***Front Cover Page*

E-clean House Apps for Kampar Residential

By

Lim Ming Xuan

A Report

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BACHELOR INFORMATION SYSTEMS (HONOURS)
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_6, Jalan Perak Jaya 2, **Dr Noraini Binti Ibrahim**

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ACKNOWLEDGEMENTS

I would like to express my sincere thanks and appreciation to my supervisors, Dr Noraini Binti Ibrahim and Mr Yew King Tak who has given me this bright opportunity to engage in an IC design project. It is my first step to establish a career in IT design field. A million thanks to you.

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ABSTRACT

In this project, the e-clean House Apps for Kampar Residential mobile applications are developed to help people that don't have time to clean their house without age limit and unable to clean their house conveniently and effectively. This mobile application is helping them to be able to book for maid to do their house chores as they are more professional compared to us. Besides that, there are three issues which are lack of loyalty programs, service is fixed and can't be alter, and limited feedback and review mechanism. For the first issue, the application is lack of loyalty programs as loyalty programs is one of the best methods to keep user loyal. Therefore, one of the objectives is to provide users with a loyalty program. User can use this cleaning apps to exchange prize with the point gained from the loyalty program every time a transaction is done. By having this function, it can gain users trust and their loyalty as everyone like free gifts. Furthermore, the second issue is the service is fixed and can't be alter. Some users prefer to have their house clean twice a month and some of them may prefer to clean one of their rooms and not the whole house, but most of the application services are fixed and can't be change. This means that no matter the number of rooms that need to be cleaned, the price is already fixed, so users can't choose the thing that they only want to clean. Thus, to solve this problem, we can provide more flexibility choice for the cleaning service. Hence, user has more flexibility in selecting the service they require and not the whole package. Other than that, user can also choose for their house type such as condominium, terrace, bungalow and other as well as the number of bedrooms and bathrooms. This will enhance the customer satisfaction as they only need to pay as they require. Moreover, the third issue is lack of dashboard for administration. Without a proper dashboard, it is hard to track accurate information about the sales. The dashboard come in three different graph that is the total sales graph, cleaner graph and cleaning type graph. The total sales graph will illustrate the total sales. The cleaner graph will illustrate the sales that have done by the cleaner. Finally, the cleaning type graph will illustrate the sales that have profit by which cleaning type. User can set the date based on their needs. For example, monthly, quarterly, half year, and yearly. Therefore, by fully utilizing the dashboard, we can maximize the efficiency of a good decision making.

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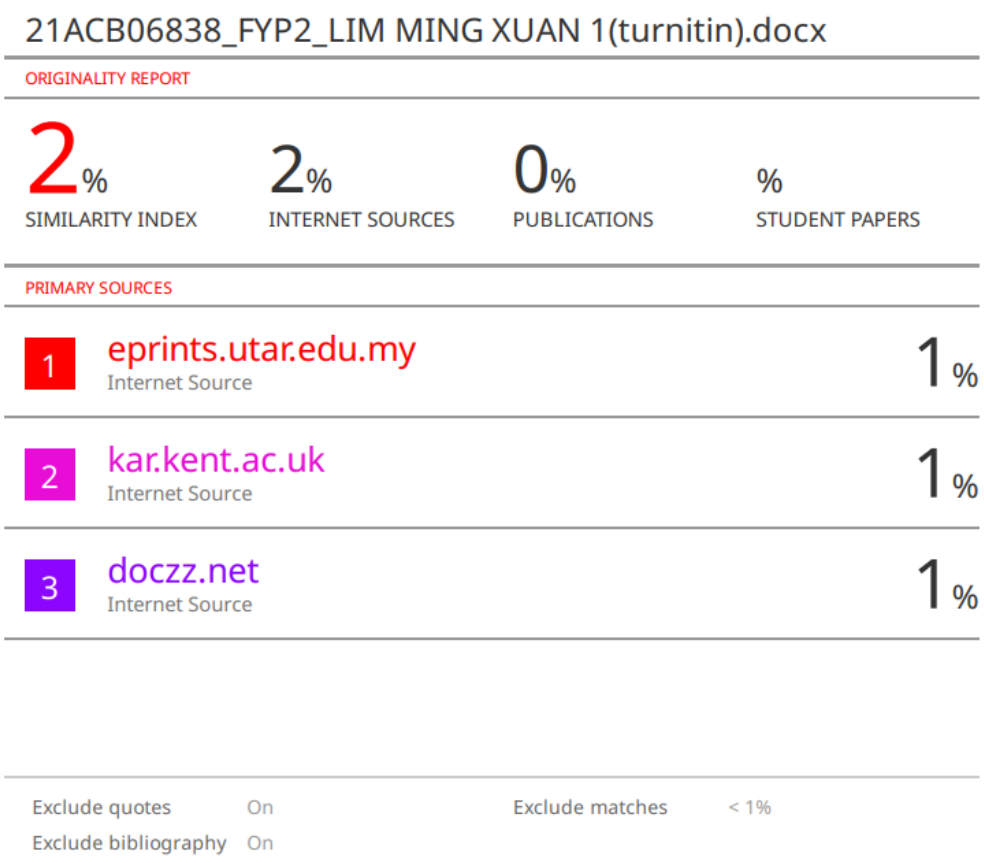

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CHAPTER 1

Introduction

In the contemporary era characterized by globalization and modernization, technology plays an increasingly pivotal role in shaping our daily lives. Notably, advancements in technology have significantly revolutionized the service industry, particularly through the proliferation of smartphone applications. These applications empower individuals to execute various tasks remotely, irrespective of time or location. For instance, users can now access instructional guides on cleaning procedures directly from their smartphones, facilitating independent housekeeping even when alone at home. Additionally, the advent of e-clean house applications has streamlined the process of locating reputable cleaning services, addressing a critical need for maintaining cleanliness in our living environments.

Cleanliness stands as a cornerstone of a healthy lifestyle, profoundly influencing our well-being and productivity. As the adage goes, "Cleanliness is close to godliness," underscoring its inherent value in promoting physical and mental wellness.[1]s by fostering hygienic surroundings, individuals can mitigate the risk of diseases while concurrently enhancing their efficiency and effectiveness in various endeavors. However, despite the recognized importance of cleanliness, accessing reliable cleaning services remains a challenge, particularly in locales like Kampar. Traditional avenues often tie cleaning services to property management, leaving individuals living independently to navigate the arduous task of finding trustworthy cleaners.

In response to this pressing need, the development of a dedicated application emerges as a pragmatic solution. This innovative platform empowers users to effortlessly book personalized cleaning services with just a few clicks, obviating the need for laborious manual searches. By centralizing a network of vetted cleaning professionals, the app not only promotes convenience but also instils confidence in users regarding the reliability and quality of services rendered. Through seamless integration of technology and service provision, this initiative not only fulfils a practical need but also underscores the transformative potential of technological innovations in enhancing everyday experiences.

1.1 Problem Statement and Motivation

1.1.1 Lack of loyalty program to keep user loyal.

First of all, the first problem statement is that it lack of loyalty program to keep user loyalty. Nowadays, the crucial problem is improving customer retention and loyalty, as these qualities have a considerable influence on long-term profitability and growth. Customer retention is the percentage of customers that continue to buy from a brand over time, whereas customer loyalty is the emotional connection that leads customers to pick a brand over competitors [3]. It often prioritize client acquisition above retention and loyalty, leading to customer churn [2]. As they promote increased spending, repeat business, and the development of emotional ties, loyalty programs are a useful instrument for boosting client retention and loyalty [3]. Loyalty programs may improve customer satisfaction, forge closer bonds with customers, and supply useful customer information for prediction and personalization by offering rewards, personalized deals, and exclusive benefits [4]. There are several kinds of loyalty programs, each with special features and advantages, such as point-based, tier-based, subscription-based, and value-based programs [3]. Value-based programs match rewards with customers' values or causes, subscription-based programs demand a recurring fee for exclusive benefits, and point-based programs, which are the most popular, award points for purchases or actions. Tier-based programs, on the other hand, offer varying degrees of benefits based on spending or activity [3]. Businesses can use best practices like active listening, omnichannel experiences, anticipating consumer demands, and customizing rewards and incentives to optimize the efficacy of loyalty programs [3]. Loyalty programs may help businesses stand out from competitors, foster customer loyalty and trust, and lower customer attrition, all of which boost customer retention and lifetime value [4].

https://ideausher.com/blog/top-10-loyalty-apps/

1.1.2 Service is fixed and cannot be alter.

Next, the second problem is service is fixed and can't be alter. Some users prefer to have their house clean twice a month and some of them may prefer to clean one of their rooms and not the whole house. However, most of the application services are fixed and can't be change. This means that no matter the number of rooms that need to be clean, the price is already fixed, so users can't choose the thing that they only want to clean. Nowadays, it's quite challenging to determine whom to trust. Even then, your trust is not always absolute including professional services [6]. It is hard to find a reliable cleaning service, as we don't always see the advertisement for cleaning service in the Kampar area. Even if we see, most of it are just writing on the door, traffic light and other places that are free and crowded. The most important for a service is their services must be aligned with the needs and desire of the customers. People want to pay for services on their terms and dislike paying for more services than they require [9]. Flexibility can only go so far as it is a business, but when it's practical, think about making some of your service flexible [8] Businesses may improve customer satisfaction, trust, and loyalty by offering customized services like room-specific cleanings or different cleaning frequency. This will help them stand out in a crowded market and satisfy the changing needs of discriminating consumers [10].

1.1.3 Lack of Dashboard for Administration

The lack of a single dashboard for administration creates substantial hurdles for operational efficiency and efficient decision-making inside the company [5]. Currently, administrative teams are tasked with manually acquiring and combining data from a variety of sources, including spreadsheets, reports, and several systems. This fragmented approach results in inefficiencies, as administrators spend too much time collecting data instead of focusing on strategic projects that may propel the business ahead [7]. Furthermore, the lack of a comprehensive dashboard leads to inconsistent data, with differences between departments or reports, causing confusion and potentially erroneous judgments [17]. This problem is aggravated by the lack of real-time data visualization, which causes delays in insights necessary for timely solutions to emergent challenges [5]. As a result, administrators are frequently left navigating a sea of data without a clear grasp of performance measures and patterns, restricting their ability to make effective decisions. Furthermore, the lack of an overall dashboard limits

cross-departmental cooperation and transparency, making it difficult for teams to agree on goals and performance indicators [7]. This not only affects productivity but also raises the likelihood of bad decision-making, which can have far-reaching consequences for the organization's overall performance [17]. Furthermore, frustration caused by inefficient processes can contribute to low morale among administrative workers, reducing productivity and job satisfaction [5]. As a result, it is critical for the business to create and execute an integrated dashboard that gathers important performance indicators and operational metrics, providing data access and enabling administrators to make informed decisions that foster organizational success.

Motivation

The purpose of this project is to help people that don’t have time to clean their house without any age limit to able to clean their house conveniently and effectively. This mobile application is helping them to able to book for cleaners to do their house chores as they are more professional compared to us. It also provides loyalty programs to enable user to get point for redeeming prize or voucher that can be use. The point will be given every time a transaction is done based on the amount. It also provides admin with a dashboard that display the total sales, cleaner sales, and cleaning type sales. This will make the admin more easier to make efficient decision based on the dashboard. Moreover, it also enables a lot of different cleaning service provided. Not only this, but user can also customize their own number of bathrooms and bedrooms based on their requirement to improve user satisfaction as they only need to pay for the service they require. This mobile application is developed because they are a lot of people that don’t know or don’t have the time to do the cleaning as cleaning is not as easy as it seems. Besides that, the traditional way of looking for cleaning service is not convenience as most of them are self-employed and not from a company. Users need to look for flyer or ask for contact from referral to get into contact with the cleaning service. In the worst scenario, the cleaning service is not available on that time, and everything need to start from scratch again starting from looking for new cleaning services. Thus, another purpose of this project is to bring convenience for users to find for suitable cleaning services. The aim of this project is to help users to look for trustworthy cleaning services and bring convenience to make booking.

1.2 Research Objectives

1.2.1 To provide users with a loyalty program.

The primary objective of implementing a reward program into the e-cleaning service application is to provide notable enhancements in customer retention and loyalty. These variables are critical in propelling sustained profitability and expansion. The service provider wants to stand out from competitors, encourage customer loyalty, and build better relationships by launching a complete reward program. This effort aims to enhance customer satisfaction, improve engagement, and eventually generate revenue development by aligning with industry best practices and customer-centric tactics. The project's main outcomes include greater rates of customer retention, better customer engagement and loyalty through personalized rewards and incentives, higher customer satisfaction through exclusive benefits and customized experiences, the collection of useful customer data for targeted marketing campaigns and customized service offerings, and market differentiation of the e-cleaning service application to fortify brand loyalty. The deployment of a loyalty program seeks to improve customer retention, loyalty, and the entire customer experience inside the e-cleaning service application by concentrating on customer-centric efforts, aligning with strategic goals, and defining clear targets.

1.2.2 To provide more flexibility choice for the cleaning service.

By providing flexible and customizable cleaning services that are tailored to each user's individual requirements and preferences, the project aims to improve customer satisfaction, trust, and loyalty by tackling the issue of fixed services in the e-cleaning service application. The service provider may better serve a wider range of consumer needs and preferences by offering customizable cleaning packages and frequency options, which will eventually increase customer satisfaction and trust. This program seeks to fulfill the changing requirements of picky customers while also helping the service provider stand out in a crowded market. Offering room-specific cleaning choices, letting clients choose how often they want to have their rooms cleaned, and offering a variety of packages to accommodate different cleaning schedules and habits are all part of the project's goals. Customer can also select different type of house such as terrace, condominium, bungalow and other which have different price for each of the type. Most of the e-cleaning service already have a fix price for every cleaning service

which make it unfair for some customer that only need to clean their bathroom. Moreover, customer can also select the number of bathroom and bedroom that need to clean which are more useful for student that stay in hostel and only need to clean their own bedrooms. By doing this, the e-cleaning service application may establish a solid reputation as a customer-focused service provider and enhance client happiness, engagement, and revenue development.

1.2.3 To provide a dashboard for administrative.

The primary objective of developing an administrative dashboard for the e-cleaning service application is to streamline management processes, improve decision-making capabilities, and maximize operational efficiency by integrating key performance indicators, user analytics, and service-related data into a single interface. This dashboard will provide administrators with real-time insights into user management, service tracking, financial reporting, and marketing tools, allowing for effective control of continuing services and preemptive issue resolution. Furthermore, comprehensive analytics will enable the analysis of user behavior and service trends, directing strategic choices and the creation of new services. Finally, this program intends to provide the management team with the tools needed to drive continuous development and assure the platform's scalability and success in addressing the changing demands of its users.
The dashboard come in three different type of categories that is the total sales graph, cleaner sales graph, and cleaning type sales graph. As the name suggests, the total sales graph provide the data for every sale that are already make. The cleaner sales graph illustrates the total sales for each cleaner and finally, the cleaning type sales graph illustrates the total sales for each cleaning type. All the graphs can be set to view from monthly, quarterly, half year, and yearly.

1.2.4 To evaluate the e-clean house apps for Kampar residential.

In addition, the second objective is to test the e-clean house apps for Kampar residential. Testing the cleaning e-service application is critical for ensuring its functioning and usability. Unit testing for individual components, integration testing to ensure seamless interactions, functional testing to validate core features such as booking and GPS, usability testing for user-friendliness, performance and security testing, and compatibility testing across various devices and operating systems are all part of the testing process. Regression testing validates issue fixes, whereas user acceptability testing gathers input from actual users. Performance and load testing determine scalability, whereas beta testing gathers final user feedback. These procedures contribute to the application's dependability and preparation for a successful launch, resulting in a more convenient and efficient experience for both users and mechanics.

1.3 Project Scope and Direction

The project scope entails the development of an e-cleaning service platform, aiming to provide a convenient solution for individuals and businesses struggling to find time for cleaning tasks. This application can help customers in finding a reliable cleaning services in the shortest time. It can help user to find and make booking for cleaning services as they don't have the time to do it themselves.

First and foremost, the app will include different categories of cleaning services including indoor cleaning, outdoor cleaning, office cleaning and other services. This apps are created for both cleaning service provider and users. Users can make booking for cleaning service and other function such as loyalty programs, multiple service provided, feedback and others basic feature that every booking application have. User can choose the cleaning they needs from indoor cleaning, outdoor cleaning, office cleaning and other services. A typical indoor cleaning service involves a wide variety of duties designed to guarantee a tidy, hygienic, and clean living or working environment. These services may differ according on the requirements and preferences of the customer, but they often include cleaning and sanitizing restrooms, dusting and wiping down surfaces, and vacuuming and mopping floors. The service might also include maintaining upholstery, cleaning carpets, and windows whereas outdoor cleaning perform outdoor cleaning services like pressure washing, lawn and yard cleanup, pool cleaning and other outdoor cleaning services. Office cleaning are same as indoor cleaning but only for office and other services include additional service others than cleaning services. For example, kitchen helper, party assistant and others related services. The cleaning provider company whereas can view users booking and assign cleaner for the users.

1.4 Contributions

The primary objectives of this proposed project for the e-cleaning service application are to implement a loyalty program, provide flexible cleaning service options, and develop an administrative dashboard. First, the implementation of a comprehensive reward program aims to enhance customer retention and loyalty, which are critical for sustained profitability and growth. By offering personalized rewards and incentives, the program seeks to improve customer satisfaction and engagement while differentiating the service provider from competitors. Key outcomes include increased customer retention rates, higher satisfaction through exclusive benefits, and the collection of valuable customer data for targeted marketing campaigns. Second, the project aims to offer flexible and customizable cleaning services tailored to individual user preferences, addressing the limitations of fixed service options. This includes providing room-specific cleaning choices, allowing clients to select their preferred cleaning frequency, and accommodating various types of homes, thereby enhancing customer trust and satisfaction. Finally, the development of an administrative dashboard will streamline management processes by integrating key performance indicators, user analytics, and service-related data into a single interface. This dashboard will provide administrators with real-time insights into user management, service tracking, financial reporting, and marketing tools, enabling effective oversight and pre-emptive issue resolution. With features such as total sales graphs, cleaner sales graphs, and cleaning type sales graphs, the dashboard will facilitate comprehensive analysis of user behaviour and service trends, ultimately supporting strategic decision-making and ensuring the platform's scalability and success in meeting the evolving needs of its users. Through these interconnected initiatives, the project aims to create a more engaging, customer-centric, and operationally efficient e-cleaning service application.

The proposed application will contribute to help the cleaning company to attract new users, retain the regular users, and help management to make decisive decision. With the introduction of loyalty programs, modify service, and dashboard for management. Thus, returning users will continue using the apps for booking not only for convenience, but the benefits it brings for them as a user that need to find a cleaning service.

Also, the proposed application can improve the efficiency of the booking process. Users can make the booking through the application by themselves without the needs of finding different contact number for different cleaning services as the application has provided variable type of cleaning service to choose from. Company can run smoothly due to the booking processes are replaced by the proposed application. Thus, the workload of cleaner will be reduced, and they can focus on the cleaning part and not wasting time on finding customers.

1.5 Report Organization

The structure of the report is organized in chapter. In Chapter 2, a literature review is conducted on e-clean mobile applications, including their background, type, limitations of previous studies, and solution for the limitations. Chapter 3 outlines the proposed methodology for developing the e-clean house apps mobile application, including the planning, analysis, and design phases. Chapter 4 include the preliminary work, including the pre-development, development, and post-development stages for building the e-clean service mobile apps. Finally, Chapter 5 provides a conclusion to the project, summarizing the findings and discussing their limitation and future work. The appendix includes the references used in this report.

CHAPTER 2

Literature Reviews

2.1 Review of existing system

2.1.1-Inner Melbourne Maids

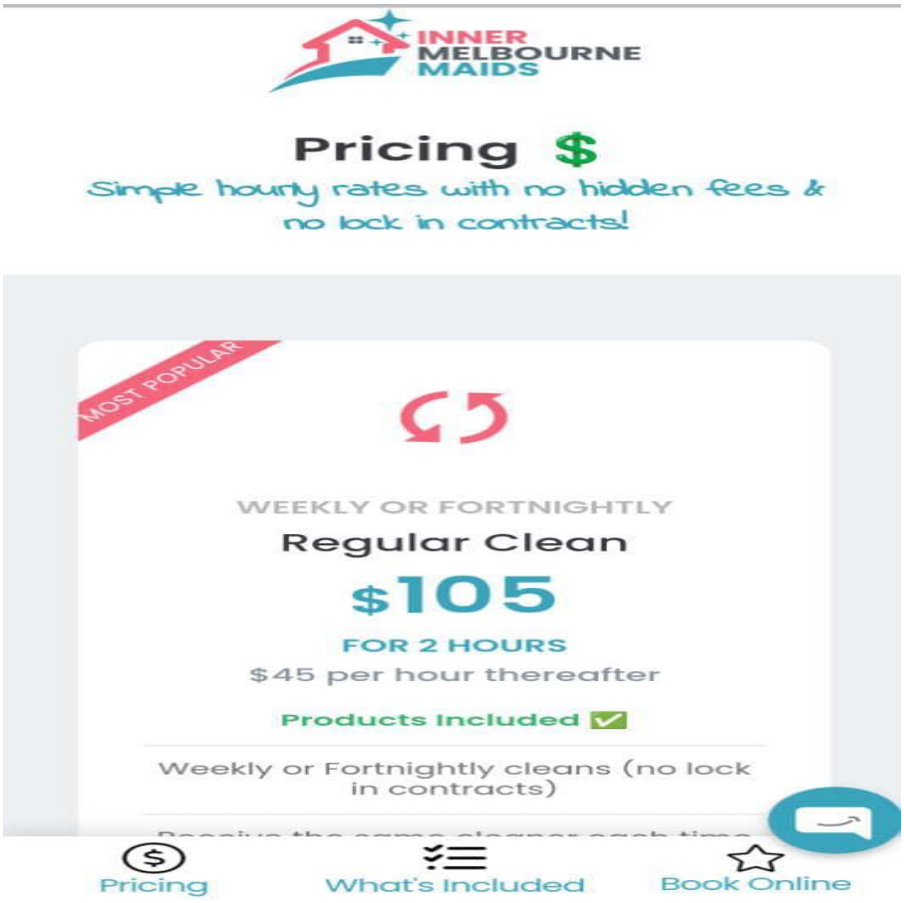


Figure 2.1.1.1 The main page of Inner Melbourne Maids

Figure 2.1.1.2 Interface show after pressing booking online.

Inner Melbourne Maids is an e-clean house app developed and published by IWDO Group on 28 Dec 2022. This is a free booking app that focuses on letting users to seek maids in a more convenient way. It focuses on letting users to making booking for house cleaners. Figure 2.1.1.1 shows the main interface to let users to see the different cleaning service that are available which include regular clean, once off clean, and deep clean. After clicking the details, it will bring you to the booking online pages as shown in the figure 2.1.1.2. Then it will show you an application form to let you choose for the type of space to be cleaned, type of service, booking details, address, and client details. It also provides a comment box for users to key in special requirements.

