**Development of Automotive e-Services Mobile Apps for Kampar Area**

By

Lee Zhong Cheng

A REPORT

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BACHELOR OF INFORMATION SYSTEMS (HONOURS)

DIGITAL ECONOMY TECHNOLOGY

Faculty of Information and Communication Technology

(Kampar Campus)

MAY 2024

**UNIVERSITI TUNKU ABDUL RAHMAN**

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**Academic Session**: May 2024

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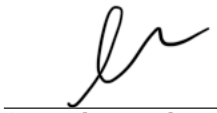

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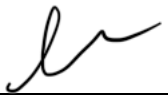
Signature : 

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Date : 12/09/2024

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To a very special person in my life, Poh Hui See, for her patience, unconditional support, and love, and for standing by my side during hard times. Finally, I must say thanks to my parents and my family for their love, support, and continuous encouragement throughout the course.

# ABSTRACT

In this project, the automotive e-service mobile application is developed to help the car owner and also the mechanic in Kampar area. When car owners are facing car broke down in anywhere, this mobile application is helping them to book a mechanic to help them to fix their car. This mobile application will provide chance not only for those mechanics that are having trouble in finding jobs to sustain the family and also for part time mechanic. Mechanics can use this mobile application to generate their income by accepting immediate repair jobs. There are three problem statements which are less automotive e-service mobile application in the market, hard to find trusted mechanic and difficult to know whether the mechanic is experienced. For the first problem statement, there are less automotive e-service in the market. As we can see people nowadays are most likely rely on technology, so if there is less or no such mobile application in the market, car owners are very hard to find a mechanic when their car occur some problems. Therefore, one of the objectives of this project will solve this problem which is developing an automotive e-service mobile application. This mobile application will let user to book the mechanic to help them solve their car problems. The mobile application will have a built-in map, so user can get their exact location then share to mechanic. The second problem statement which is hard to find trusted mechanic. At physical workshop, some mechanics will be dishonest to the customer like want customer to pay extra cost of repairing the car. Therefore, one of the objectives of this project will solve this problem which is let user to import their contact, when user want to book a mechanic, the system will check from both sides which are users and mechanics, if the contact number in the contact list appear at past order of the mechanic then it will first recommend to user. The reason for this is the mechanic is servicing your friends or family before, so the mechanic is trusted. The third problem statement is difficult to know whether the mechanic is experienced. The objective that will solve the problem is it will need the mechanic to verify by submitting their information like certificate, skills and the car that repaired before. After admin verified the submission of the mechanic, mechanic's status will only change to verify and based on the data that provide by mechanic and get from all order history, them the system will calculate the professional level and display it at the mechanic profile.

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| | |
|---|---|
| *GPS* | Global Positioning System |

# Chapter 1

## Project Background

This chapter includes an introduction that briefly discusses the project's history, the significance of doing it, the challenge at hand, the driving force behind it, and the contribution it will make.

**Introduction**

The significance of e-service applications has never been greater, especially at a time of accelerating technical development and altering consumer expectations. There is ongoing pressure on businesses in all sectors to innovate and adjust to changing customer needs. Automotive e-service application will help car owners when they are in the trouble of car broke down, car owners just have to perform few clicks in our application then their problems will be solved by connecting car owners to mechanics. The vanguard of this revolutionary wave is automotive e-Services. Our application represents a paradigm shift in how businesses may interact with, serve, and keep consumers in a world that is dominated by digital technology. It is more than simply a software solution.

### 1.1 Problem Statement

#### 1.1.1 Less automotive e-service mobile applications in the market

The first problem statement is there are very less automotive e-service mobile applications in the market especially car repair services. Nowadays, people are all rely on technology, it is very inconvenient when there is no such application that can solve the problem of car owners. Car owners are very hard to find a mechanic when their car occur some problems. There is a need of built-in GPS function. It is because it can accurately know the exact location of the user. If a user is facing the problem of car broke down, he or she want to contact mechanic to come over the place that the car has broken down and help him or her to fix the car. When user has to tell the location to the mechanic and unfortunately user cannot tell where he or she is located, the mechanic will have to spend a lot of time in searching for the location. It is very time-consuming and dangerous if this happens.

### 1.1.2 Hard to find trusted mechanic

The second problem statement is hard to find trusted mechanic. When car owner needs to find a mechanic to help him or her to fix the car, usually user will search online. There are many mechanics that will be recommended to car owner, and it is very difficult to verify is the mechanic is honest and trustable. Some mechanic will be dishonest. For example, the mechanic will tell the car owner that there are many parts need to be fixed on his or her car but actually there is just some small problems, so those mechanics can get paid more from the car owner. Car owner that lack of this kind of knowledge will pay to the mechanic without consideration. This problem is frequently happened nowadays.

### 1.1.3 Difficult to know whether the mechanic is experienced

The third problem statement addresses the challenge of assessing the experience level of mechanics, which can lead to unexpected issues for car owners. In situations where mechanics lack sufficient experience, misdiagnoses and inappropriate repairs may occur, resulting in prolonged vehicle downtime and unnecessary expenses for car owners. For instance, a mechanic inexperienced in diagnosing engine problems may mistakenly identify a battery issue as the cause of a car breakdown. Consequently, the car owner might purchase and replace the battery, only to find that the vehicle still fails to start due to underlying engine issues. This lack of accurate diagnosis not only prolongs the repair process but also creates frustration and inconvenience for car owners.

## 1.2 Motivation

The aim of this project is to assist both car owners and mechanics, particularly in the Kampar area, where many car owners are students studying at the university. Often, these students are far from home and lack local connections, leaving them feeling helpless when their cars break down with no one to turn to for assistance. This mobile application aims to bridge this gap by connecting them with nearby mechanics who can come to their aid and repair their vehicles. The app serves as a lifeline for stranded car owners, offering them immediate assistance and peace of mind in times of vehicle trouble. Additionally, it fosters entrepreneurship by empowering mechanics to leverage their skills and generate income, thus contributing to the local economy.

## 1.3 Project Objectives

### 1.3.1 Develop an automotive e-service application

This first project objective is developing an automotive e-service application. As there is a problem statement stated above which is there are very less automotive e-service application in the market. To solve this problem, develop an automotive e-service application is a best solution. This mobile application will let user to book the mechanic to help them solve their car problems. The mobile application will have a built-in map, so user can share their real-time location to mechanic. Mechanic will know the exact location of the user and easy to get to the him or her by following the route on the map that appear in this mobile application. This is more convenient and time saving for both user and mechanic.

### 1.3.2 Enhancing Trustworthiness Through User-Imported Contacts

This objective aims to tackle the challenge of finding trusted mechanics by leveraging user-imported contacts within the automotive e-service mobile application. In physical workshops, instances of dishonesty, such as unnecessary charges, can erode trust between mechanics and customers. To address this, the project seeks to implement a feature allowing users to import their contacts into the app. When booking a mechanic, the system will cross-reference these contacts with the mechanic's past orders. If a contact number matches a previous customer, the mechanic will be prioritized for recommendation. This prioritization is based on the assumption that if a mechanic has serviced a user's friends or family before, they are likely trustworthy. By utilizing user-imported contacts, the objective aims to foster trust and confidence in the mechanic selection process, enhancing the overall user experience within the platform.

### 1.3.3 Establishing Mechanic Verification and Professional Level System

This objective is aimed at addressing the challenge of verifying mechanic experience within the automotive e-service mobile application. To ensure users can easily discern the level of expertise of mechanics, the project will implement a verification process. Mechanics will be required to submit various credentials, including certificates, skills, and details of previously repaired cars. Upon submission, the admin will review and verify the provided information. Once verified, the mechanic's status will be updated to

"verified." Additionally, the system will analyze data from all past orders, considering factors such as the complexity of repairs and customer feedback. Based on this analysis, the system will calculate a professional level for each mechanic, reflecting their experience and proficiency. This professional level will be displayed on the mechanic's profile, providing users with valuable insights into the mechanic's expertise and enhancing transparency within the platform.

## 1.4 Contributions

The primary aim of this project is to offer assistance to car owners encountering breakdowns anywhere. Through this mobile application, users can seamlessly book a mechanic to resolve their car issues promptly. Moreover, the app incorporates a convenient built-in map function, allowing users to share their current location with the mechanic effortlessly. This feature not only streamlines communication but also facilitates mechanics in reaching users promptly by providing precise location details. Mechanic-side functionality of the app offers a lifeline to those struggling to secure consistent employment opportunities to support their families. By leveraging this platform, mechanics can efficiently generate income by accepting immediate repair jobs, thereby addressing their financial challenges while meeting the needs of car owners in distress.

## 1.5 Report Organization

The details of this research are shown in the following chapters. In Chapter 2, some related backgrounds are reviewed and also strengths, weaknesses and solutions. Then, methodology, system requirement, some diagrams for the mobile app and timeline are presented in Chapter 3. And then, Chapter 4 show Preliminary Work and software used. Furthermore, Chapter 5 reports the conclusion.

# Chapter 2
# Literature Review

## 2.1 Review of existing system

### 2.1.1 Auto Repair Cloud for iPhone

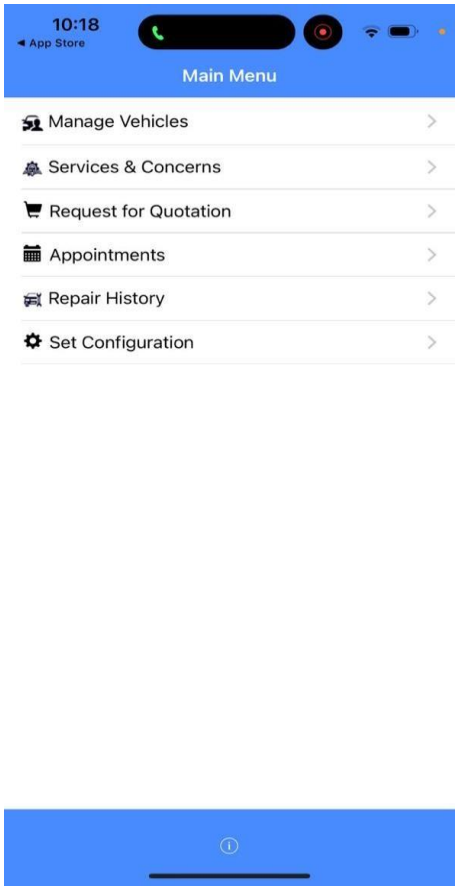


**Figure 2.1**

AutoRepair Cloud for iPhone is a cloud-based auto shop management system that can be used from an iPhone.[3] Users have access to a wealth of options, including the ability to look up OEM technical service information, do digital inspections, create repair orders, print invoices, and much more.[3] The developer of this application is InterTAD LLC. It is a high-end, full-cycle software development business with a focus on custom software development.[4] Figure 2.1 is the main menu that will appear after user login.

**Strength:**

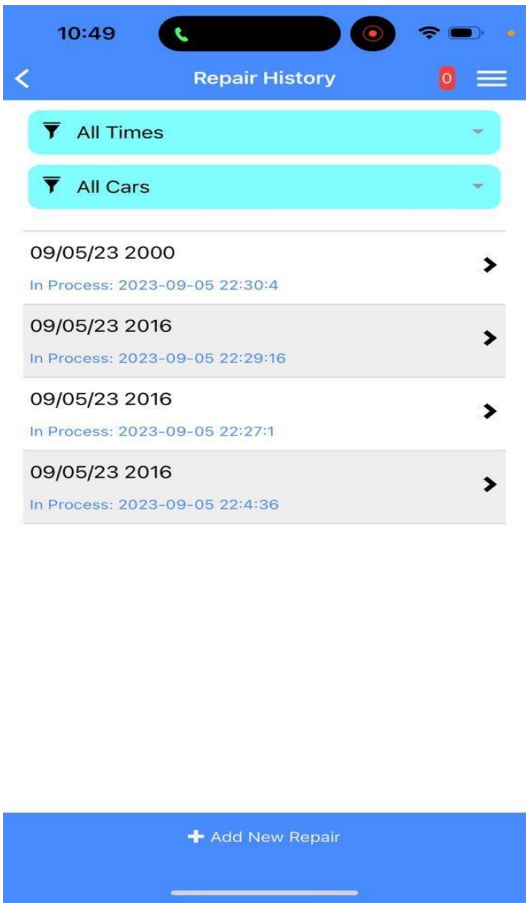


**Figure 2.2**

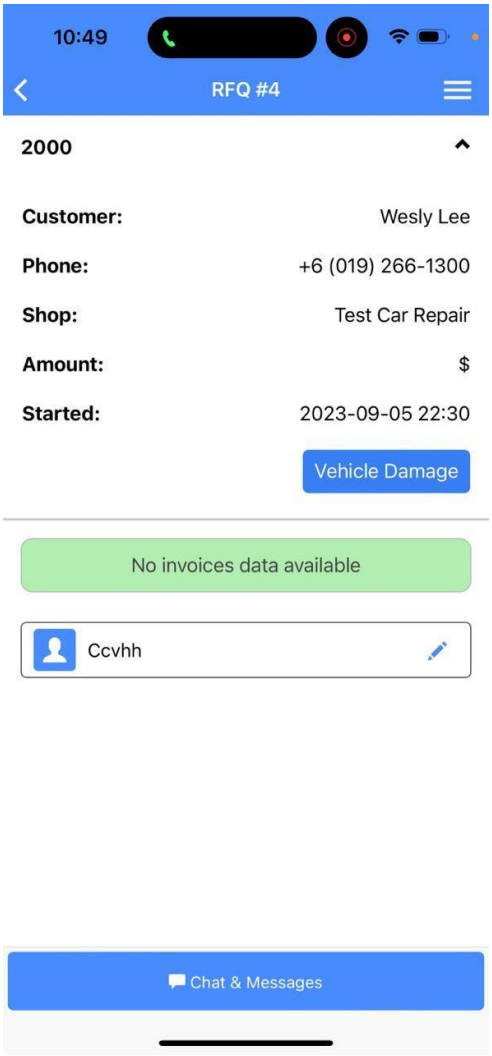


**Figure 2.3**

The strength of this application is Repair History. As we can see in figure 2.2, user can view the repair history of the car. User can view the repair history by selecting the time, which have the option of all times, last 6 months, last year, last 2 years and last 5 years. Other than that, user can also view the repair history by selecting the car that added into the system. Then, in figure 2.3, user can view the information of the customer and the amount they paid.

**Weakness:**

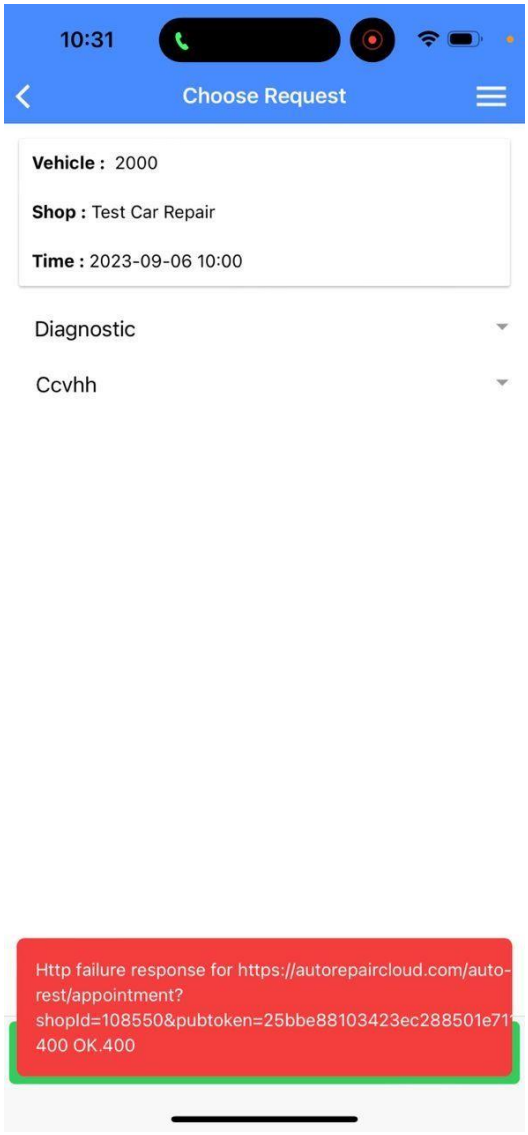


**Figure 2.4**

The weakness of this application is the performance and function of this mobile application is unstable. In the appointments booking feature, after choosing the date, time and type of repair, it cannot save the appointment into the system. It will prompt out error below telling that it is failure to response for it, this show in figure 2.4. Other than that, this application is confusing user because there have combine car owner and mechanic feature together.

**Solution:**

The solution to solve those problems are the developer of this application have to run software testing regularly and also the developer may have to update and upgrade the application to fix the bugs and some unexpected error to ensure the application is running smoothly. Moreover, developer can solve the problem of confusing user by

separate the features of car owner and mechanic like user can choose to register for car owner or for mechanic. When they login as different roles, they will experience difference features.

### 2.1.2 ServiceMyCar

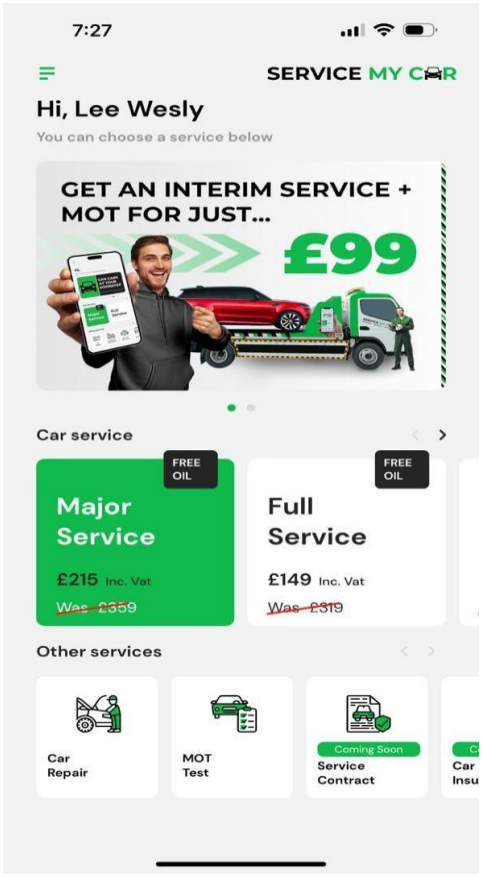


**Figure 2.5**

ServiceMyCar is an online platform for automobile service and repairs established in the UAE. The business, which has its headquarters in Dubai, UAE, offers automobile services via its mobile application in Saudi Arabia, Oman, the UAE, and the UK.[7] The developer of this mobile application is Service My Car Holdings Limited. It is a functioning Private Limited Company with the registration number 13250951 at Companies House. Service My Car Holdings Limited was established on March 8, 2021, and has its registered office in Bolton. For 2 years and 6 months, SERVICE MY CAR HOLDINGS LIMITED has been in business. There are now 2 active directors and activities connected to the SIC Code 45200 - Maintenance and repair of motor vehicles, according to the most recent confirmation statement published on 8 December 2022.[8] Figure 2.5 show the home page of ServiceMyCar application.

