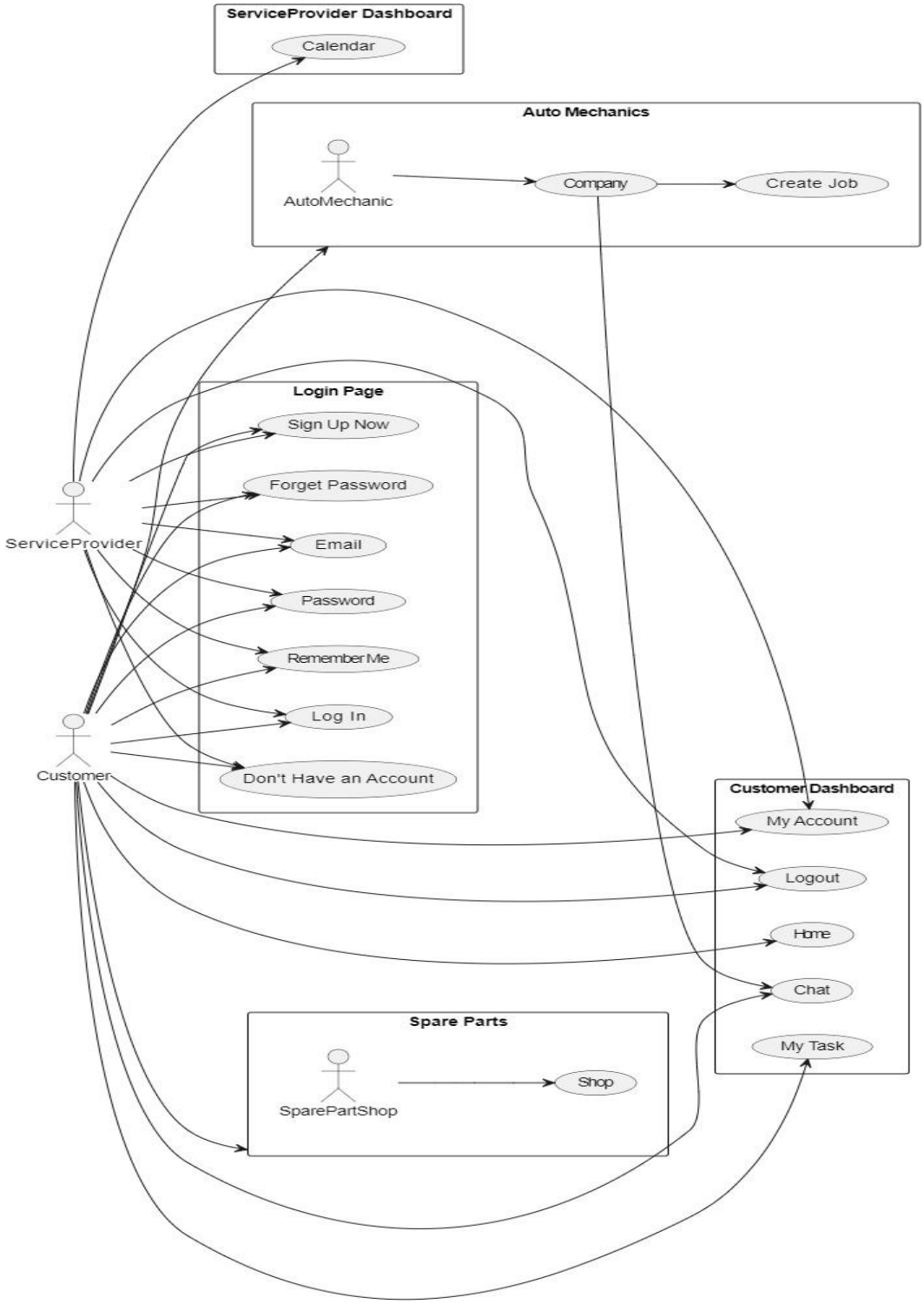

Fig 2.5 Use Case of whole project [4.5]