Strength:

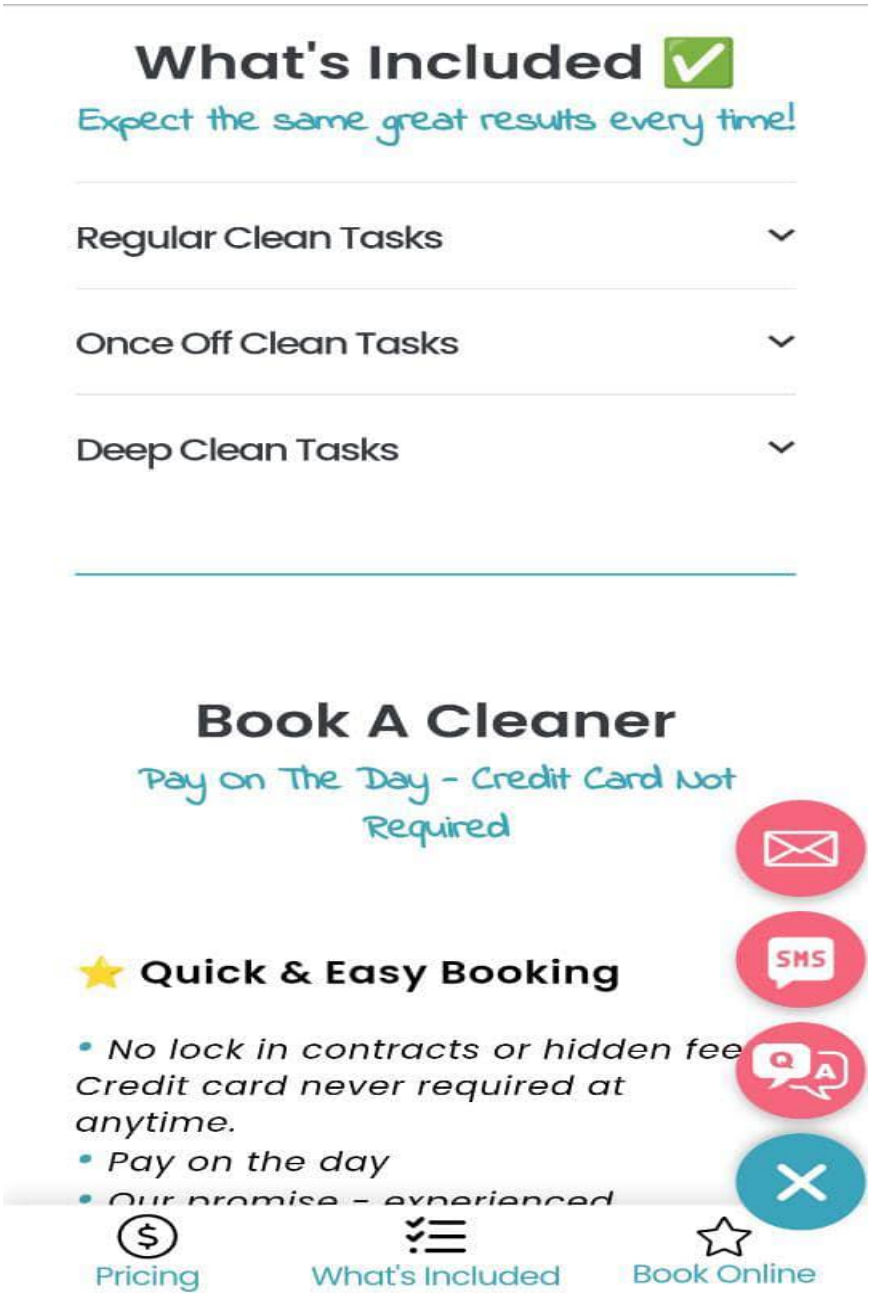


Figure 2.1.1.3 The interface for the Q&A

Figure 2.1.1.4 The interface for Common Question

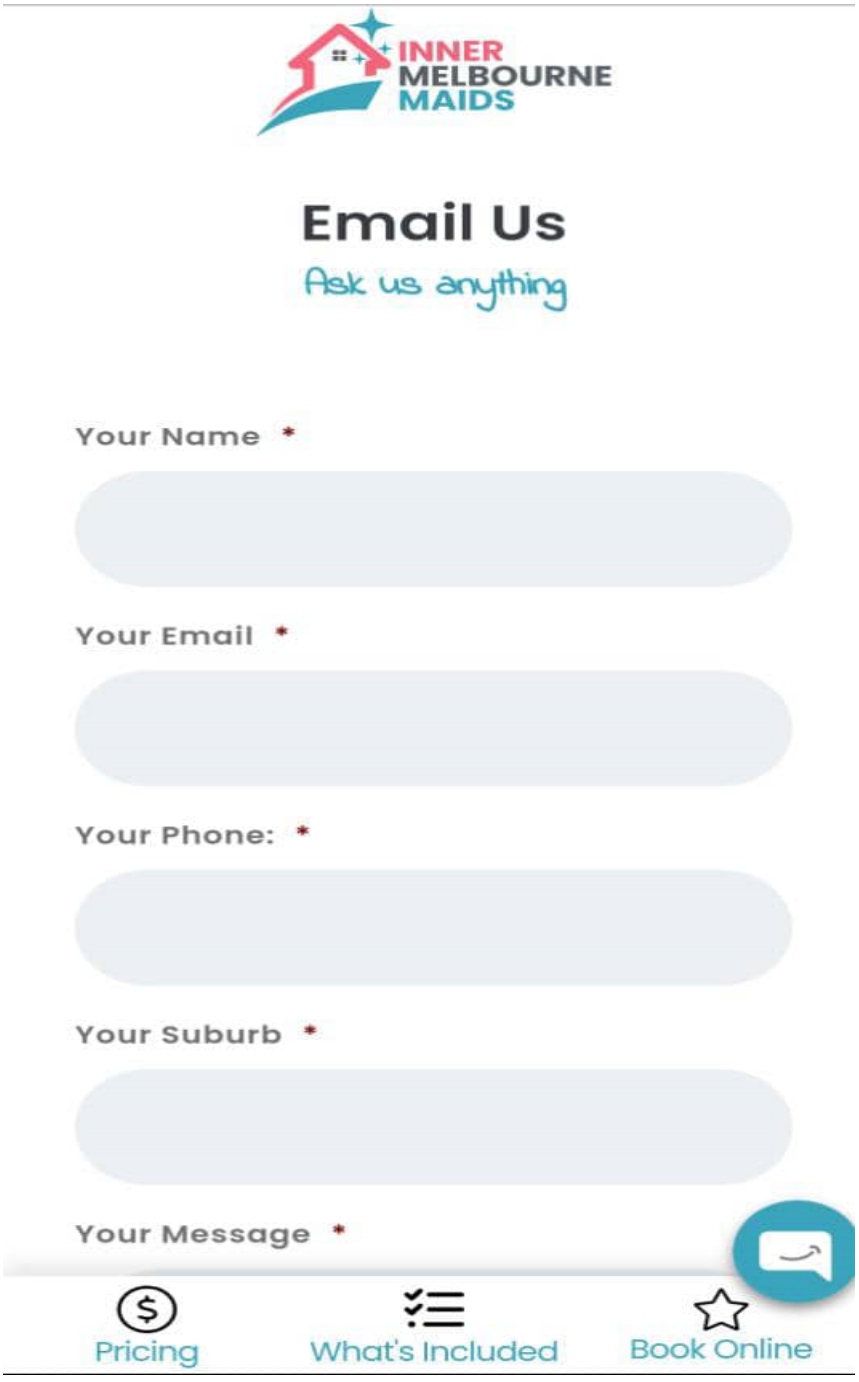


Figure 2.1.1.5 The interface for Email Us

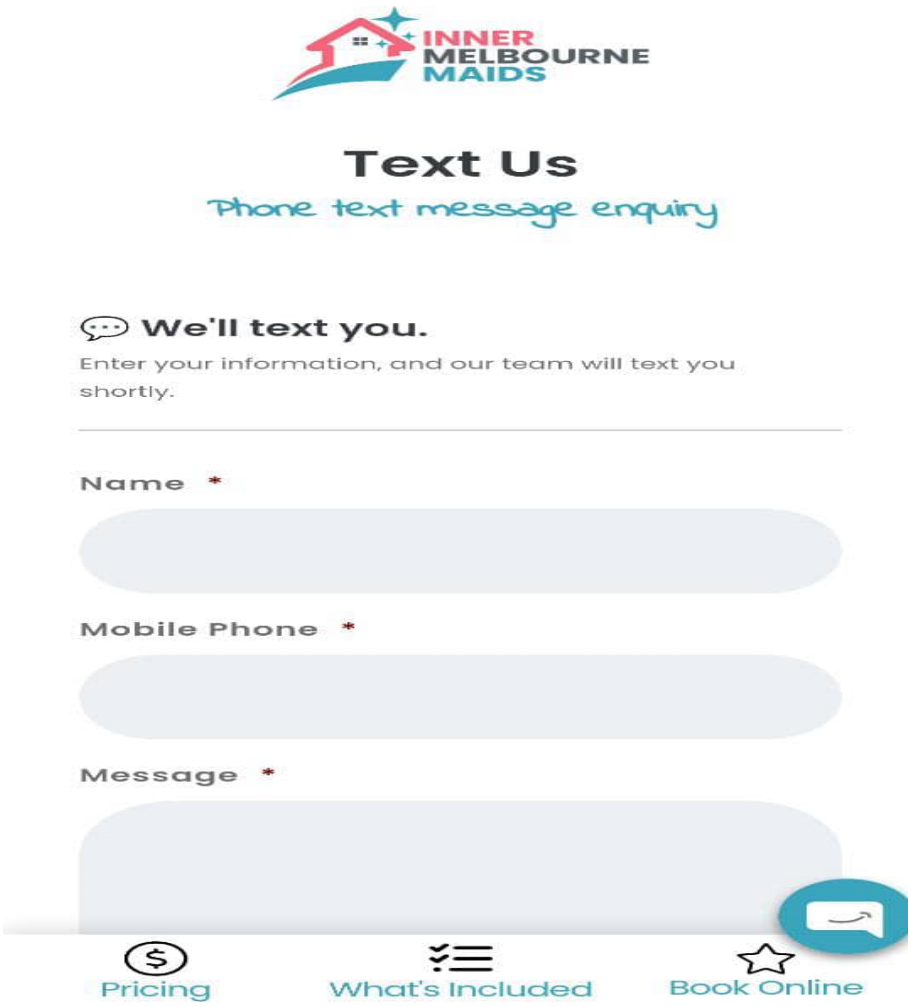


Figure 2.1.1.6 The interface for SMS

In addition, there are many strengths for the Inner Melbourne Maids. One of the strengths of this application is user-friendly and easy to use. This app is designed for all age which include elderly, so it needs to be simple and easy to use. Then, it contains a smiley icon which can be seen in all the figure shown above. The icon will provide three button that is Email Us, SMS, and common question as shown in Figure 2.1.1.3. This application is free to download, so, it can attract more people to download it. Figure 2.1.1.4 show us the common question ask by user. With this, users don't need to waste time to ask again and wait for reply which will take a bit of time. Figure 2.1.1.5 and Figure 2.1.1.6 are providing the same function which is ask for question and the only difference is figure 2.1.1.5 are using email and figure 2.1.1.6 are using SMS. Some elderlies don't have their own email so they can choose for receiving the reply in SMS which will bring them convenience too.

Weakness:

On the contrary, there are also many weaknesses in this e-clean house mobile app. The first weakness is the app have a limited set of cleaning services provided. The apps only provide 3 cleaning services which is regular clean, once off clean, and deep clean. The regular clean and once off clean provide the same service and the only difference is that regular clean is a weekly package which it will come to clean every week in the same day and same time and the same cleaner each time, but still same with once of clean that the payment is make every time a cleaning is done. The deep clean offer a few more task that both other 2 cleaning services don't have that is oven and rangehood clean, internal cabinet clean, and window clean. In addition, this app is lack of login system. Without a login system, some unmoral user will key in fake information for the client details, and it can't be trace. It also lacks the transaction history function to let user to track their past transactions as it is one of the most common functions that every transaction apps must have. Besides that, the cleaning service is fixed and can't be change. Some users might just need to clean one of their bedrooms, but all the cleaning services are come in a package, so the price will be the same as the package even when users want to clean only one room. Finally, it has lack of booking history to allows users to view past history of their booking.

Solution:

The solution for solving the first weakness of this e-clean house app is to provide more set of cleaning services. For example, outdoor cleaning services, so they can have more selection to choose from without needing to find other cleaning company for different cleaning. In addition, the second solution provide a login function. This is a must as it can provide users from key in fake information. With a login function, the users need to verify their phone number before registering an account, so it can trace every user that make a booking with their phone number. Furthermore, it should also provide a transaction history in the application to solve the problem of lack of transaction history report, so users can know their transaction history of when they have done a transaction. Furthermore, provide another set of cleaning services that enable users to pick their own cleaning services and the price is not fixed. For example, user can choose their

own number of rooms to be clean and others. Finally, developers can provide users with a booking history including with search and filter function.

2.1.2- JustClean

Figure 2.1.2.1 The main page of the justclean

JustClean is an e-clean house application developed by justclean. JustClean is a technology company that provides people with easy and cost-efficient cleaning services in cities. Figure 2.1.2.1 shown the main page of the application after the application has been open. It contains a lot of different service not only cleaning.

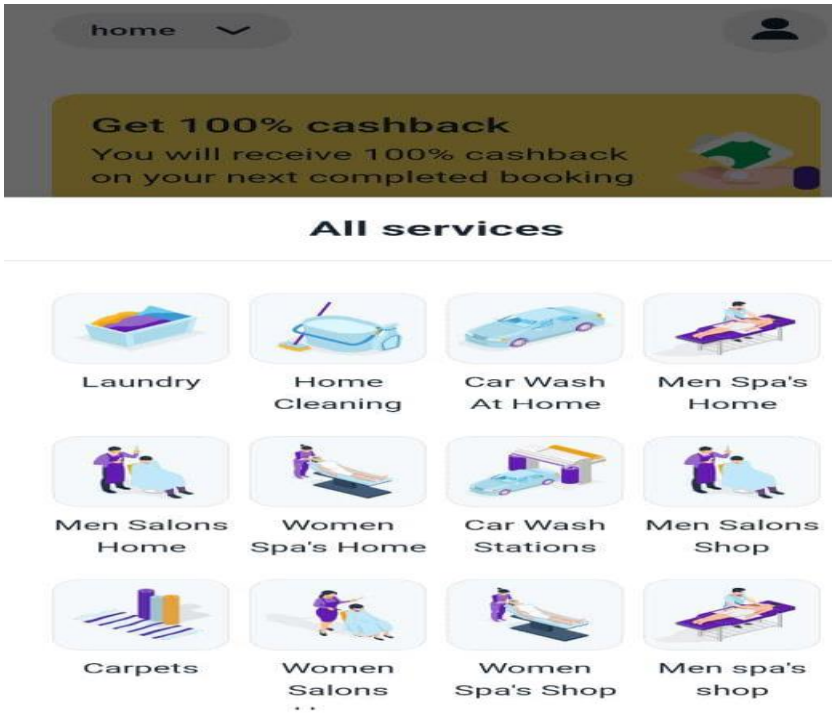


Figure 2.1.2.2 The interface after pressing more service.

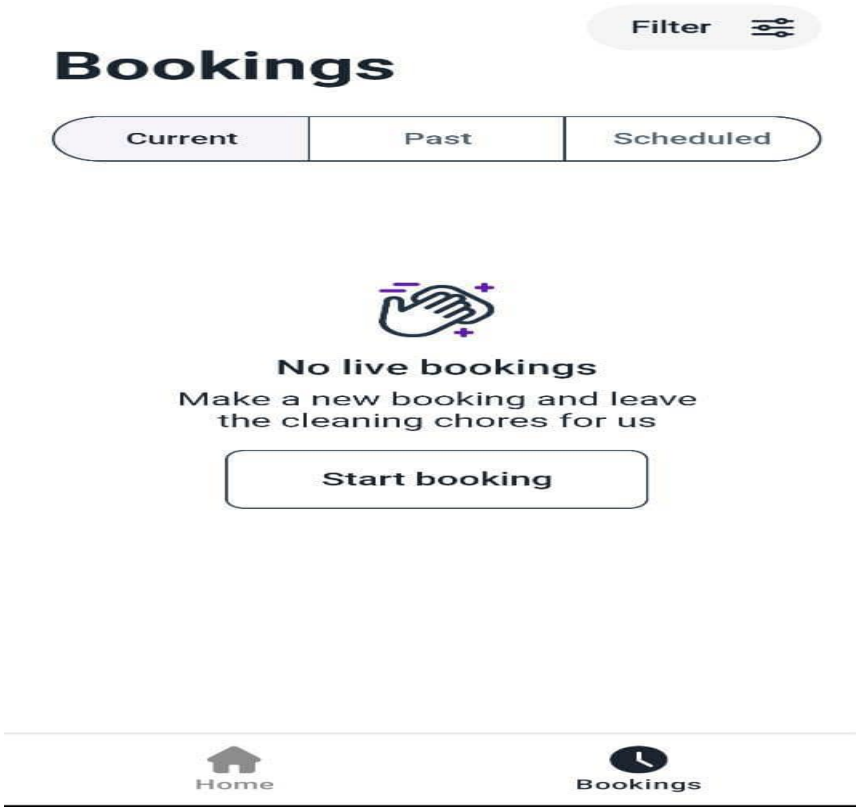


Figure 2.1.2.3 The interface of bookings

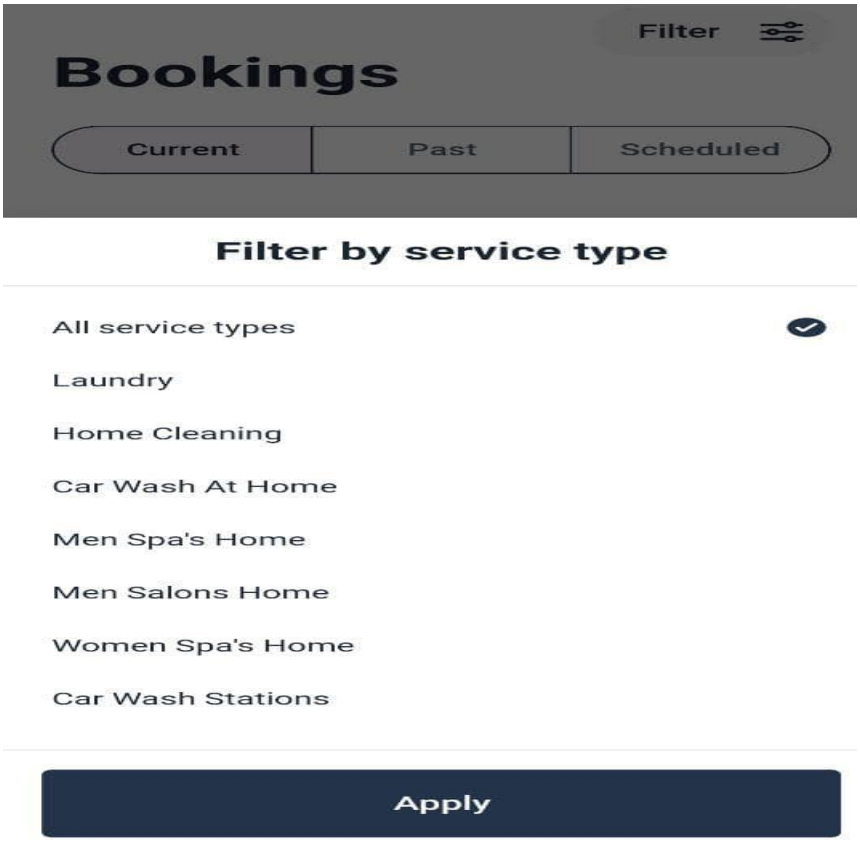


Figure 2.1.2.4 The interface after pressing filter.

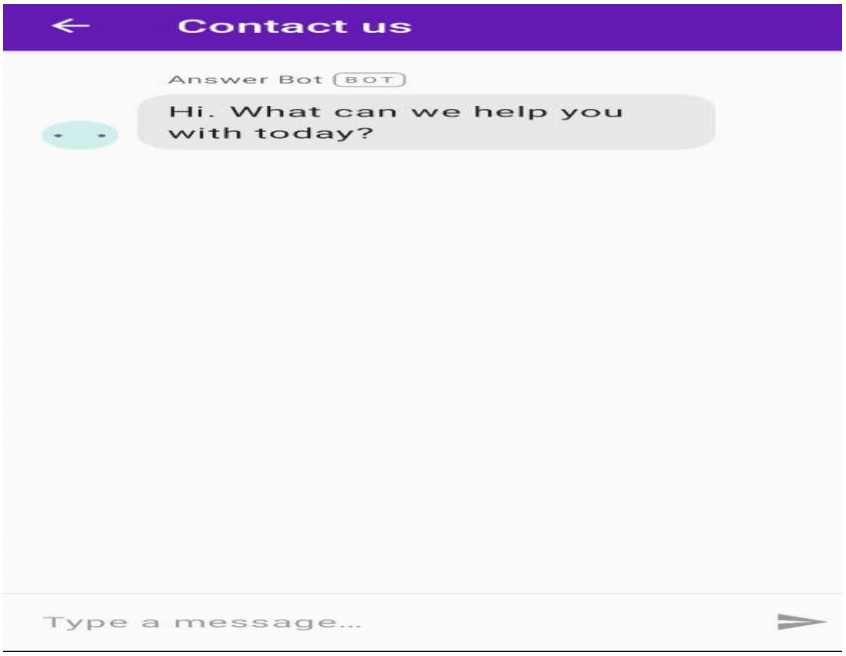


Figure 2.1.2.5 The interface for AI Bot Chat

Strength:

The first strength of this app is it contain all lot of service not only include cleaning services. It includes services such as car wash at home, men spa's home, salons home,

carpets and many other. Figure 2.1.2.2 shows all the available service provided by justclean. Many e-clean house apps only provide cleaning service and not other services, but with this app. Users can do all their things in a single app without switching different apps for different services. The second strength is it provided with an excellent history report. Users can see their current booking, past booking, and schedule as shown in figure 2.1.2.3. With this, users can be able to trace all their booking not only in the past but also the future. The schedule will show the repeated booking that user have make for the future. For example, some user will book early for a cleaning service for the next month, but some of them will forget as it will happen in a short time. With this, users can be able to remind themselves. Not only that, but it also contains the filter function as shown in figure 2.1.2.4. Users can filter which booking history of the category they want to view which will bring a lot of convenience and save time for user that have a lot of booking history. Besides that, it provides an AI Bot chat for users to ask for questions and get a reply in the shortest time. This can let user to get the maximum satisfaction as some similar apps without AI Bot chat require some time to get only one reply.

Weakness:

Nevertheless, it also contains some weakness in the application. One of the weaknesses of this application is also the filter function. It is the strength and the weakness of this application. As the strength has been say above. However, the weakness of the filter function is that it can't select multiple categories to view for the booking history. It will hard if some users need to view multiple categories at the same time. At the same time, the filter function also doesn't provide user to select date to view the booking for that date. For example, some users may need to view the booking history for last months. Without the filter based on date, users need to scroll down until he sees the date that he wants which will waste a lot of time. Besides that, the cleaning service is fixed and can't be change. Some users might just need to clean one of their bedrooms, but all the cleaning services are come in a package, so the price will be the same as the package even when users want to clean only one room.

Solution:

In addition, the solution for the first weakness which is the filter function can select multiple categories at the same time. The developer can enable users to select multiple

categories they prefer at the same time to view for the history. With this, users can view more data at the same time. Besides that, the solution for the weakness to no select date to view is that the developer can let users to select the date they want to view. It is hard for users to unable to select the date they want to view. It is not a problem if the data is less, but if the data is huge. It is hard for user and inconvenient for them. Finally, provide another set of cleaning services that enable users to pick their own cleaning services and the price is not fixed. For example, user can choose their own number of rooms to be clean and others.

2.1.3 Maideasy

Figure 2.1.3.1 The main page of the Maideasy

Maideasy is an e-clean house application developed by Maideasy And Bhd. Maideasy.my is an online company that simplify finding and booking a home cleaner. It is a platform for enabling the connection between individuals seeking to obtain cleaning services and individuals seeking to provide cleaning services. Figure 2.1.3.1 shown the main page of the application after the application has been open.

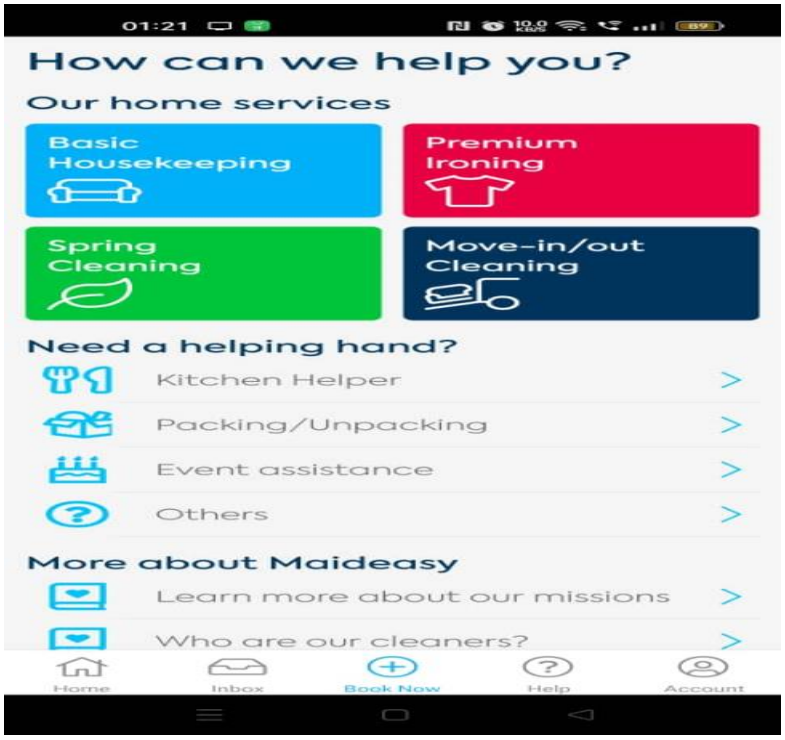


Figure 2.3.1.2 The Book Now Page of the Maideasy

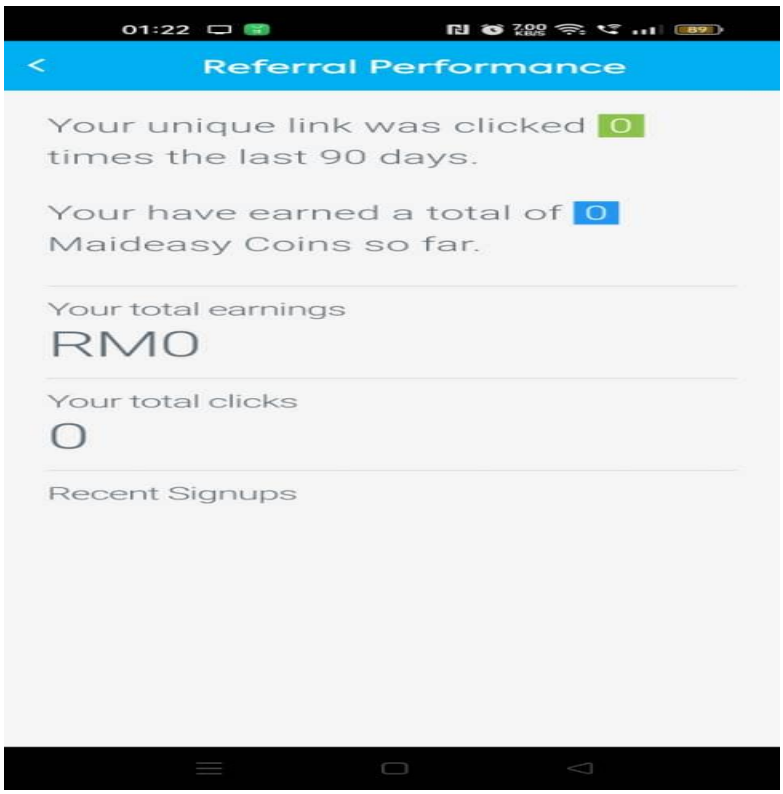


Figure 2.3.1.3 The referal page of the Maideasy

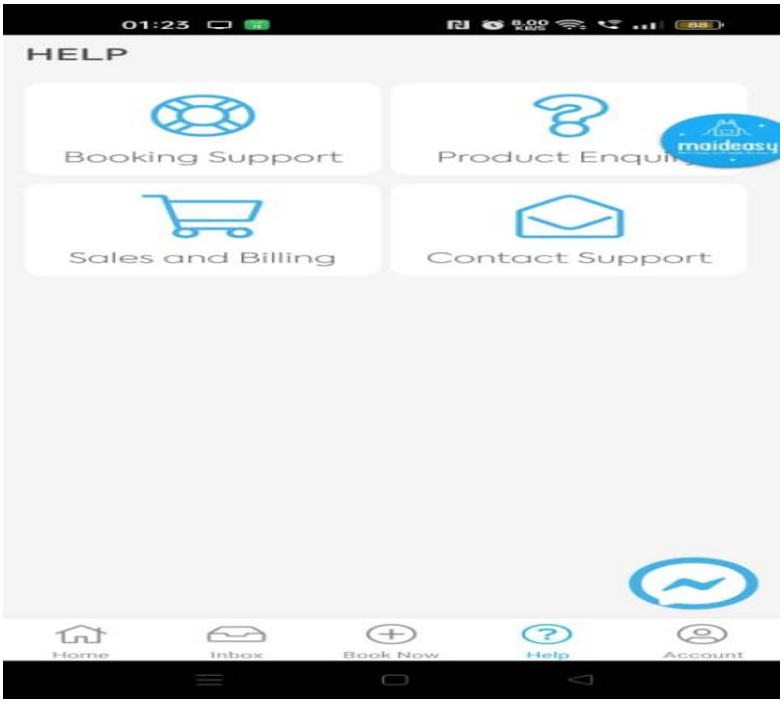


Figure 2.1.3.4 The help page of the Maideasy

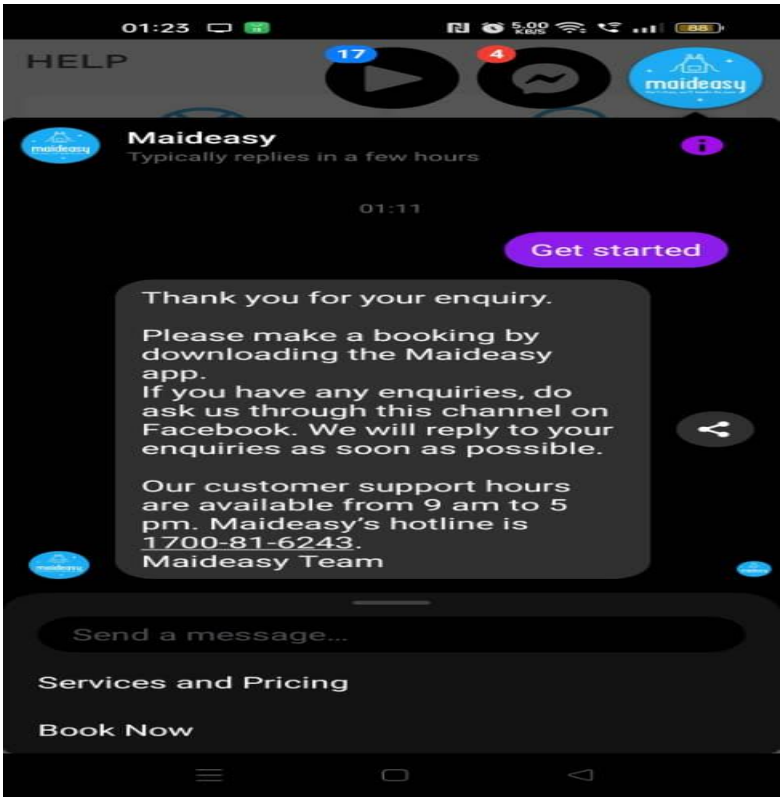


Figure 2.1.3.5 The main page of the Maideasy

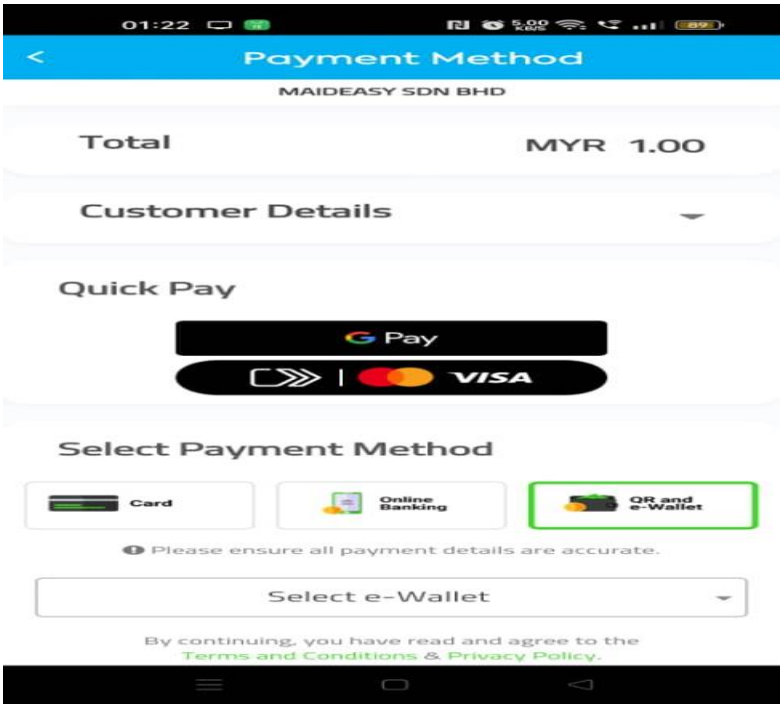


Figure 2.3.1.6 The payment page of the Maideasy

Strength:

The first strength of this application is it include a lot of others service and not only include cleaning services. It includes other services such as kitchen helper, packing/unpacking, event assistance, and others as shown in figure 2.3.1.2. The others let user to key in their own instructions and see whether they would accept the job. Most of the application only provide cleaning services and no others, but in this application. It provides some additional services that need help in our daily life, but no application provides booking services for things like this. For example, a user needs to plan a birthday party, but with only this application. Users can do all those things with only this application. The kitchen helper, event assistant can use during the party and the cleaning services can be use after the party. The second strength is the referral performance. Users can gain earning just by being the referral as shown in figure 2.3.1.3. The earning can be use as Maideasy coin to pay for the service. Users can see the total clicks of other users and the recent signup. The earning will be given based on per signups. Moreover, it provides a help page that would answer most of the questions that peoples ask. It also categories the questions that will make users easy to find the questions they would like to ask as shown in figure 2.3.1.4. This will bring a lot of convenience to users unlike others app that pour all their questions into a single page. It also contains a live chat button in the bottom right corner of the application. After the

user press, it will bring users to a live chat in messenger as shown in figure 2.1.3.5. Finally, the application provided a lot of payment method to the user. It included google pay, visa, debit card, online banking, QR and e-wallet as shown in figure 2.1.3.6. More payment method means more selection for users as different users have different preferences in the payment method. With all this payment method, users can choose which payment method that they are most satisfied with and use it.

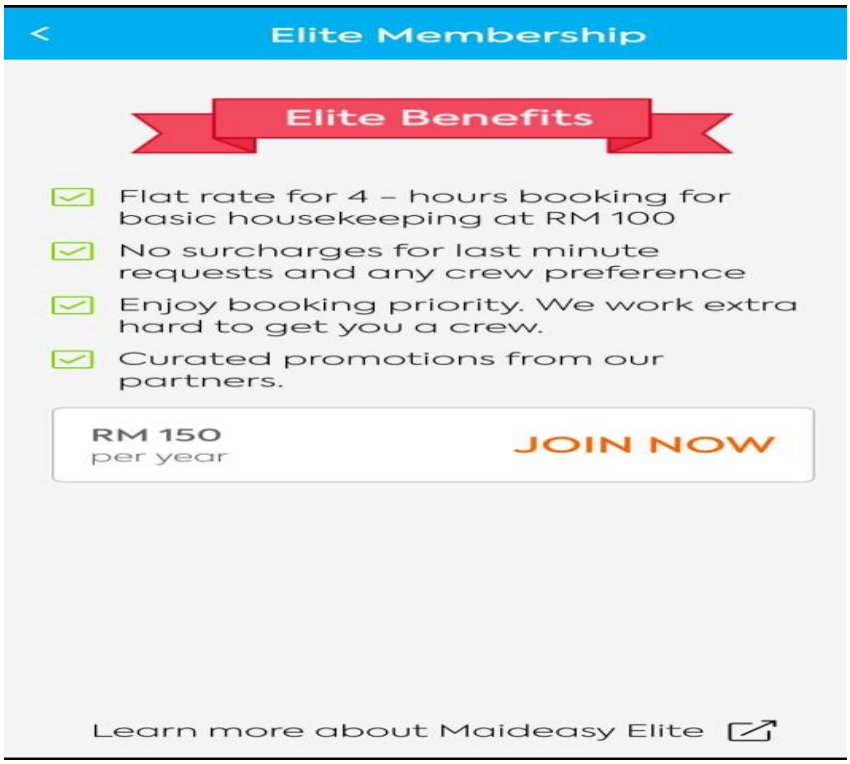


Figure 2.3.1.7 The membership page of the Maideasy

Weakness:

Nevertheless, it also contains some weakness in the application. One of the weaknesses of this application is that it does not provide a booking history. Booking history are a useful tool for determining user preferences and routines, enabling service providers to make recommendations that are more suited to the needs of the client and improve the entire experience. Lack of a booking history might be particularly troublesome since it makes it difficult to efficiently schedule and manage these repeated operations. Other than that, the application required payment to access to special access like special promotion or booking priority as shown in figure 2.3.1.7. Users need to pay RM150 per year just to access all these additional services. Besides that, the cleaning service is fixed and can't be change. Some users might just need to clean one of their bedrooms,

but all the cleaning services are come in a package, so the price will be the same as the package even when users want to clean only one room.

Solution:

In addition to, the solution for the first weakness which is lack of booking history is that developer can provide a booking history for users to view their booking history. Applications should include search and filtering options to make it simple for users to find previous bookings. It is essential to extend the amount of time that booking history is kept on file and to guarantee data accuracy. Accessibility should be prioritized, including a section for booking history that is obvious and simple to find. Furthermore, the application should be free of charge to access additional services as it does not seem fair for other users as the elite membership have their booking priority taken first compared to not elite user. Finally, provide another set of cleaning services that enable users to pick their own cleaning services and the price is not fixed. For example, user can choose their own number of rooms to be clean and others.

2.2 Summary Table

System	Strength	Weakness
Inner Melbourne Maids[20]	• **User-friendly** • **Simple and easy to use.** • **FAQ provided.** • **Multiple ways to ask question.**	• **Lack of login system** • **Lack of booking history** • **Limited services** • **Fixed services**
Justclean[19]	• **Many different services provided.** • **History report** • **Filter function** • **AI Bot Chat**	• **Filter function can't select multiple categories.** • **Can't select date to view in history report.** • **Fixed service**
Maideasy[18]	• **Many services provided.** • **More flexible as users can key in their own service they needed.** • **Referral performance.** • **Categorized help page.** • **Live chat** • **Multiple payment method**	• **Lack of booking history** • **Payment needed for special services.** • **Fixed service**

CHAPTER 3

PROPOSED METHOD/APPROACH

3.1 Methodology

Figure 3.1.1 depicts the Agile technique. Agile approach is made up of multiple short cycles with six major phases: planning and requirement analysis, design, development, testing, deployment, and feedback in the cycle. The first phase is requirement analysis, in which the software requirements are specified. The second process is design, which involves creating a prototype of the program. Coding is the next step in developing the software. After development is completed, testing is essential before deployment to ensure that performance matches customer expectations and to check for problems. The program is then provided to the customer for additional input. Customer feedback has been collected and will be utilized to enhance the software product via iterative development.

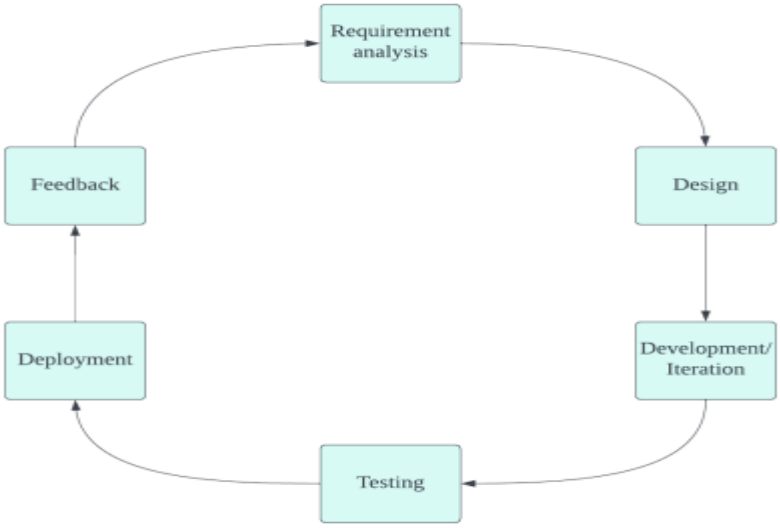


Figure 3.1.1 Agile methodology

The goal of using agile approach is to increase the quality of mobile apps. The agile technique incorporates testing into the development cycle, resulting in regular product evaluations throughout the process [13]. This reduces the likelihood of faults being left behind once the project is concluded, hence boosting the mobile app's quality.

3.2 System Requirement

3.2.1 Hardware

The hardware involved in this project includes computers and Android mobile devices. The computer serves as the primary tool for coding and development purposes, providing a robust platform for software development tasks. Meanwhile, the Android mobile device complements the development process by facilitating testing and deployment of applications. This dual hardware approach ensures a comprehensive workflow, allowing developers to seamlessly transition from coding to testing on real-world devices. By leveraging the capabilities of both platforms, we can enhance efficiency, optimize development cycles, and deliver high-quality applications to our users.

3.2.2 Specifications of laptop

Description	Specification
Model	Asus A556U
Processor	Intel(R)Core(TM)i5-7200U CPU@2.50GHz
Operating System	Windows 10
Graphic	NVIDIA GeForce 940MX
Memory	12.0GB RAM
Storage	1TB SATA SSD

Figure 3.2.2 Specifications of laptop

3.3 System Design Diagram

3.3 UML Diagramming

3.3.1 Use Case Diagram

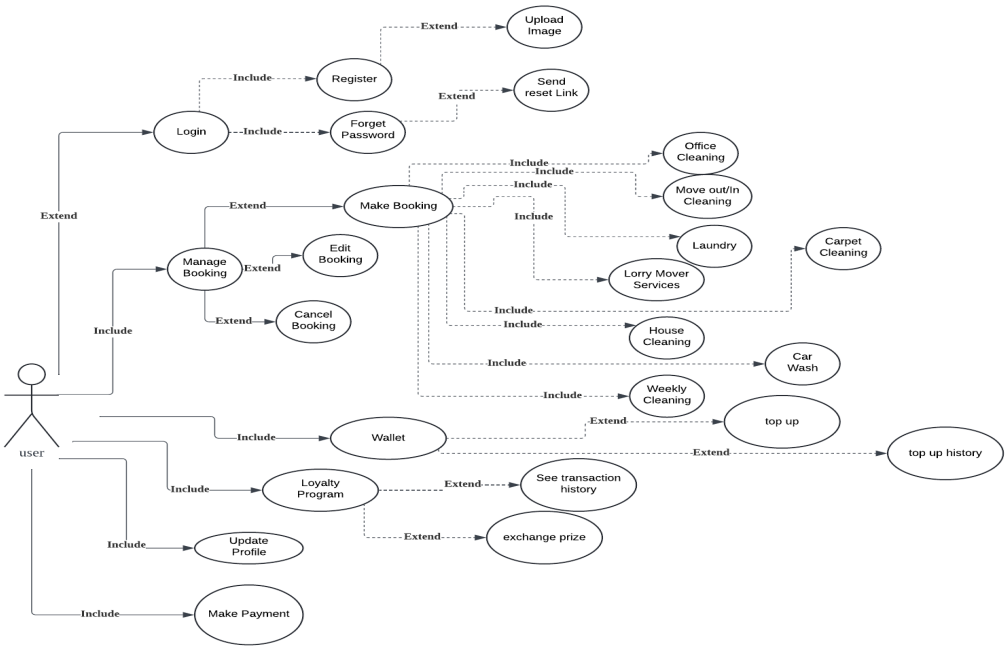


Figure 3.3.1.1 Use Case Diagram (User)

From figure 3.2.1.1 above, user can perform the login by entering their email and password to proceed to the homepage. The login page contains 2 other button that is registered and forget password. The register page is for new users that still doesn't have an account then the new user will save into the database and the forget password are for users that have forget their password. The system will automatically send a reset link to the user email to let them to reset their new password. Moreover, if user would like to book for a cleaning service, they can make a booking for the cleaning service. There are many different types of services available such as house cleaning, office cleaning, move out/in cleaning, laundry, carwash, carpet cleaning, lorry mover services, weekly cleaning, and other services. They can also manage their bookings such as cancelling the bookings or modifying their existing appointments details. User can also join the loyalty programs where user will receive points every time a transaction is done. The points can be exchanged for different things such as cleaning utensils, promo code and others. Furthermore, they can also update their personal profile such as changing email,

username, profile photo and others. Last but not least, they can make payments for their confirm booking.

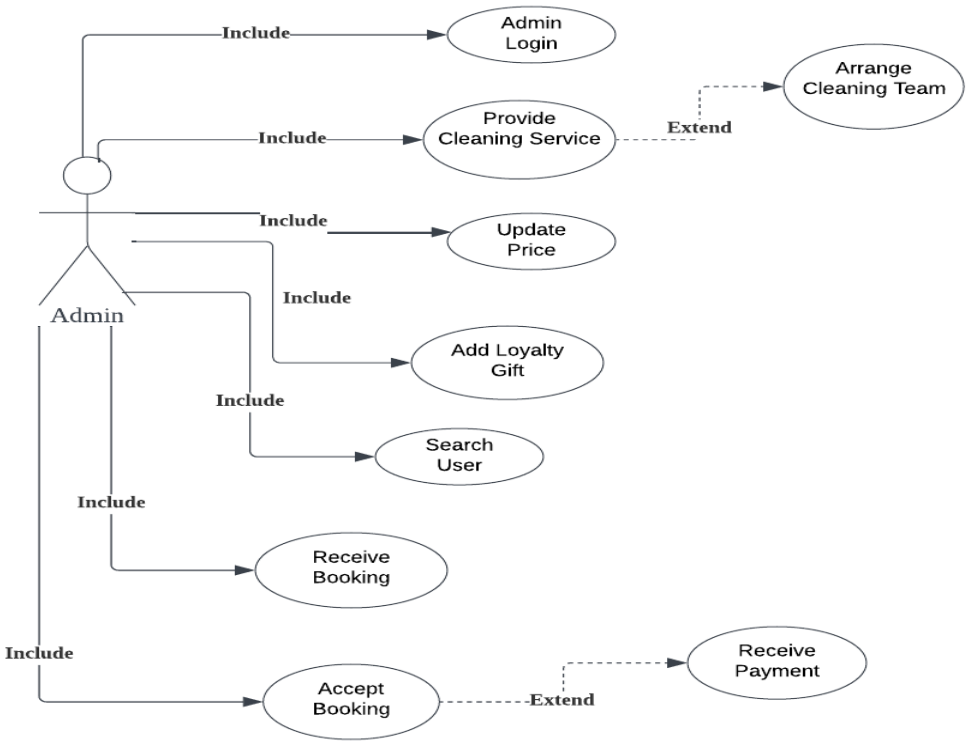


Figure 3.2.1.2 Use Case Diagram (Admin)

Figure 3.2.1.2 above shows the use case diagram for the admin. First, admin can login to their own homepage as admin have different function compared to users. They can provide the cleaning services to let user choose from on their own user homepage. Then the admin will arrange the cleaning team for the user after they have confirmed their booking. Moreover, they can update the price for all the different types of cleaning services. Furthermore, admin can also add new loyalty gift/prize to let user to exchange will their own loyalty points. They can also search for all users to view the user details. Lastly, admin can receive the booking make by the user. After that, they can choose to confirm or reject the booking.

3.3 Activity Diagram

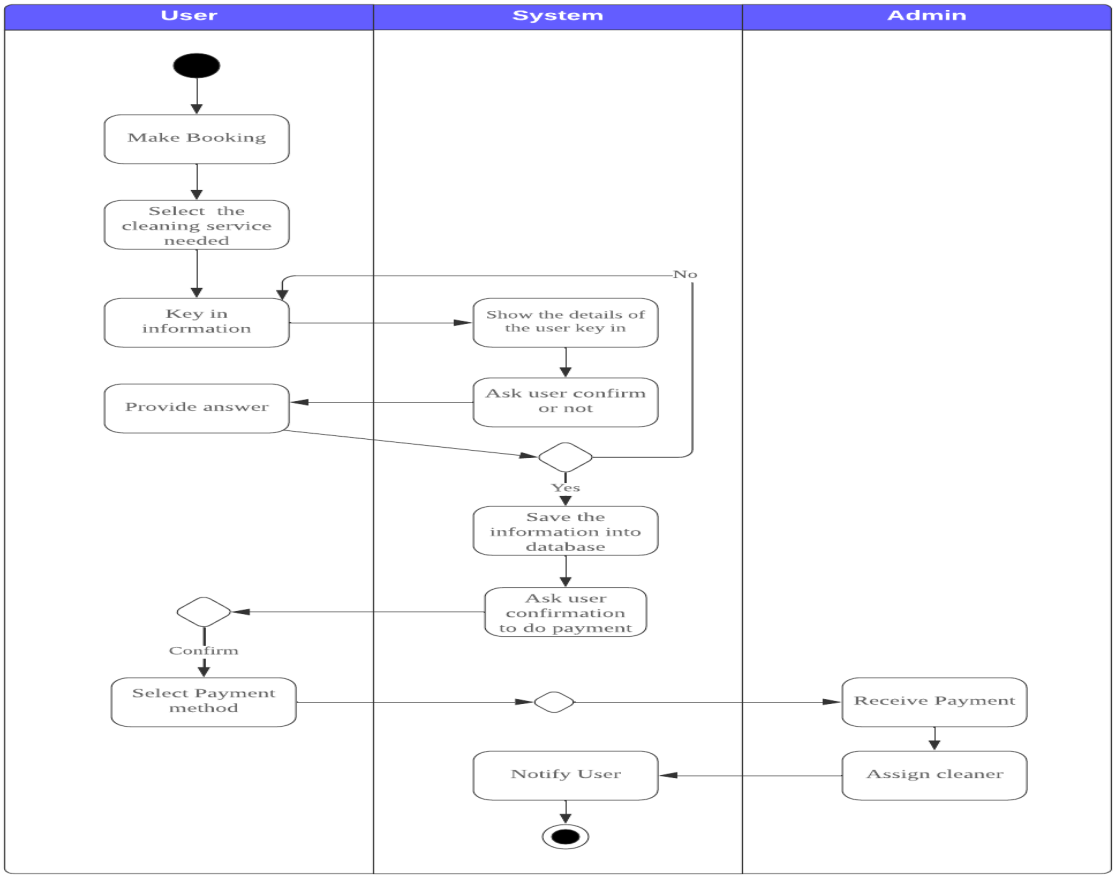


Figure 3.3.1 Activity Diagram of Making Booking

Figure 3.3.1 shows the activity diagram of making booking. First, the user will select the cleaning service that they needed such as house cleaning, office cleaning, move out/in cleaning, laundry, car wash, carpet cleaning, lorry mover services, weekly cleaning, and other services. Then, user will key in their information like date, time, and others based on the cleaning services they selected. After key in all the information, the system will display the details enter by the user to ask users whether the details are correct or not, if yes, the system will save the information into the database else will call user to rekey in the information. After that, the system will ask user whether to do the payment, if yes will prompt out an alert to let user choose the payment method. Finally, the admin will receive the payment and will assign the cleaner for the following booking, then the system will notify the user of the cleaner assign.

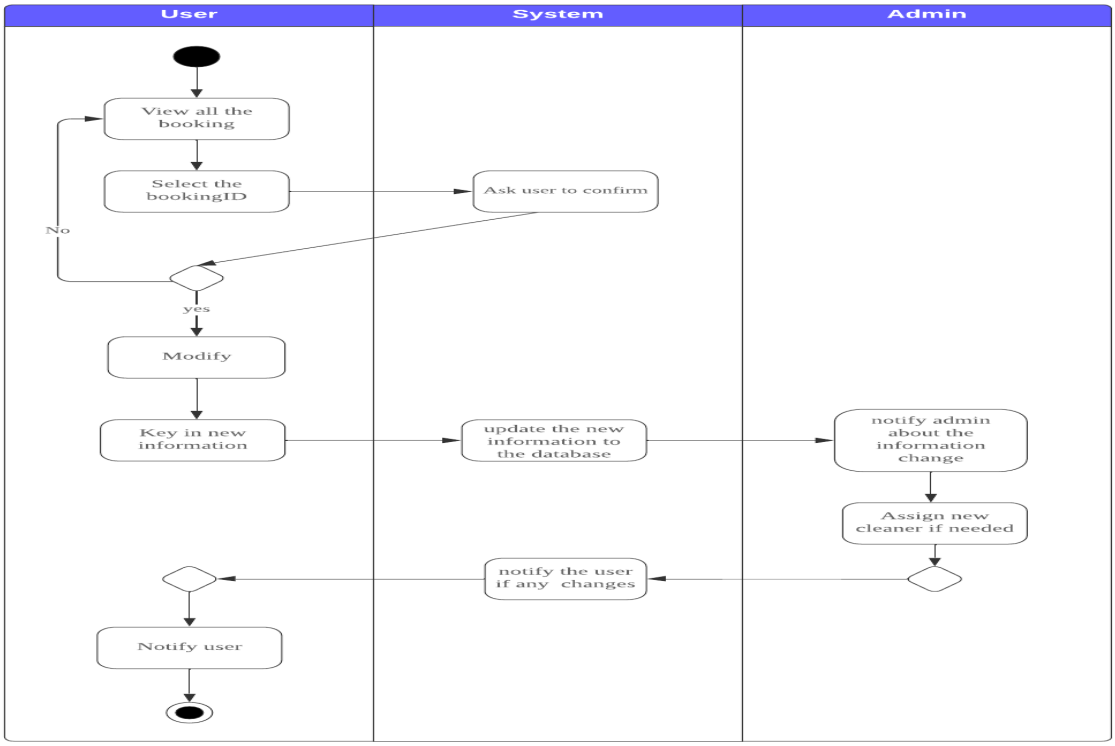


Figure 3.3.2 Activity Diagram of Modify Booking

Figure 3.3.2 above shows the activity diagram for modifying the booking. First, user can view all the booking make by the user. Then, user will click for which booking that need to do modification. After user selected the booking, the system will prompt an alert to ask users need to confirm or not. If cancel, it will bring user back to the booking list. If confirm, will ask users to key in the new information then the new information will update to the database for that booking, then the system will notify the admin about the changes make. Lastly, admin will see whether there a need to assign new cleaner. After that, ssthe system will notify user about the decision.

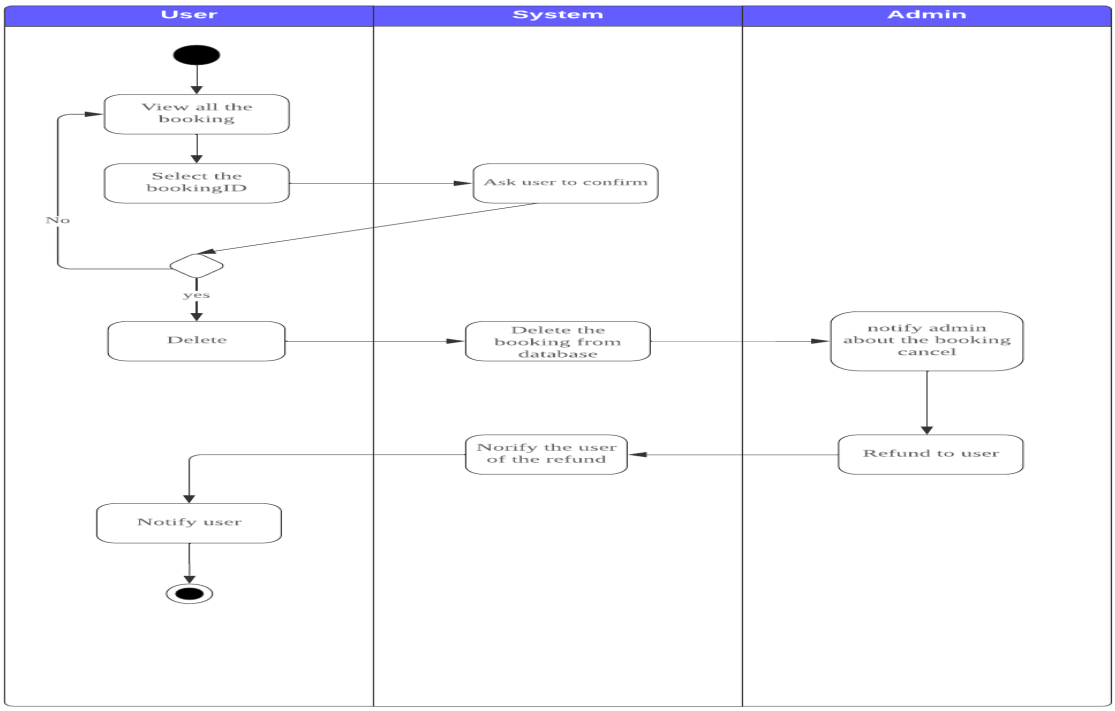


Figure 3.3.3 Activity Diagram of Cancel Booking

Figure 3.3.3 above shows the activity diagram for cancelling the booking. First, user can view all the booking that have been booked, Then, user will select for the booking that need to cancel. After that, the system will prompt out an alert asking the user to confirm. If no, the system will redirect the user to the booking lists. If yes, the system will delete the booking in the database and notify the admin of the booking cancellation. The admin will see whether the cancellation have fulfilled the requirements for booking cancellation. If yes, the admin will press confirm and the refund will be refunded to the user. Finally, the system will notify the user.