**Strength:**

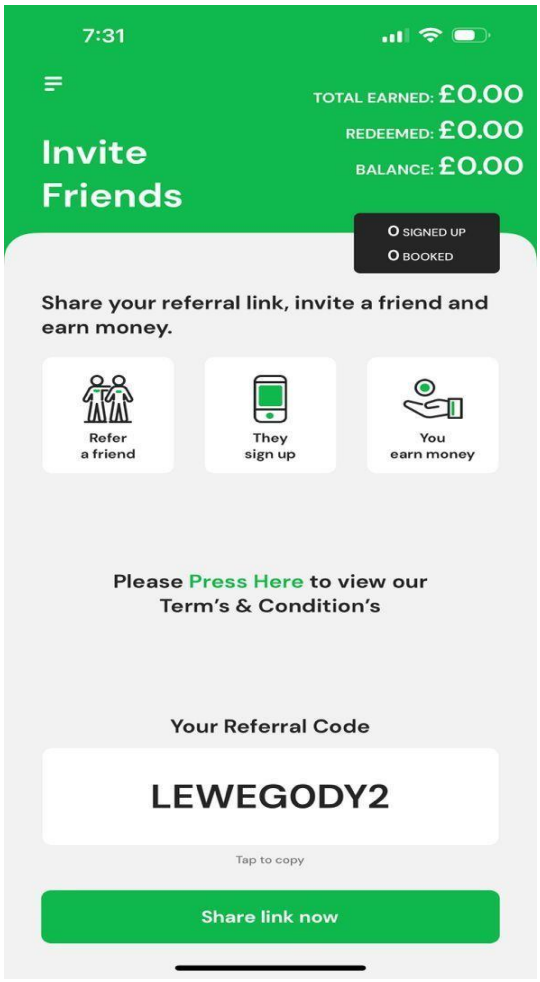


**Figure 2.6**

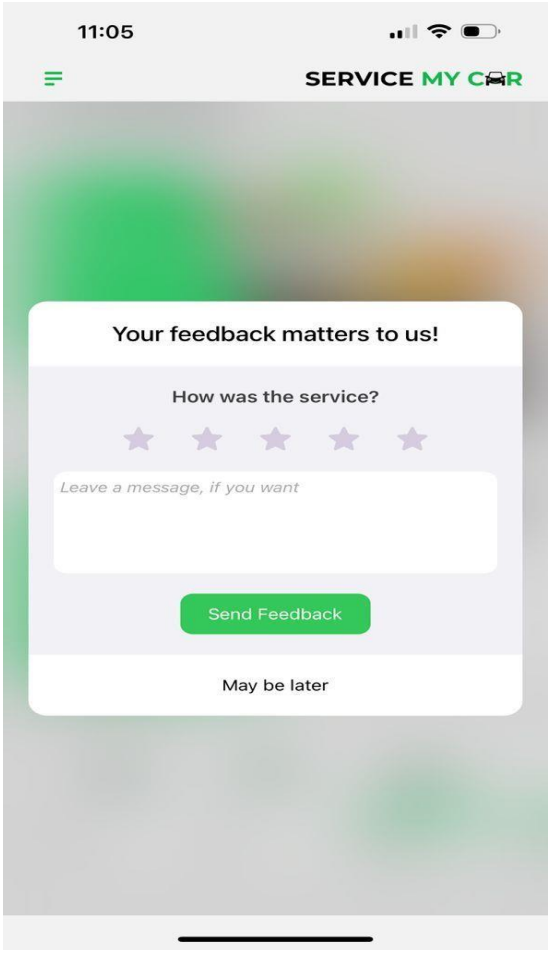


**Figure 2.7**

There are two strengths for this ServiceMyCar mobile application. The first strength in this mobile application is the rewards program. This rewards program is located in the menu on the left-hand side of the application. Figure 2.6 is the page of rewards program. This rewards program is about when one existing user invite his or her friends to use this mobile application and register using the referral code of user, user will earn money from it. User can use the money that earn from this rewards program to pay the service in the future. The second strength for this mobile application is user can send feedback. This feedback page is also located in the menu on the left-hand side of the application. Figure 2.7 show the page of feedback. When user found out that there have somethings that need to improve, user can fill up and send this feedback out. This will help the developer of this application to have improvement on this application.

**Weakness:**

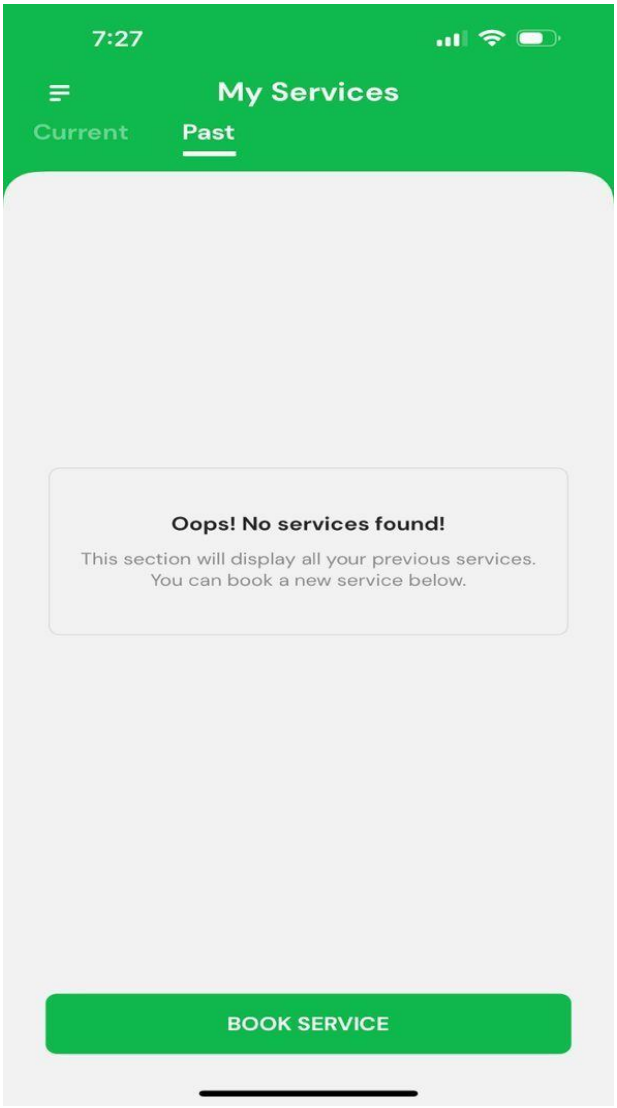
7:27
My Services
Current
Past
Oops! No services found!
This section will display all your previous services.
You can book a new service below.
BOOK SERVICE

**Figure 2.8**

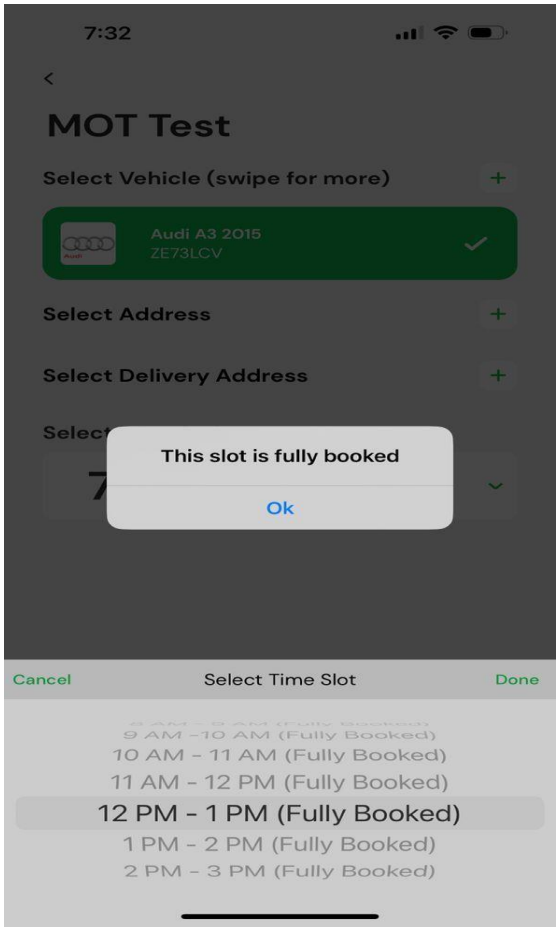


**Figure 2.9**

There are two weakness in this ServiceMyCar mobile application. The first weakness of this application is hard to look back for booking history. Figure 2.8 show the page of booking history. It will be so hard to look back the booking that have made, user have to look on those booking histories one-by-one, it is so inconvenient and also time consuming. The second weakness for this mobile application is there have the problem when selecting this time slot in Figure 2.9. It is a technical issue that in any month and any time slot, it also will display fully booked and cannot select for the time slot and make the booking. When this happening, user will feel disappointed on this application and don't want to use it anymore because it is not functioning well.

**Solution:**

The solution that can be used to solve the first weakness which is hard to look back for booking history is implementing filter function into the booking history page. When there have filter function, user can use it to filter out for related booking history, and user no need to spend time on finding the booking history. The solution can be used to solve the second weakness is make improvement and do more testing on this mobile application to make sure this mobile

application will run smoothly and do not occur any major issues on it. If the mobile appliation is error free, user will keep using this mobile application.

### 2.1.3 HeXA Towing


**Figure 2.10**

HeXA Towing is a mobile application that allows users to book, schedule, and dispatch car recovery and towing services.[9] The app was launched in April 2023 and was developed by Mulubrhan Dagnew, the founder of HeXA Apps LLC.[9] It streamlines the process of obtaining roadside assistance and towing services, providing users with a user-friendly and efficient platform. Figure 2.10 shows the login page of the HeXA Towing mobile application, which serves as the entry point for users to access its features.

**Strength:**

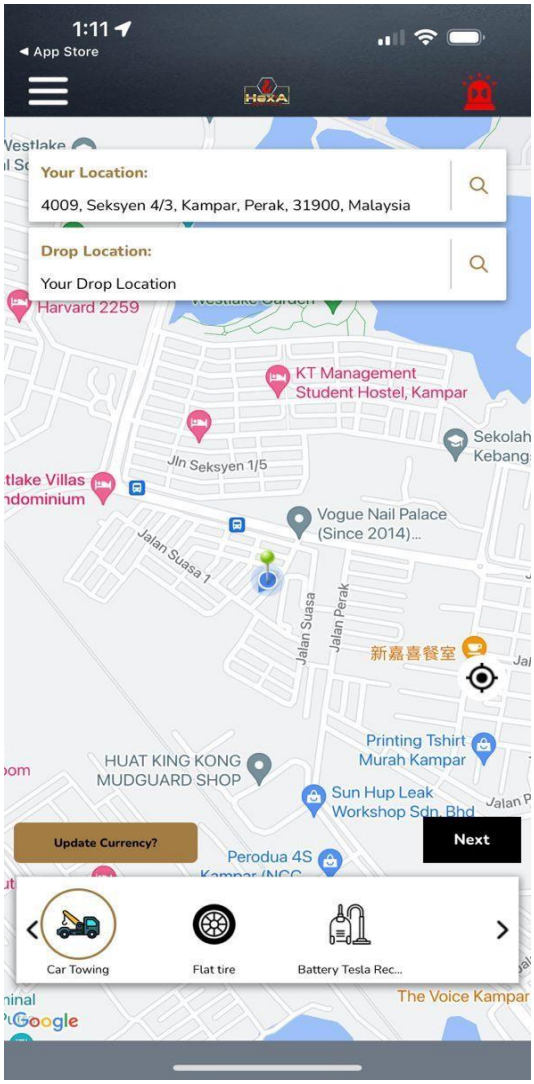


**Figure 2.11**

The strength of HeXA Towing mobile application is it has a built-in GPS function. In figure 2.11, we can see clearly there is a map on the screen with the current location of the user. With this built-in GPS function, user no need to key in manually for his or her address and it is impossible to know the address when user is not familiar to the place that he or she currently at. User just have to click the locate button, then his or her current location will be pinned on the map, and it will help user to auto-fill the address.

**Weakness:**


**Figure 2.12**

The weakness of this HeXA Towing mobile application is hard to look for past and upcoming booking history. Figure 2.12 show the page of your bookings. It will be so hard to look for the past and upcoming booking that have made, user have to look on those booking histories one-by-one to search for the booking he or she want to view at.

**Solution:**

The solution that can be used to solve the weakness of this HeXA Towing mobile application which is hard to look for past and upcoming booking history is implementing filter function into your bookings page. When there have filter function, user can use it to filter out for related booking history, and user no need to spend time on finding the booking history one-by-one.

### 2.1.4 Carfix

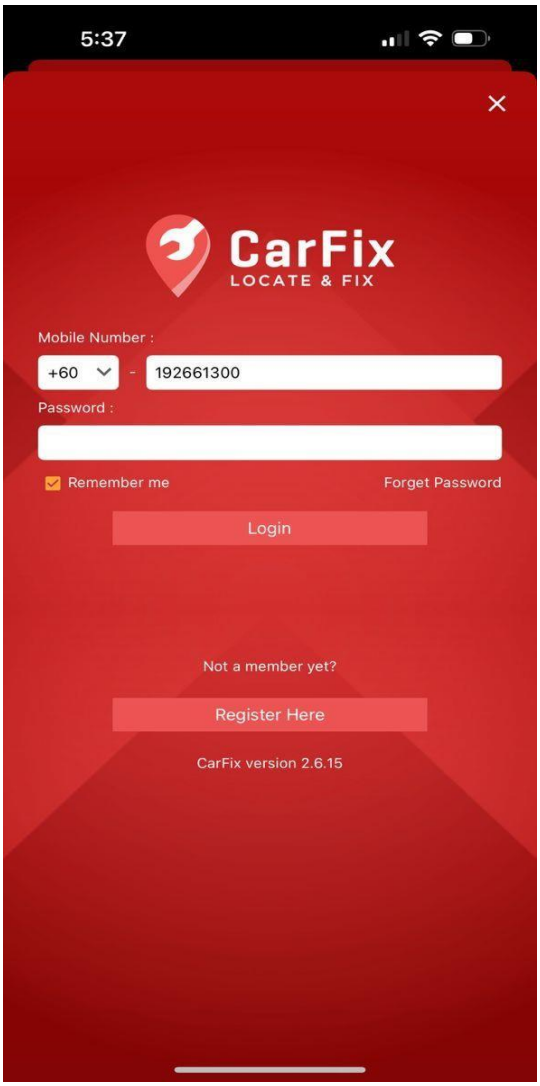


**Figure 2.13**

A variety of roadside assistance services, such as towing, fuel delivery, tyre changes, battery replacement, jump starts and foreman services, are provided by the Carfix mobile application. The software was created by OneWorks Sdn Bhd. [10] It is an online service provider renowned for its cutting-edge E-Claims technology, which expedites the online processing of insurance claims for insurance companies and their stakeholders.[11] The app was released in April 2014.[10] The login page for the Carfix mobile application is shown in Figure 2.13.

**Strength:**

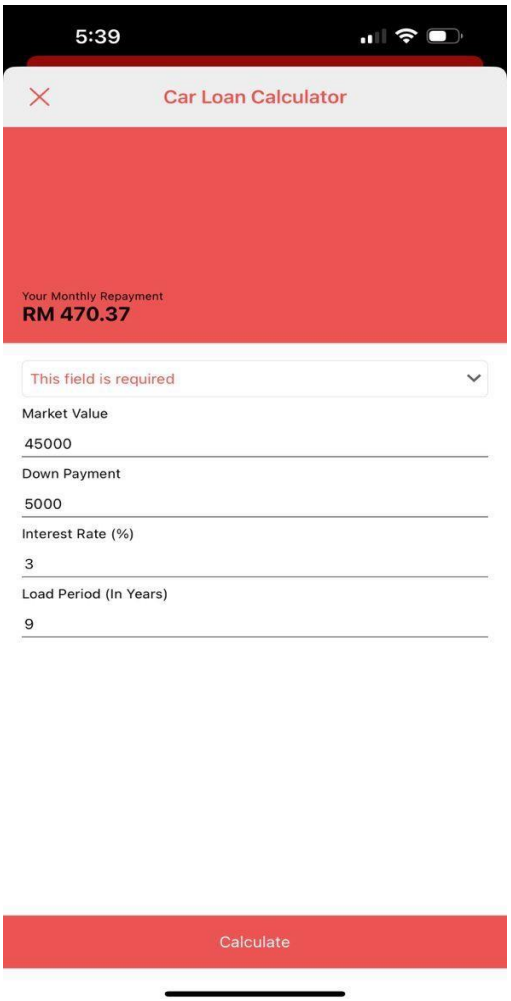


**Figure 2.14**

Carfix is renowned for its integrated loan calculator function in addition to its extensive list of roadside assistance services, which include tyre changes, fuel delivery, towing, jump starts, battery replacement and foreman services. With the help of this integrated tool, users can easily calculate their monthly loan payments based on a variety of input parameters, which significantly enhances the application's value. Users may get an instant breakdown of their monthly payment obligations by just entering the market value, down payment, interest rate, and loan period and clicking the calculate button. As shown in Figure 2.14, this simplified procedure improves the user experience overall and adds a convenience layer for financial planning.

**Weakness:**

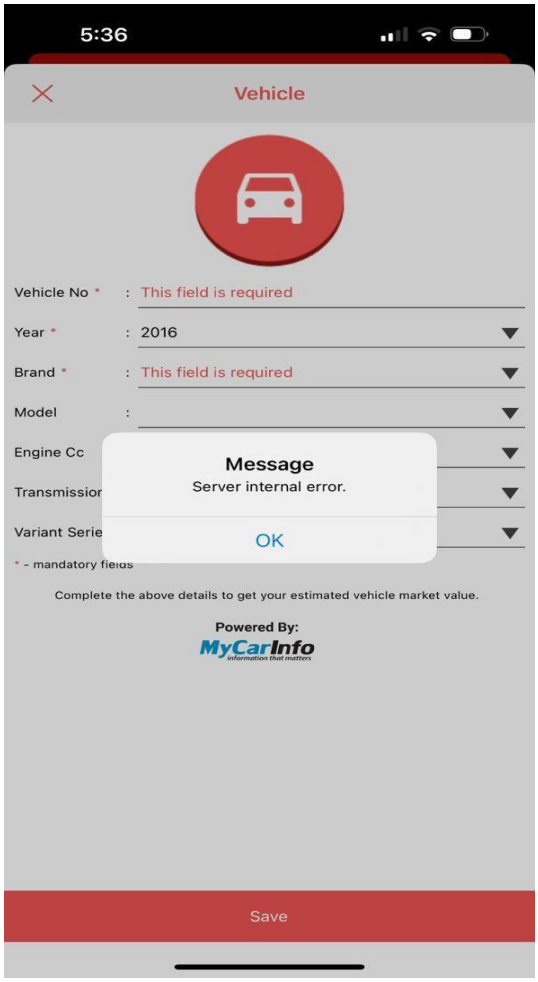


**Figure 2.15**

The problem users run into when trying to add a vehicle to their account is the weakness of the Carfix mobile application. Figure 2.15 shows the message "Server internal error" that appears when you select the vehicle brand. Users are unable to successfully add their vehicles, which is a requirement in order to use the application's full range of services. Users are consequently unable to make use of services that depend on a linked vehicle to function, like fuel delivery, tyre changes, jump starts, towing, and foreman services. The application's overall effectiveness and usability are greatly impacted by this technical challenge.