2.9 Sequence Diagram

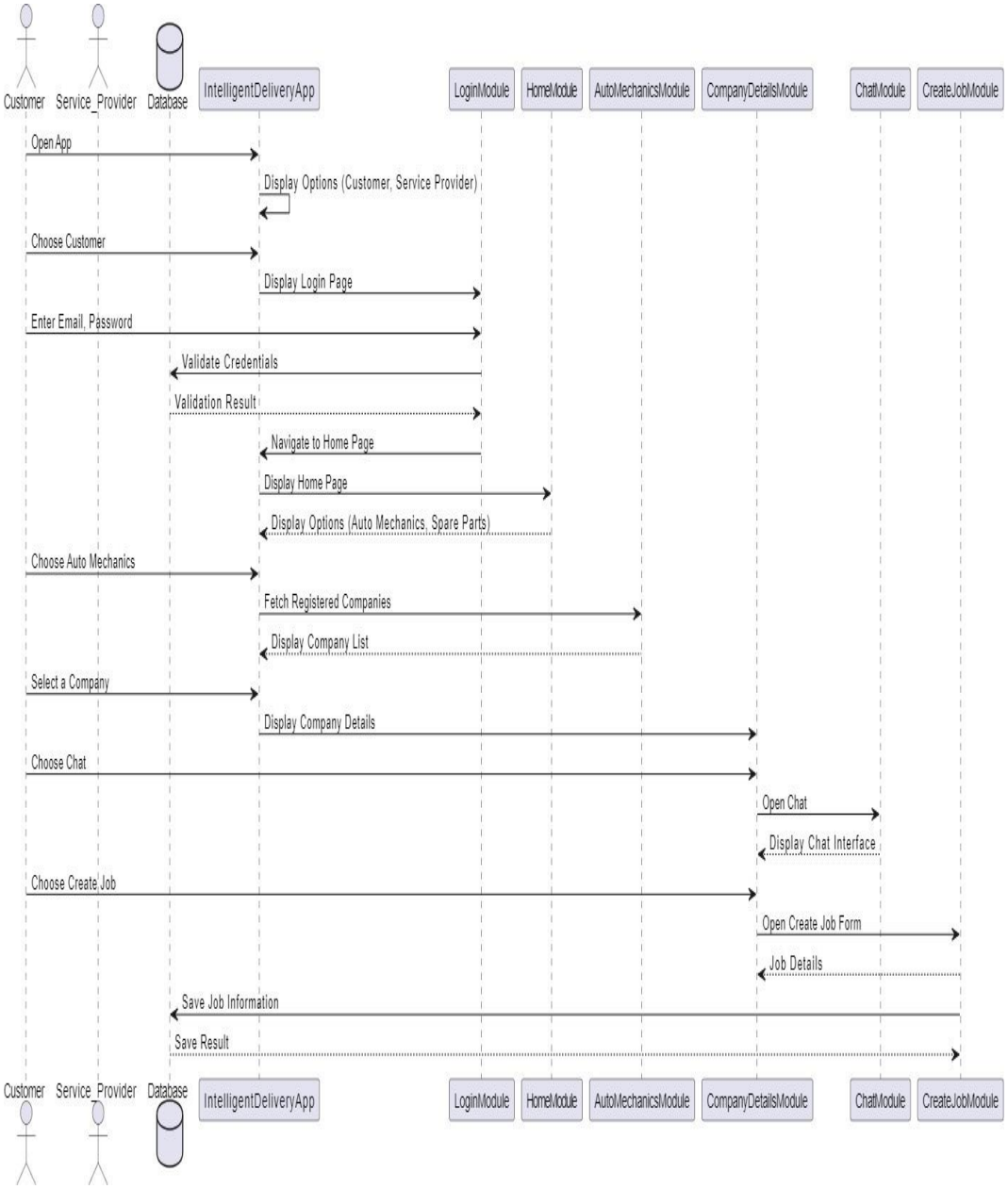

Figure 2.8 Sequence Diagram of whole project [4.6]

2.7.5 Sequence Diagram of Login page

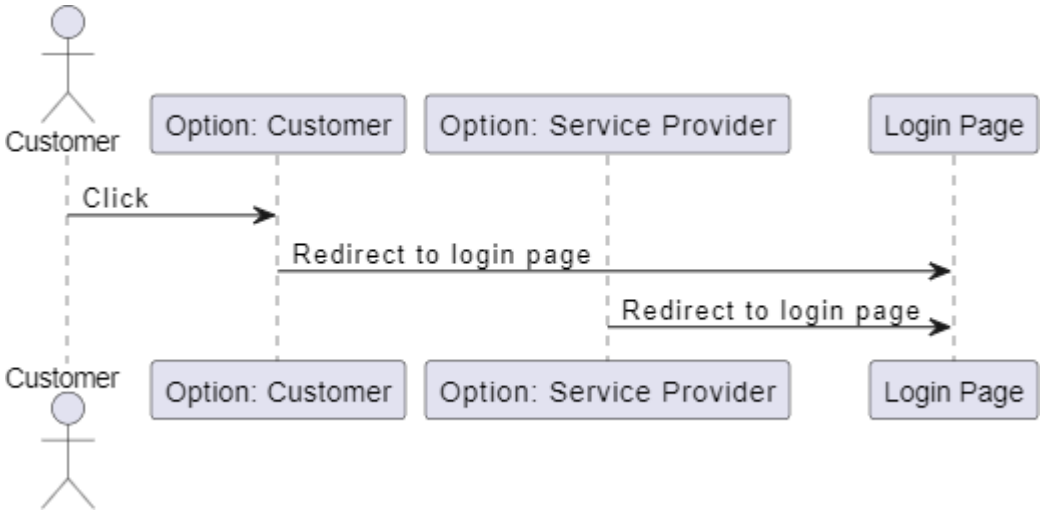

Figure 2.9 Sequence Diagram of login page [4.7]

2.8 Data Flow Diagram

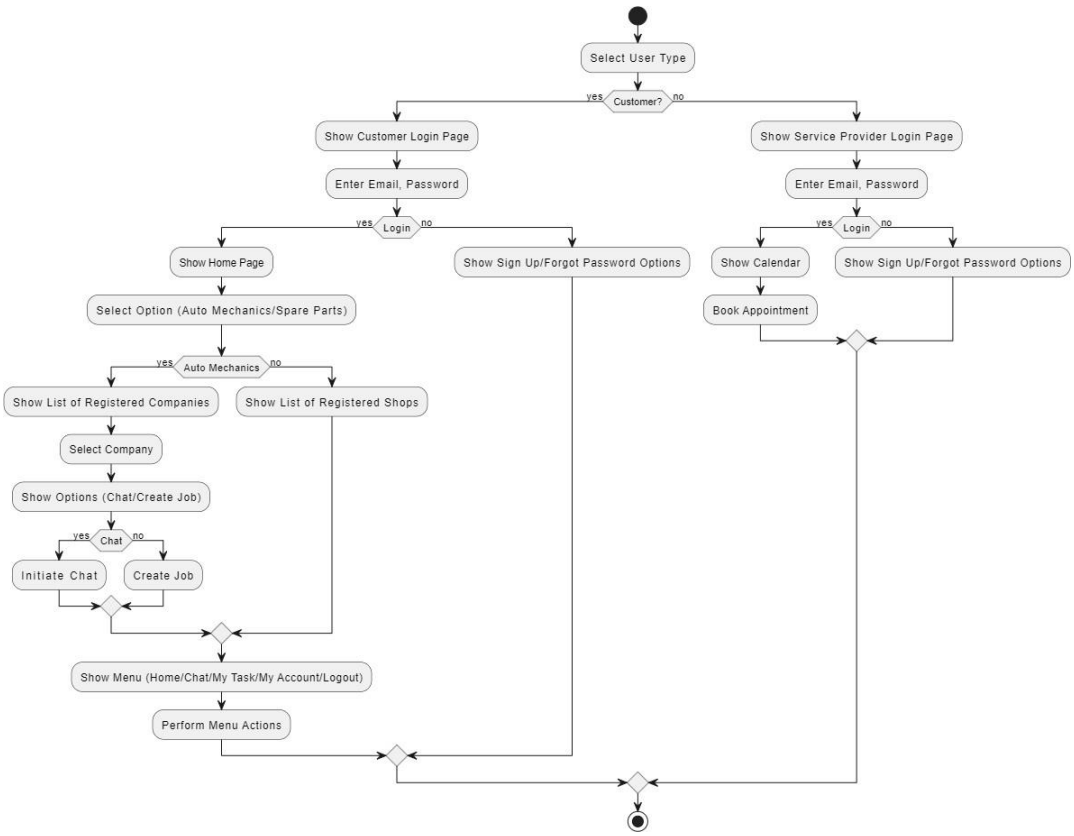

Figure 2.10 Data Flow Diagram of project [4.8]