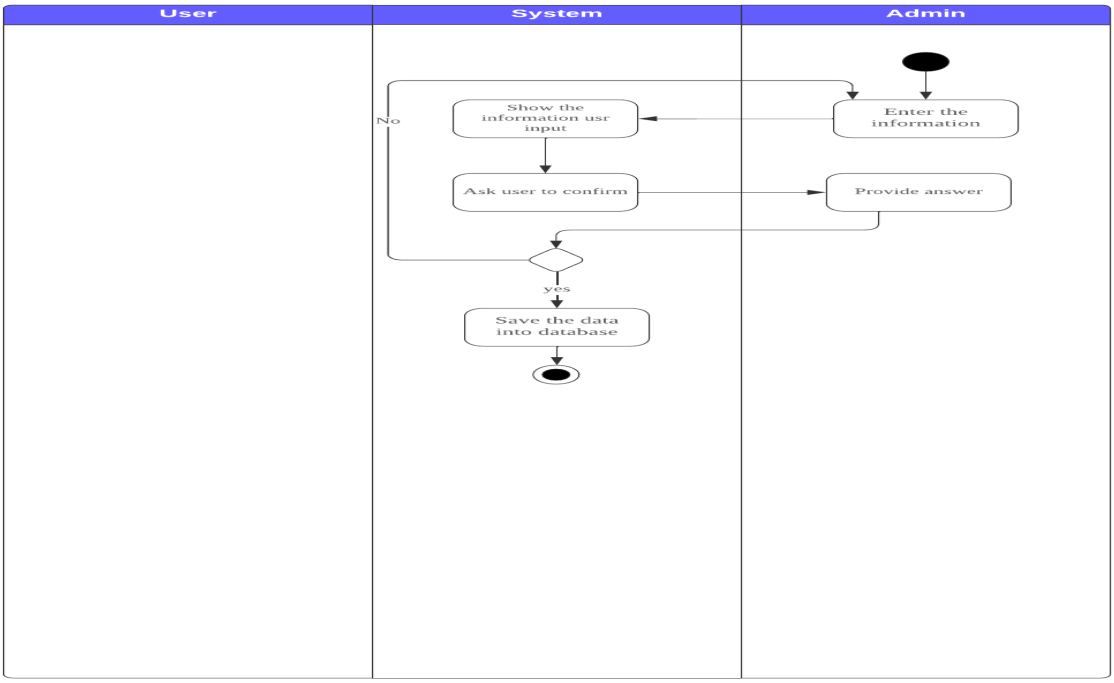


Figure 3.3.4 Activity Diagram of adding the item.

Figure 3.3.4 above shows the activity diagram of adding the item. When admin choose to add item, it will ask user to key in the information of the item. After that, the system will prompt out the information user key in to let them confirm whether the information key in is correct. Then, the admin will provide the answer. If yes, will save the data into the firebase and end the function. If no, will ask the user to reinput the information.

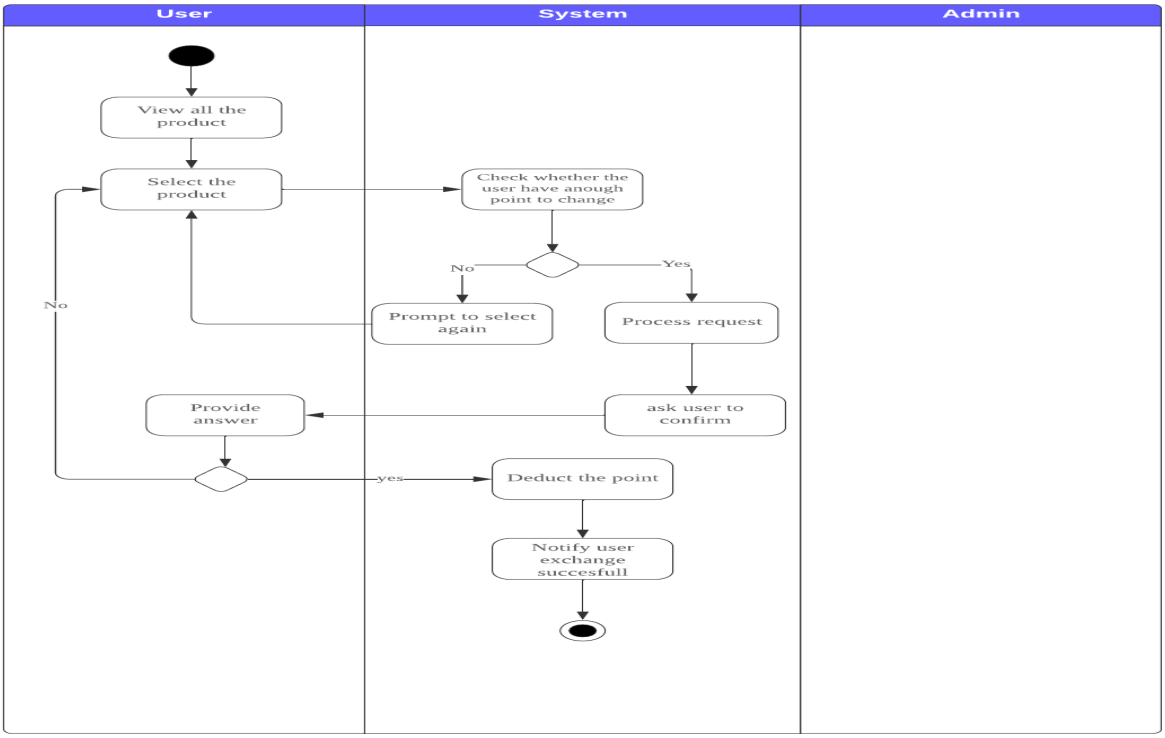


Figure 3.3.5 Activity Diagram of loyalty point exchange.

The figure 3.3.5 above illustrates the activity diagram of loyalty point exchange. First of all, user will be able to view all the products that can be exchanged with the points. After that, user can select for the product that they want to exchange with. Then, the system will check whether the user has enough point to exchange for that product. If yes, the system will process the request and ask user for confirmation else will prompt user to select again. When the user asks the user for confirmation, the user will provide the answer. If yes, the system will automatically deduct the point that have been use and update to the database and notify that the user has exchange successfully. If no, the system will ask user to select the product again.

3.4 ERD Diagram

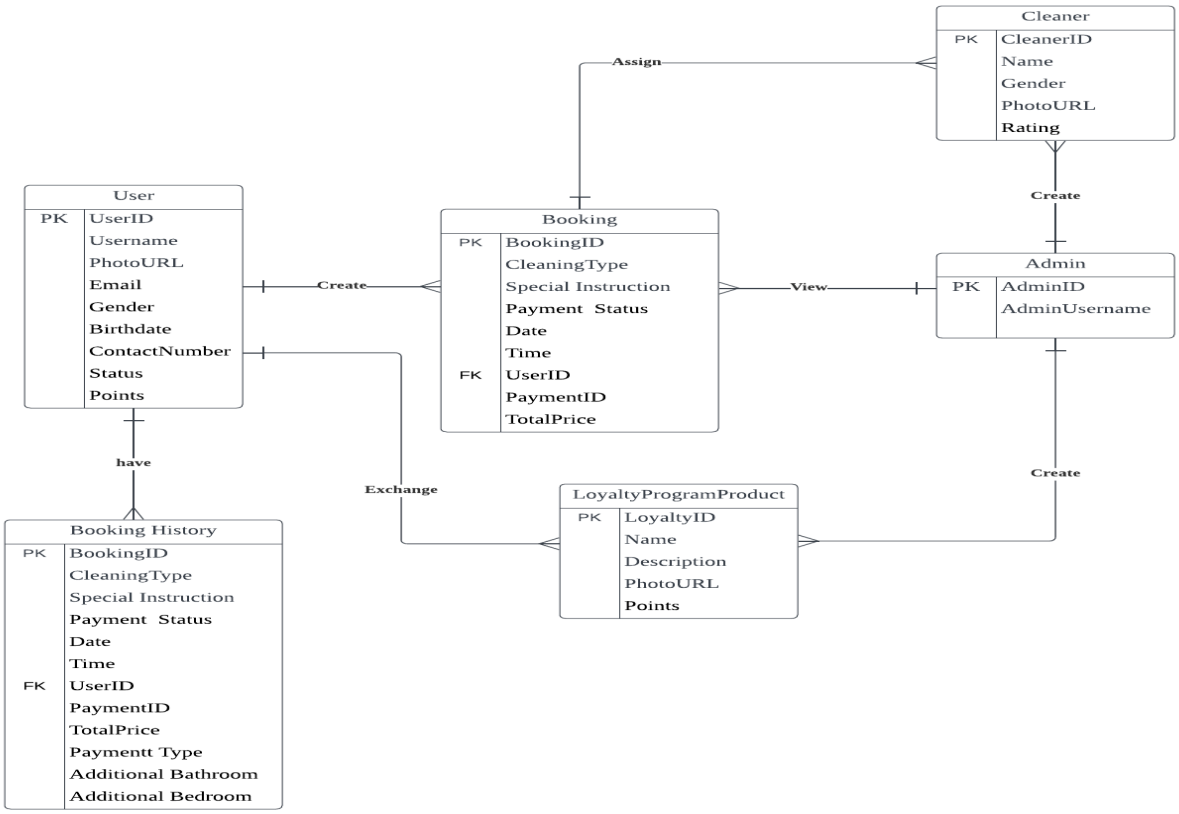


Figure 3.4.1 ERD Diagram

The entity-relationship diagram (ERD) of the e-cleaning service is presented in the figure 3.4.1. It visualizes how different entities relate to each other and how data flows within the database. User can make one or many booking in the e-cleaning service. Each booking will have different cleaning type, such as home cleaning, office cleaning, laundry, car washing, and many others. Moreover, user can exchange for one or many loyalties product if they have enough points Finally, user can have one or many booking history. The booking history contain all the information user key in when they done their booking.

However, admin can view one or many booking as they need to assign the cleaner for every booking the user has created. Then, admin can create one or many loyalties programs product for user to exchange with their points. Other than that, the admin can create one or many cleaners. Last but not least, one or many cleaners can be assign to one booking.

3.5 Class Diagram

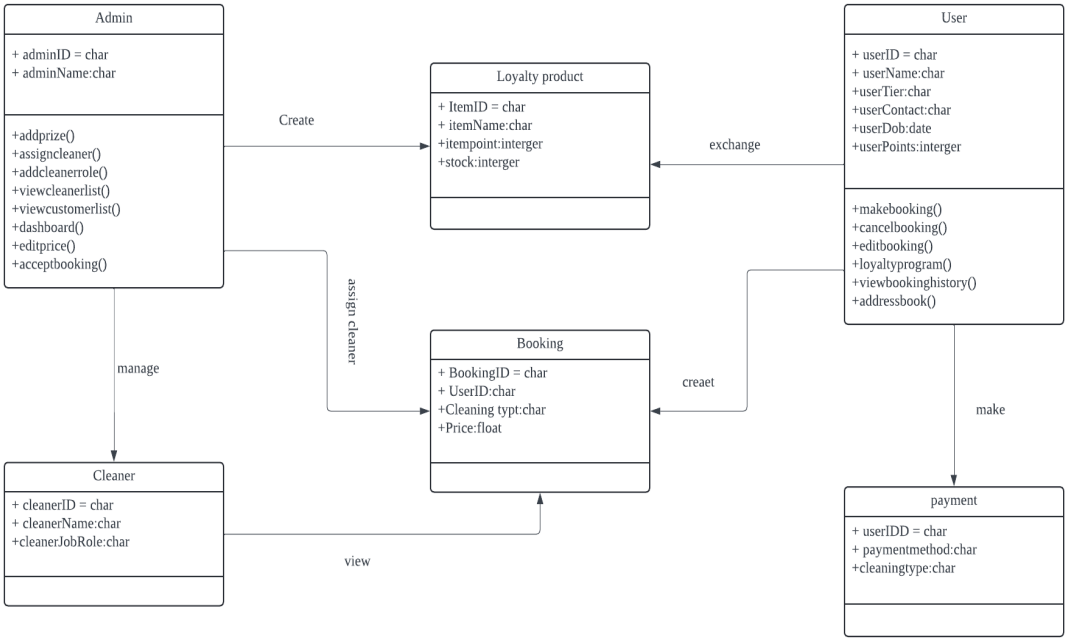


Figure 3.5.1 Class diagram

The figure 3.5.1 class diagram illustrates a cleaning service system with five primary entities: **Admin**, **User**, **Cleaner**, **Loyalty Product**, **Booking**, and **Payment**. The **admin** class manages tasks such as adding loyalty prizes, assigning cleaners, and accepting bookings. **Users** can make, edit, and cancel bookings, participate in loyalty programs, and view their booking history. **Bookings** link users to cleaning services, with **Cleaners** assigned by admins. **Payments** are linked to user IDs, recording the payment method and cleaning type. The **Loyalty Product** class manages the loyalty points system, allowing users to exchange points for items. The diagram shows relationships where admins assign cleaners, users create bookings, and users make payments.

3.6 Gantt Chart

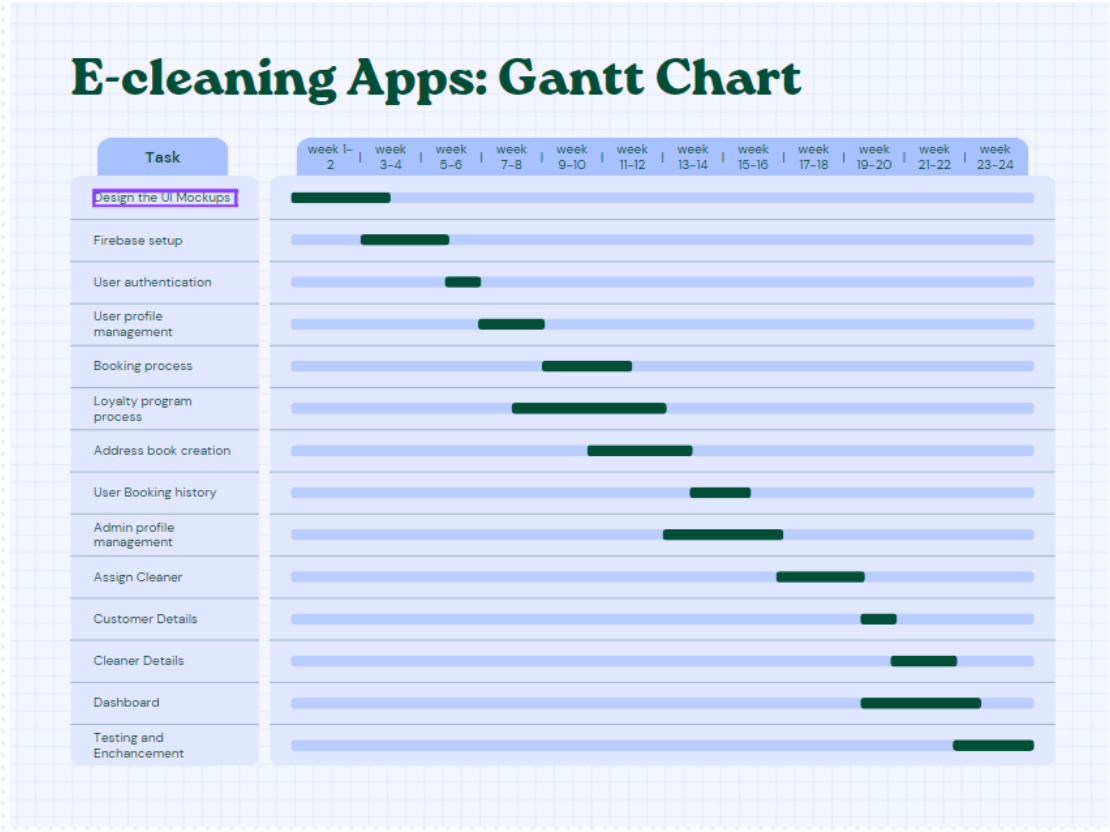


Figure 3.6.1 Gantt Chart

3.7 Timeline

1.Design UI Mockups (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 (admin or user).

4.User Profile Management (Weeks 7-8):

Develop functionality that allows user to update their information.

5. Booking process (Weeks 9-10):

A system to let user to do the booking. User can select what type of cleaning service needed to do for the booking.

6.Loyalty program process (Weeks 11-12):

A system for user to exchange prize with the point they gain. User able to see all the prize and the point needed to exchange for the prize.

7.Address Book creation (Weeks 13-14):

Implement the address book creation to let user to save their address into the firebase. Implement a map function by expo to find if the location is valid.

8. User Booking history (Weeks 15-16):

This allow user to view back all the booking that has been made on the past. User can see back the details of the booking they make.

9. Admin profile management (Weeks 17-18):

Develop functionality that allows admin to update their information.

10. Assign Cleaner (Weeks 19-20):

This function is to let admin to assign the cleaner for the booking that has been made by the users. It will list out all the cleaner that handle this cleaning service to let the admin assign.

11. Customer Details (Weeks 21-22):

Customer Details will list out all the users account that has been registered into the firebase.

12. Cleaner Details (Weeks 23-24):

Cleaner Details will list out all the cleaners account that has been registered into the firebase.

13. Dashboard (Weeks 25-26):

This dashboard will be divided into three different type of graph that is total sales, cleaner sales, and cleaning type sales. It will show a chart based on the date that admin has selected. It will show the graph based on which graph admin select and the date.

13. Unit testing and enhancement (Weeks 25-26):

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

CHAPTER 4

Application layout

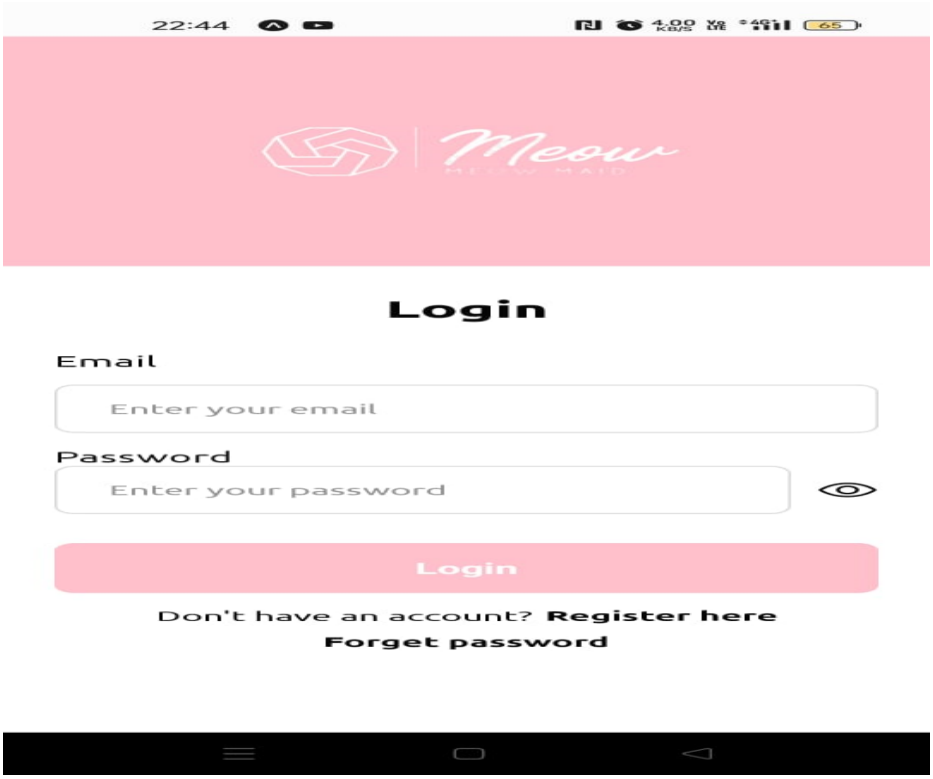


Figure 4.0.1 Login Page

Figure 4.0.1 above illustrates the login page, this page allows users to key in their login account to enter to the home page. The eye icon beside the password is the show password function. If the icon is press, it will show the password that user input and not the mask text. For new user, they can press the register here which will link users to the register page to let them register and for user that forget their password can press the forget password which will direct users to the forget password page.

Figure 4.0.2 Register Page

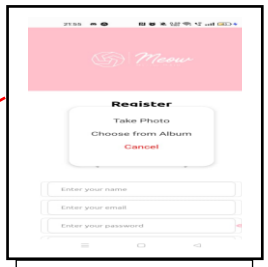


Figure 4.0.3 Upload photo

Figure 4.0.4 Show Country

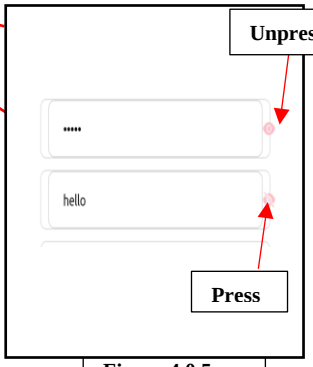


Figure 4.0.5 Show password

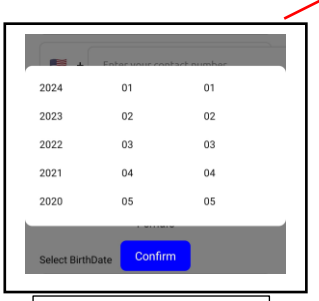
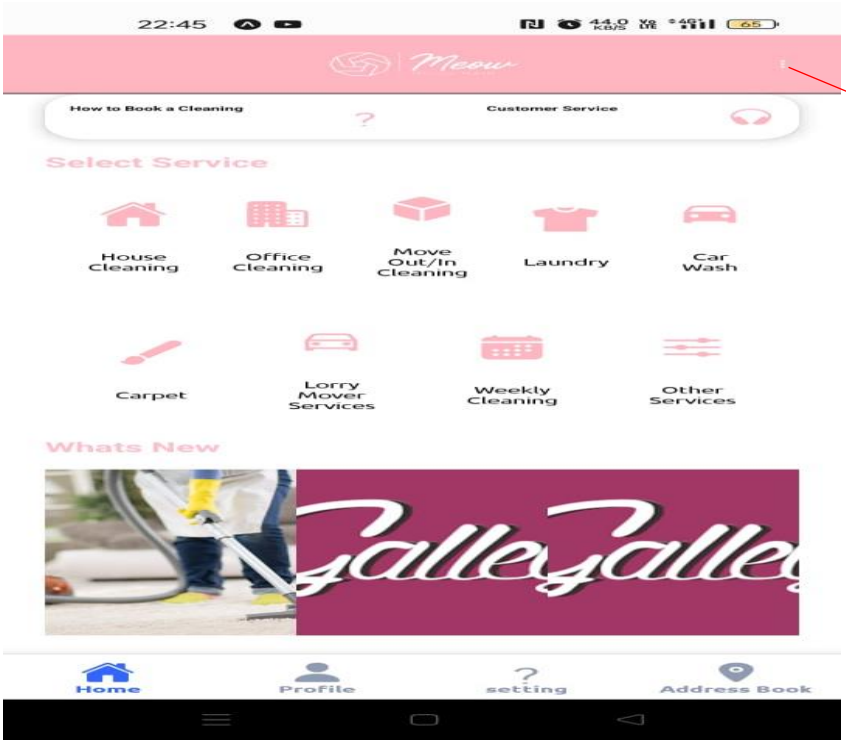


Figure 4.0.6 Select Date of Birth

The figure 4.0.2 show the register page of the application. First of all, user can press the blank picture as shown in the figure above to upload their profile picture. User can choose whether to take photo or upload from album as shown in the figure 4.0.3. After that, user need to enter their email address and password. The password must be match with the confirm password to successfully register. We also have the show password function as shown in figure 4.0.5. When press the user can see the letter of the password else will show the mask input text. Then, we have the contact number. When user press the flag icon, it will show all the flag and country code to let user choose as shown in figure 4.0.4. For example, if user choose Malaysia. It will automatic add +60 in the front. Furthermore, user need to key in their date of birth. After user press the calendar like icon, it will pop up as show in figure 4.0.6 that let user select from year/month/date and finally the user status is fixed which can't let user to key in.