**Solution:**

When users try to add a vehicle to the Carfix mobile application, they encounter server internal errors. To resolve this, developers should look into the underlying cause in the backend and apply specific fixes. Better error handling that provides precise and beneficial messages can

direct users towards fixing the problem. Future incidents can be avoided by proactive server and database maintenance and monitoring. Offering consumers a different way to add cars—like a web-based interface—can serve as a temporary fix. Users' trust and satisfaction can be preserved by keeping them informed about progress and resolution timelines.

### 2.1.5 Roadz

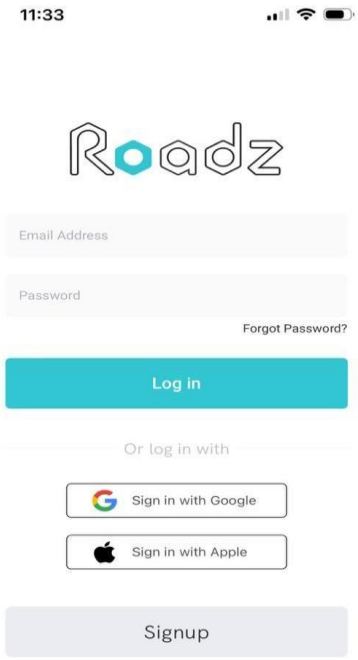


**Figure 2.16**

Roadz is a smartphone app that connects vehicle owners and service providers by providing automotive services as an e-commerce platform.[12] Roadz is developed by a person wo called Sager Alsager.[13] It was introduced in 2020 with the goal of digitising manual processes that have historically existed in the auto aftermarket industry.[12] Through the ability to schedule and manage services, peruse provider reviews, and securely make in-app payments, the app streamlines auto maintenance and repair. Roadz improves car owners' experiences by encouraging openness and confidence between users and service providers. Figure 2.16 displays the Roadz login page.

**Strength:**

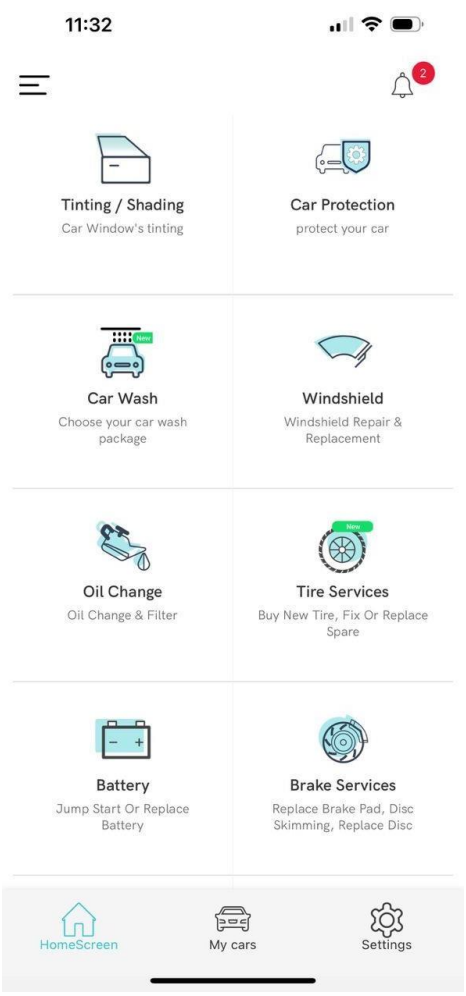
11:32
2
Tinting / Shading
Car Window's tinting
Car Protection
protect your car
Car Wash
Choose your car wash package
Windshield
Windshield Repair & Replacement
Oil Change
Oil Change & Filter
Tire Services
Buy New Tire, Fix Or Replace Spare
Battery
Jump Start Or Replace Battery
Brake Services
Replace Brake Pad, Disc Skimming, Replace Disc
HomeScreen
My cars
Settings

**Figure 2.17**

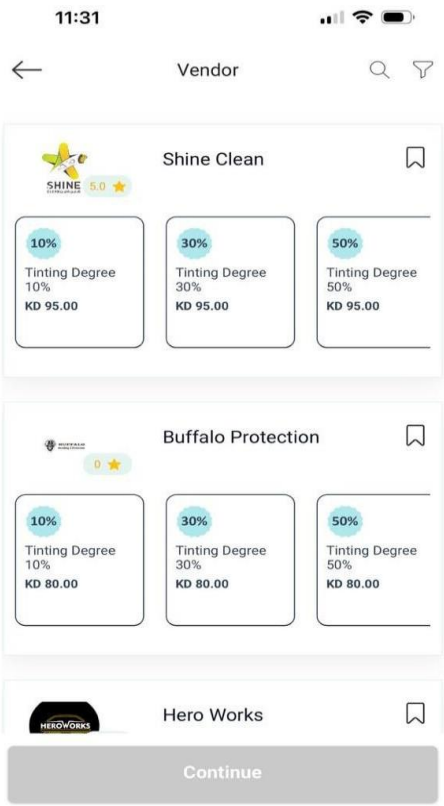


**Figure 2.18**

The strength of Roadz lies in its extensive service offering, which includes, as Figure 2.17 illustrates, tinting, car washes, windscreen repairs, oil changes, tyre services, battery replacement and brake services. As seen in Figure 2.18, where users can choose a service and see available service providers along with clear pricing for each service, the app excels in transparency. By preventing disputes over fees between customers and service providers, this upfront pricing promotes a more seamless and dependable experience while also fostering community trust.

**Weakness:**

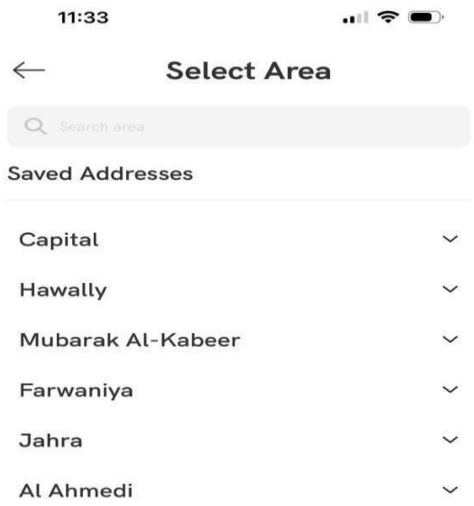


**Figure 2.19**

The absence of a map feature that allows the user's current location to be automatically determined is one of the main weaknesses of the Roadz mobile application. This absence can be problematic, especially for users who might not be familiar with their surroundings and need assistance right away. It is a laborious task for users to manually enter their address if they are unable to quickly and accurately populate their current location. This can cause delays in getting the required services, which can be particularly problematic in emergency or time-sensitive situations. The annoyance of manual entry can negatively affect the user experience in general and take away from the app's otherwise flawless service provisions.

**Solution:**

Roadz ought to incorporate a strong map feature with location services functionality into the application. This feature would make it easier to request services by enabling the app to automatically determine and display the user's current location. By using GPS technology, the

app can direct service providers to the user's precise location, resulting in more precise and effective service. Additionally, to ensure flexibility and accuracy in service requests, the app should provide options for users to edit or verify their location information as needed. Including map functionality will expedite the entire service process and increase user satisfaction.

## 2.2 Summary Table

| Mobile Application | Strength | Weakness |
|---|---|---|
| **Auto Repair Cloud for iPhone** | - User can view the repair history by using filter function.<br>- User can view the detailed information of their customer. | - the performance and function are unstable |
| **ServiceMyCar** | - Rewards program<br>- user can send feedback of the application to the developer | - hard to look back history |
| **HeXA Towing** | - built-in GPS function | - hard to look for past and upcoming bookings history |
| **Carfix** | - built-in car loan calculator | - unable to add a vehicle successfully |
| **Roadz** | - Extensive and Transparent Services | - Lack of Location Detection |

**Table 2.1 Summary Table**

# Chapter 3

# PROPOSED METHOD/APPROACH

## 3.1 Methodology

The methodology that most suitable in this project is Rapid Application Development. RAD is a flexible approach to software development that places less of a focus on detailed design and more on experimentation and fast feedback. In general, the RAD method places more emphasis on prototyping and development than it does on planning. Rapid application development enables developers to swiftly iterate and update software without having to start from scratch. This ensures that the output is more quality-focused and meets the needs of the end customers.[1] There are four phases of RAD which are requirement planning, user design, construction, and cutover. In requirement planning phase, it is collaborating with stakeholders to capture essential project requirements. In user design phase, it is creating a high-level design and working prototype for user feedback. In construction phase, it will code and develop the software with frequent updates and iterations. For cutover phase, it prepares for deployment, test, and refine based on user feedback post-launch.[2]

## 3.2 System Requirement

### 3.2.1 Hardware

The hardware utilized in this project comprises computers and iOS mobile devices. The iOS mobile devices are essential for testing the automotive e-service mobile app. It's imperative that these devices are capable of downloading the latest Expo Go app and supporting the required system version. On the other hand, computers are utilized to operate the software used in developing the mobile application, namely Visual Studio Code and Firebase. These hardware components play integral roles in the successful development and testing of the automotive e-service mobile app.

### 3.2.2 Specifications of laptop

| Description | Specifications |
|---|---|
| Model | MSI GL63 8RE |
| Processor | Intel Core i7 8t Gen |
| Operating System | Windows 11 |
| Graphic | NVIDIA GeForce GTX 1060 |
| Memory | 32GB DDR4 RAM |
| Storage | 500GB SSD 1TB HDD |

**Table 3.1 Specifications of laptop**

### 3.3 Use Case Diagram

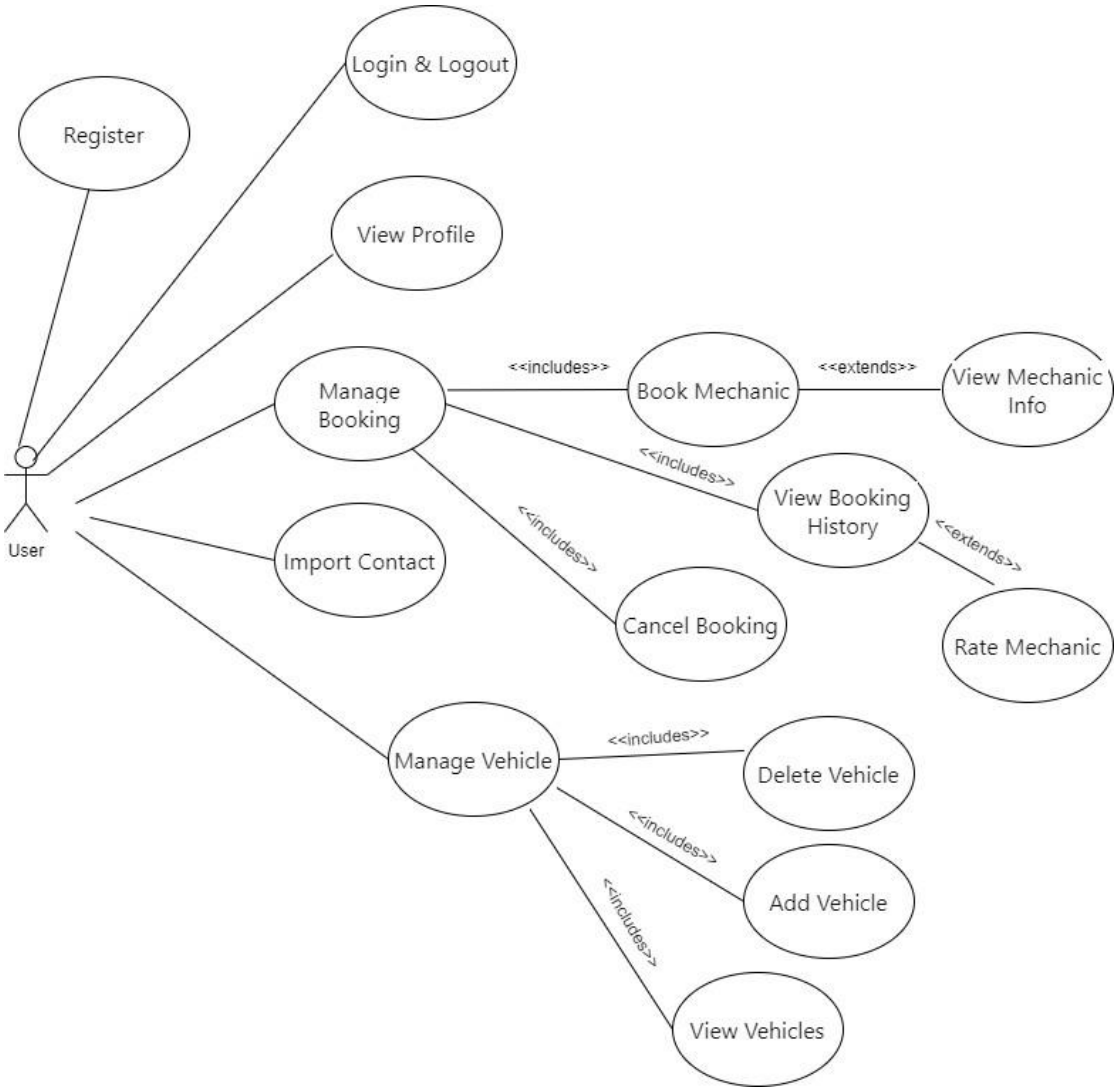


**Figure 3.1 Use Case Diagram for ECARFIX**

In the ECARFIX app, users start by registering and creating their profile, which they can view and edit at any time. Once registered, they can log in to access the app's features, including managing bookings where they can book a mechanic for immediate service, view their booking history to keep track of past and upcoming services, and cancel bookings if necessary. The app also allows users to import contacts for convenience and manage vehicles by adding or removing them from their profile. They have the option to rate the mechanic, providing valuable feedback for both the mechanic and other users. This streamlined process ensures that users can quickly and efficiently manage their vehicle service needs in real time.

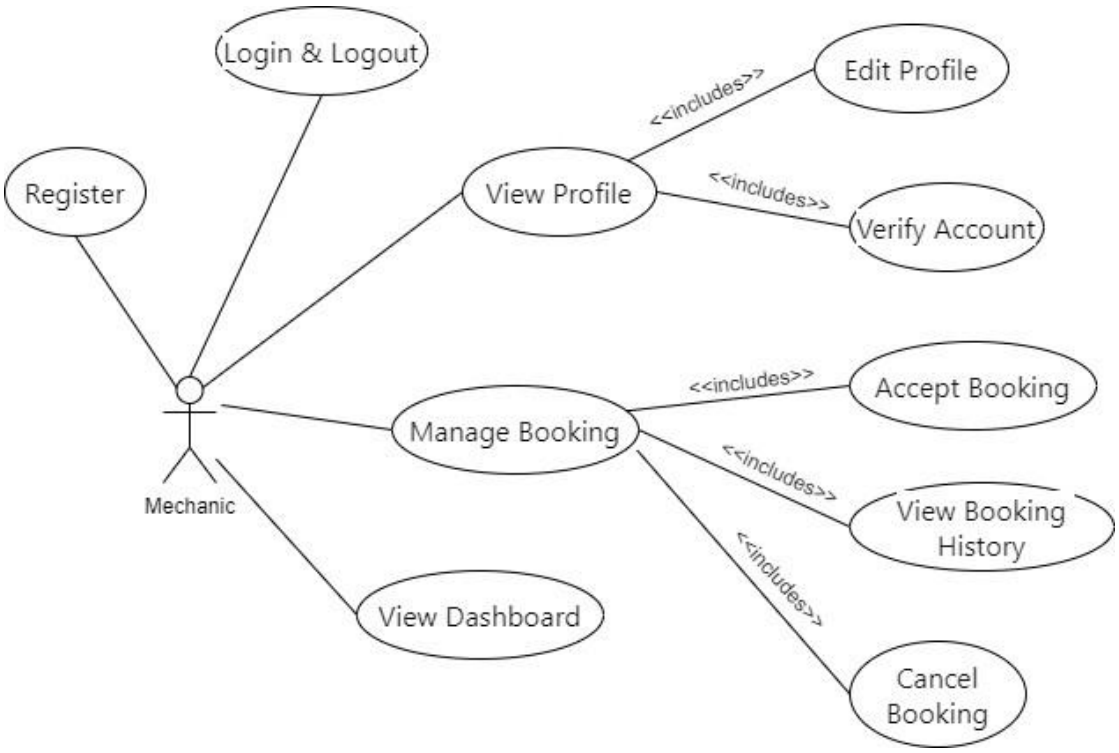


**Figure 3.2 Use Case Diagram for ECARFIX for mechanic**

Mechanics using the ECARFIX app start their journey by registering and creating a profile. To fully engage with the platform, they must log in and navigate to their profile. Within the View Profile section, mechanics have the option to undergo a verification process. This step is crucial as it validates their expertise and experience, ensuring that only qualified mechanics are available for real-time bookings. The verification process must be completed before they can accept any jobs, which is a measure to maintain high service standards and user trust.

Once verified, mechanics gain access to other functions such as Manage Booking, where they can accept new job requests, view their booking history, and cancel bookings if necessary. Mechanic also can view the dashboard to know the total earnings of the month and also average rating on the problem solved. This comprehensive set of functions ensures that mechanics can efficiently manage their bookings and provide high-quality services in the app's real-time booking environment.


**Figure 3.3 Use Case Diagram for Admin**

The admin in the ECARFIX app is entrusted with a multifaceted role that ensures the smooth operation of the platform. After logging in, the admin is presented with a dashboard that provides a holistic view of the system's activities. Their responsibilities include managing users, where they can view user lists, delve into individual user booking histories, and have the authority to cancel bookings if necessary. In parallel, the admin manages mechanics by viewing the mechanic list and verifying their credentials, which is a critical step before mechanics can accept jobs. Additionally, the admin monitors the mechanics' booking history to ensure service quality and efficiency. Another vital aspect of the admin's role is vehicle management, which involves adding, viewing, updating, and deleting vehicle brands and types, keeping the vehicle database current and comprehensive. Apart from that, admin also able to manage services, add new service and the cost. Admin can also manage user reports by cancelling the order if receive report from user. Through these diverse functions, the

admin plays a key role in maintaining the integrity and efficiency of the ECARFIX service, aligning with the expectations of a real-time booking system.