Class Diagram

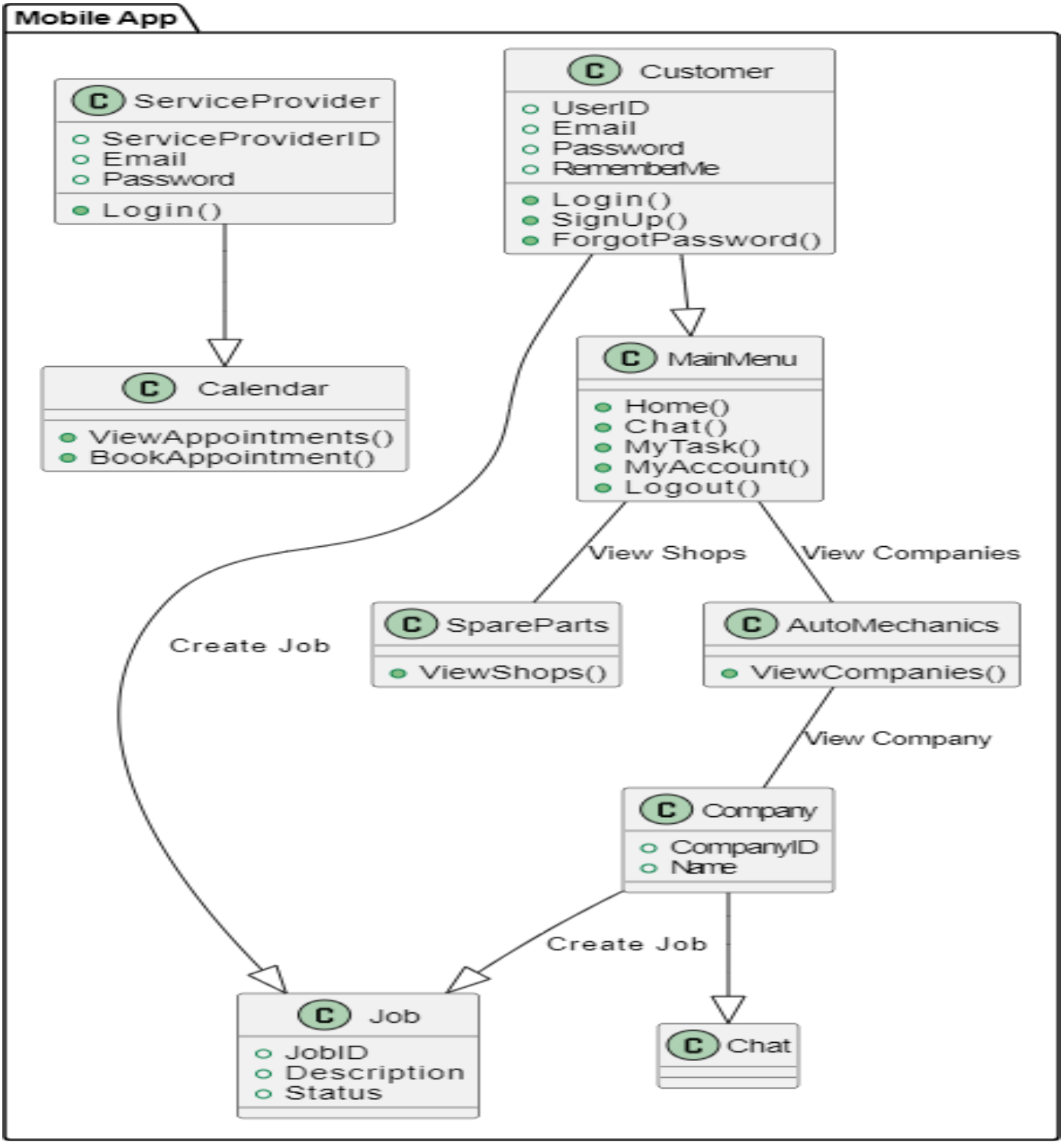

Figure 2.11 Class Diagram [4.9]

Relational Diagram

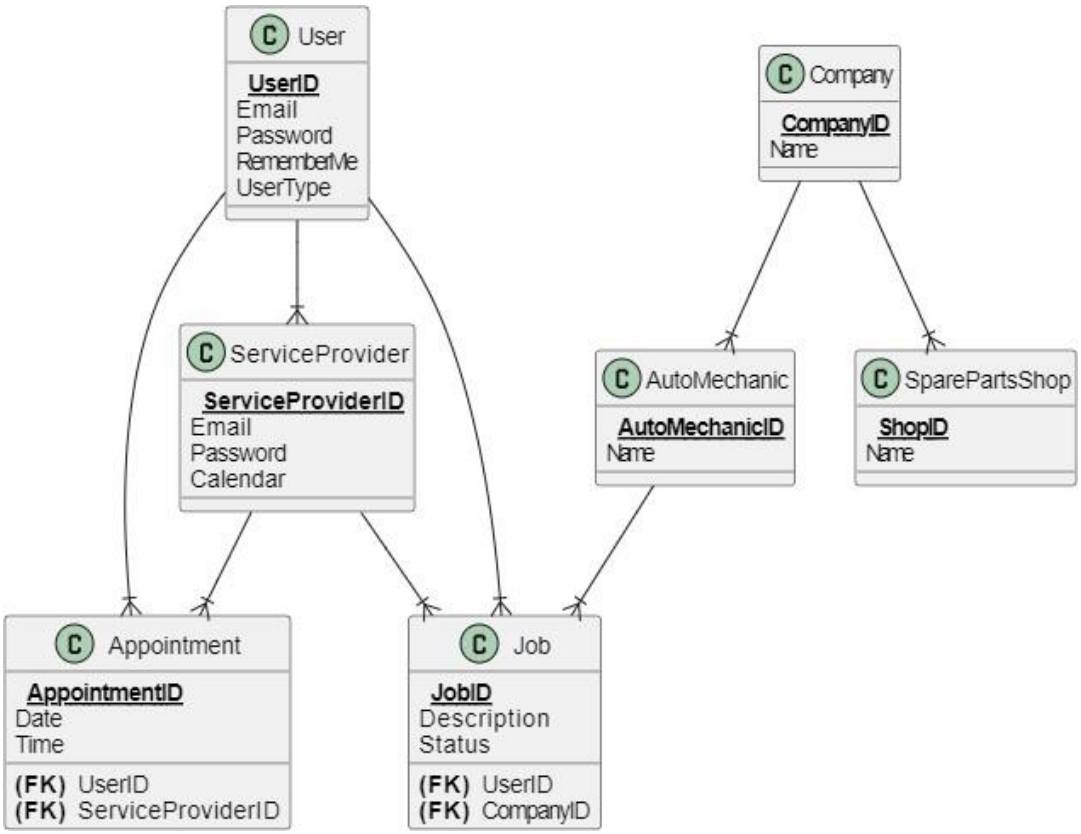

Figure 2.14 Relational Diagram [5]