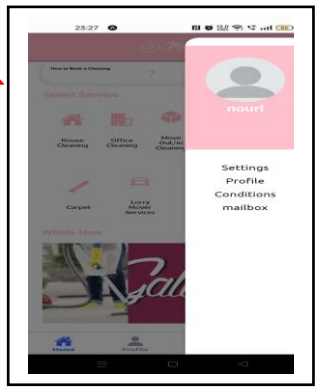


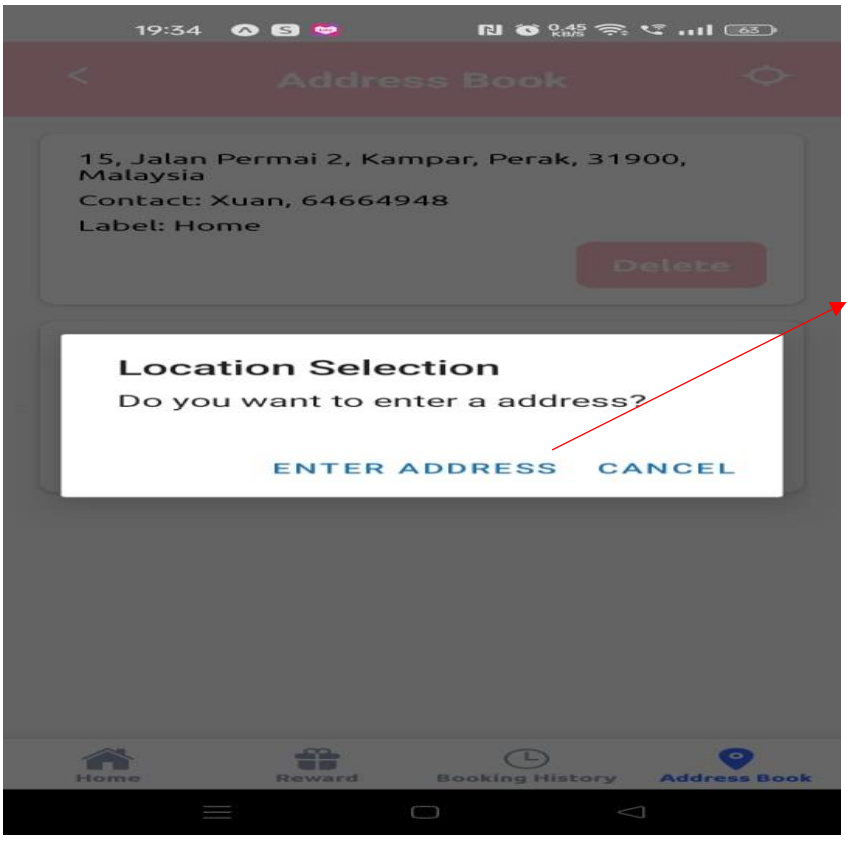
Figure 4.0.8 Right Navigation

Figure 4.0.7 Home Page

Figure 4.0.7 above shows the home page of the application. At the top of the page, we got a 'How to book a cleaning' and 'Customer Service'. The 'How to book a cleaning' button will direct user to a page where it will teach user how to do the booking with picture and explanation include. Then, there are 8 different types of service which include home cleaning, office cleaning, move out/in cleaning, laundry, car wash, carpet cleaning, lorry mover services, weekly cleaning, and other services. On the top right of the navigation bar will have a pin lookalike icon, when user press will pop up a modal as shown in figure 4.0.8 which will contain the profile picture, username, settings, profile, conditions, and mailbox. For user that does not upload their profile picture will have a default picture as shown in figure 4.0.8, but for user will their profile picture upload will show their upload profile picture. At the bottom, will have what's new where it will show any new thing or service available. Finally, the bottom navigation will contain Home, Profile, Setting, and address book.

Figure 4.0.9 Address Book

Figure 4.0.10 Location Setting



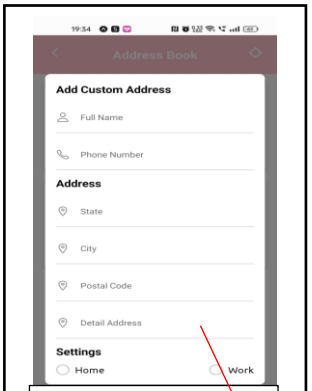


Figure 4.0.11 Enter Custom Adress

Figure 4.0.12 Location of custom address

Figure 4.0.9 above shows the address book of the application. This page will contain every save address of the login user. After user press the button as shown above, it will pop up a alert box to ask users whether they want to enter custom address or use the current location as shown in figure 4.0.10. If user press enters custom address, it will pop up another box as shown in figure 4.0.11. User can either write the whole address or write the place name. For example, lotus Kampar as shown in figure 4.0.11. After pressing submit, it will display the address and the location of the place in the map as shown in figure 4.0.12. The figure 4.0.13 is when user press uses current location. Users need to open the location setting on their mobile device to track their current location.

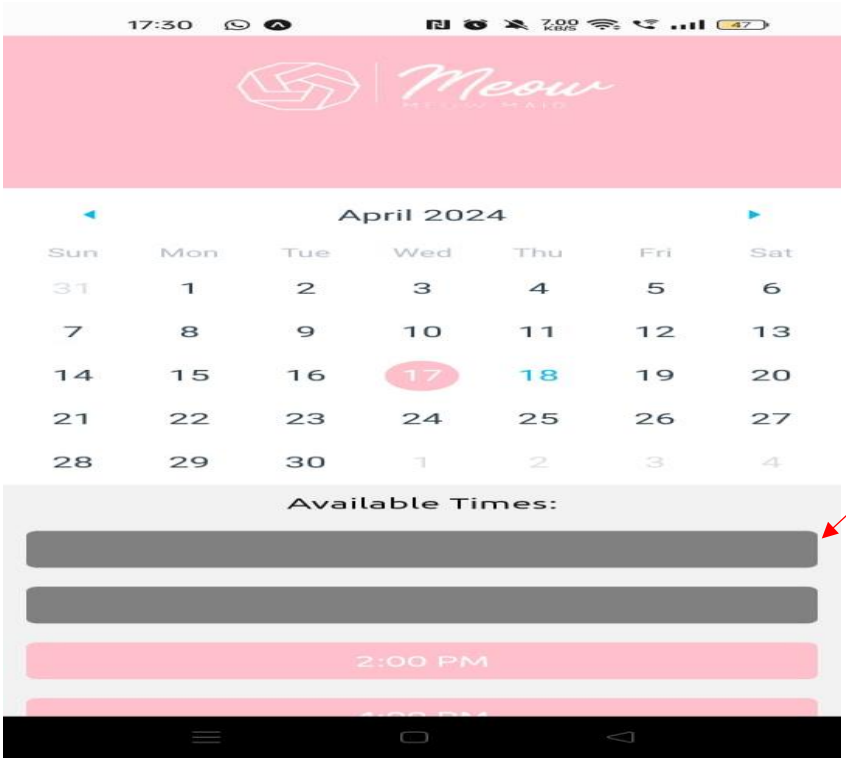


Figure 4.0.14 Calendar

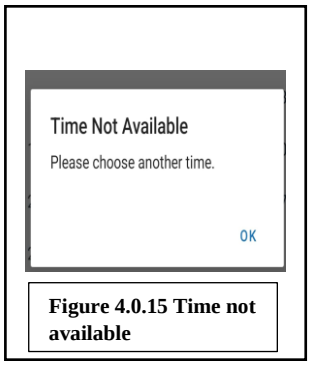


Figure 4.0.15 Time not available

Figure 4.0.14 shows the calendar for user to choose when they want to do the booking. After choosing the date, it will list down the available time slot for that date as shown in figure 4.0.14. For time that are not available, it will prompt out an error that shows time not available as shown in figure 4.0.15.

Figure 4.0.18 Select current address.

Figure 4.0.17 Select Address

Figure 4.0.16 Select Address

Figure 4.0.16 above shows the select address when use make a booking. It will show all the addresses create by the login user. After selecting the address, it will pop up to ask user confirmation as shown in figure 4.0.17. If user press the use current location, it will pop up as shown in figure 4.0.18.

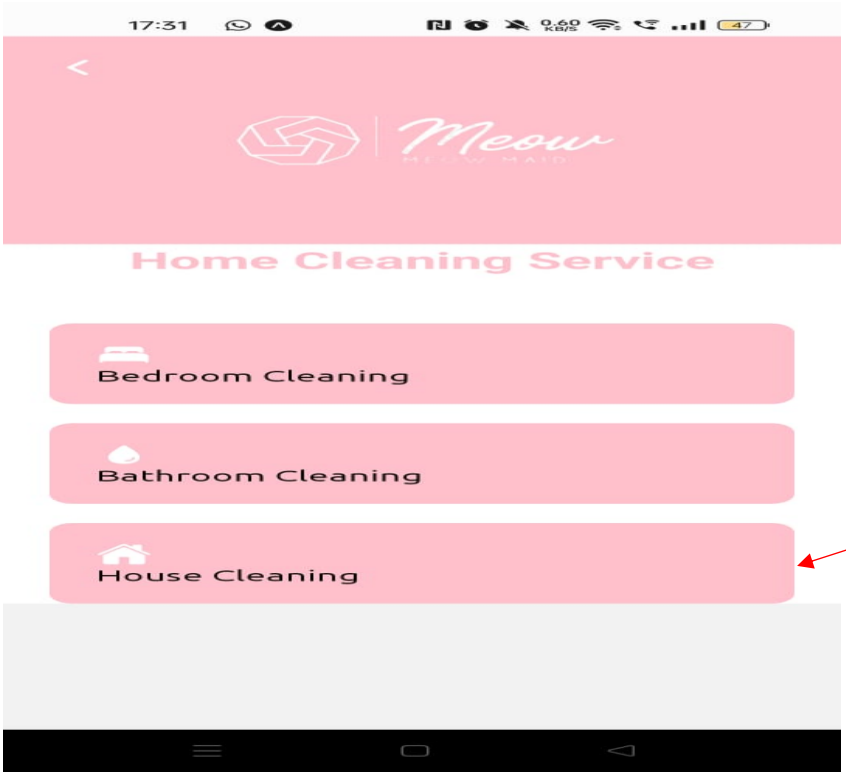


Figure 4.0.19 Home Cleaning Service

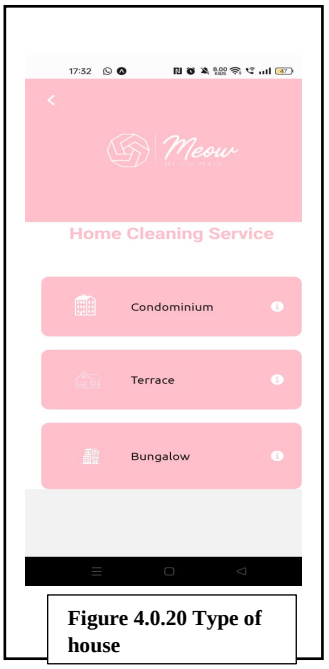


Figure 4.0.20 Type of house

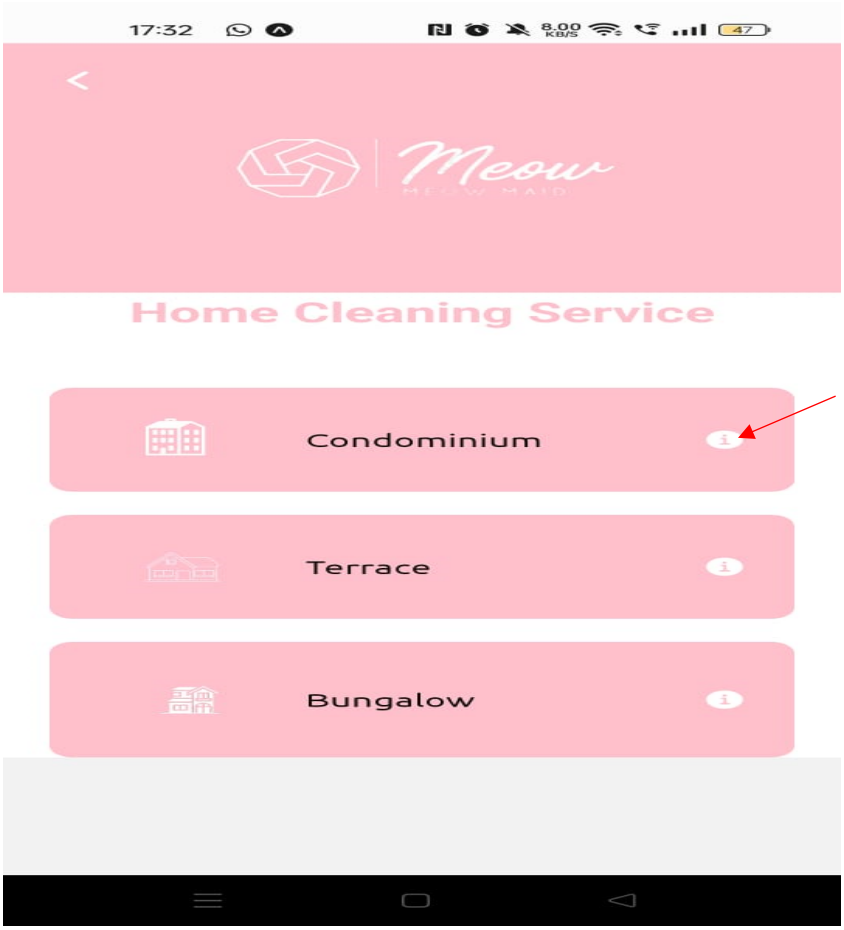


Figure 4.0.21 Type of house

Figure 4.0.19 above shows the home cleaning service available. For home cleaning services, user can choose to clean only their bedroom, bathroom, or the whole house. After pressing the house cleaning, it will direct the user to choose type of house as shown in figure 4.0.20. It includes condominium, terrace, and bungalow which are the common house type in Kampar area. When user press the 'i' button, it will show a description as shown in figure 4.0.21.

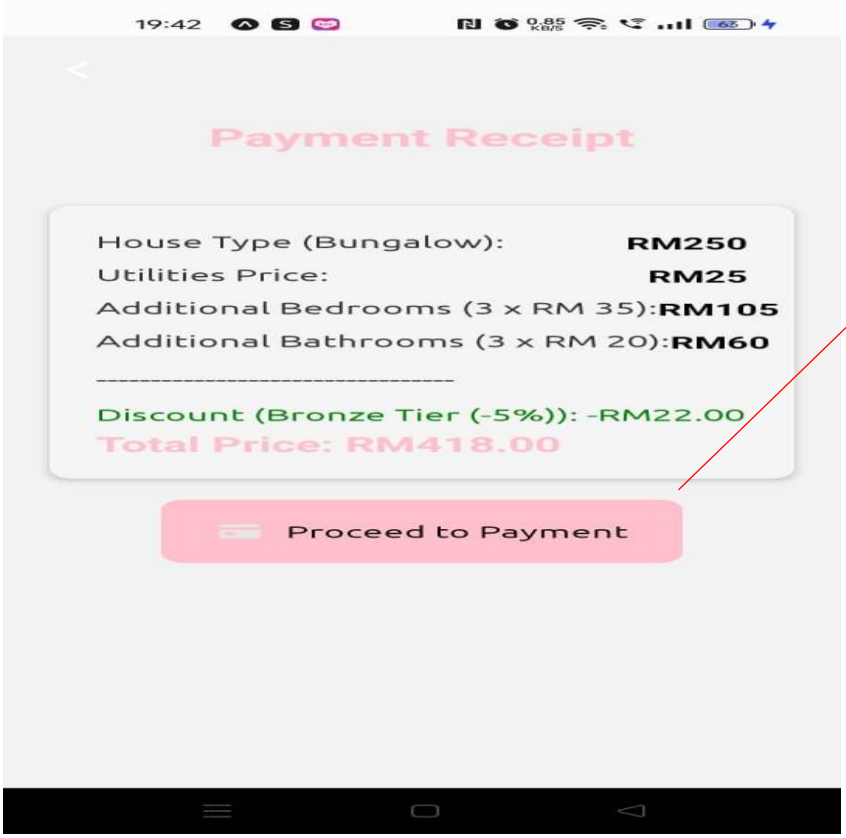
Figure 4.0.23 Add chemical

Figure 4.0.24 Warning

Figure 4.0.22 Selection Page

The figure 4.0.22 shows the page after select the type of house. It will bring forward the price of the house selection and added to the total price. User can add the number of bedroom and bathroom by pressing the add and minus button then the total price will add according automatic based on the number of bedrooms and bathrooms. Then, there is a add chemical checkbox which means that the cleaner will provide all the cleaning material themselves. After tick, it will show all the item provided by the cleaner as shown in figure 4.0.23. Moreover, we have the prioritize areas to be clean. As it optional, user can choose whether to tick the prioritize areas but can only tick 2. If more than 2 are tick, it will pop up an error warning the user as shown in figure 4.0.24. Finally, we can let users to type their own special instructions. For example, beware of

pets and will show the total price of the type of house select, number of bathroom and bedrooms, and whether the add chemical is needed.



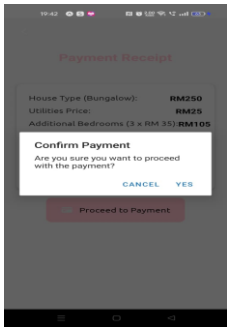
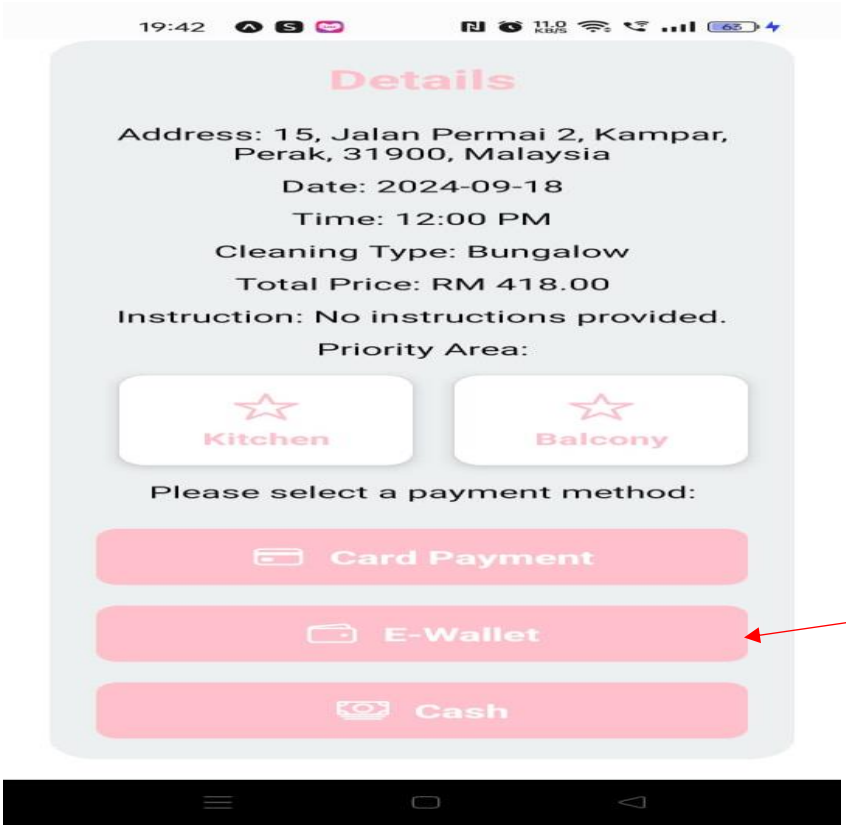


Figure 4.0.26Confirm payment

Figure 4.0.25 Payment Receipt

Figure 4.0.25 above illustrate the payment receipt after user done all the selection. It will show the house type that user chooses. For example, the house type () will change according to the type of house user chooses. Then the utilities price will also change if the add chemical is check or not. If the user doesn't check for the add chemical, the utilities price will become 0. Moreover, the additional bedrooms and bathrooms will also change according to the number that user select. It will also show the total for that bedrooms or bathroom. For example, figure 4.0.25 shows the bedroom (1xrm35) means that the user only adds 1 additional bedroom, and the system will auto calculate. Finally, it will show the total price of the receipt.



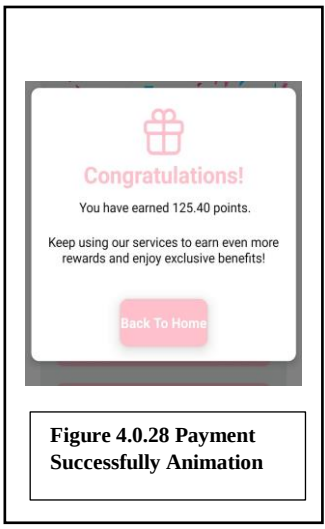


Figure 4.0.28 Payment Successfully Animation

Figure 4.0.27 Payment Details

Figure 4.0.26 shows the payment details. It will list all the information that user chooses such as their username, payment ID, total price, date, time, cleaning type, number of bathrooms, number of bedrooms, address, and the priority area to let user double confirm. After confirming, user can choose the select payment method and a box will pop up letting user to see the point gain as show in figure 4.0.27.

Figure 4.0.29 Cleaning Checklist

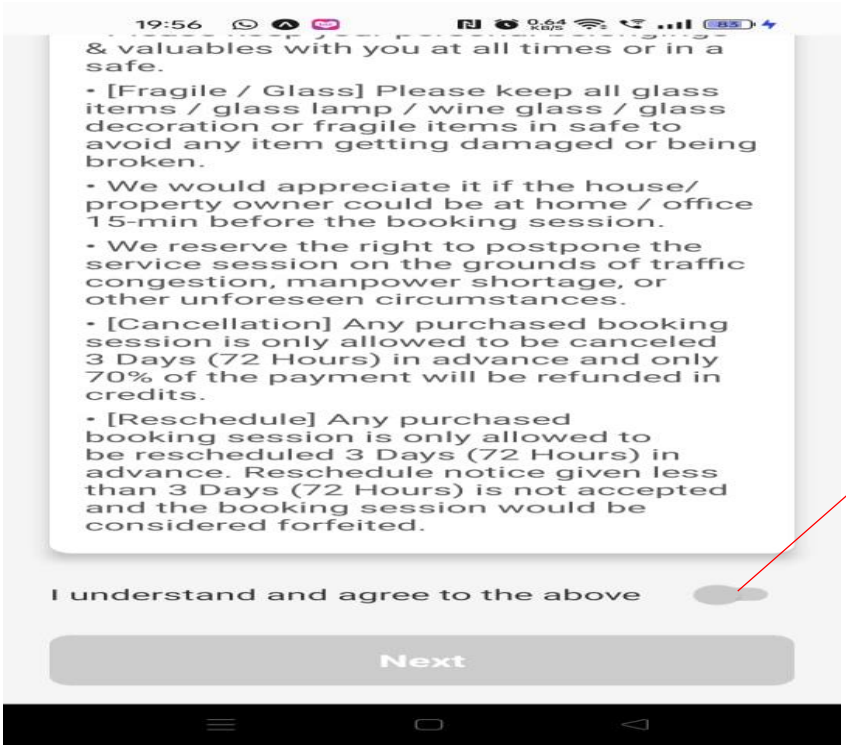


Figure 4.0.30 Cleaning Checklist End

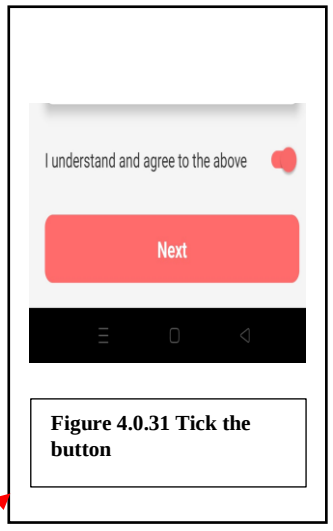


Figure 4.0.31 Tick the button

Figure 4.0.29 and figure 4.0.30 shows the cleaning checklist for the office cleaning service. It will what type of cleaning is provided in each area. After press the 'I understand and agree to the above' , the next button will be enable as shown in figure 4.0.31.

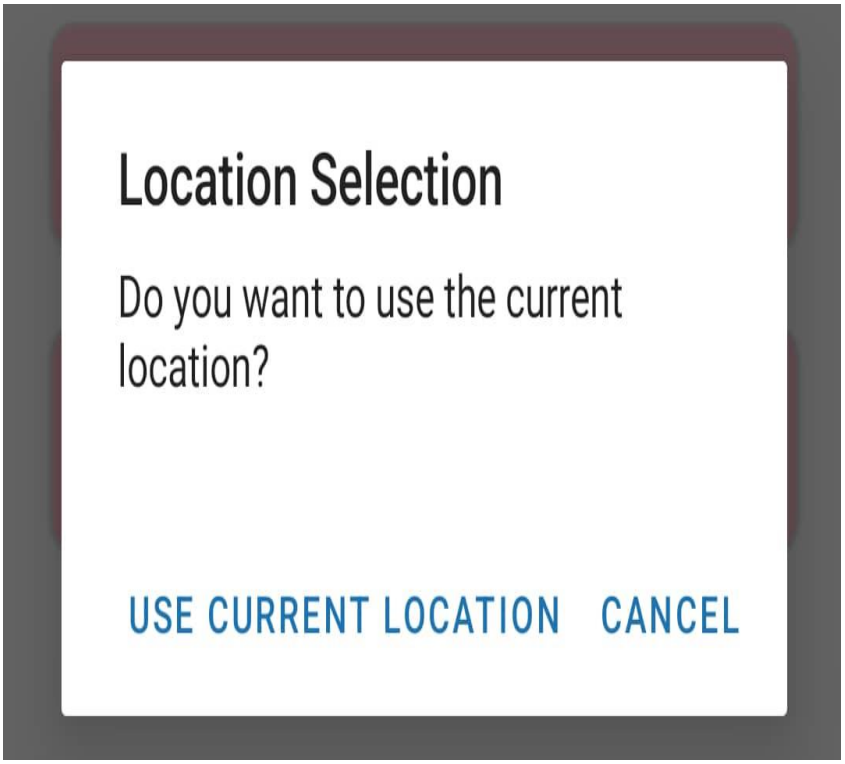


Figure 4.0.32 Calendar

Figure 4.0.32 shows the calendar for user to choose when they want to do the booking. After choosing the date, it will list down the available time slot for that date as shown in figure 4.0.32. For time that are not available, it will prompt out an error that shows time not available as shown in figure 4.0.33.

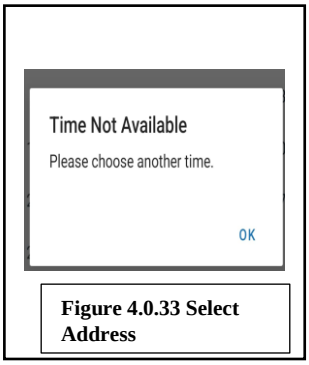


Figure 4.0.33 Select Address

Figure 4.0.35 Select current address.

Figure 4.0.36 Select Address

Figure 4.0.34 Select Address

Figure 4.0.34 above shows the select address when use make a booking. It will show all the addresses create by the login user. After selecting the address, it will pop up to ask user confirmation as shown in figure 4.0.35. If user press the use current location, it will pop up as shown in figure 4.0.36.