### 3.4 Firebase

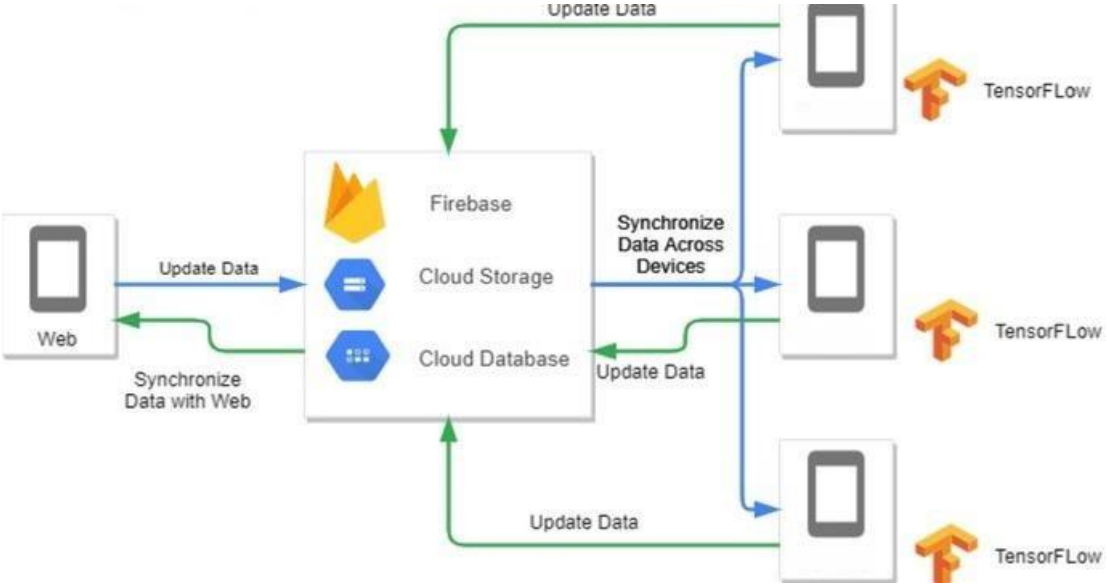


**Figure 3.4 Firebase Diagram for Automotive e-Services Mobile Apps**

Data is first updated via web interfaces and then synchronised with the database and cloud storage of Firebase. By doing this, the data consistency across the web platform is guaranteed. Serving as the focal point for data management, Firebase makes it easier to synchronise data between many platforms. Every Android device linked to Firebase receives the most recent version of the data as it is updated, thanks to synchronisation. Additionally, TensorFlow, an open-source machine learning framework, can be used to process the data from devices. This processing could entail learning from the data to enhance user experience or services, predicting the future, or analysing the data. To ensure correctness, consistency, and real-time updates across all system components, the data flow is carefully regulated.

## 3.5 ERD

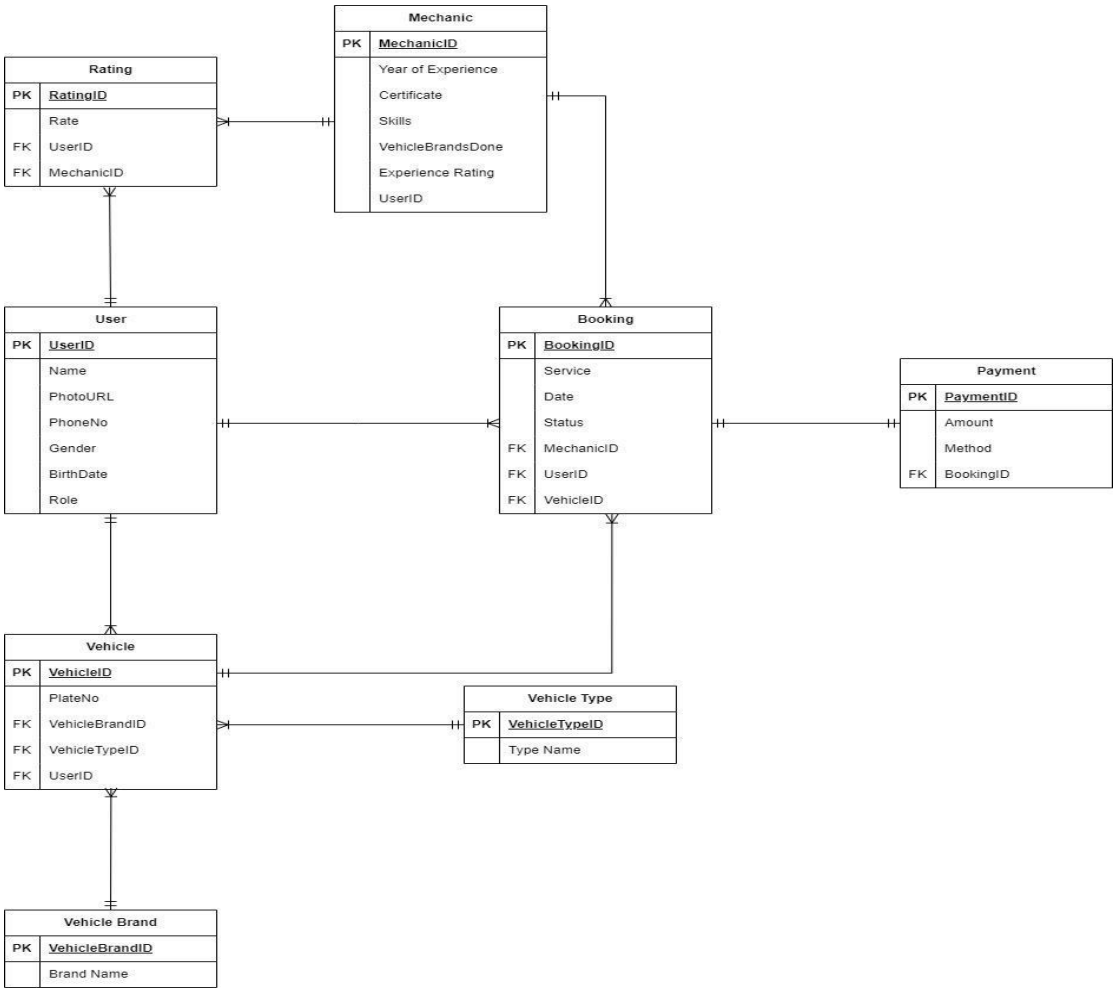


**Figure 3.5 ERD for Automotive e-Services Mobile Apps**

The Entity-Relationship Diagram offers a methodical summary of the system's data management procedures. It consists of multiple entities: user, which stores personal information and sets itself apart from other types of users; Mechanic, a specialised user possessing extra qualifications; rating, which stores the service ratings of mechanics; Vehicle Brand and Vehicle Type, which classifies vehicles into brands and types; Vehicle, which lists the vehicles that users own; Scheduling, keeping track of the specifics of service appointments; and Payment, keeping track of transaction details. In order to ensure that users can schedule services, mechanics can manage their jobs, and all transactions are processed smoothly, these entities are connected through relationships that specify how data flows within the app. This results in an extensive and effective automotive e-service platform.

## 3.6 Flowchart

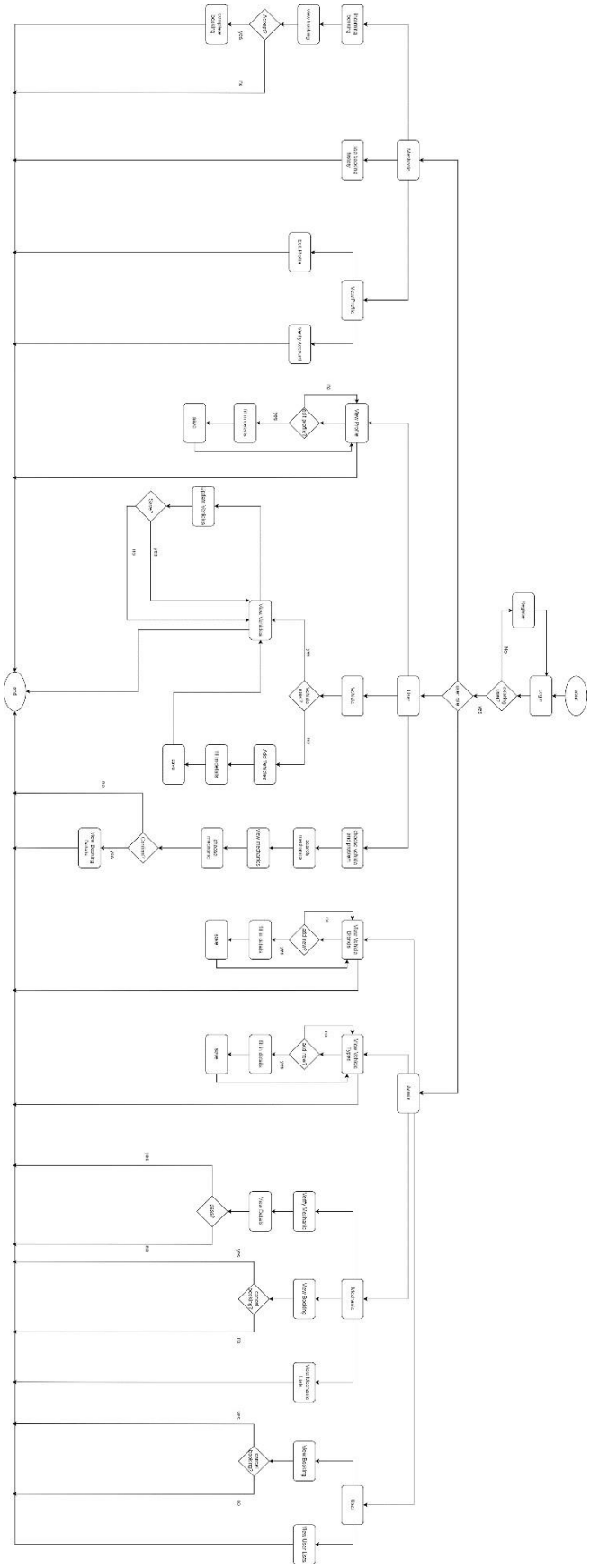

**Figure 3.6 Flowchart for Automotive e-Services Mobile Apps**

The flowchart illustrates a systematic sequence of steps within the system, encompassing interactions for nurses, regular customers, and administrators. It commences with the system's initiation, guiding users to the login page where they authenticate their credentials.

Mechanics can login to access their profiles, where they can view and update and they can also verify their account. When a booking request is received, the mechanic has the option to accept or decline it. Upon confirmation of booking, the mechanic retains the ability to complete or cancel it, and also view booking details. Finally, mechanic can view back the booking history.

Concurrently, normal users are directed to log in and access a book function that enables them to book a mechanic to fix the chosen vehicle and problem occured. When user start to book, the system will process and find three mechanics that match user's request the user can view the details of the mechanic then user can choose to cancel book or choose one mechanic then can view booking details. Other than that, users can view their profiles and they can choose to edit the profile. Finally, users can add, update and view their own vehicle in vehicle page.

For admin, the flowchart designates a specific pathway upon login, granting access to the admin panel. Within this interface, administrators can view the mechanic and user lists. Moreover, administrators have the capability to view booking info and can cancel the booking if needed. Admin can also able to verify mechanic by viewing the details that mechanic submitted. Lastly, admin can add, view and update vehicle brands and types.

## 3.7 Gantt Chart

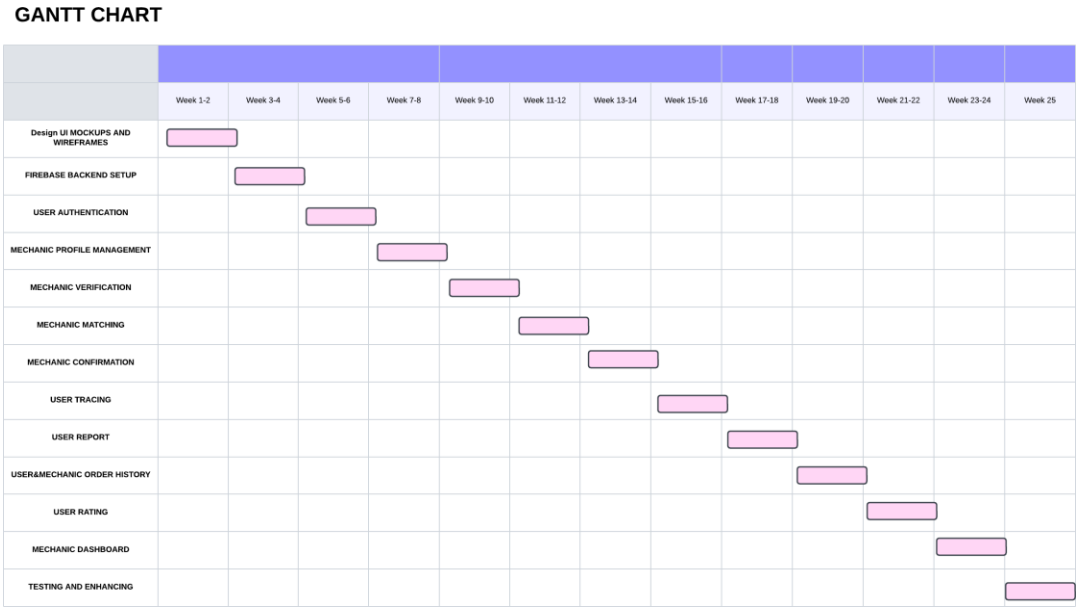


**Figure 3.7 Gannt Chart**

### 3.8 Timeline

1. **Design UI Mockups and Wireframes (Weeks 1-2):**

During this phase, creating the visual design for the mobile application are being working out. Then. sketch out the layouts, navigation, and user interactions.

2. **Firebase Backend Setup (Weeks 3-4):**

Firebase backend is set up, including configuring the database and creating cloud functions. This step is crucial for data management and authentication.

3. **User Authentication (Weeks 5-6):**

User authentication using Firebase Authentication is implemented. This includes features like email verification and role-based access control (mechanic or user).

4. **Mechanic Profile Management (Weeks 7-8):**

Develop functionality that allows mechanics to update their information and verification.

5. **Mechanic Verification (Weeks 9-10):**

A system for admin to verify mechanic is set up. Admin is able to view the verification details mechanic submitted and make decision on let mechanic to pass the verification.

6. **Mechanic Matching (Weeks 11-12):**

Implement the booking feature for users. Users should be able to find a mechanic to service on their vehicle by choosing the vehicle they added and the problem occured.

7. **Mechanic Confirmation (Weeks 13-14):**

When user has chosen a matched mechanic, this is the feature that let mechanic to consider accepting the job or decline it, and if accept it will direct mechanic to google map to bring mechanic to the place of user.

8. **User Tracing (Weeks 15-16):**

This is the page when user create order, it will bring user to this page, user can see the status which mechanic choose to accept the job or not and when mechanic accept, user can see the time that mechanic will arrive, and also it will show when mechanic arrive and complete the order.

9. **User Report (Weeks 17-18):**

This function is to let user report to admin. User can press the report button if the mechanic is not able to contact and not arrived in the estimated time. When admin receive user report, admin will help user to cancel the order and let user to call other mechanic again.

**10. User&Mechanic Order History (Weeks 19-20):**

Order History page is to let user and mechanic to see their ongoing and past order, there has implement some filter to let them choose to filter what type of order they are finding.

**11. User Rating (Weeks 21-22):**

The rating system is in user order history, when the order is completed, user can go order history to rate the mechanic, and system will help the mechanic to calculate average rating for further use.

**12. Mechanic Dashboard (Weeks 23-24):**

This dashboard will show the total amount of the mechanic earn in the specific month and also implement a pie chart to show to mechanic the percentage of earning is from which problem solved, and there is also a line graph to show the average rating on a specific problem. User can choose the month to show all related data by using the month filter.

**13. Testing and Enhancing (Weeks 25):**

Do testing on all features and make sure they are working and also do some enhancement on those functions and UI.

# CHAPTER 4

# Preliminary Work

## 4.1 Software

The software that I will use in this project is React Native. With the help of the innovative React Native framework, web developers can create solid mobile apps utilising their existing TypeScript skills without compromising the user experience or the application's quality. Any React Native App Development Company wants to offer quicker mobile development and more effective code sharing across iOS, Android, and the Web since React Native actually draws APIs following the standard of its host platform.[5] It can develop quick, reliable applications. Mobile apps must be quick and responsive in order to live up to consumers' expectations with the introduction of 5G internet. React Native provides various benefits over competing solutions in addition to enabling its developers to construct cross-platform mobile apps. The performance of the apps created using React Native is superior to that of other online frameworks. [6]

Another key aspect of my development workflow is the use of Visual Studio Code (VS Code), a powerful source-code editor that offers a seamless experience for developing React Native apps. VS Code's integrated terminal, source control features, and debugging tools make it a great choice for managing the complexities of mobile app development. Additionally, its support for TypeScript, numerous extensions—such as React Native Tools—and Live Share collaboration features enhance the overall development process. By leveraging VS Code alongside React Native, I can achieve cleaner code, more efficient debugging, and better collaboration with my team.

Other than that, it has third-party library support. With the help of the React Native framework, programmers may use TypeScript to construct mobile applications. Customers may find it expensive and time-consuming to create an app from scratch. React Native provides a wide range of third-party libraries that may be used to add features and functionalities to the app in order to simplify and accelerate the development process.[6]

## 4.2 Preliminary Work Result

**ECARFIX -USER**


**Figure 4.2.1 Welcome Page**

The figure above shows Welcome Page of ECARFIX, mobile application for user. In this page it contains logo, name and login button.

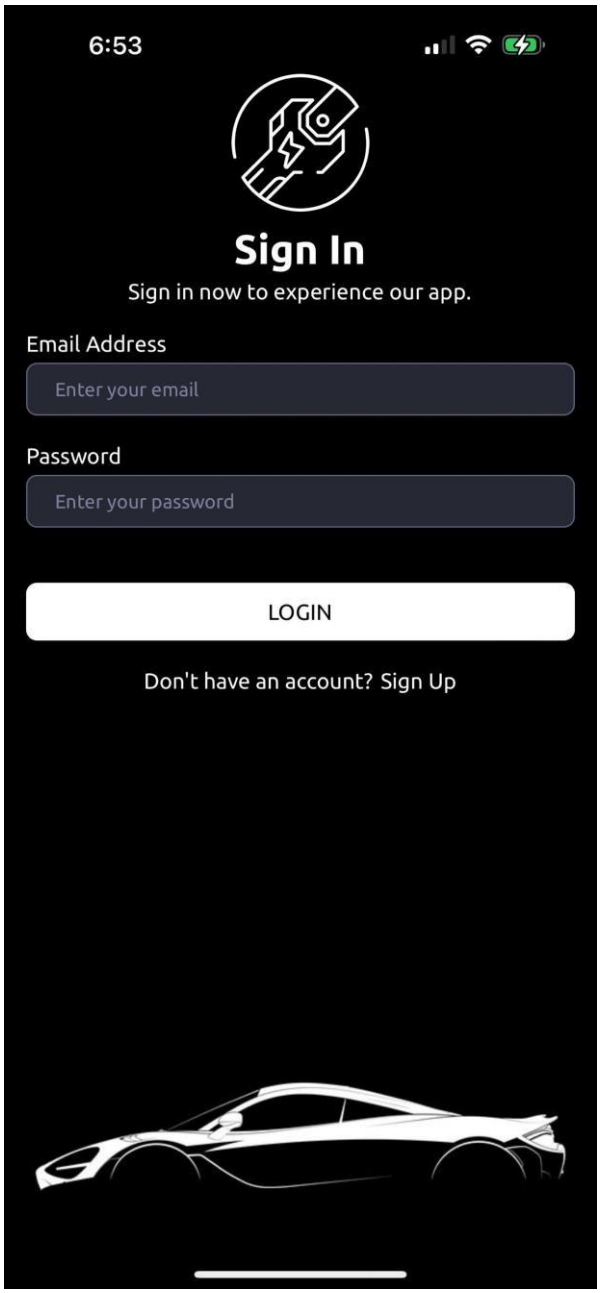


**Figure 4.2.2 Login**

The figure above shows Login page of ECARFIX, mobile application for user. In this page it contains email address field to let user key in email, password field to let user enter password, login button and also a hyperlink to direct user to sign up.