2.10 Flow Chart Diagram

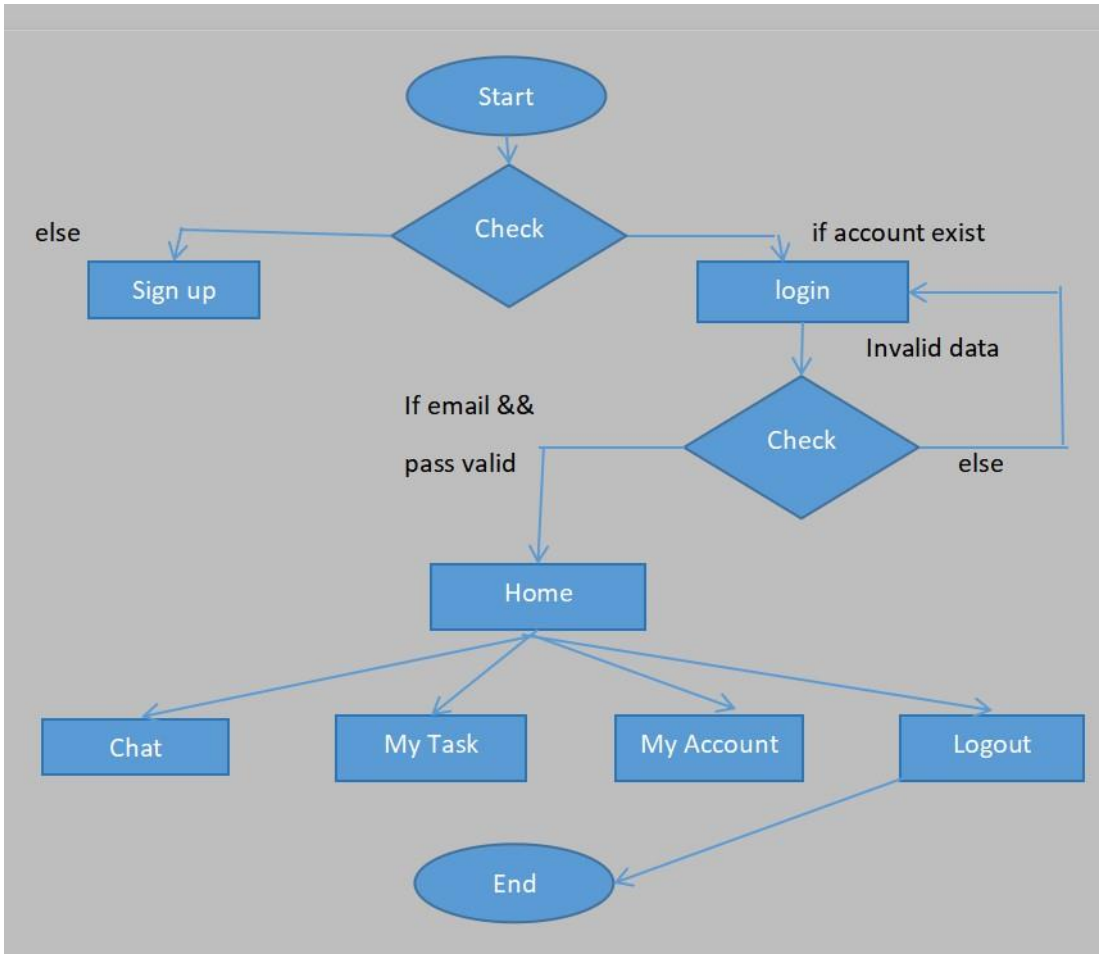

Figure 2.15 Flow Chart [5.1]

CHAPTER 3

DESIGN AND METHODOLOGY

In this project, we made a mobile app which provide services regarding cars, this app work on Cordova. Cordova is a framework of mobile app development. In this app we have used agile methodology because it is user friendly, and we can make any updated anytime according to requirement.

3.1 Framework

Cordova is a mobile application development framework that allows developers to build cross-platform mobile apps using web technologies such as HTML, CSS, and JavaScript. It enables the creation of mobile apps that can run on multiple platforms, including iOS, Android, and Windows

3.2 Methodology

Agile is an incremental and iterative software development methodology that priorities client feedback, adaptability, and teamwork. By dividing the development process into digestible chunks known as iterations, it encourages flexible planning and ongoing development. Software development teams utilize agile approaches like Scrum and Kanban to improve teamwork, adapt to changing needs, and produce high-quality software fast.