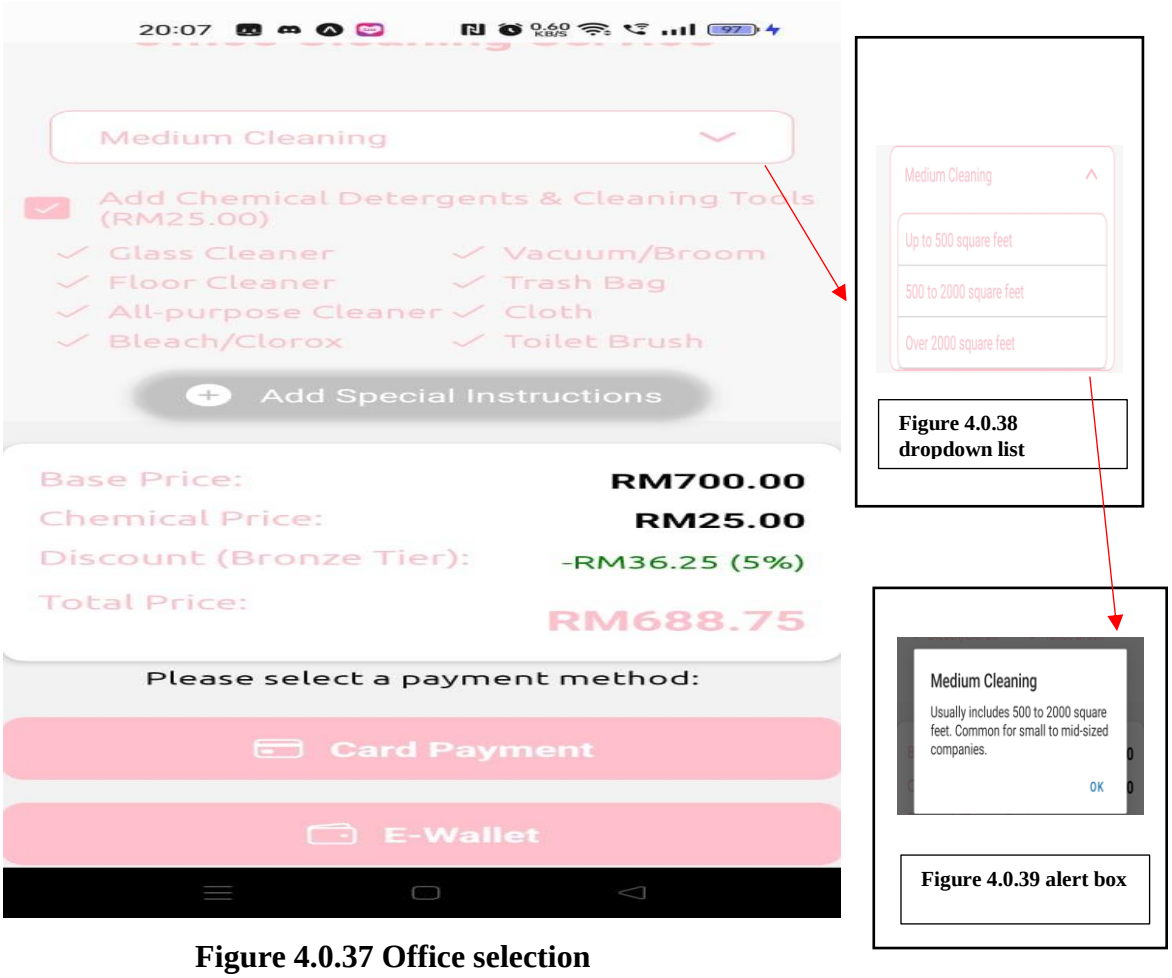


Figure 4.0.37 Office selection

Figure 4.0.37 illustrates the office selection and the price based on the selection. Then, the figure 4.0.38 will pop up when the arrow is press where it lists all the size of office. After choosing from the select box, a alert pop will pop up telling users the size what type of office as shown in figure 4.0.39.

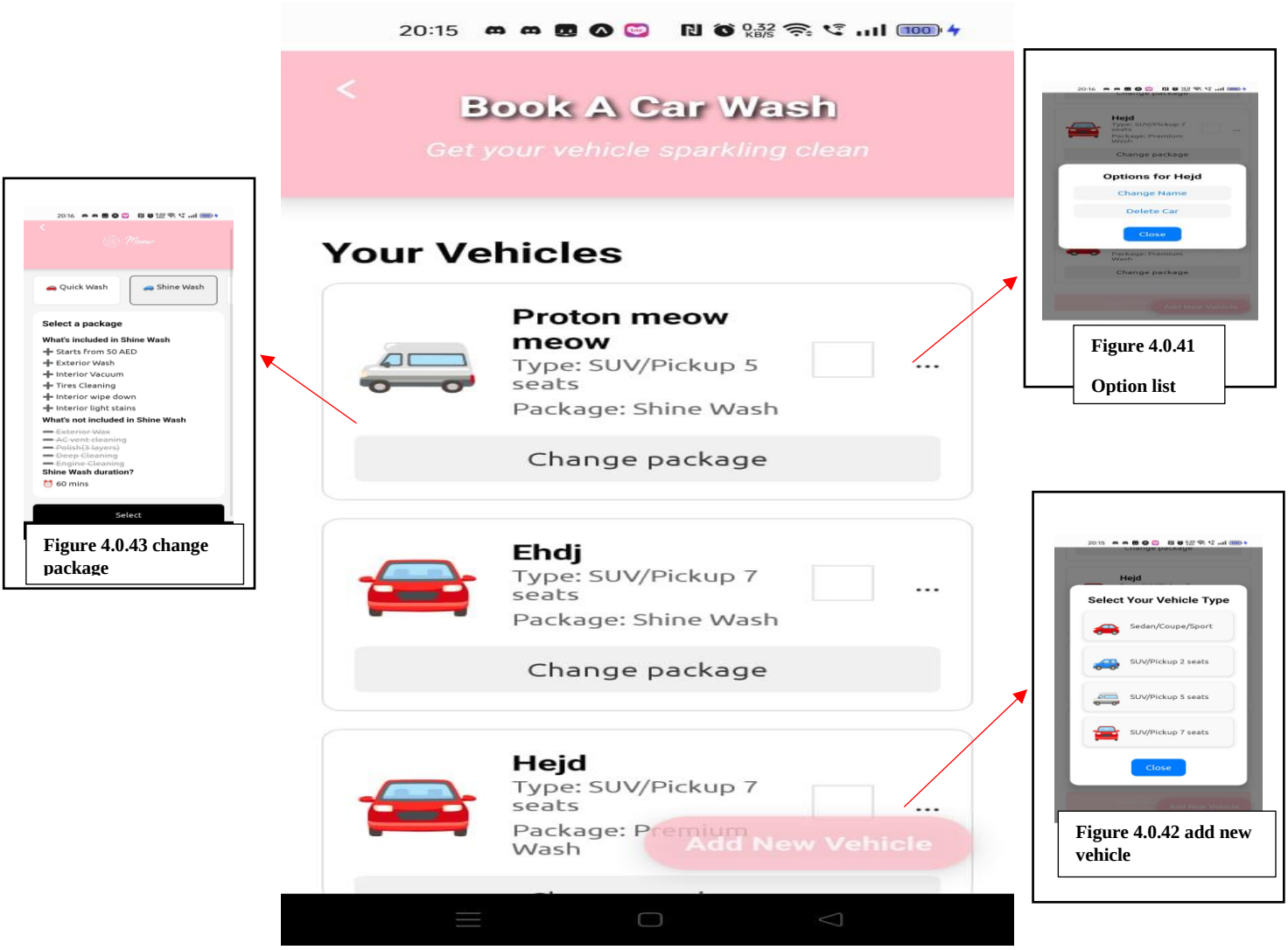


Figure 4.0.41 Option list

Figure 4.0.42 add new vehicle

Figure 4.0.43 change package

Figure 4.0.40 Car Wash

Figure 4.0.40 shows the lists of cars create by the login user. When press the '…', an option box will pop up to ask whether to delete the car or change the name as shown in figure 4.0.41. However, when the add new vehicle is press, it will pop up a modal to ask user to select the type of car as shown in figure 4.0.42. Finally, the change package will navigate user to the change package page as shown in figure 4.0.43. After selecting the car that need to wash, it will bring user to select the date, time, and location as in figure 4.0.32 and figure 4.0.34 above.

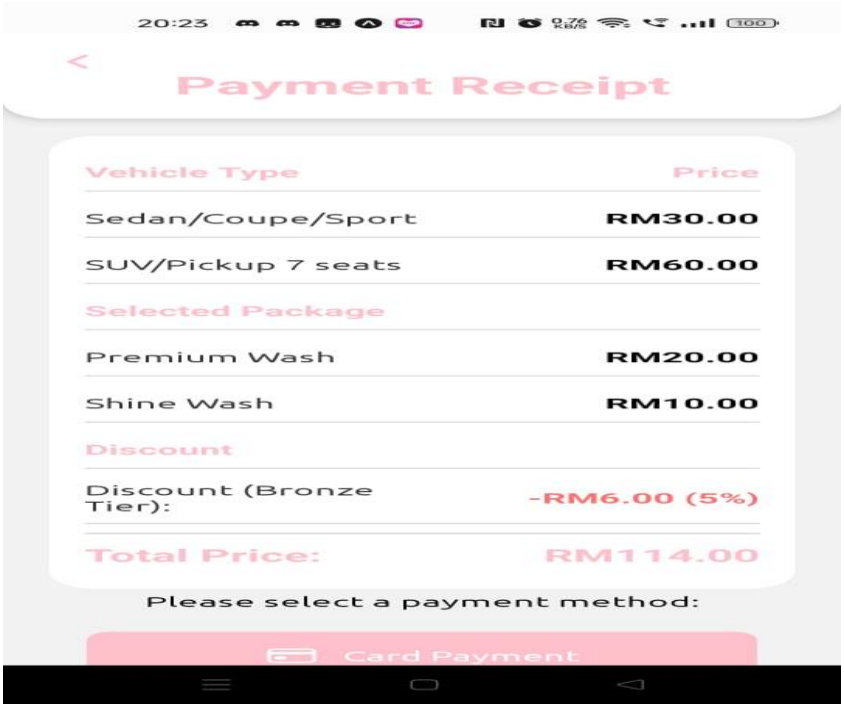


Figure 4.0.44 Car Wash receipt

Figure 4.0.44 shows the vehicle type that has select and the package that have been chosen. Finally, user will select the payment method and it will direct users back to the homepage.

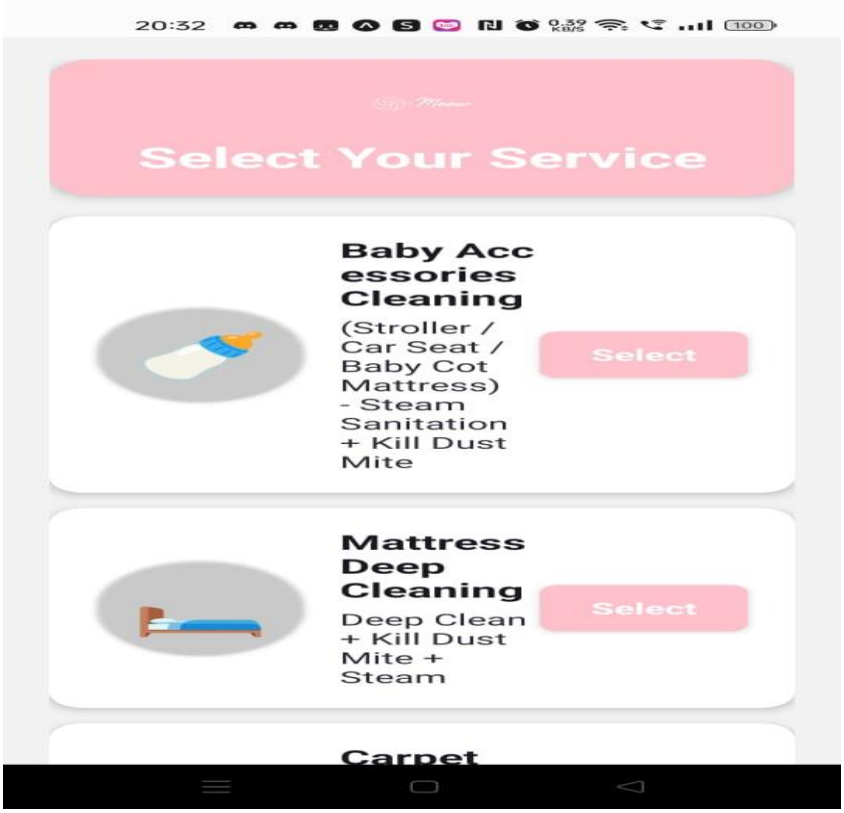


Figure 4.0.45 sofa, mattress, carpet cleaning

Figure 4.0.45 shows all the service from the sofa, mattress, carpet cleaning service. As the name suggests, it includes cleaning for baby accessories, mattress deep cleaning, carpet cleaning, sofa deep cleaning, commercial carpet cleaning, carpet masjid, and office chair.

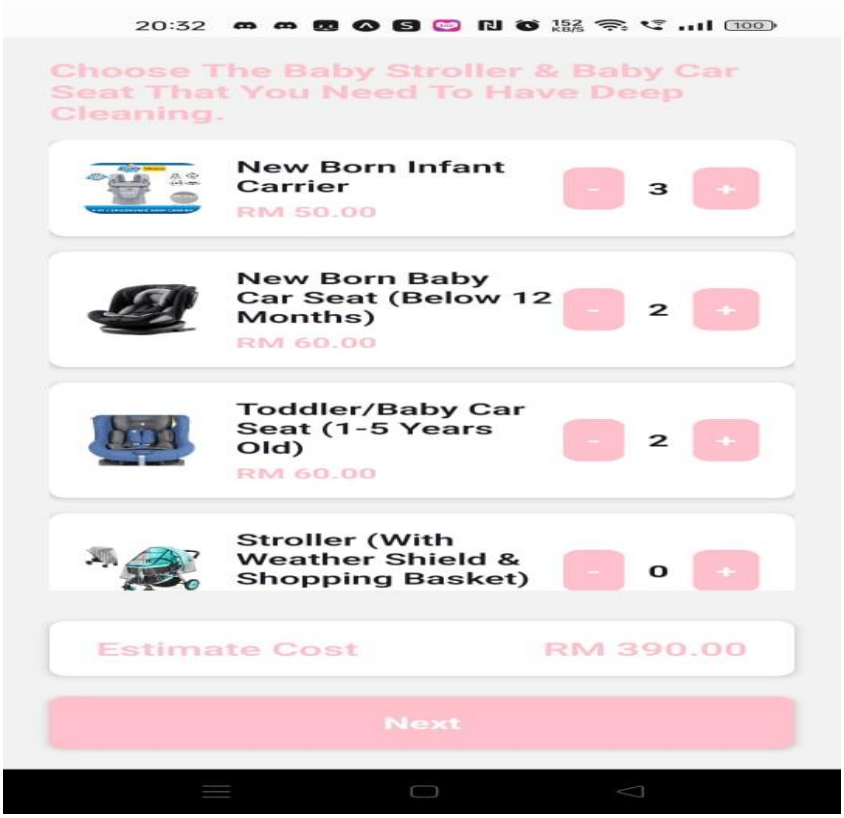


Figure 4.0.46 sofa category cleaning page

Figure 4.0.46 show the list of products under the sofa category of baby accessories. User can press the increment and decrement button to add or minus the product and it will show the total estimate cost on the bottom of the page.

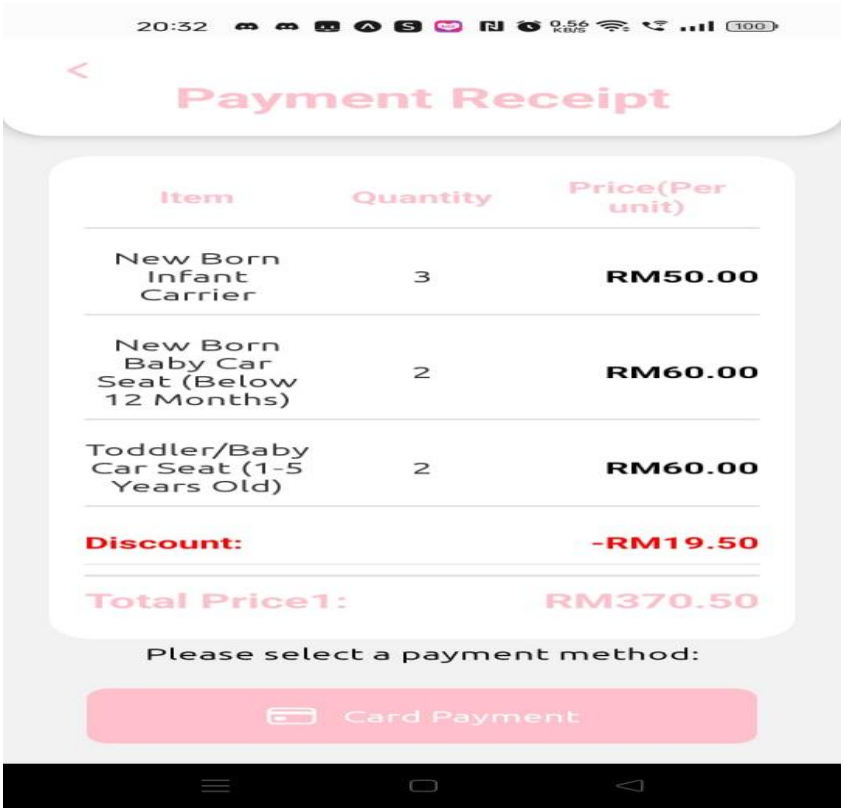


Figure 4.0.47 sofa category receipt

Figure 4.0.47 show the receipt of the sofa category cleaning. It includes the item name, item quantity, and price (per unit) that are fetch from the figure 4.0.46. Then it will show the discount that had given to the user based on their tier.

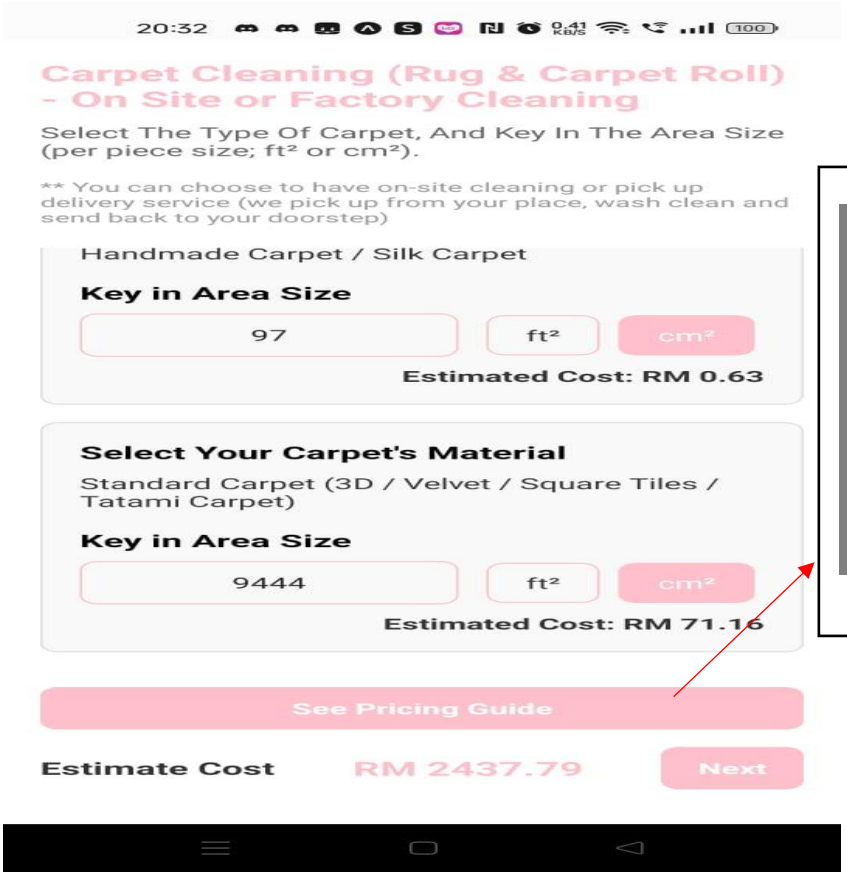


Figure 4.0.49 price list

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Figure 4.0.48 carpet category service

Figure 4.0.48 shows the page for selecting carpet category service services. It includes different type of carpet details and let user key in the size by selecting the size based on ft2 or cm2. The price will calculate automatically after user key in the size based on the unit they pick. When the see pricing guide button is press, it will pop up a modal showing the price based on ft2 or cm2 unit as shown in figure 4.0.49.

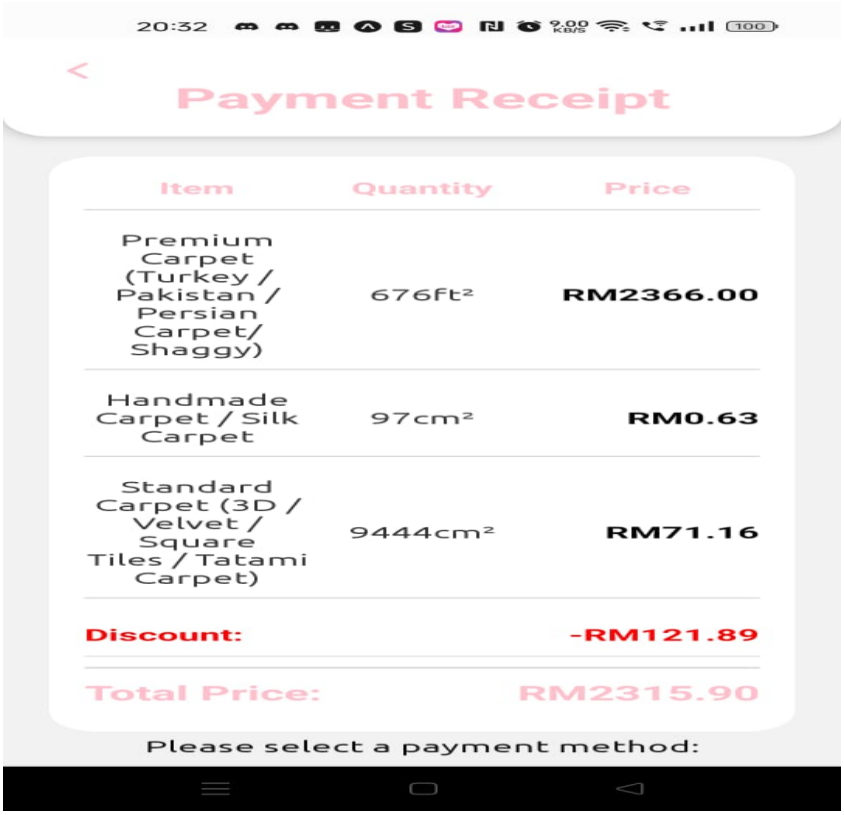
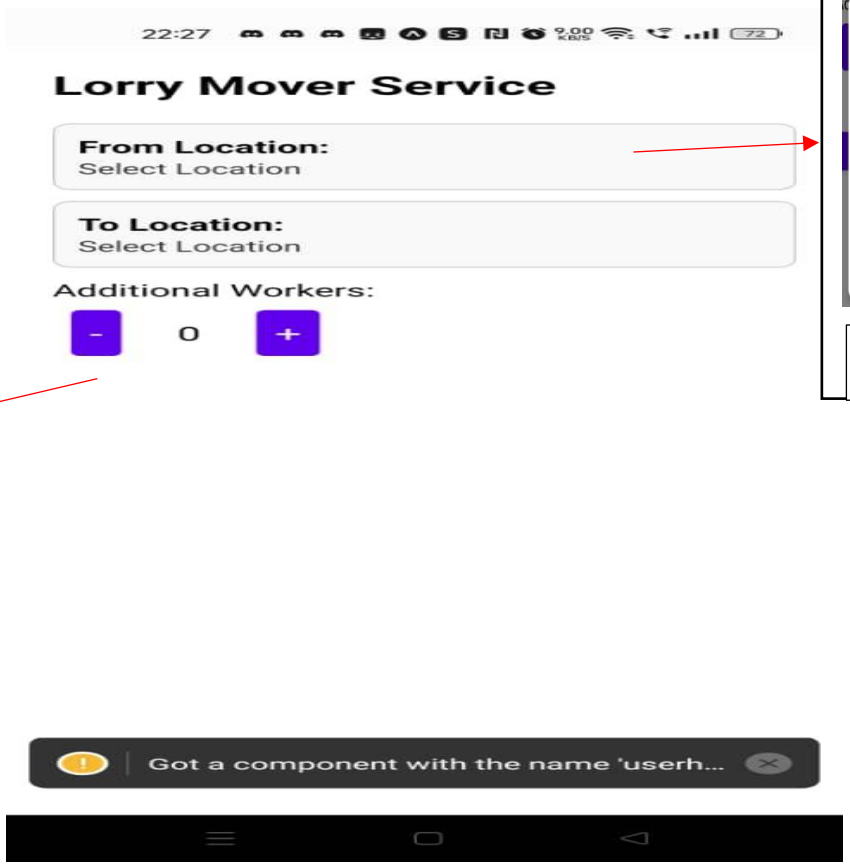


Figure 4.0.50 carpet category service

Figure 4.0.50 shows the receipt for carpet category service. The only different between this receipt and the sofa category receipt is that one is showing the unit, and the other is showing the quantity.

Figure 4.0.51 lorry mover service

Figure 4.0.51 shows all the available plan for the lorry mover service, it include details like which package is suitable for what type of house.



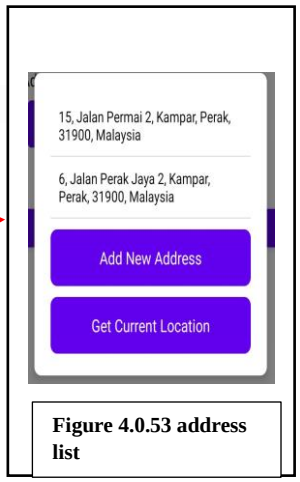


Figure 4.0.53 address list

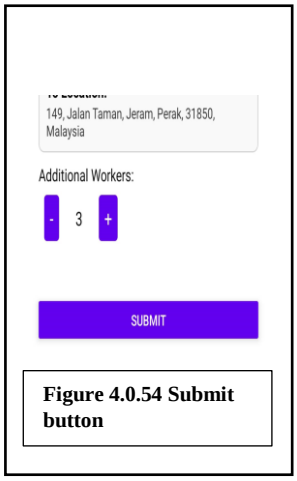


Figure 4.0.54 Submit button

Figure 4.0.52 lorry mover location

Figure 4.0.5.2 show the selection of from and to the place location. When the from or to location text input is click, it will pop up a modal as shown in the figure 4.0.53. When the location is pick, it will auto set to the text input that is press. Then, the increment and decrement will add or minus the additional worker. When everything is fill, the submit button will pop up as shown in figure 4.0.54.