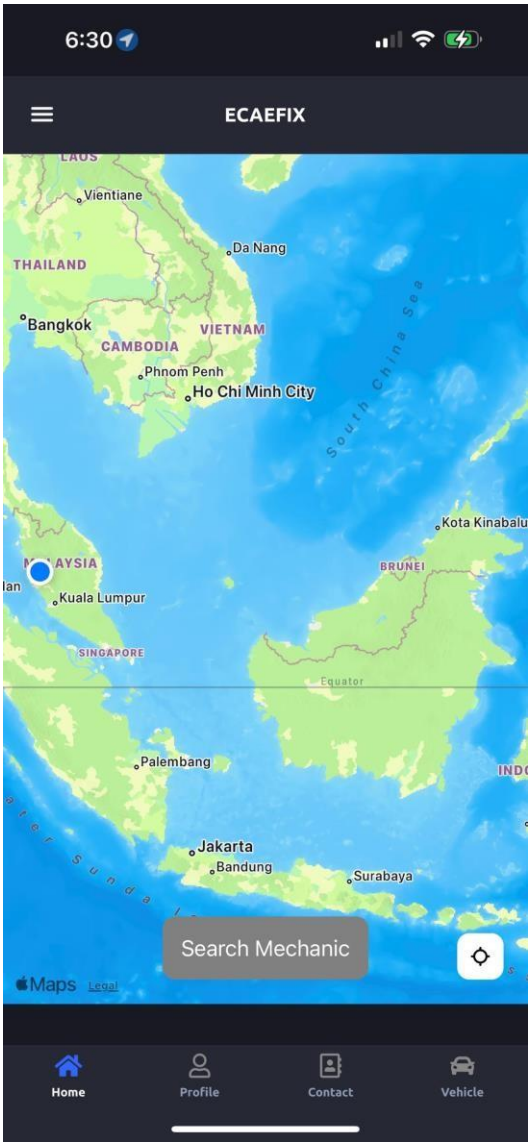


**Figure 4.2.3 Home**

The figure above shows Home Page of ECARFIX, mobile application for user. In this page it contains burger menu, search mechanic button to open search modal and get current location button.

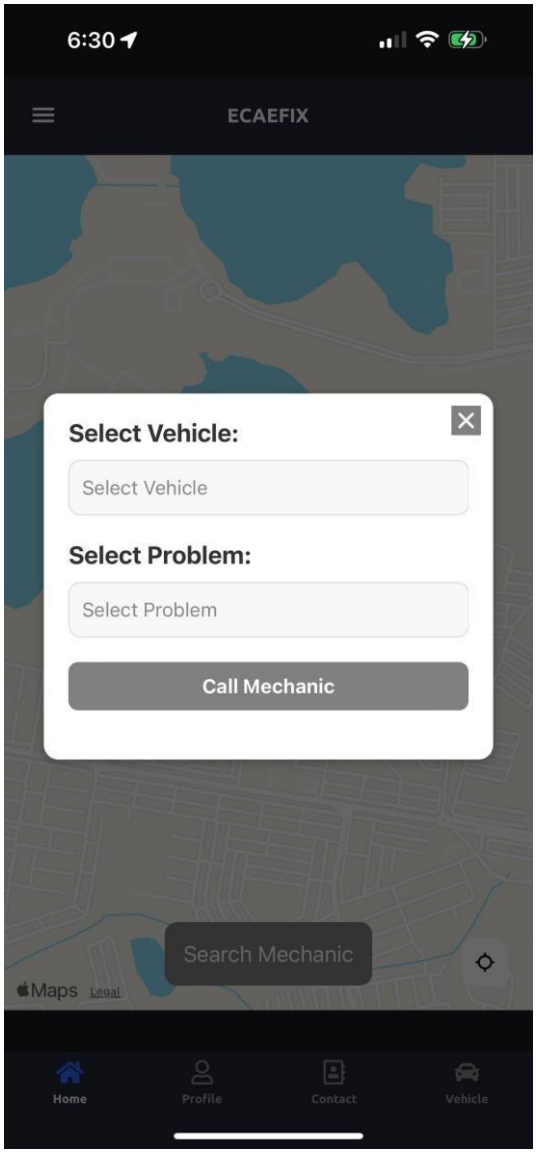


**Figure 4.2.4 Search Mechanic**

The figure above shows Search Mechanic Modal of ECARFIX, mobile application for user. In this modal it contains select vehicle dropdown to let user choose their added vehicle, select problem dropdown to let user choose the problem and call mechanic button to let user search for mechanic that match the requirements.

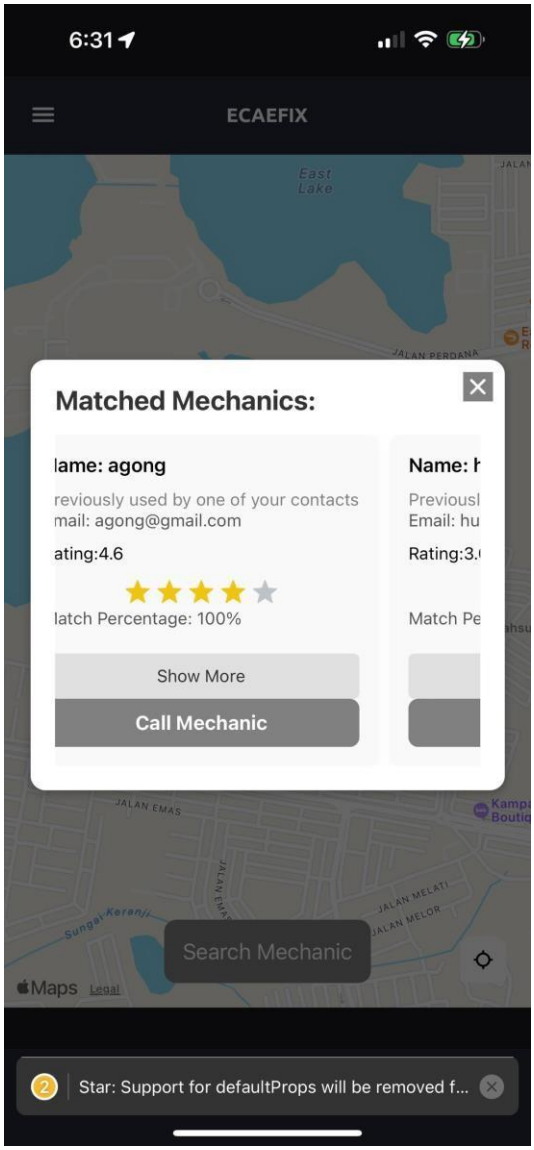


**Figure 4.2.5 Matched Mechanic**

The figure above shows Matched Mechanic Modal of ECARFIX, mobile application for user. In this page it contains few mechanics, show more button to show more details about the mechanic and also call mechanic button to let user create order and direct to order status page.

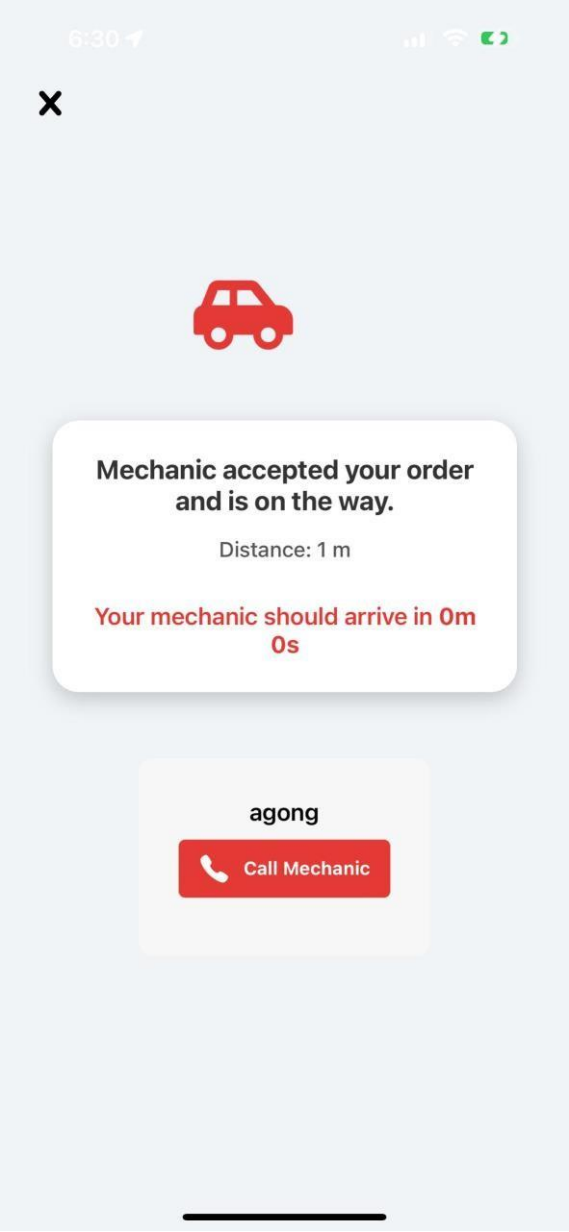


**Figure 4.2.6 Ongoing Order**

The figure above shows Order Status Page of ECARFIX, mobile application for user. In this page it contains a modal that will update time-to-time the status of the order and also call mechanic button to let user contact the mechanic and report button to let user to report to aadmin.

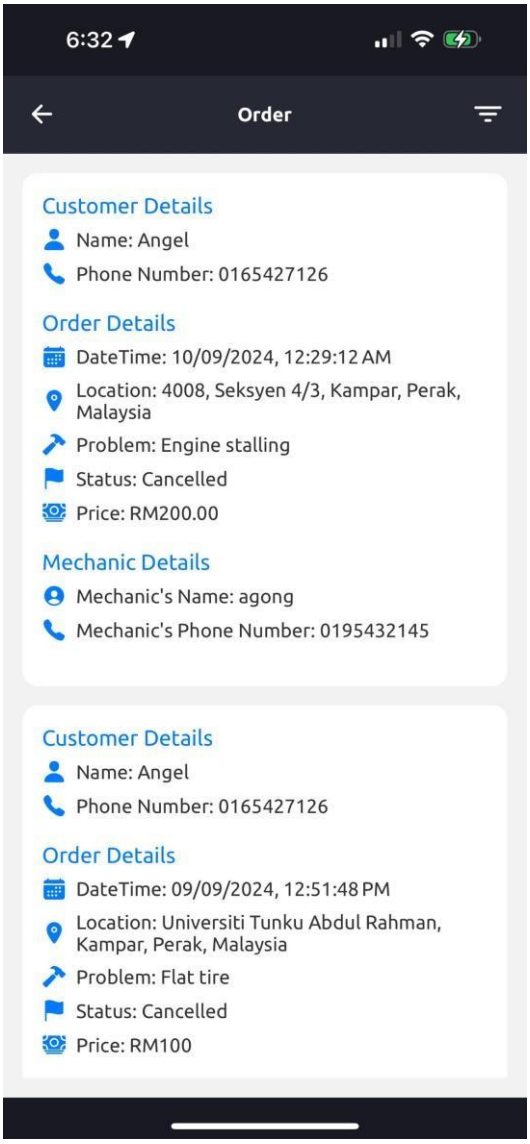


**Figure 4.2.7 Order History**

The figure above shows Order History of ECARFIX, mobile application for user. In this page it contains all past orders and ongoing order details and filter to let user to filter the order.

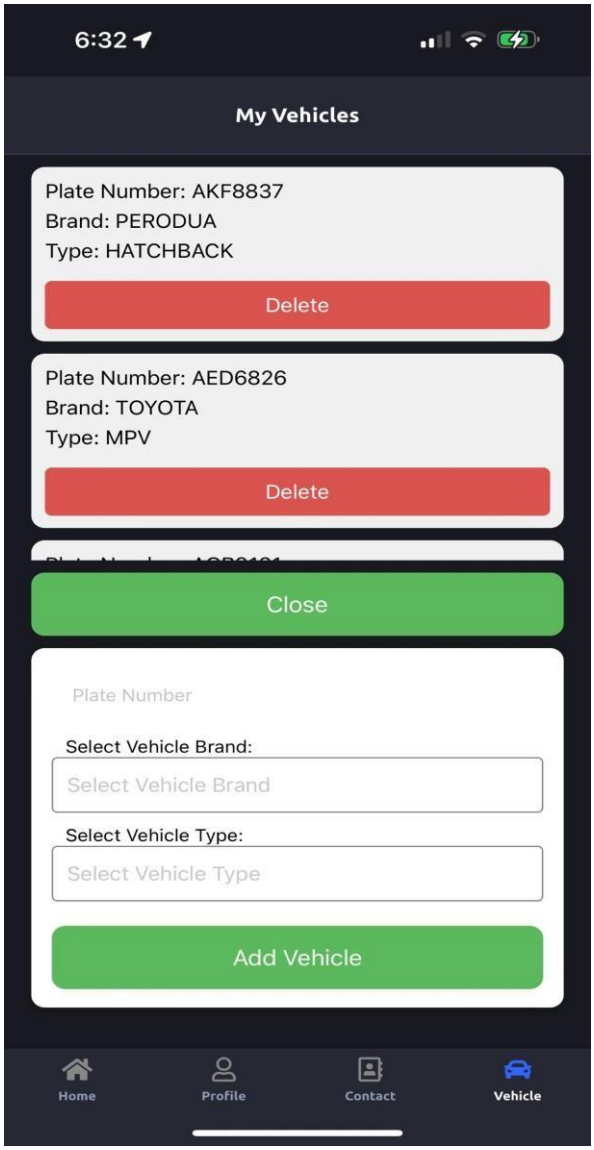


**Figure 4.2.8 Vehicle**

The figure above shows Vehicle Page of ECARFIX, mobile application for user. In this page it contains vehicle added by user, delete button to let user delete the vehicle and also let user to add new vehicle by entering plate number, choosing vehicle brand and type.

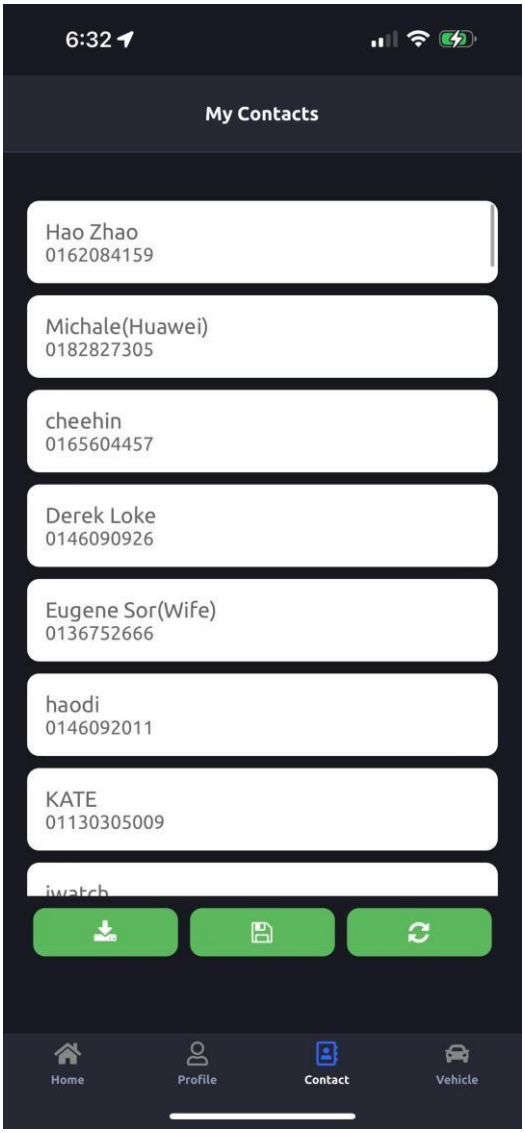


**Figure 4.2.9 Contacts**

The figure above shows Contact Page of ECARFIX, mobile application for user. In this page it contains contacts added by user, fetch button to let user to fetch contact from phone contact, save button to let user save all contacts to database after fetched and refresh button to refresh the contact list.

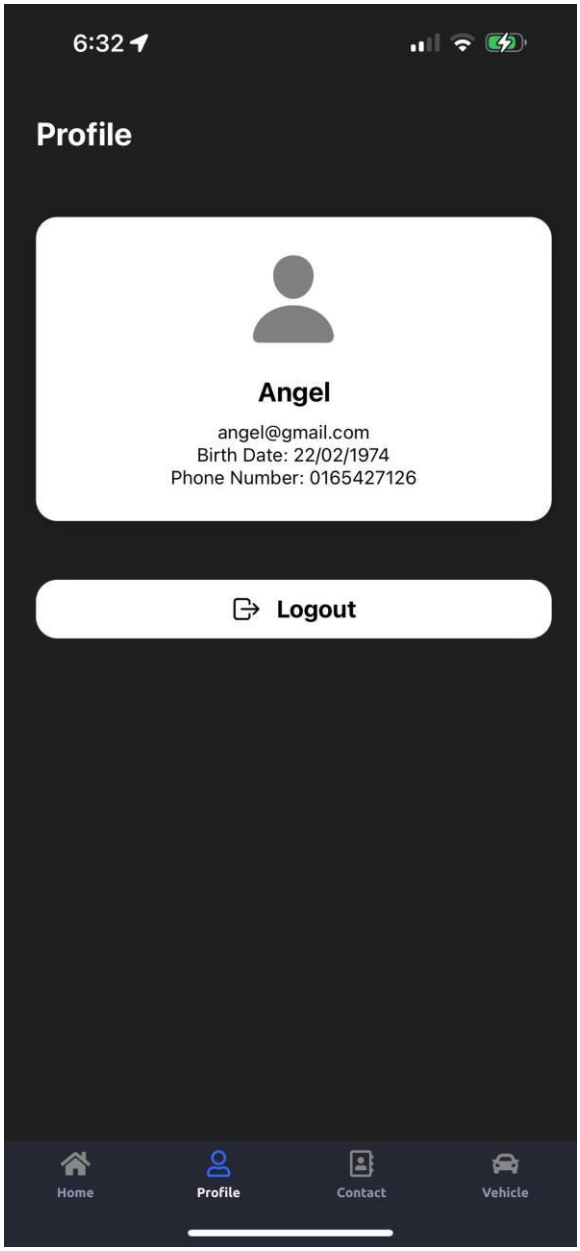


**Figure 4.2.10 Profile**

The figure above shows Profile Page of ECARFIX, mobile application for user. In this page it contains card that showing user information like display name, email address, birth date and phone number and a logout button to log user out.

**ECARFIXM – Mechanic**


**Figure 4.2.11 Welcome**

The figure above shows Welcome Page of ECARFIXM, mobile application for mechanic. In this page it contains logo, login button to direct user to login page and also hyperlink to direct user to register page.