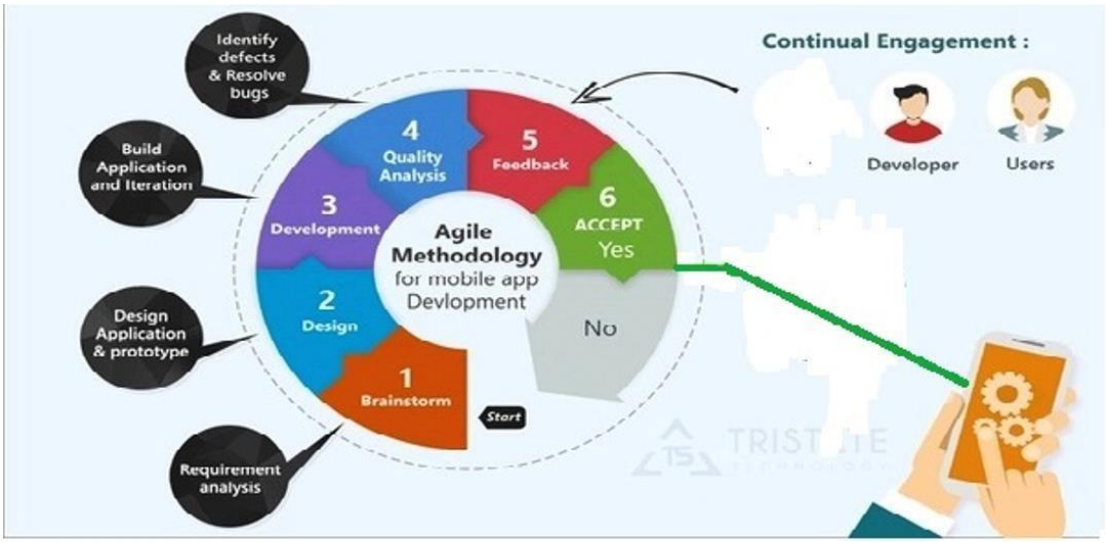

Figure 3.1 Agile Methodology [5.2]

3.2.1 Sprint Planning

In agile methodology sprint planning is used to plan short development cycles called sprints, typically 2-4 weeks long. Break down user stories into smaller tasks, estimating the effort required for each.

3.2.2 Development with Cordova

Apache Cordova to develop cross-platform mobile applications using web technologies. Adopt responsive design principles to ensure a consistent user experience across different devices and platforms.

3.2.3 Continuous Integration and Testing:

Implement continuous integration practices to ensure that code changes are regularly integrated and tested. Automate testing processes to catch bugs early and maintain code quality.

3.2.4 Iterative Development:

Release increments of the application at the end of each sprint, allowing for regular feedback from stakeholders. Use feedback to adjust the product backlog and reprioritizes features as needed.

3.2.5 Deployment and Feedback

Deploy the application regularly to gather real-world feedback. Use feedback to make continuous improvements and plan for the next iterations.

3.3 Unit Testing

Unit testing in the Intelligent Delivery Services project involves testing individual components or units of code in isolation to ensure their correctness and functionality. This ensures that each module, class, or function performs as expected. Unit testing helps identify and fix bugs early in the development process, promotes code reliability, and facilitates ongoing code maintenance and refactoring.

```
function account_delete() {
  if (online()) {
    navigator.notification.confirm(
      "Once you confirm, all of your data will be permanently deleted?", // message
      deleteaccount,
      "Are you Sure?", // callback to invoke with index of button pressed
      ["Cancel", "Delete"] // buttonLabels
    );
  }
}
```

Figure 3.2 Unit Testing of Account deletion

3.4 Regression Testing

Regression testing in the Intelligent Delivery Services project involves re-running previously executed test cases to ensure that new code changes or updates have not adversely affected existing functionalities. It aims to detect and address any unintended side effects or regressions that may arise due to modifications in the software. By systematically verifying the entire system's stability after each update, regression testing helps maintain the overall integrity and reliability of the application throughout its development lifecycle.

```
function check_login() {
  $('#username').val(localStorage.email);
  $('#password').val(localStorage.pass);
  if (localStorage.remember == "True") {
    $("#remember").prop('checked', true);
    if (localStorage.user_id) {
      if (localStorage.user_id != '') {
        if (localStorage.userType = 'customer')
          window.location = 'welcome.html';
        else
          window.location = 'welcome_sp.html';
      }
    }
  }
}
```

Figure 3.3 Regression Testing

3.5 Functional Testing

Functional testing in Intelligent Delivery Services involves systematically validating the individual features and functionalities of a software application to ensure they align with the specified requirements. Test cases are designed to examine user interfaces, databases, and other components to verify that the software performs as expected. By confirming that each function operates correctly and meets our expectations, functional testing plays a crucial role in delivering a reliable and error-free application to end-users. This testing phase helps identify defects, deviations, or discrepancies in the functionality, ensuring the overall quality and functionality of the software.

```
function create_account() {
  var f_name = $("#first_name").val();
  var l_name = $("#last_name").val();
  var email = $("#email").val();
  var p_num = $("#phone_number").val();
  var pass = $("#password").val();
  var b_name = $("#business_name").val();
  var address = $("#address").val();
  var experties = $("#experties").val();
  var country = $("#countries").val();
  var city = $("#cities").val();
  var states = $("#states").val();
  var lat = localStorage.latitude;
  var lng = localStorage.longitude;
  var p_code = $("#post_code").val();
  var datastring;
  var datastring = 'personal_email=' + email + '&userType=' + localStorage.userType + '&pass=' + pass + '&f_name='
  if (f_name == "") {
    $('#err').html("*First name required.");
    return false;
  }
  if (l_name == "") {
    $('#err').html("*Last name required.");
    return false;
  }
  if (email == "") {
    $('#err').html("*Email required.");
    return false;
  }
  if (pass == "") {
    $('#err').html("*Password required.");
    return false;
  }
  if (p_num == "") {
    $('#err').html("Phone Number required.")
    return false;
  }
```

(local var) datastring: string

Figure 3.4 Functional Testing

3.6 White Box Testing

White box testing in Intelligent Delivery Services involves inspecting the internal logic, structure, and code of the application. Testers examine the software's architecture and design, verifying that each component functions as intended. This testing method ensures comprehensive coverage of code paths, leading to the identification of potential vulnerabilities, errors, or inefficiencies. White box testing enhances the overall reliability and security of the Intelligent Delivery Services application.

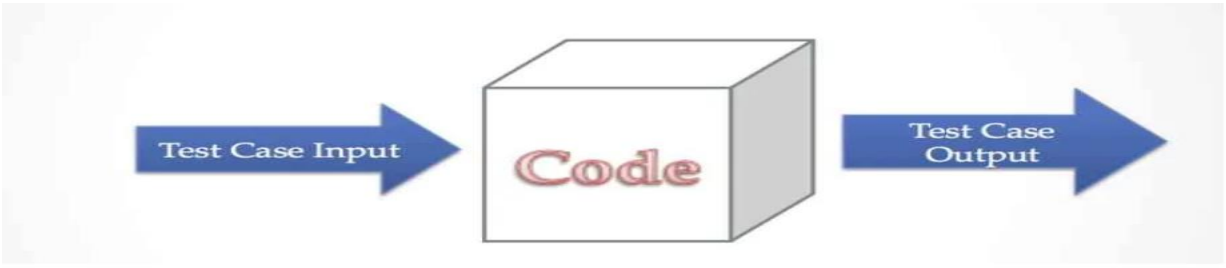

Figure 3.5 White Box testing [5.3]

3.7 Black Box Testing

Black box testing in Intelligent Delivery Services focuses on evaluating the application's functionality without delving into its internal code or structure. Testers assess the software's inputs, outputs, and user interfaces, validating that it meets specified requirements and behaves as expected. This testing approach ensures a thorough examination of the application's external behaviors. By simulating real-user scenarios, black box testing contributes to delivering a robust and user-friendly Intelligent Delivery Services application.