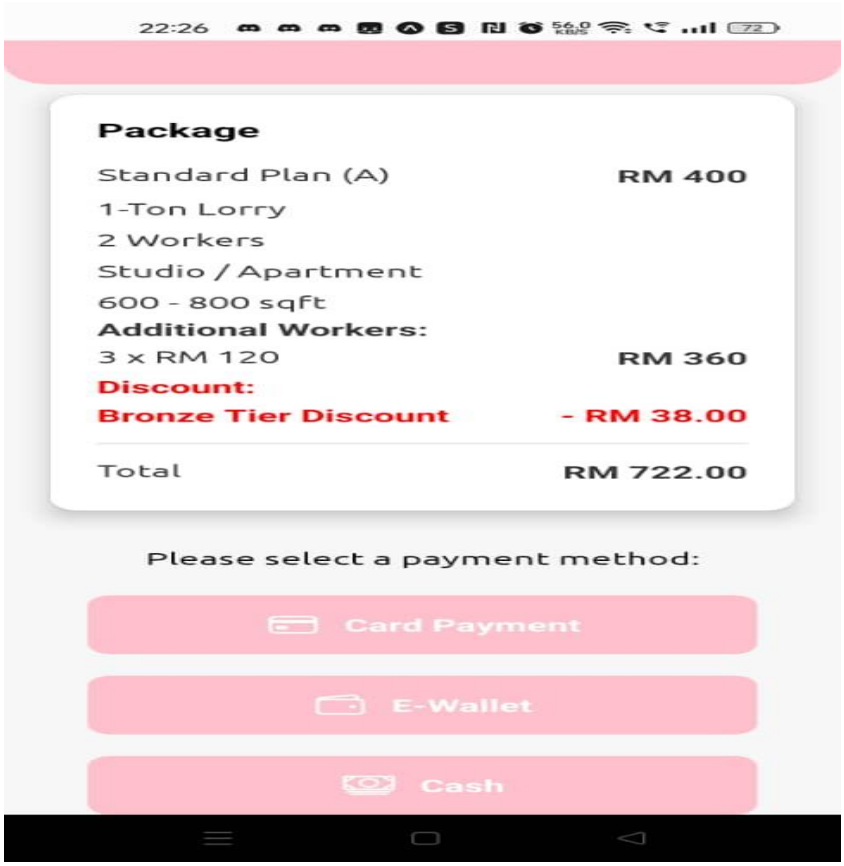


Figure 4.0.55 lorry mover receipt

Figure 4.0.55 shown the receipt for the lorry mover service. It includes the package choose and also the additional worker that has been added.

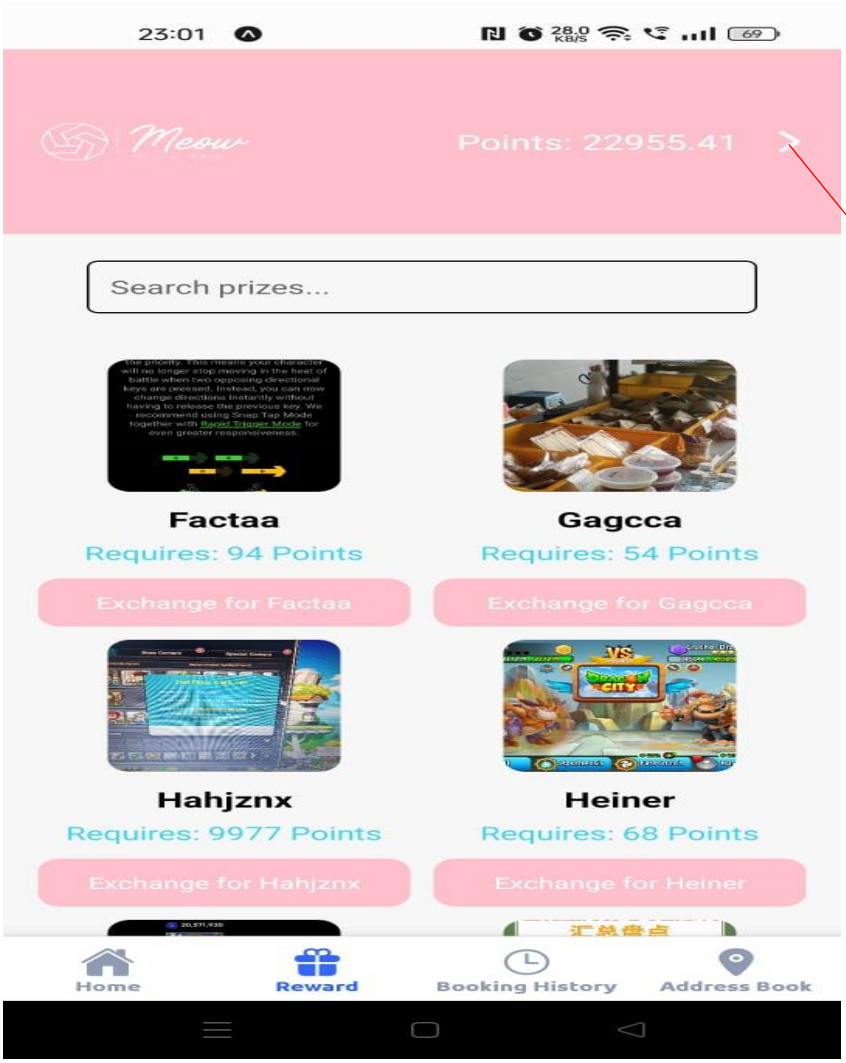
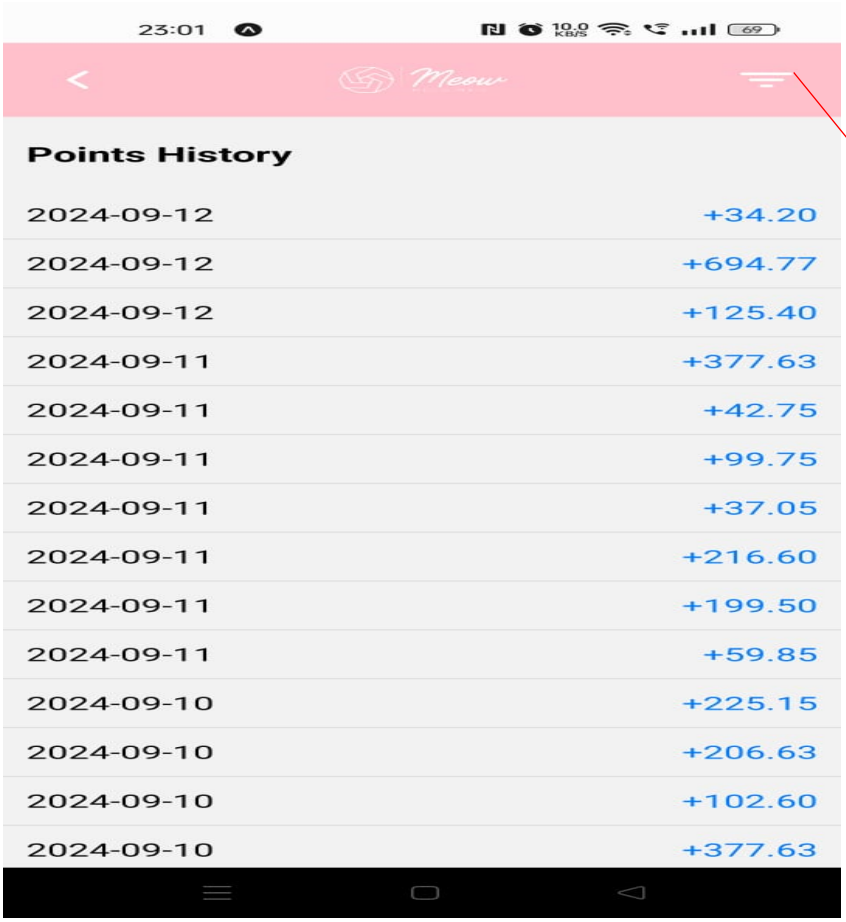


Figure 4.0.57-point history

Figure 4.0.56 Reward page

Figure 4.0.56 shows the reward page for user to exchange their point with prize. It displays all the prize name, require points that user can change with. At the top right, it will display the user current available points. When user click the '>' arrow, it will display the last 5 point history gain or use as shows I figure 4.0.57.



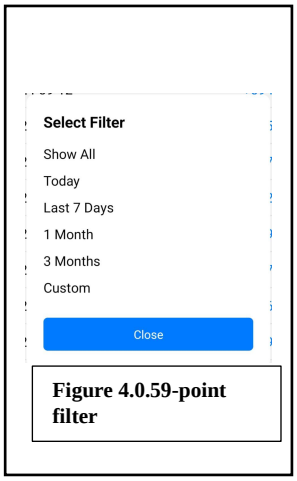


Figure 4.0.59-point filter

Figure 4.0.58 Point History page

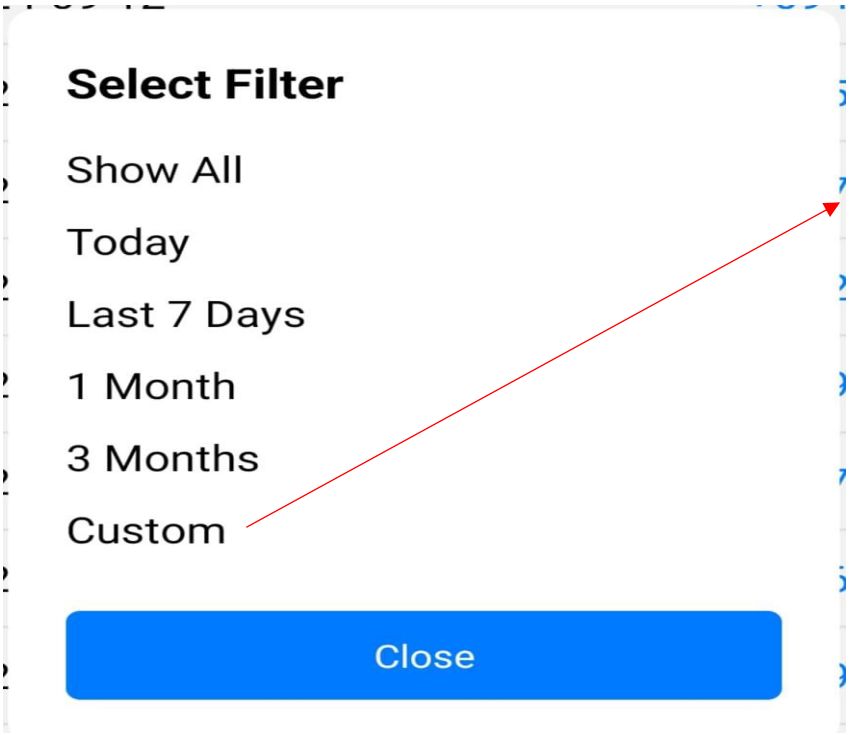


Figure 4.0.60-filter custom calendar

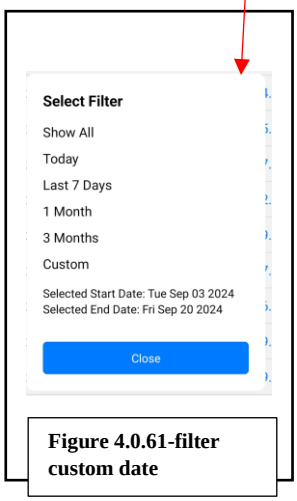


Figure 4.0.61-filter custom date

Figure 4.0.58 shows all the point history that the user has made. It will show the data and the amount of point get or use. It will put a "+' sign for gain and "- "sign for use. By pressing the filter button, a modal will pop up as shown in figure 4.0.59. The show all buttons will display all the history, today will only history done by today, 7 days will list out all the transactions for the past 7 days, 1 month will list the history for the month same as 3 month that will list for 3 months. It also provides a customer where user can set for the date from start to end. After press custom, a calendar will pop up as show in figure 4.0.60. After selecting the start and end date, it will display the date of start to end date below the custom as shown in figure 4.0.61.

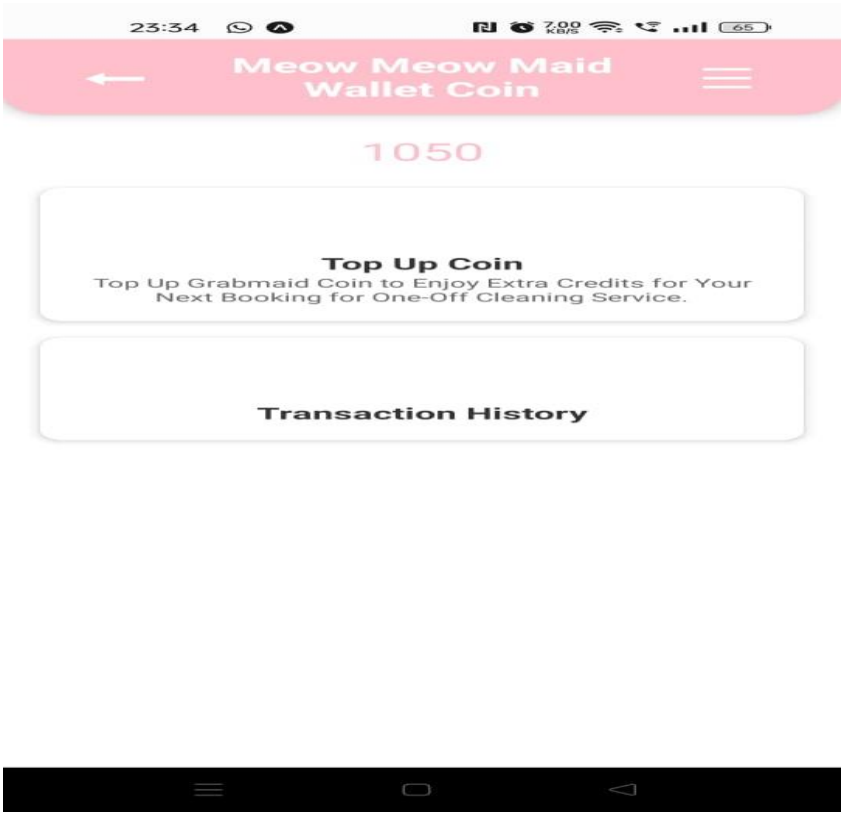


Figure 4.0.62 Wallet page

Figure 4.0.62 shows the wallet page of the user. It will show the wallet amount of the user in the middle of the page.

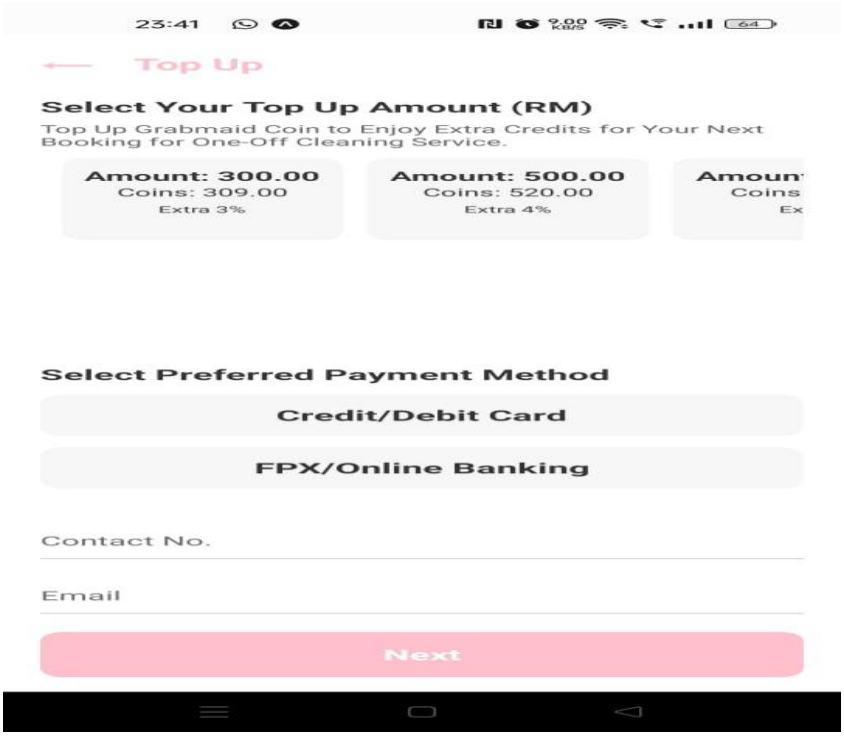


Figure 4.0.63 Top up Wallet page

Figure 4.0.63, it shows the top up package that is available. It also includes two payment methods for user to pay for the top. User also need to enter their contact no and email for future reference.

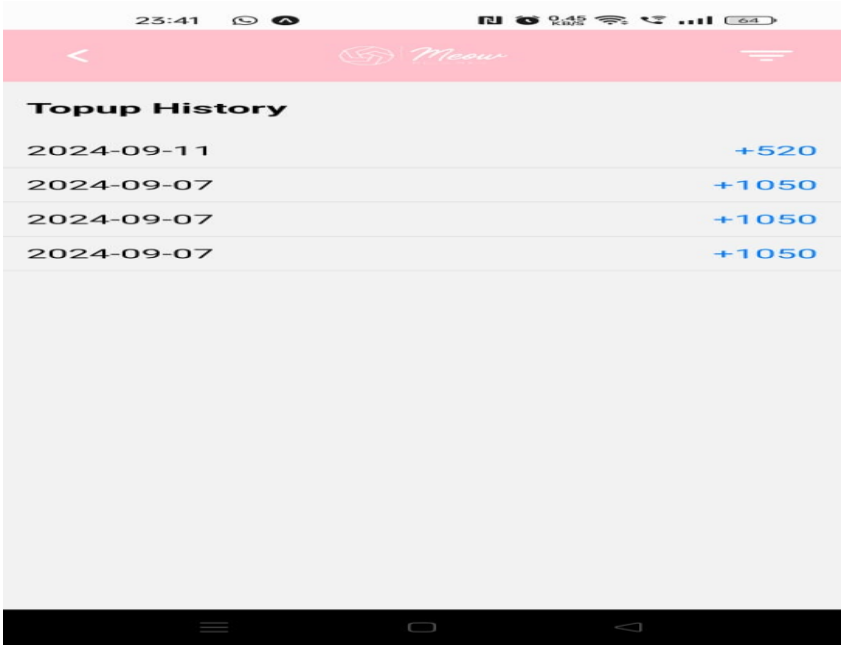


Figure 4.0.64 Top up Wallet history page

Figure 4.0.64 show all the history of the top up.

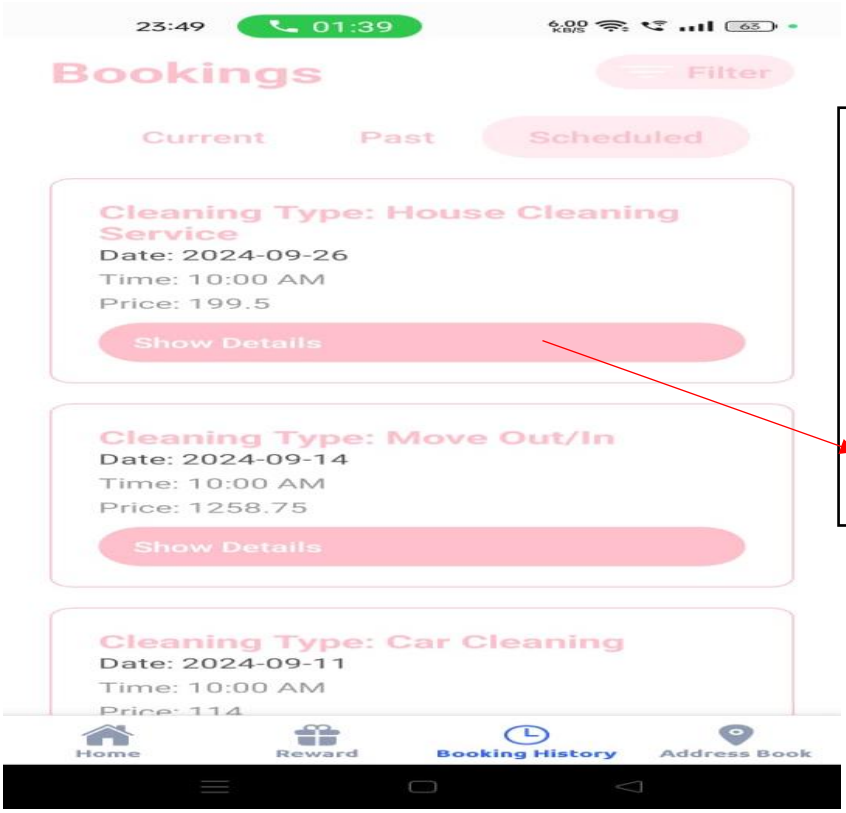


Figure 4.0.65 Booking history page

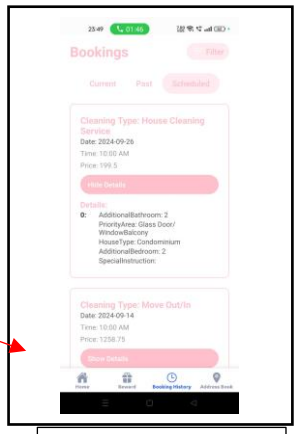


Figure 4.0.66-booking history details

Figure 4.0.65 shows the booking history page of the user. It will display 3 different types of bookings; the currents will display all the schedules booking that already assign cleaner by admin. The past will show all history where the service is already done. The scheduled will display all the booking that are reserved but not yet assign cleaner by admin. When the show details button is press, it will show additional details of the booking as shown in figure 4.0.66.

Admin Page

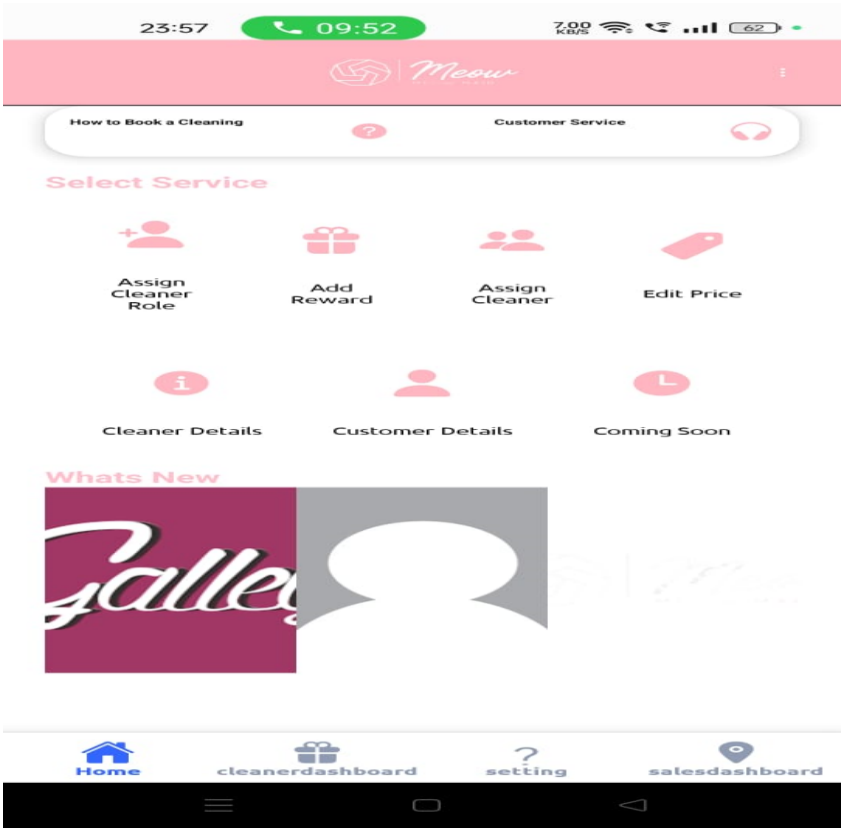


Figure 4.0.67 Admin homepage

Figure 4.0.67 shows the admi homepage, it contains functions like assign cleaner role, add reward, assign cleaner, edit price, cleaner details, customer details, dashboard.

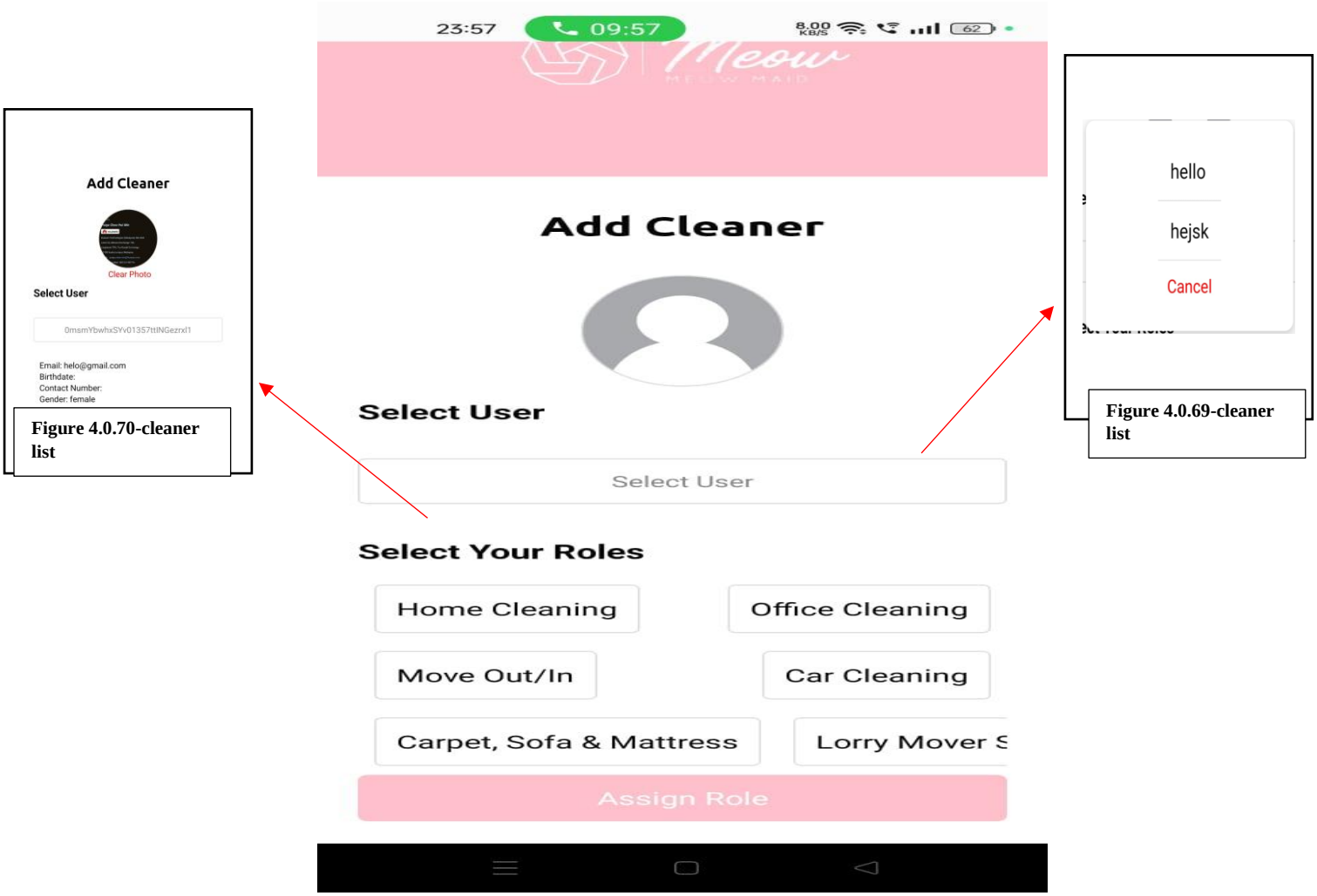


Figure 4.0.69-cleaner list

Figure 4.0.70-cleaner list

Figure 4.0.68 Admin add cleaner

Figure 4.0.68 show the admin add cleaner page. When press the select user, a list of cleaners will pop up as shown in figure 4.0.69. After selecting the cleaner on figure 4.0.69, it will display the details of the cleaner as shows in figure 4.0.70. After selecting the cleaner, admin will press the job role assign to this cleaner and will update to the cleaner details.