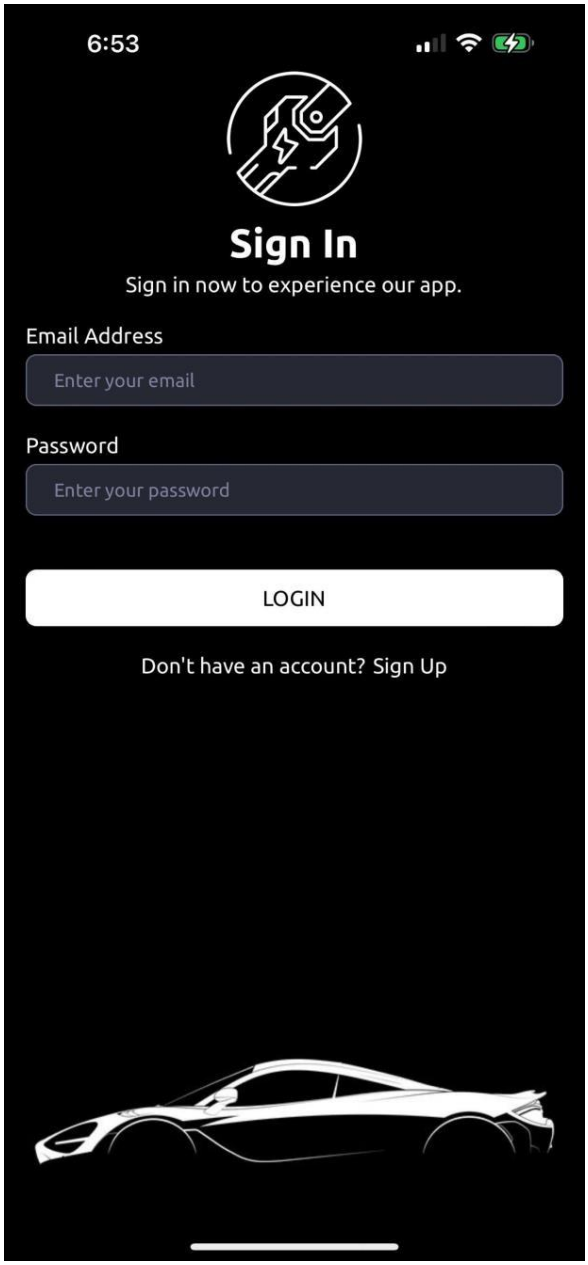


**Figure 4.2.12 Login**

The figure above shows Login Page of ECARFIXM, mobile application for mechanic. In this page it contains email address field to let user enter email, password field to let user enter password, login button to direct user to home page and also hyperlink to direct user to register page.

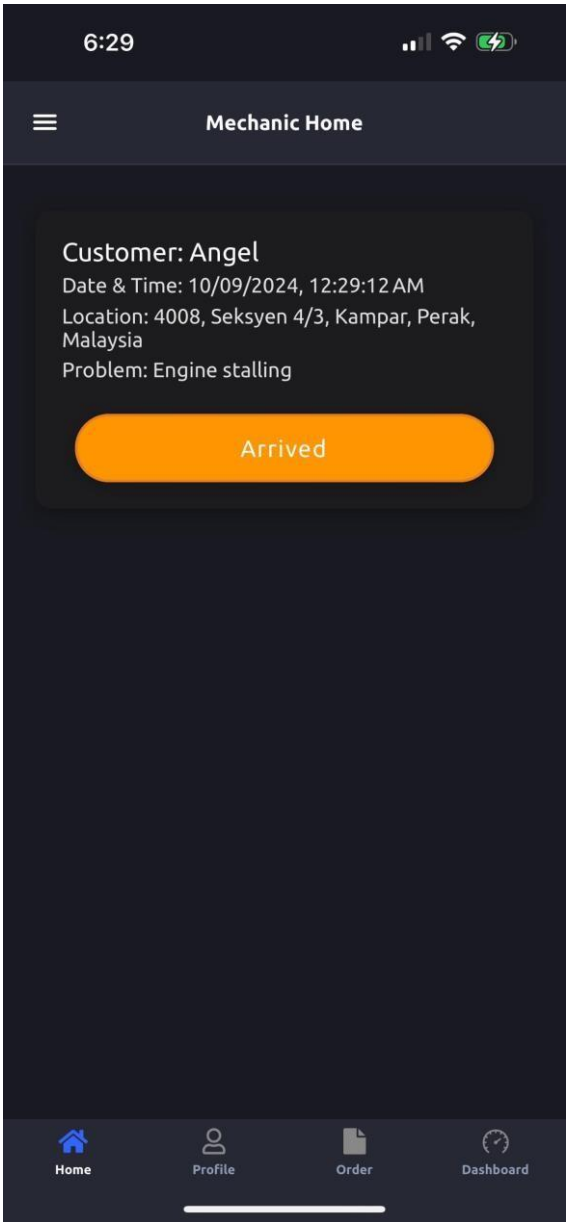


**Figure 4.2.13 Home**

The figure above shows Home Page of ECARFIXM, mobile application for mechanic. In this page it contains burger menu, card to show incoming or ongoing order and buttons to update the status of the order.

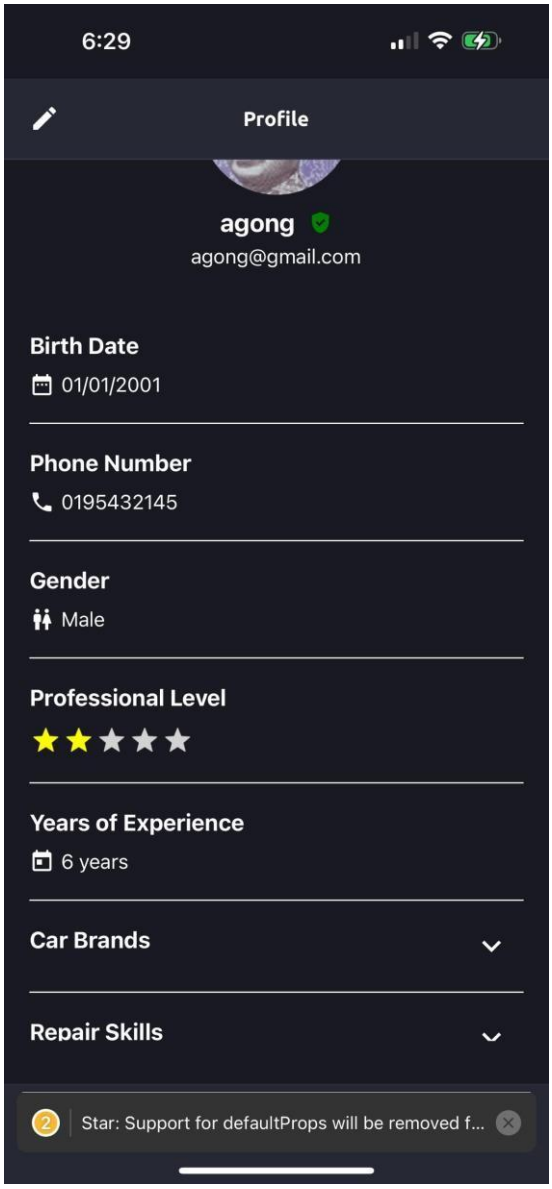


**Figure 4.2.14 Profile**

The figure above shows Profile Page of ECARFIXM, mobile application for mechanic. In this page it contains all information of the mechanic including display name, email, verify status, birth date, phone number, gender, professional level, year of experience, car brands and repair skills.

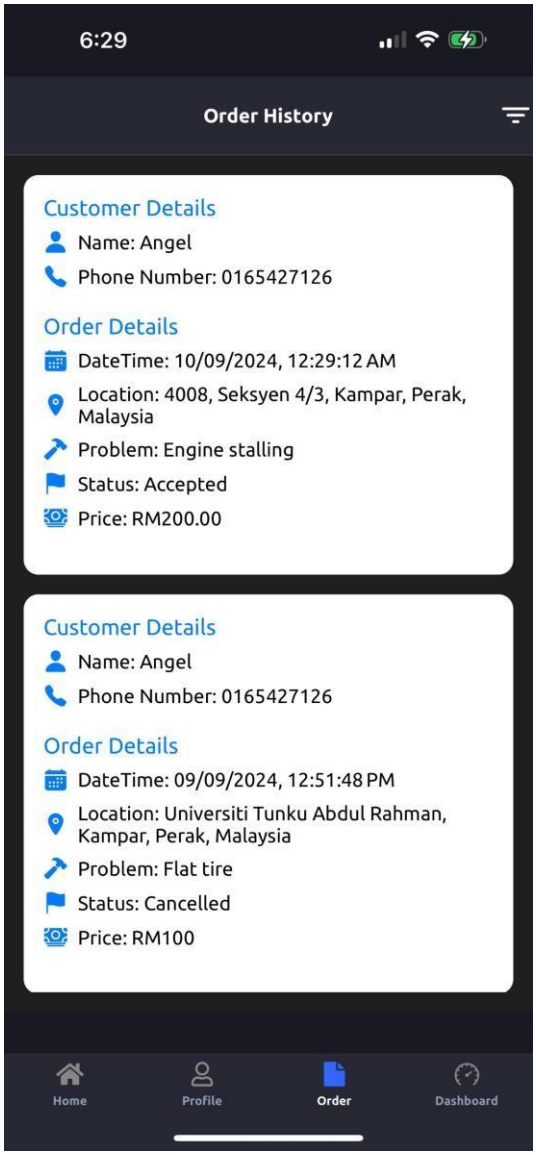


**Figure 4.2.15 Order History**

The figure above shows Order History Page of ECARFIXM, mobile application for mechanic. In this page it contains card that show all details of mechanic past orders and ongoing order and filter to let user filter the order.

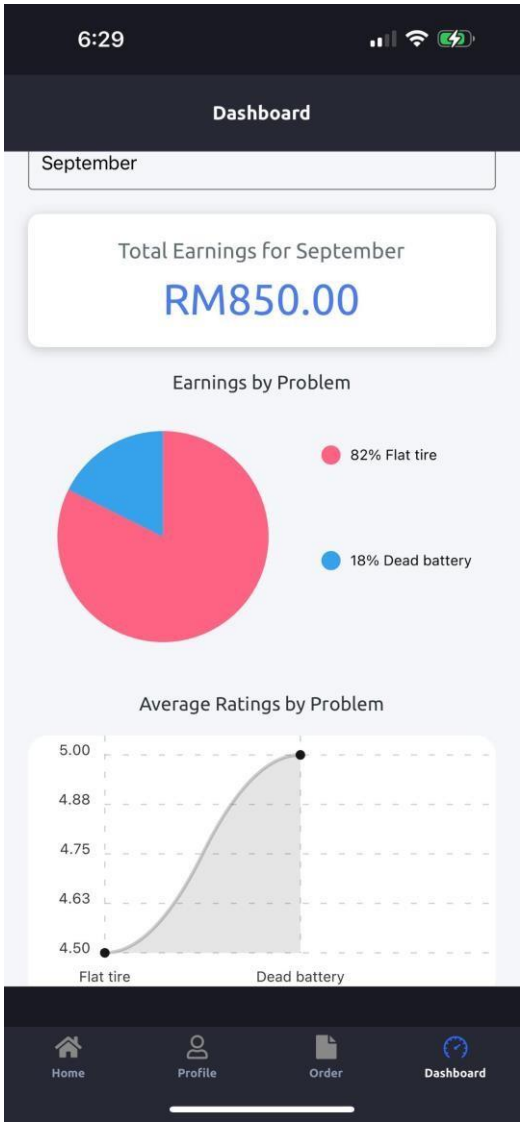


**Figure 4.2.16 Dashboard**

The figure above shows Dashboard Page of ECARFIXM, mobile application for mechanic. In this page it contains total earnings for the month, pie chart showing percentage of earning by the problem, line graph of average rating of the problem solved, month filter and year filter.

**ECARFIXA – Admin**


**Figure 4.2.17 Welcome**

The figure above shows Welcome Page of ECARFIXA, mobile application for admin. In this page it contains logo and login button to direct user to login page.

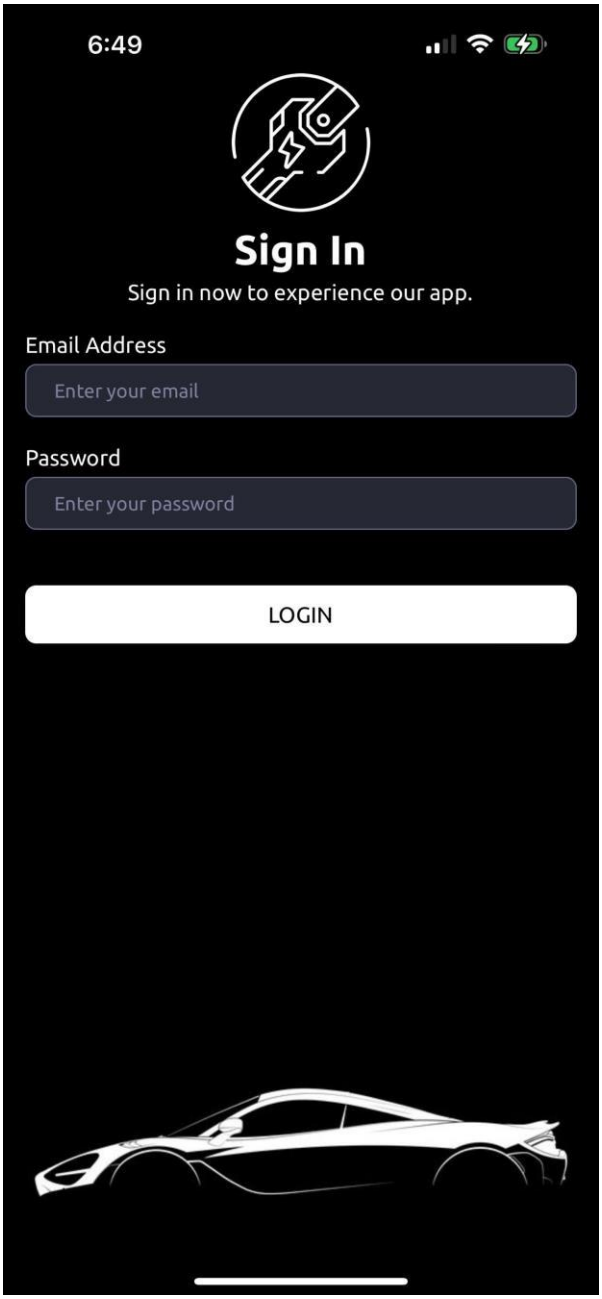


**Figure 4.2.18 Login**

The figure above shows Login Page of ECARFIXA, mobile application for admin. In this page it contains email address field to let user enter email, password field to let user enter password and login button to direct user to home page.

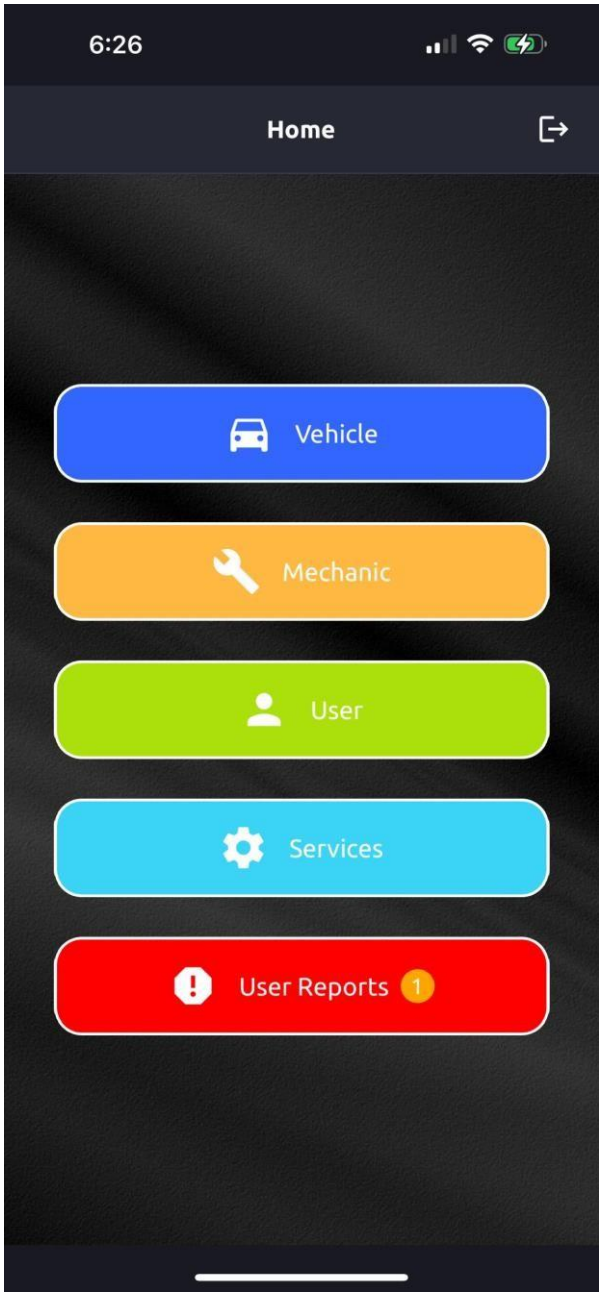


**Figure 4.2.19 Home**

The figure above shows Home Page of ECARFIXA, mobile application for admin. In this page it contains logout button to log user out, vehicle button to navigate user to vehicle page, mechanic button to navigate user to mechanic page, user button to navigate user to user page, services button to navigate user to services page and user reports button to navigate to user reports page.

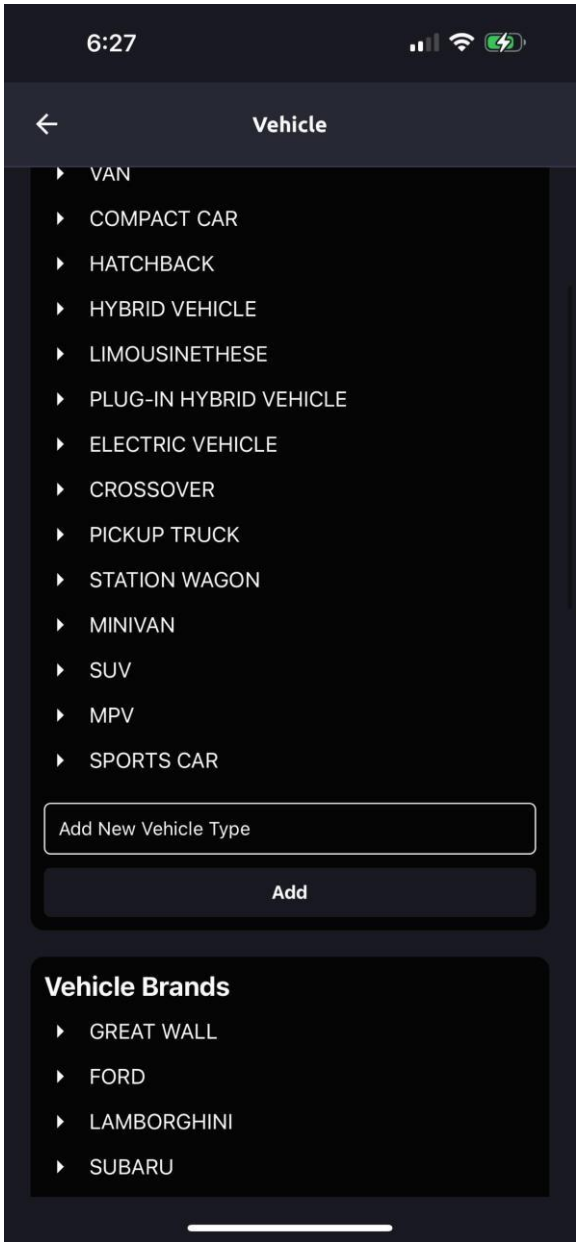


**Figure 4.2.20 Vehicle**

The figure above shows Vehicle Page of ECARFIXA, mobile application for admin. In this page it contains vehicle brands and vehicles types added by user, field to let user add new vehicle type and field to let user add vehicle brand.