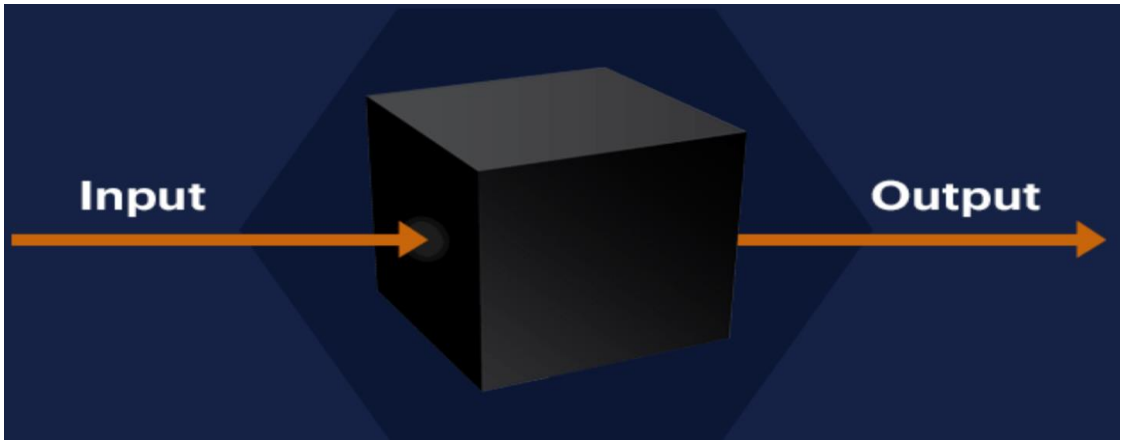

Figure 3.6 Black Box Testing [5.4]

CHAPTER 4

IMPLMENTATION

4.1 Technology Overview

The main programming language used in the Android Studio IDE to create the Android app will be Kotlin. APIs will be used to enable backend communications. We have used the Apache Cordova framework that is used for building mobile apps with HTML, CSS, and JavaScript. Apache Cordova is an open-source mobile development framework.

Apache Cordova is a potent framework that makes it easy for developers to construct cross-platform applications. Cordova, which makes use of HTML5, CSS3, and JavaScript, makes it easier to create apps that function well across several platforms, such as iOS and Android.

4.2 Front End

HTML, CSS, and JavaScript are the three languages that power front-end development in Apache Cordova. The structure of the user interface is defined by HTML, which also provides the layout. The visual appearance is styled and improved via CSS, guaranteeing a professional and responsive design. Because JavaScript is a dynamic programming language, it adds functionality and engagement to the front end, enabling developers to design seamless user experiences. The seamless combination of HTML, CSS, and JavaScript in the Cordova framework makes it easier to create cross-platform mobile applications.

4.3 Back End

PHP runs separately from the client-side code in Apache Cordova if it is selected for the back end. For processing, storing, and communicating with databases, servers usually use PHP. The PHP back-end and HTML, CSS, and JavaScript front- end of the Cordova app can communicate with each other using AJAX requests or comparable protocols. Developers can use PHP's capability for server-side activities thanks to this decoupling, which also keeps the Cordova mobile app connected seamlessly.

4.4 Data Base

We have used MYSQL database in this framework. The app is more responsive because to this connection, which makes data storage and retrieval more efficient. Developers may construct dynamic, user-friendly mobile apps by integrating MySQL's powerful data management with Cordova's web technology features. The combination of these technologies enables scalability and real-time data synchronization.

4.1 Software Details for Building Android Application

Software Development details for Android Application

Languages and Framework	**Database**	**Integrated Development Environment**	**Browser**
HTML	**MySQL**	**VS Code**	**Chrome**
CSS			
JavaScript			
PHP **Apache Cordova**			

Table 4.1 Technology used in app

CHAPTER 5

RESULTS AND DISCUSSIONS

5.1 Splash screen

When the user opens the Intelligent delivery services app in his mobile, they will be brought to the splash screen. If the user is a service provider and want to sale his mechanical services or spare parts, he will click on the service provider button and if the user is a customer and want to buy some spare parts or the mechanical services, he will click on the customer button as shown in the figure 5.1.

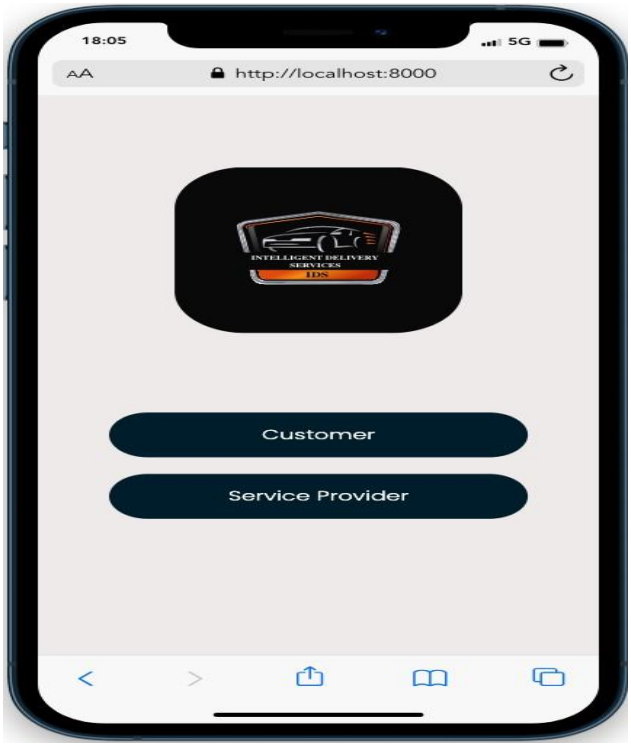

Figure 5.1 Splash Screen

5.2 Sign Up page

Intelligent Delivery Services app user will be brought to the sign up page after clicking on the service provider button on splash screen. If the Service provider is new, he will click on the sign up button and will create new account by simply adding personal information such as Name, Email, Contact Number, Address, City, Business Name.

5.3 Sign In page

User (Service provider or customer) who have already created their account can now directly login with their username and password into the Intelligent delivery Services android application.

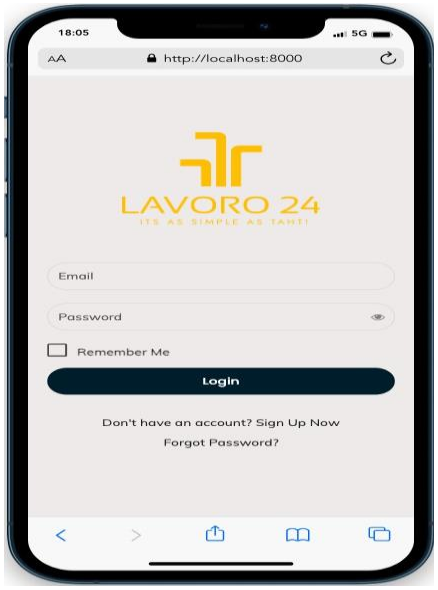

Figure 5.4 Sign In page

5.4 Home Page for Customer

This is the home page for the customer in intelligent Delivery Services android app, in which customer can easily avail the spare parts and the auto mechanic services.

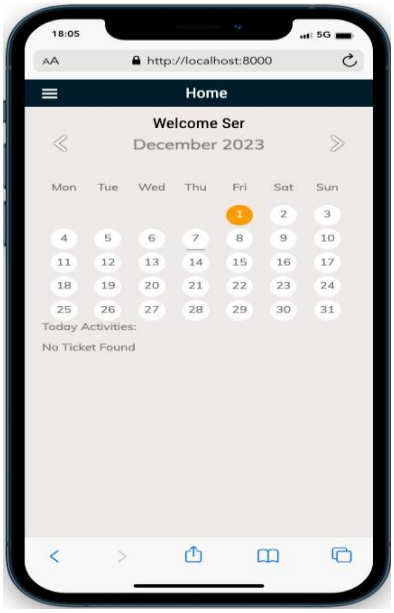

Figure 5.6 Service provider page

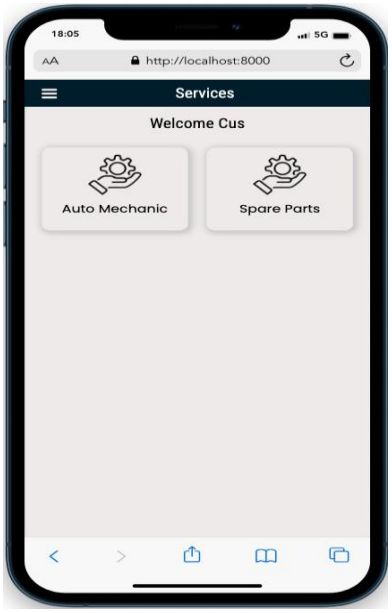

Figure 5.5 Home Page

5.5 Home Page for Service Provider

This is the home page for the service provider in Intelligent Delivery Services android app, and Service provider can mark the date on the calendar for appointment booking.

5.6 Chat Page

5.7 My Task page

This is the task page for the service provider for creating job in the Intelligent Delivery Services android app.

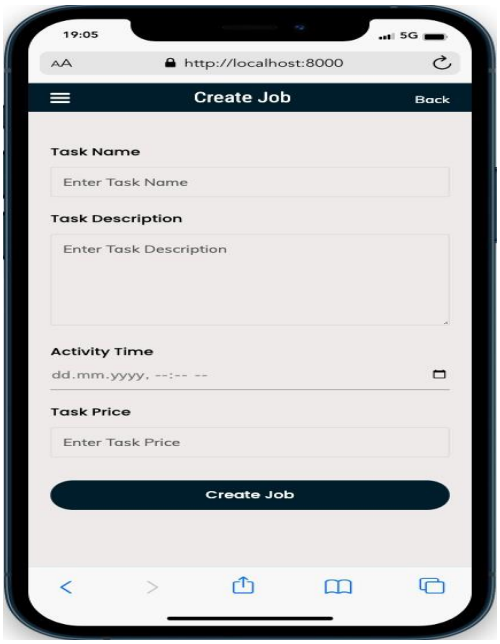

Figure 5.8 My task page

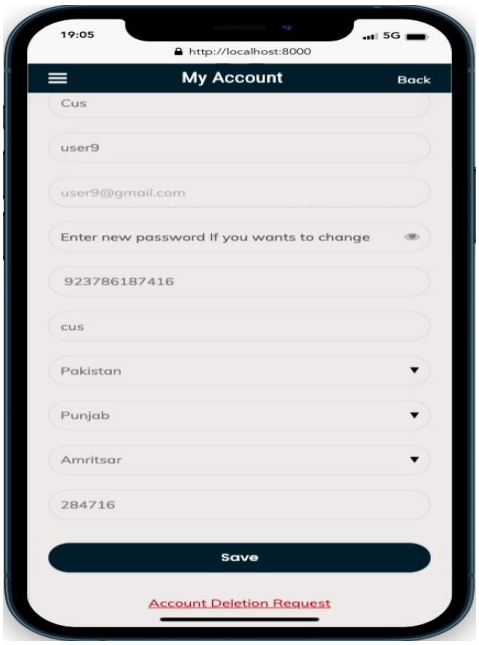

Figure 5.9 My Account page

CHAPTER 6

CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

In conclusion, the Android app designed for the car industry spare parts has undergone a remarkable evolution, positioning itself as a pivotal player in the automotive sector. From its inception as a straightforward online marketplace, the application has continuously evolved to meet the dynamic needs and expectations of its users.

The app's commitment to providing a wide range of goods and services associated with the automotive sector is evident in its comprehensive catalog, featuring a diverse selection of auto parts ranging from electrical components to brake pads, suspension parts, and engine parts.