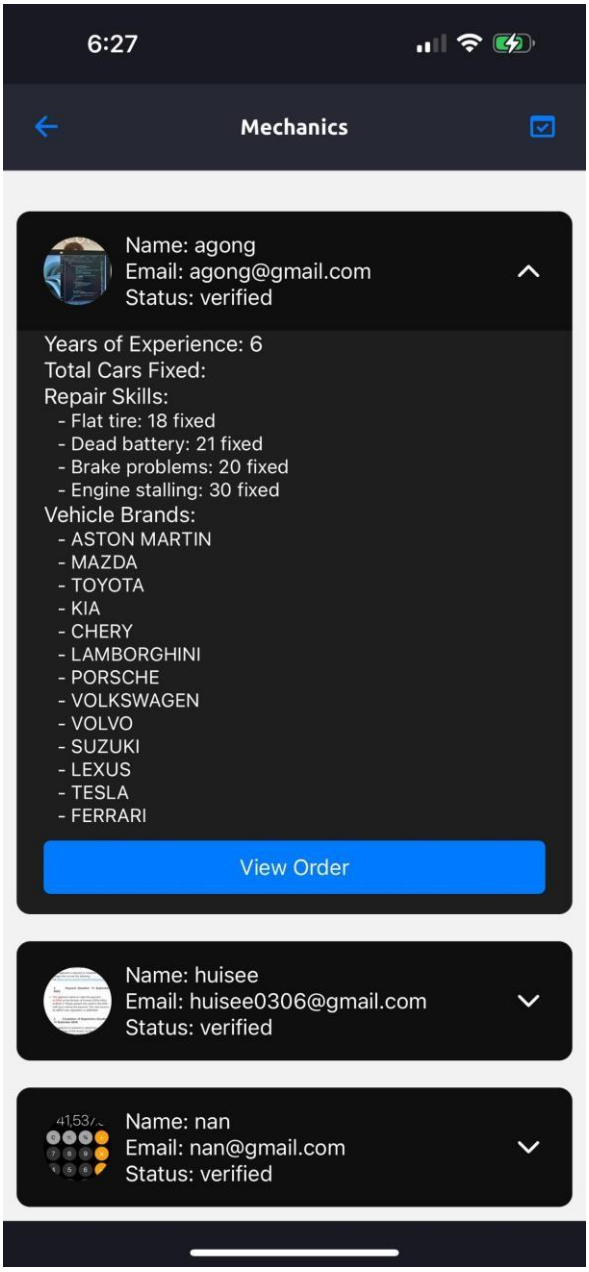


**Figure 4.2.21 Mechanic**

The figure above shows Mechanic Page of ECARFIXA, mobile application for admin. In this page it contains verify button to navigate user to mechanic verification page, card to display mechanic details and view order button to let user view order history of the mechanic.

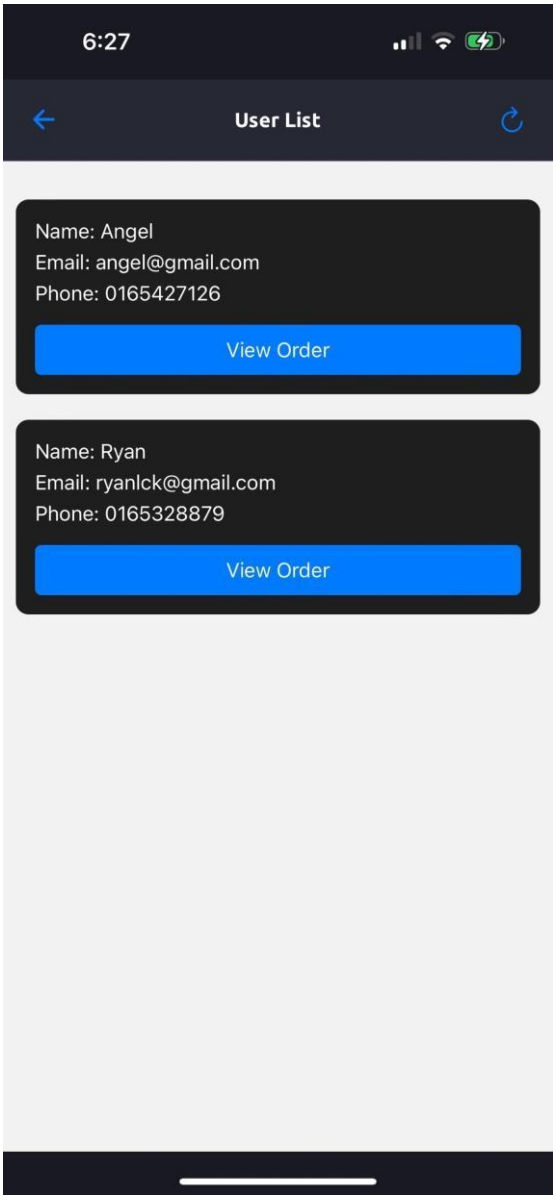


**Figure 4.2.22 User**

The figure above shows User Page of ECARFIXA, mobile application for admin. In this page it contains refresh button to let user to refresh this page, card to display user details and view order button to let user view order history of the user.

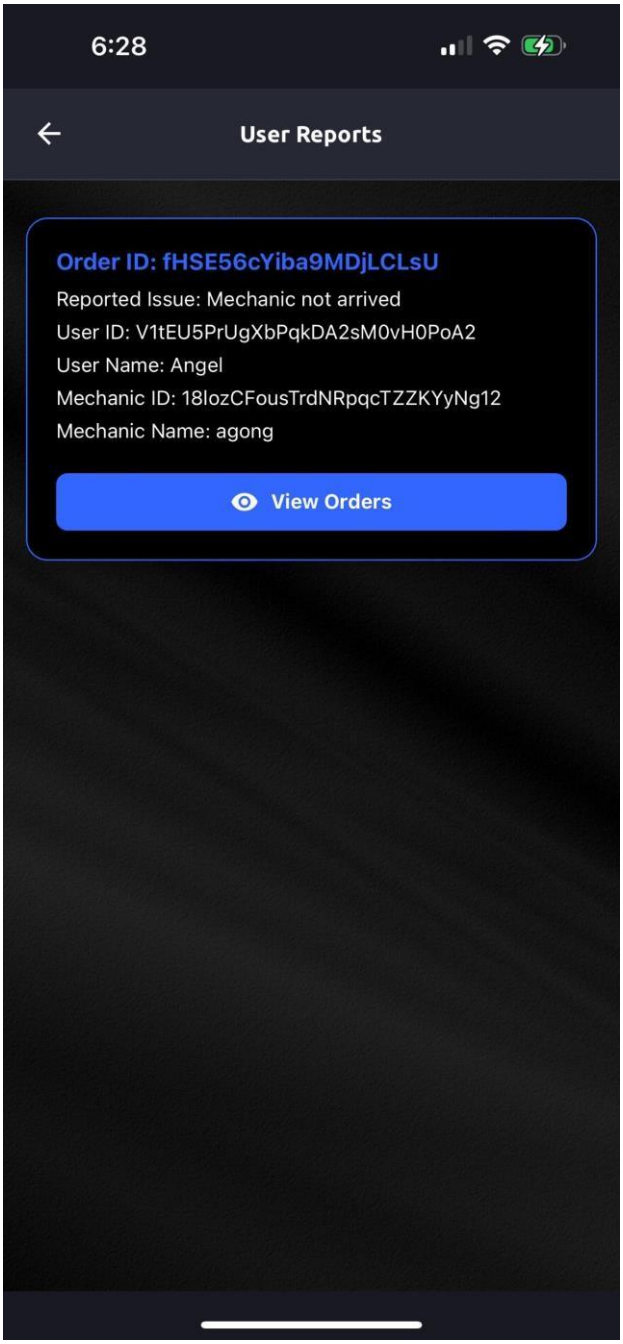


**Figure 4.2.23 User Report**

The figure above shows User Reports Page of ECARFIXA, mobile application for admin. In this page it contains card to display details of user report, view orders button to navigate user to order history of user so user can help to cancel order.

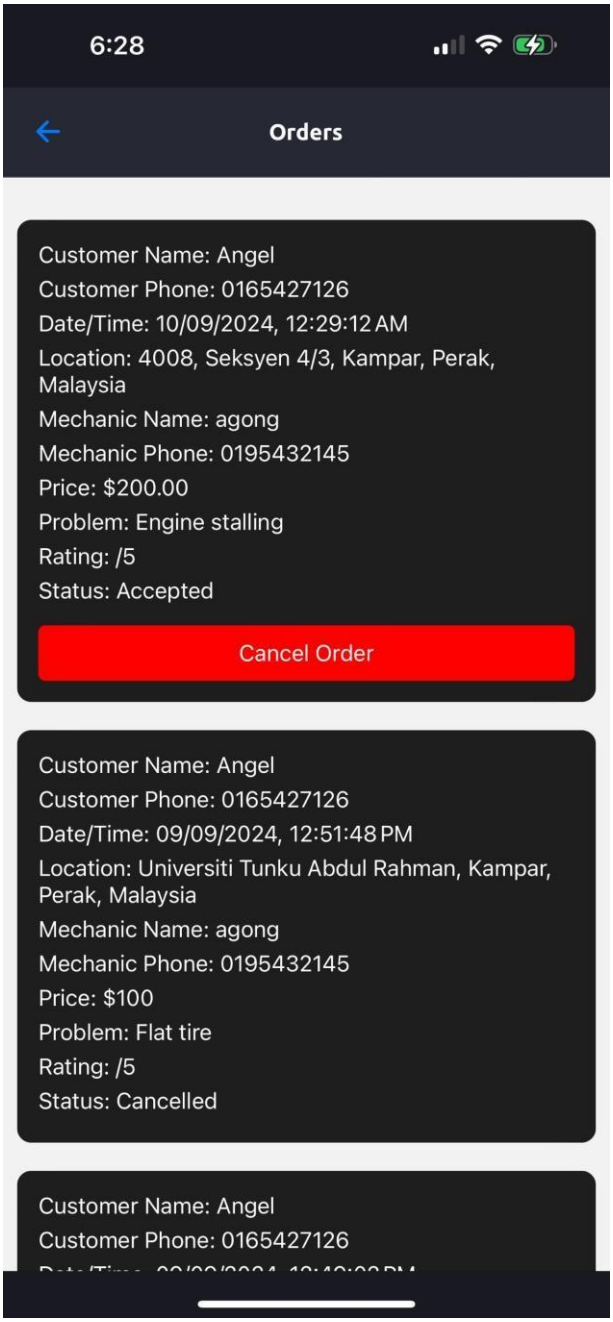


**Figure 4.2.24 User/ Mechanic Order List**

The figure above shows User/Mechanic Order List Page of ECARFIXA, mobile application for admin. In this page it contains cancel button if the order is ongoing, and user will cancel the order when receive user report and also show all order details of user/mechanic.

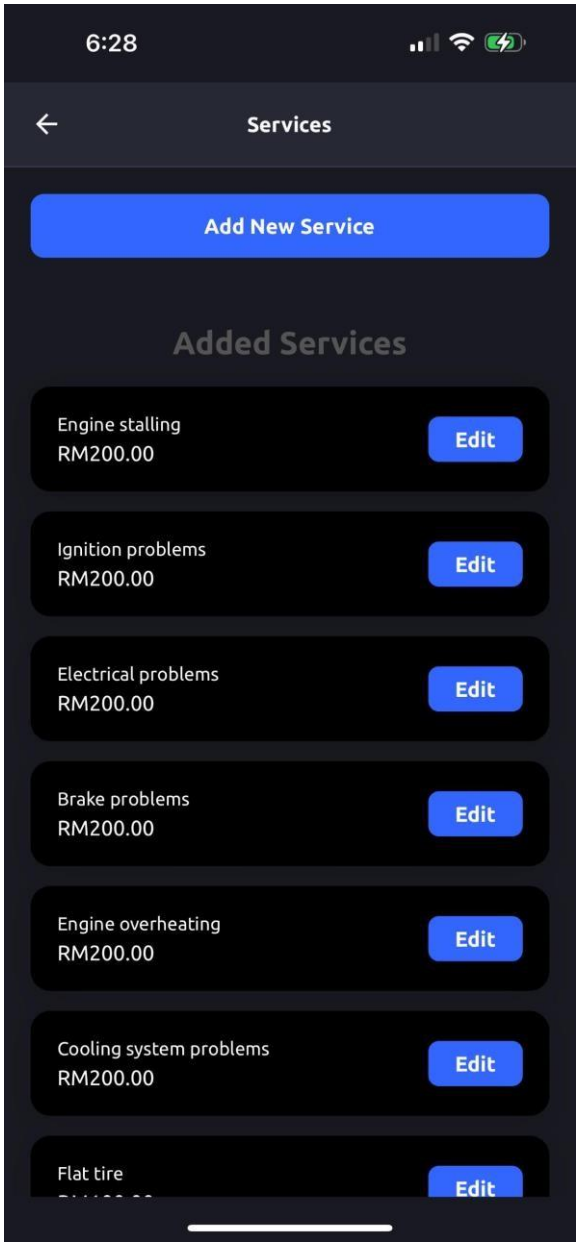


**Figure 4.2.25 Service**

The figure above shows Service Page of ECARFIXA, mobile application for admin. In this page it contains services and prices added by user, allow user to add new service and also allow user to edit added services.

# CHAPTER 5

# System Testing

## 5.1 System Testing

### 5.1.1 ECARFIX – Mobile Application for User

| Steps to take | Expected Result | Actual Results (Pass/Fail) |
|---|---|---|
| 1. Click on "Login with Email" button at welcome page | - navigate to login page | Pass |
| 2. Click on "Enter your email" textbox | - Let user to enter email | Pass |
| 3. Click on "Enter your password" textbox | - Let user to enter password | Pass |
| 4. Click on "Login" button after user key in email and password | - Navigate user to home page | Pass |
| 5. Click on "Sign Up" word | - Navigate user to register page | Pass |
| 6. Click on "Search Mechanic" button | - Open model to let user choose the vehicle and problem | Pass |
| 7. Click on "Select Vehicle" dropdown | - Let user to choose added vehicle | Pass |
| 8. Click on "Select Problem" dropdown | - Let user to choose the problem | Pass |
| 9. Click on "Call Mechanic" button after user choose vehicle and problem | - Open a modal to display matched mechanic to let user view and choose | Pass |
| 10. Click on the "Close" button | - Close the search modal | Pass |

| | | |
|---|---|---|
| 11. Click “Show More” button | - Display more information of the matched mechanic | Pass |
| 12. Click on “Call Mechanic” button of selected mechanic | - Create order<br>- Navigate user to order status page | Pass |
| 13. Update the status automatically | - Show user the status of the order | Pass |
| 14. Click “Call Mechanic” Button | - Let user make a call on the mechanic phone number | Pass |
| 15. Click on “Close” | - Navigate user back to home page | Pass |
| 16. Click “Profile” Tab | - Navigate user to profile | Pass |
| 17. Click “Logout” button | - Log user out | Pass |
| 18. Click “Contact” Tab | - Navigate user to contact page | Pass |
| 19. Click “Fetch” button | - Fetch all contact in phone contact | Pass |
| 20. Click “Save” button | - Save all fetched contacts to database | Pass |
| 21. Click “Refresh” button | - Refresh the saved contact list | Pass |
| 22. Click on “Vehicle” tab | - Navigate user to vehicle page | Pass |
| 23. Click on “Add Vehicle” button | - Open a modal let user key in car info | Pass |
| 24. Click on “Plate Number” textbox | - Let user to enter plate number | Pass |

| | | |
|---|---|---|
| 25. Click on “Select Vehicle Brand” dropdown | - Let user to choose vehicle brand | Pass |
| 26. Click on “Select Vehicle Type” | - Let user to choose vehicle type | Pass |
| 27. Click on “Add Vehicle” button | - Save the vehicle into database | Pass |
| 28. Click on “Delete” button | - Delete the selected saved vehicle | Pass |
| 29. Click on burger menu | - Show up a modal that contain “Order” and “Logout” | Pass |
| 30. Click on “Logout” | - Log user out | Pass |
| 31. Click on “Order” | - Navigate user to order history page | Pass |
| 32. Click on “Filter” | - Let user to select what to filter | Pass |
| 33. Click on the “stars” | - User can click on the stars that use to rate mechanic | Pass |
| 34. Click “Submit” button | - Save the rating of the mechanci | Pass |
| 35. Click on “Back” | - Navigate user back to home page | Pass |

**Table 5.1 ECARFIX – Mobile Application for User Test Case**

### 5.1.2 ECARFIXM – Mobile Application for mechanic

| Steps to take | Expected Result | Actual Results (Pass/Fail) |
|---|---|---|
| 1. Click on "Login with Email" button at welcome page | - navigate to login page | Pass |
| 2. Click on "Enter your email" textbox | - Let user to enter email | Pass |
| 3. Click on "Enter your password" textbox | - Let user to enter password | Pass |
| 4. Click on "Login" button after user key in email and password | - Navigate user to home page | Pass |
| 5. Click on "Sign Up" word | - Navigate user to register page | Pass |
| 6. View Incoming Order | - User able to view incoming order at home page | Pass |
| 7. Click on "Accept" button | - User accepts the job and update the status | Pass |
| 8. Click on "Decline" button | - User decline the job and update the status | Pass |
| 9. Click on "Arrived" button when arrive | - User arrived the place and update the status | Pass |
| 10. Click on "Complete" button | - User completed the job and update the status | Pass |
| 11. Click on "Profile" tab | - Navigate user to profile | Pass |
| 12. If user is new, click on "verify" | - Navigate user to verify page | Pass |

| | | |
|---|---|---|
| 13. Click on “Upload Certificate” button | - Let user to upload the certificate | Pass |
| 14. Click on those “Skills” | - Let user to select the skill<br>- Open a modal to let user enter the number of cars fixed with the skill | Pass |
| 15. Click on those “Car Brands” | - Let user to select the car brands they know how to fix | Pass |
| 16. Click on “Year of experience” textbox | - Let user to enter the year of experience | Pass |
| 17. Click “Take” button | - Submit all the data to let admin to approve | Pass |
| 18. View Profile | - When user is verified, they can see their information | Pass |
| 19. Click on “Order” Tab | - Navigate user to order history page | Pass |
| 20. Click on “Filter” | - Let user to select what to filter | Pass |
| 21. Click on “Dashboard” tab | - Navigate user to dashboard page that show total earning of month, pie chart showing percentage of earning from solving problems and also line graph on average rating on problems solved | Pass |

| | | |
|---|---|---|
| 22. Click on the “month” dropdown | - Let user to select the month | Pass |
| 23. Click on the “year” dropdown | - Let user to select the year | Pass |
| 24. Click on “View Details” button | - Navigate user to order page | Pass |
| 25. Click on burger menu | - Show up a modal that contain “Logout” | Pass |
| 26. Click on “Logout” | - Log user out | Pass |