A standout feature of many Android applications in this domain is the inclusion of robust customer support services. By helping in identifying the appropriate parts for their vehicles, the app establishes itself not only as a marketplace but also as a reliable guide for users navigating the complex world of automotive spare parts. This commitment to customer support is further exemplified by the provision of detailed product descriptions, specifications, and high-quality photos, empowering users to make well-informed purchasing decisions.

Beyond being a mere marketplace, the app has transformed into a holistic solution provider by incorporating additional services such as installation, repair, and maintenance. This diversification reflects a keen understanding of the user's needs, offering a one-stop platform for all automotive requirements.

The incorporation of flexible shipping and delivery options, and warranties on products demonstrates the app's dedication to ensuring a secure and satisfying transaction experience for its users. This not only adds a layer of trust but also caters to a global audience by providing diverse options for seamless transactions.

As technology advances and user expectations evolve, the Android app for car industry spare parts stands as a testament to adaptability and innovation. By staying at the forefront of the automotive sector's demands, this application continues to serve as a valuable companion for both enthusiasts and professionals, redefining the landscape of online marketplaces for automotive components. The journey so far has been marked by continuous improvement, and the future promises even greater strides in providing excellence and convenience to the users it serves.

6.2 Recommendations

Recommendations for Enhancing the Android App for Car Industry Spare Parts are given below as.

1. Advanced Search and Filtering Options

Integrate advanced search filters, allowing users to refine their searches based on specific criteria like brand, price range, or customer ratings.

2. Continuous Expansion of Product Catalog

Regularly update the app's product catalog to include the latest auto parts and accessories, ensuring a comprehensive selection for users. Collaborate with a diverse range of suppliers to broaden the variety of available products.

3. Enhanced Customer Support

Expand customer support services, possibly introducing live chat functionality for real-time assistance. Provide multilingual support to cater to a more diverse user base, especially in global markets.

4. Educational Content and Tutorials

Develop and include educational content, such as tutorials and guides, to empower users with knowledge about installation, repair, and maintenance of various auto parts. Collaborate with industry experts to create informative video content that can be integrated into the app.

5. Personalized Recommendations

Utilize machine learning algorithms to provide personalized product recommendations based on user preferences, purchase history, and browsing behavior. Implement a notification system for informing users about relevant promotions, discounts, or newly available products.

6. Integrated Service Booking System

Strengthen the service offerings by integrating a seamless booking system for installation, repair, and maintenance services. Provide real-time updates on service appointments and progress to keep users informed.

7. Enhanced Payment Options

- Diversify payment methods to include emerging options such as digital wallets, cryptocurrency, and buy-now-pay-later services.
- Ensure the highest standards of security for all payment transactions.

8. Global Shipping Optimization

- Optimize the shipping and delivery process to reduce lead times and enhance overall customer satisfaction.
- Provide detailed tracking information to keep users informed about the status of their orders.

9. Regular App Updates and Bug Fixes

Implement a schedule for regular app updates, focusing on bug fixes, security patches, and the incorporation of new features. Maintain compatibility with the latest Android OS versions to ensure a seamless experience for users.

By incorporating these recommendations, the Android app for car industry spare parts can elevate its functionality, user engagement, and overall market competitiveness. This proactive approach will not only enhance customer satisfaction but also position the app as a leader in the dynamic landscape of automotive parts marketplaces.

REFERENCE

[1] “N. A. Dagdag, A. A. F. D. Guzman, R. V. Pamplega and G. L. D. Intal, "At-Your-Service Mobile Application: E-Hub for Skilled Workers," 2019 IEEE 6th International Conference on Industrial Engineering and Applications (ICIEA), Tokyo, Japan, 2019, pp. 392-39”.

[2] “D. I. N. Quispe, J. M. N. Quispe, J. L. H. Salazar and J. P. Cruzado, "Mobile App for the Promotion of Home Services," 2020 IEEE Engineering International Research Conference (EIRCON), Lima, Peru, 2020, pp. 1-4, doi: 10.1109/EIRCON51178.2020.9254079.”.

[3] “R. Rei, J. Metrôlho and F. Ribeiro, "We Help : Platform to find service providers," 2023 18th Iberian Conference on Information Systems and Technologies (CISTI), Aveiro, Portugal, 2023, pp. 1-6, doi: 10.23919/CISTI58278.2023.10211509.”.

[4] “M. C. Saputra, N. H. Wardani, R. Trialih and A. L. Hijriyati, "Analysis of User Acceptance Factors for Mobile Apps Browser Using Unified Theory of Acceptance and Use of Technology (UTAUT) and Task Technology Fit (TTF) on Generation Y," 2018 International”.

[5] “P. Devigayathri, R. Amritha Varshini, M. Pooja and S. Subbulakshmi, "Mobile Ambulance Management Application for Critical Needs," 2020 Fourth International Conference on Computing Methodologies and Communication (ICCMC), Erode, India, 2020, pp. 319-323, d”.

[6] “N. Guy-Ifergan, D. Pikus, I. Ben-Harrush and V. Eisenberg, "Configuration Service for Mobile Apps," 2017 IEEE/ACM 4th International Conference on Mobile Software Engineering and Systems (MOBILESoft), Buenos Aires, Argentina, 2017, pp. 209-210, doi: 10.110”.

[7] “A. Belkhir, M. Abdellatif, R. Tighilt, N. Moha, Y. -G. Guéhéneuc and É. Beaudry, "An Observational Study on the State of REST API Uses in Android

Mobile Applications," 2019 IEEE/ACM 6th International Conference on Mobile Software Engineering and Systems (”.

[8] “S. E. Polykalas, G. N. Prezerakos, F. D. Chrysidou and E. D. Pylarinou, "Mobile apps and data privacy: When the service is free, the product is your data," 2017 8th International Conference on Information, Intelligence, Systems & Applications (IISA), Larn”.

[9] “T. Li, Y. Fan, Y. Li, S. Tarkoma and P. Hui, "Understanding the Long-Term Evolution of Mobile App Usage," in IEEE Transactions on Mobile Computing, vol. 22, no. 2, pp. 1213-1230, 1 Feb. 2023, doi: 10.1109/TMC.2021.3098664”.

[10] “A. A. Editor, Title: Subtitle (in italics), Edition(if not the first), Vol.(if a multivolume work). Place of publication: Publisher, Year, page number(s) (if appropriate).”.