**Table 5.2 ECARFIXM – Mobile Application for Mechanic Test Case**

### 5.1.3 ECARFIXA – Mobile Application for Admin

| Steps to take | Expected Result | Actual Results (Pass/Fail) |
|---|---|---|
| 1. Click on "Login with Email" button at welcome page | - navigate to login page | Pass |
| 2. Click on "Enter your email" textbox | - Let user to enter email | Pass |
| 3. Click on "Enter your password" textbox | - Let user to enter password | Pass |
| 4. Click on "Login" button after user key in email and password | - Navigate user to home page | Pass |
| 5. Click on "Logout" button | - Log user out | Pass |
| 6. Click on "Vehicle" button | - Navigate user to vehicle page | Pass |
| 7. View vehicles brand and types | - Let user to view added vehicle brands and types | Pass |
| 8. Click on "Add New Vehicle Type" textbox | - Let user to key in vehicle type | Pass |
| 9. Click on "Add" button | - Save the vehicle type enter by user to database | Pass |
| 10. Click on "Add New Vehicle Brand" textbox | - Let user to key in vehicle brand | Pass |
| 11. Click on "Add" button | - Save the vehicle brand enter by user to database | Pass |

| | | |
|---|---|---|
| 12. Click on “Back” button | - Navigate user back to home page | Pass |
| 13. Click on “Mechanic” button | - Navigate user to mechanic page that show all mechanic | Pass |
| 14. Click on “Verify” button | - Navigate user to mechanic verification page | Pass |
| 15. Click on the selected mechanic | - Show all the details of the mechanic submit | Pass |
| 16. Click on “Qualified” button | - Update the selected mechanic status as “Verified” | Pass |
| 17. Click on “Disqualified” button | - Update the selected mechanic status as “Unverified” | Pass |
| 18. Click on “Back” button | - Navigate user back to mechanic page | Pass |
| 19. Click on a mechanic in the list | - User able to see the details and a view order button | Pass |
| 20. Click on “View Order” button | - Navigate user to the selected mechanic order history | Pass |
| 21. Click on “Back” button | - Navigate user back to mechanic page | Pass |
| 22. Click on “Back” button | - Navigate user back to home page | Pass |
| 23. Click on “User” button | - Navigate user to user page that contains a list of users | Pass |

| | | |
|---|---|---|
| 24. Click on “View Order” button | - Navigate user to the selected user order history | Pass |
| 25. Click on “Back” button | - Navigate user back to user page | Pass |
| 26. Click on “Back” button | - Navigate user back to home page | Pass |
| 27. Click on “Service” button | - Navigate user to service page | Pass |
| 28. Click on “Add New Service” button | - Open a modal to let user to key in service name and price | Pass |
| 29. Click on “Service Name” textbox | - Let user to enter service name | Pass |
| 30. Click on “Price” textbox | - Let user to enter price | Pass |
| 31. Click on “Add Service” button | - Save the service name and price to database | Pass |
| 32. Click on “Cancel” button | - Close the add new service modal | Pass |
| 33. Click on “Edit” button of selected service | - Open edit service modal | Pass |
| 34. Click on “Service Name” textbox | - Let user to enter service name | Pass |
| 35. Click on “Price” textbox | - Let user to enter price | Pass |
| 36. Click on “Update Service” button | - Save the updated service name and price to database | Pass |

| | | |
|---|---|---|
| 37. Click on “Cancel” button | - Close the edit service modal | Pass |
| 38. Click on “Back” button | - Navigate user back to home page | Pass |
| 39. Click on “User Report” button | - Navigate user to user report page | Pass |
| 40. Click on “View Order” button | - Navigate user to the order history of the user that make a report | Pass |
| 41. Click on “Cancel” button | - Update the order status to cancel | Pass |
| 42. Click on “Back” button | - Navigate user back to user report page | Pass |
| 43. Click on “Back” button | - Navigate user back to home page | Pass |

**Table 5.3 ECARFIXA – Mobile Application for Admin Test Case**

# CHAPTER 6

## Conclusion

In conclusion, this project aims to develop a user-centric automotive e-service mobile application tailored for both users and mechanics in the Kampar area. The project commenced with a thorough identification of key problem statements, followed by the establishment of clear project objectives to guide the app's development process.

A comprehensive review of existing mobile applications in related sectors was conducted to assess their strengths and limitations. This analysis allowed us to incorporate well-established features while avoiding potential challenges that could compromise the app's functionality.

Throughout the development phase, various technical artifacts, including use case diagrams, entity-relationship diagrams (ERD), and flowcharts, were produced to provide a clear representation of the app's architecture and workflow.

Over the course of 25 weeks, significant progress was made, notably in achieving three key project objectives: the successful development of the automotive e-service application, enhancing trust through user-imported contacts, and implementing a Mechanic Verification and Professional Level System to ensure credibility and service quality.

Looking ahead, future enhancements will include the integration of a real-time tracking feature, enabling users to monitor the location of the mechanic on a map, providing transparency and reducing uncertainty in case of delays. Additionally, the app will incorporate an in-app payment system to facilitate seamless, cashless transactions, ensuring transparency and eliminating disputes related to payments.

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# Appendix

# FINAL YEAR PROJECT WEEKLY REPORT

*(Project II)*

| | |
|---|---|
| **Trimester, Year: Y3T3** | **Study week no.: 2** |
| **Student Name & ID: Lee Zhong Cheng (21ACB06690)** | |
| **Supervisor: Dr. Wong Pei Voon** | |
| **Project Title: Development of Automotive e-Services Mobile Apps for Kampar Area** | |

**1. WORK DONE**

[Please write the details of the work done in the last fortnight.]

- Completed implementation of mechanic confirmation feature, allowing mechanic to decide to accept or decline the order.
- Completed implementation of direct mechanic to google maps and set the current location of user for mechanic

**2. WORK TO BE DONE**

- Implement an order status page for user to track the status of order after user make an order.

**3. PROBLEMS ENCOUNTERED**

- No

**4. SELF EVALUATION OF THE PROGRESS**

- Progress is on track with planned timelines.

wong

Supervisor's signature

Student's signature

# FINAL YEAR PROJECT WEEKLY REPORT

*(Project II)*

| | |
|---|---|
| **Trimester, Year: Y3T3** | **Study week no.: 4** |
| **Student Name & ID: Lee Zhong Cheng (21ACB06690)** | |
| **Supervisor: Dr. Wong Pei Voon** | |
| **Project Title: Development of Automotive e-Services Mobile Apps for Kampar Area** | |

**1. WORK DONE**

[Please write the details of the work done in the last fortnight.]

- Implemented an order status page for user to track the status of order after user make an order.

**2. WORK TO BE DONE**

- Implement user report function to let user to report to admin when user is not able to contact the mechanic and the mechanic has not arrived on estimated time.
- Implement user report page for admin to let admin view user report and also implement cancel order feature for admin to help user cancel order.

**3. PROBLEMS ENCOUNTERED**

- Use google map API to calculate the distance and also the ETA.

**4. SELF EVALUATION OF THE PROGRESS**

- Progress is on track with planned timelines.

wong

Supervisor's signature

Student's signature

# FINAL YEAR PROJECT WEEKLY REPORT

*(Project II)*

| | |
|---|---|
| **Trimester, Year: Y3T3** | **Study week no.: 6** |
| **Student Name & ID: Lee Zhong Cheng (21ACB06690)** | |
| **Supervisor: Dr. Wong Pei Voon** | |
| **Project Title: Development of Automotive e-Services Mobile Apps for Kampar Area** | |

**1. WORK DONE**

[Please write the details of the work done in the last fortnight.]

- Implemented user report function to let user to report to admin when user is not able to contact the mechanic and the mechanic has not arrived on estimated time.
- Implemented user report page for admin to let admin view user report and also implemented cancel order feature for admin to help user cancel order.

**2. WORK TO BE DONE**

- Implement order history for mechanic to view order history and also add filter to let mechanic filter the order.
- Implement order history for user to view order history and also add filter to let user filter the order.

**3. PROBLEMS ENCOUNTERED**

- No

**4. SELF EVALUATION OF THE PROGRESS**

- Progress is on track with planned timelines.

wong

Supervisor's signature

Student's signature

# FINAL YEAR PROJECT WEEKLY REPORT

*(Project II)*

| | |
|---|---|
| **Trimester, Year: Y3T3** | **Study week no.: 8** |
| **Student Name & ID: Lee Zhong Cheng (21ACB06690)** | |
| **Supervisor: Dr. Wong Pei Voon** | |
| **Project Title: Development of Automotive e-Services Mobile Apps for Kampar Area** | |

**1. WORK DONE**

[Please write the details of the work done in the last fortnight.]

- Implemented order history for mechanic to view order history and also added filter to let mechanic filter the order.
- Implemented order history for user to view order history and also added filter to let user filter the order.

**2. WORK TO BE DONE**

- Implement rating system for user to rate on the mechanic that solved user car problems and the rating data will be used future.

**3. PROBLEMS ENCOUNTERED**

- When implementing the filter, it will confuse and don't know what to put to let user and mechanic filter.

**4. SELF EVALUATION OF THE PROGRESS**

- Progress is on track with planned timelines.

wong

Supervisor's signature

Student's signature

# FINAL YEAR PROJECT WEEKLY REPORT

*(Project II)*

| | |
|---|---|
| **Trimester, Year: Y3T3** | **Study week no.: 10** |
| **Student Name & ID: Lee Zhong Cheng (21ACB06690)** | |
| **Supervisor: Dr. Wong Pei Voon** | |
| **Project Title: Development of Automotive e-Services Mobile Apps for Kampar Area** | |

**1. WORK DONE**

[Please write the details of the work done in the last fortnight.]

- Implemented rating system for user to rate on the mechanic that solved user car problems and the rating data will be used future.

**2. WORK TO BE DONE**

- Implement dashboard for mechanic to view the total amount of the mechanic earn in the specific month
- Implement a pie chart to show to mechanic the percentage of earning is from which problem solved
- Implement line graph to show the average rating on a specific problem.
- Implement filter to let user to choose to view the data on which month and year.

**3. PROBLEMS ENCOUNTERED**

- No

**4. SELF EVALUATION OF THE PROGRESS**

- Progress is on track with planned timelines.

wong

Supervisor's signature

Student's signature

# FINAL YEAR PROJECT WEEKLY REPORT

*(Project II)*

| | |
|---|---|
| **Trimester, Year: Y3T3** | **Study week no.: 12** |
| **Student Name & ID: Lee Zhong Cheng (21ACB06690)** | |
| **Supervisor: Dr. Wong Pei Voon** | |
| **Project Title: Development of Automotive e-Services Mobile Apps for Kampar Area** | |

**1. WORK DONE**

[Please write the details of the work done in the last fortnight.]

- Implemented dashboard for mechanic to view the total amount of the mechanic earn in the specific month
- Implemented a pie chart to show to mechanic the percentage of earning is from which problem solved
- Implemented line graph to show the average rating on a specific problem.
- Implemented filter to let user to choose to view the data on which month and year.

**2. WORK TO BE DONE**

- Do testing on these applications and make sure they work smoothly.
- Do some enhancement to make these applications better.

**3. PROBLEMS ENCOUNTERED**

- The calculation of the average rating needs to take some time to figure out.

**4. SELF EVALUATION OF THE PROGRESS**

- Progress is on track with planned timelines.

wong

Supervisor's signature

Student's signature

# FINAL YEAR PROJECT WEEKLY REPORT

*(Project II)*

| | |
|---|---|
| **Trimester, Year: Y3T3** | **Study week no.: 13** |
| **Student Name & ID: Lee Zhong Cheng (21ACB06690)** | |
| **Supervisor: Dr. Wong Pei Voon** | |
| **Project Title: Development of Automotive e-Services Mobile Apps for Kampar Area** | |

**1. WORK DONE**

[Please write the details of the work done in the last fortnight.]

- Done testing on these applications and make sure they work smoothly.
- Done some enhancement to make these applications better.

**2. WORK TO BE DONE**

- Prepare documentation and presentation.
- Looking for further improvement on these applications.

**3. PROBLEMS ENCOUNTERED**

- No

**3. SELF EVALUATION OF THE PROGRESS**

- Overall project completion is on track.

wong

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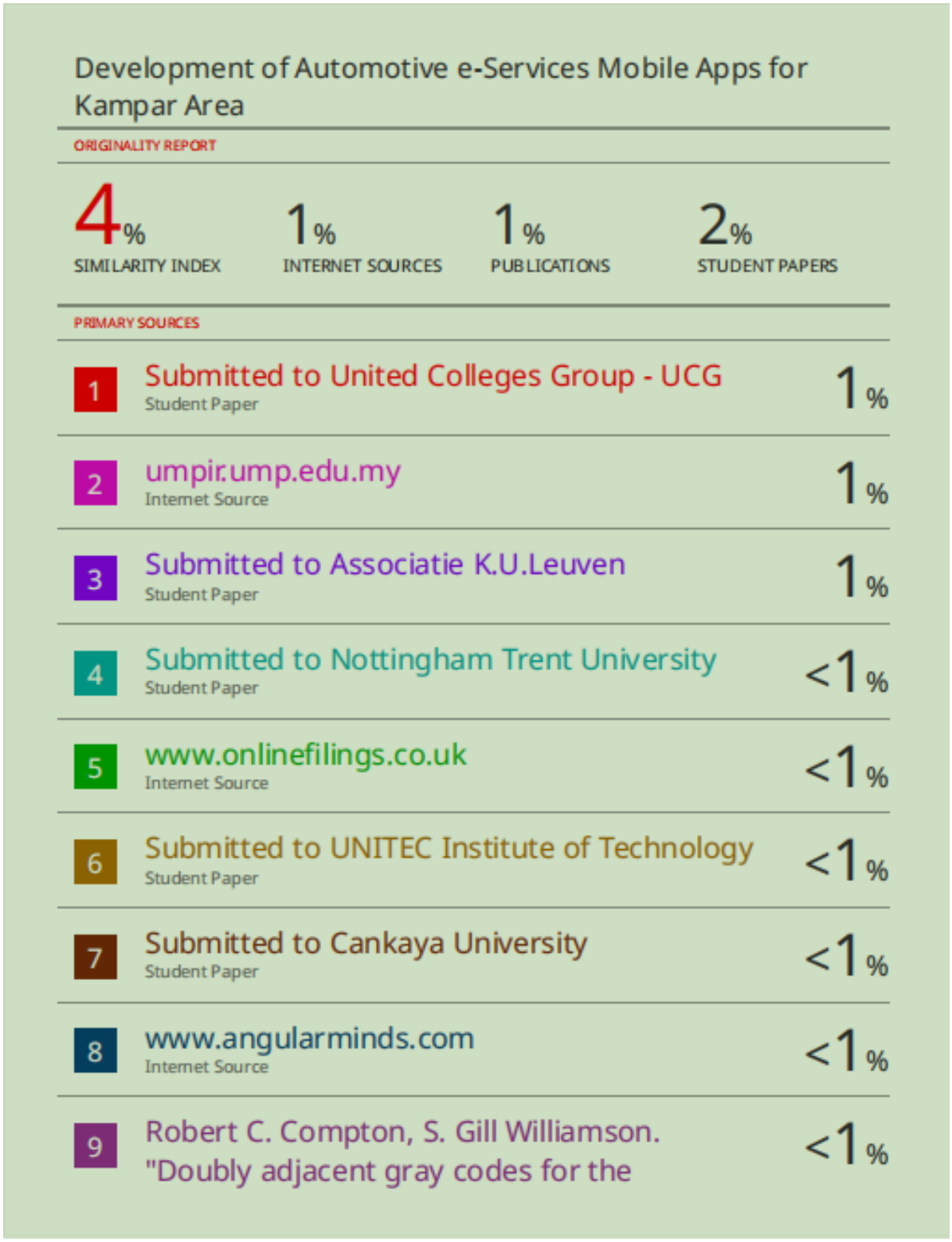
# POSTER

Bachelor of Information Systems (Honours) Digital Economy Technology
Faculty of Information and Communication Technology (Kampar Campus), UTAR


E`CARFIX AUTOMOTIVE
E-SERVICE MOBILE APP
INTRODUCTION
AN AUTOMOTIVE E-SERVICE MOBILE APP THAT CONNECT MECHANICS AND USERS IN KAMPAR AREA TO SOLVE IMMEADIATE VEHICLE PROBLEM
PROBLEM STATEMENT
Less automotive e-service mobile applications in the market
Hard to find trusted mechanic
Difficult to know whether the mechanic is experienced
OBJECTIVES
Develop an automotive e-service application
Enhancing Trustworthiness Through User-Imported Contacts
Establishing Mechanic Verification and Professional Level System
METHODOLOGY
Rapid Application Development (RAD)
Prototype
Requirements Planning
User Design
Construction
Cutover
Refine
Test
DELIVERABLE
E`CARFIX
for mechanic
Login With Email
Don't have an account ? Register

**PLAGIARISM CHECK RESULT**



Development of Automotive e-Services Mobile Apps for Kampar Area

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| **ID Number(s)** | 21ACB06690 |
| **Programme / Course** | DE |
| **Title of Final Year Project** | Development of Automotive e-Services Mobile Apps for Kampar Area |

| **Similarity** | **Supervisor's Comments (Compulsory if parameters of originality exceeds the limits approved by UTAR)** |
|---|---|
| **Overall similarity index:** 4 **%**<br><br>**Similarity by source**<br>Internet Sources: 1 %<br>Publications: 1 %<br>Student Papers: 2 % | |
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**Parameters of originality required and limits approved by UTAR are as Follows:**
- **(i) Overall similarity index is 20% and below, and**
- **(ii) Matching of individual sources listed must be less than 3% each, and**
- **(iii) Matching texts in continuous block must not exceed 8 words**

***Note: Parameters (i) – (ii) shall exclude quotes, bibliography and text matches which are less than 8 words.***

Note Supervisor/Candidate(s) is/are required to provide softcopy of full set of the originality report to Faculty/Institute

***Based on the above results, I hereby declare that I am satisfied with the originality of the Final Year Project Report submitted by my student(s) as named above.***

wong

Signature of Supervisor

Name: Ts Dr Wong Pei Voon

Date: 12/9/2024

Signature of Co-Supervisor

Name:

Date:

# UNIVERSITI TUNKU ABDUL RAHMAN

FACULTY OF INFORMATION & COMMUNICATION TECHNOLOGY
(KAMPAR CAMPUS)

**CHECKLIST FOR FYP2 THESIS SUBMISSION**

| | |
|---|---|
| Student Id | 21ACB06690 |
| Student Name | Lee Zhong Cheng |
| Supervisor Name | Ts Dr Wong Pei Voon |

| TICK (√) | DOCUMENT ITEMS<br>Your report must include all the items below. Put a tick on the left column after you have checked your report with respect to the corresponding item. |
|---|---|
| ✓ | Title Page |
| ✓ | Signed Report Status Declaration Form |
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| ✓ | Signed form of the Declaration of Originality |
| ✓ | Acknowledgement |
| ✓ | Abstract |
| ✓ | Table of Contents |
| ✓ | List of Figures (if applicable) |
| ✓ | List of Tables (if applicable) |
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I, the author, have checked and confirmed all the items listed in the table are included in my report.

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Date: 12/09/2024