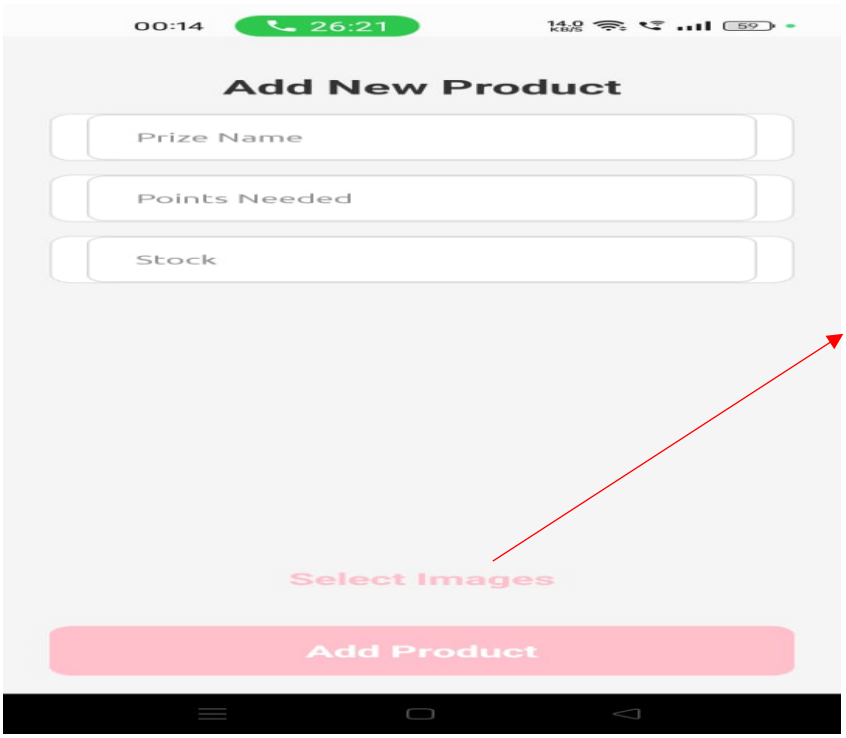


Figure 4.0.71-select image

Figure 4.0.70 Admin add new prize

Figure 4.0.70 shows the admin add new prize. Admins need to enter the prize name, points needed and the stock for the prize. When the select image is click, a modal of asking admin to take photo or choose from album as shows in figure 4.0.71.

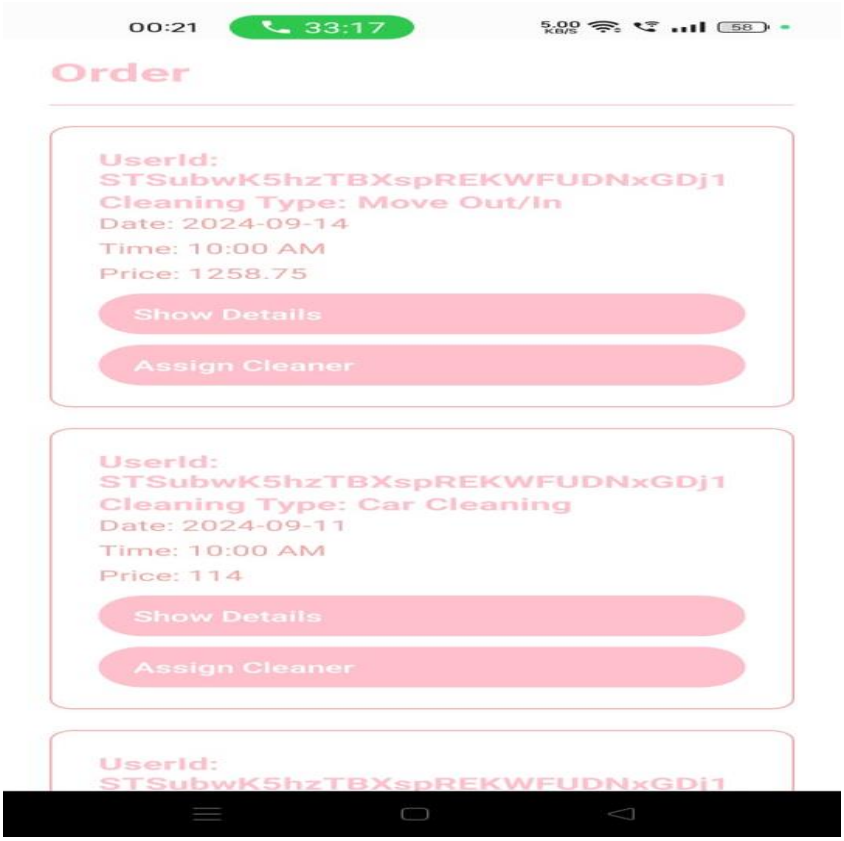


Figure 4.0.71 Admin order list

Figure 4.0.71 shows all the booking that has been book by users. It will display the booking details such as userId, cleaning type, date, time and price.

Figure 4.0.72 Admin booking details

Figure 4.0.72 show the booking details after pressing the assign cleaner on the figure 4.0.71. It will display all the booking details of that booking. When admin press the assign cleaner, a modal will pop up and list all the cleaner that has this cleaning type role and assign it to this booking order as shown in figure 4.0.73.

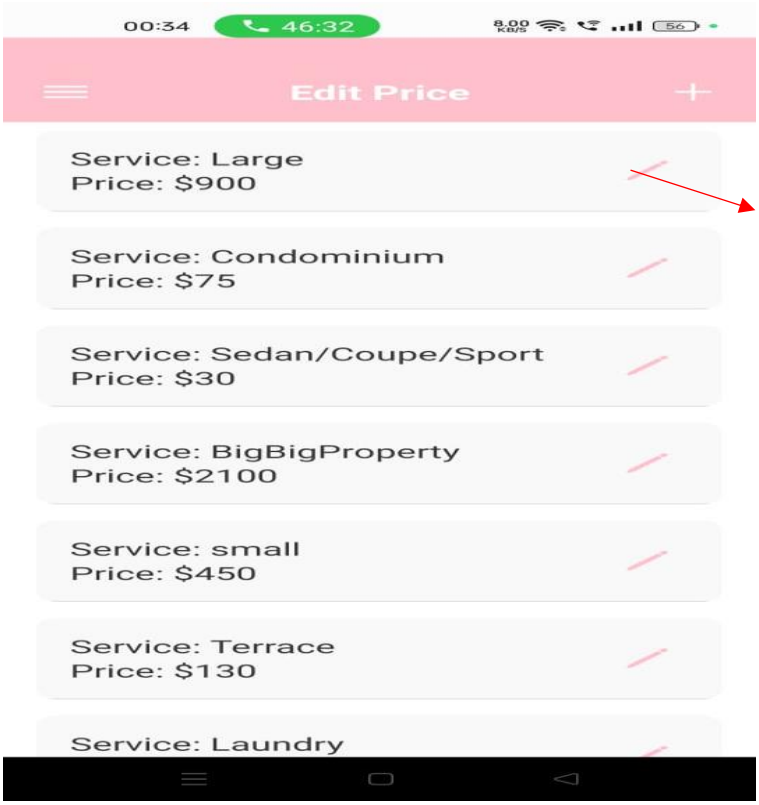


Figure 4.0.75-edit price modal

Figure 4.0.74 Edit price page

Figure 4.0.74 shows the edit price page, all the service will be list out along with their price. When the “pencil” button is click, a modal will pop up to let admin to edit the price of the service as shown in figure 4.0.75.

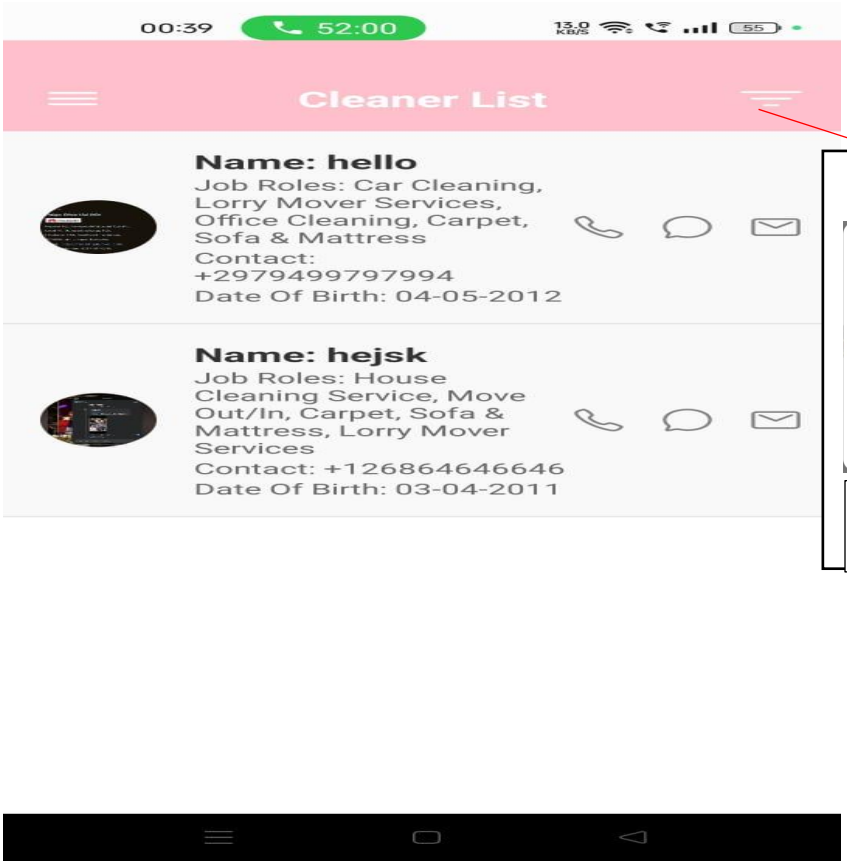


Figure 4.0.77-cleaner filter

Figure 4.0.76 Cleaner List page

Figure 4.0.76 shows the cleaner list page that list all the cleaner. It includes their details such as name, job roles, contact, and date of birth. When the filter button is press, a modal of filter by what cleaning type will be show as in figure 4.077.

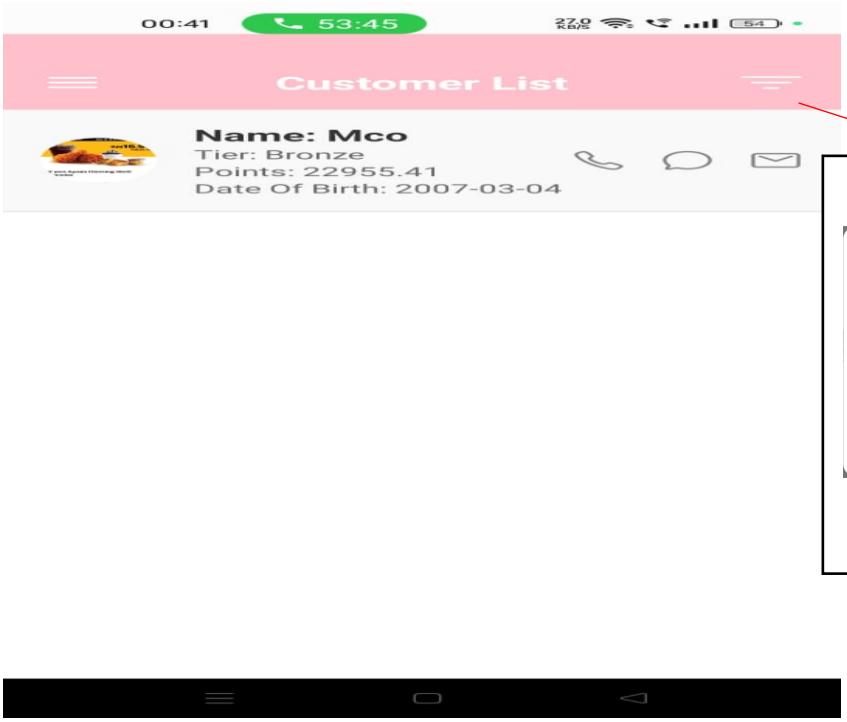


Figure 4.0.79- customer filter

Figure 4.0.78 Customer List page

Figure 4.0.78 shows the customer list page that list all the cleaner. It includes their details such as name, tier, point, and date of birth. When the filter button is press, a modal of filter by what tier will be show as in figure 4.079.

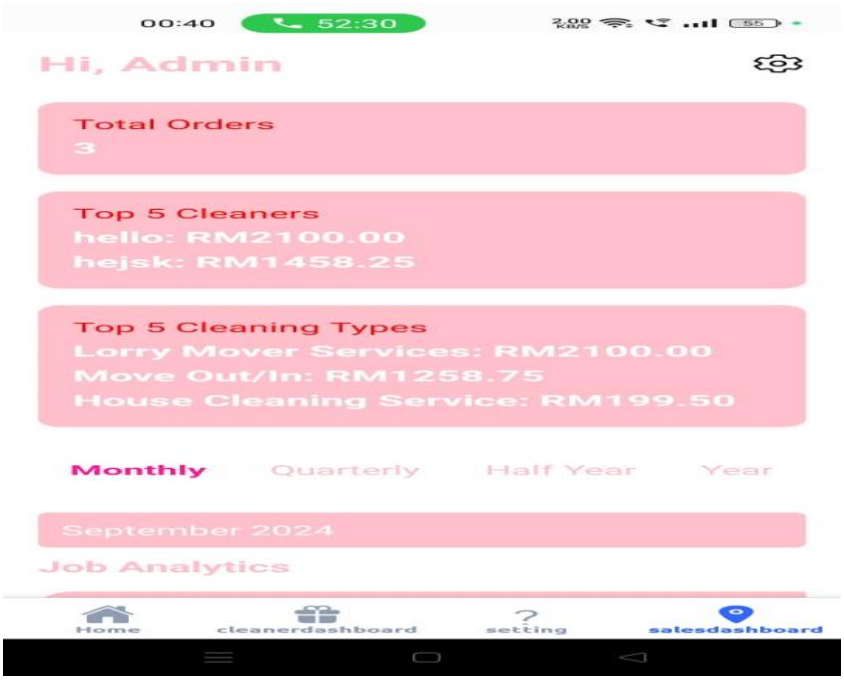


Figure 4.0.80 Dashboard

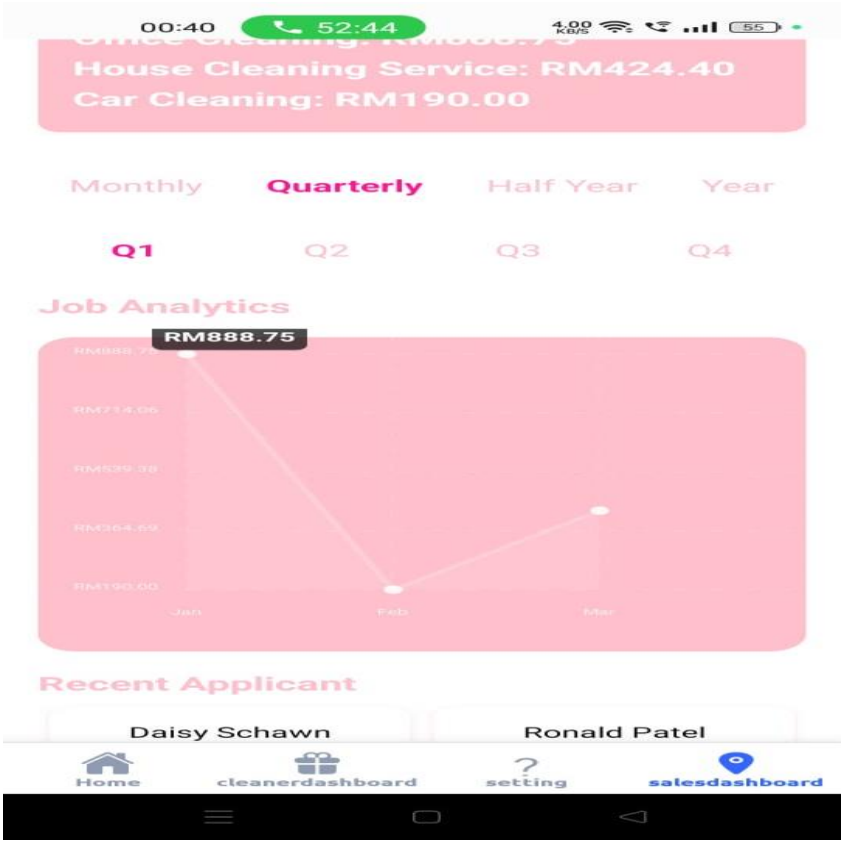


Figure 4.0.80 Dashboard

Figure 4.0.80 illustrates the dashboard for the admin. The dashboard will include the total orders, top 5 cleaners, and top 5 cleaning type. Admin can also set to view the graph by monthly, quarterly, half year, or yearly. The line graph will change according to the date it has been set. The total order, top 5 cleaner, and top 5 cleaning type will also change according to the date the graph shows.

4.1 Setting up

4.1.1 Software

The Software I will use in this project is react-native. React-Native is suitable for all devices including websites. React-Native able to speed up development compared to a standard Javascript page. React-generated pages load faster than other types of pages and may be less likely to be abandoned. Besides that, one may deploy the same code for both iOS and Android using React Native. This technique is effective in cutting improvement time and costs in half. Its framework uses a component-based interface, which allows developers to easily plug and play with the interface elements and create superior apps.[11] It supports firebase database. Furthermore, React Native is a framework that allows developers to create mobile apps using JavaScript. However, building an app from scratch can be expensive and time-consuming for customers. 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.[12]

Moreover, the second software that I use is firebase. Firebase serves as the database for my application. Given its offline data capabilities and real-time data synchronization, my application will always be dependable and responsive, even in the face of difficult network conditions. In addition to its database capability, Firebase's authentication, storage, and hosting services provide a complete package for developing modern web and mobile apps. I can launch my application quickly, securely store and retrieve data, and simply handle user authentication with Firebase. To further streamline the development process, I can add more features and functions to my application thanks to Firebase's connectivity with third-party libraries.

Other than that, the third software that I use is visual studio code. Visual Studio serves as the primary platform for coding my application. Visual Studio is a strong integrated development environment (IDE) that offers several tools to improve productivity and simplifies the development process. Building complex applications is a good fit for it because of its wide library of extensions, debugging tools, and easy code editor. Additionally, effective version control and developer collaboration are made possible via Visual Studio's interface with Git. I can produce high-quality software quickly and

easily using Visual Studio's seamless development experience, regardless of whether I'm working on desktop, mobile, or online apps.

Furthermore, the fourth software that I use is node.js. Node.js is indispensable in mobile application development, primarily for its prowess in backend development. It serves as the backbone for managing server-side operations, including handling requests, processing data, and interacting with databases. Through its event-driven architecture and non-blocking I/O operations, Node.js enables the creation of efficient, scalable, and responsive APIs. These APIs act as intermediaries between the mobile app and the server, facilitating seamless communication and data exchange. Additionally, Node.js excels in implementing real-time features crucial for modern mobile applications, such as chat functionality and live updates. Thus, by leveraging Node.js, developers can streamline the backend development process and deliver robust, high-performance mobile applications.

Finally, the last software that I use is expo go. Expo Go transforms the process of creating mobile apps by giving developers a seamless way to test and showcase their apps on actual devices without having to create emulators. Expo Go saves developers the time-consuming task of setting up and configuring emulators by enabling them to evaluate their applications instantaneously by merely scanning a QR code. This optimized methodology promotes quick testing and iteration while speeding up development cycles. Expo Go further enhances productivity and efficiency with a variety of development tools and capabilities, such as live reloading, which lets developers view changes in real-time while they work. Expo Go gives developers the ability to test on physical devices quickly and easily, ensuring that the user experience and performance are optimized across a range of platforms and devices.

CHAPTER 5

Chapter 5: System Testing

5.1 System Testing

5.1.1 Login Page (User Authentication)

Steps to take	Expected Result	Actual Result(Pass/Fail)
1. Fill in valid "email" and "password" and click "login" button	**Admin Role** Show alert "login successfully" and "you are logged in as admin" - Show admin homepage **Cleaner Role** -Show alert "login successfully" and "you are logged in as cleaner" - Show admin homepage but will lock all the function except the button use for cleaner. **User Role** -Show alert "login successfully" and "you are logged in as user" - Show user homepage	**Pass**
2. Fill in invalid "email" and "password" and click "login" button	-If email is invalid but password is valid, show message "Account not found. Please check your email or register." -if email is valid but password is invalid, show message "Invalid password. Please try again." -if both email and password is invalid, show message "Account not found. Please check your email or register"	**Pass**
3. 3. After login to the apps click "logout" button	- Show Login Page. -Requires login credentials to access the system	**Pass**

5.1.2 User Homepage (House Cleaning)

Steps to take	Expected Result	Actual Result(Pass/Fail)
1. Click on the "House Cleaning" button at the home page	-Navigate to the calendar page -show calendar	**Pass**
2. Click on one of the date	-show list of time to pick -after pick both date and time, will show message of the date and time pick and ask user to confirm -navigate to location page	**Pass**
3. Click on the location	-show list of address that are create by login user. -if press from create address, will pop up a message of the pick address and ask user to confirm. -if press use current location, will pop up the current address and show the map of the address. -navigate to select home cleaning service	**Pass**
4. Click on the service(Bathroom)	-if pick bathroom, will ask user the number of bathrooms needed to clean, is utensils needed, and special instruction. -navigate to receipt	**Pass**
5. Click on continue to payment(Bathroom)	-show the receipt of the order to the user -navigate to payment page	**Pass**
6. Select payment method(Bathroom)	-save the order information to the firebase -pop up a message "payment successful". -navigate to home.	**Pass**
7. Click on the service(Bedroom)	-if pick bedroom, will ask user the number of bedroom needed to clean, is utensils needed, and special instruction. -navigate to receipt	**Pass**
8. Click on continue to payment(Bedroom)	-show the receipt of the order to the user -navigate to payment page	**Pass**
9. Select payment method(Bedroom)	-save the order information to the firebase -pop up a message "payment successful". -navigate to home.	**Pass**

10. Click on the service(House cleaning)	-show the list of type of house	**Pass**
11. Click on the house type(House Cleaning)	-Navigate to the selected house type	**Pass**
12. Click on proceed to payment(House Cleaning)	-ask user to insert the number of additional bathroom and bedrooms(optional) -ask user whether the utensil is provided or not.(optional) -select 2 prioritize area and also add special instruction. (optional) -navigate to the receipt page	**Pass**
13. Click on proceed to payment(House Cleaning)	-show the price of the house type, utensil price, additional bathrooms price, additional bedrooms price, the discount given based on user tier and the total price. -navigate to payment	**Pass**
14. Select payment method(House Cleaning)	-show the details of the whole order, the address, date, time, house type, total price, special instruction and priority area. -pop up a animation showing the total point gain for the loyalty program. -save the order information to the firebase -navigate to home page.	**Pass**

5.1.3 User Homepage (Office Cleaning)

Steps to take	**Expected Result**	**Actual Result(Pass/Fail)**
1. Click on the "Office Cleaning" button at the home page	-show the cleaning checklist for office cleaning and reminder. -navigate to calendar page	**Pass**
2. Click on the date	-show list of time to pick -after pick both date and time, will show message of the date and time pick and ask user to confirm -navigate to location page	
3. Click on the location	-show list of address that are create by login user.	

	-if press from create address, will pop up a message of the pick address and ask user to confirm. -if press use current location, will pop up the current address and show the map of the address. -navigate to select office cleaning service	
4. Click on the payment method	-Ask user to select the size of the office, will pop up a message to tell the size is suitable for what type of office. -Ask user if utensils is needed and ask user for special instruction if needed -show the price of the whole order including the office size price, utensils price and also the discount given based on the tier. -pop up a animation showing the total point gain for the loyalty program. -save the order information to the firebase -navigate to homepage	

5.1.4 User Homepage (Move out/in Cleaning)

Steps to take	**Expected Result**	**Actual Result(Pass/Fail)**
1. Click on the "move out/in Cleaning" button at the home page	-show the cleaning checklist for move/in cleaning and reminder. -navigate to calendar page	**Pass**
2. Click on the date	-show list of time to pick -after pick both date and time, will show message of the date and time pick and ask user to confirm -navigate to location page	**Pass**
3. Click on the location	-show list of address that are create by login user. -if press from create address, will pop up a message of the pick address and ask user to confirm.	**Pass**

	-if press use current location, will pop up the current address and show the map of the address. -navigate to select move out/in service	
4. Click on the payment method	-Ask user to select the size of the house, will pop up a message to tell the size is suitable for what type of house. -Ask user if utensils is needed and ask user for special instruction if needed -show the price of the whole order including the house size price, utensils price and also the discount given based on the tier. -pop up a animation showing the total point gain for the loyalty program. -save the order information to the firebase -navigate to homepage	**Pass**

5.1.5 User Homepage (Car Wash)

Steps to take	**Expected Result**	**Actual Result(Pass/Fail)**
1. Click on the "car wash" button at the home page	-show the list of user car created. -navigate to car wash page	**Pass**
2. Click on the "change package" button	-navigate to the change package page. - show the list of package	**Pass**
3. Click the "select button" on the change package page	-pop up a message "vehicle info updated successfully" -update the information in the firebase. -navigate back to car wash page	**Pass**
4. Click the "…" button	-pop up a modal to ask user to change the car name or delete the car. - if change name will let user input the name and update the firebase -if delete will delete this car from the firebase.	**Pass**

5. Click on the "add new vehicle button"	-pop up a modal to select user type of car.	**Pass**
6. Click the car on the add new vehicle modal	-navigate to add car page -show the package available.	**Pass**
7. Click on select on the add car page	-pop up a modal to ask user set a name for that car -if press save, navigate to the car wash page -if press cancel, close the pop up modal -pop up message "vehicle add succefully" and save the car into firebase	**Pass**
8. Click on the "select" button on the car wash page	-navigate to calendar page -show the calendar	**Pass**
9. Click on the date	-show list of time to pick -after pick both date and time, will show message of the date and time pick and ask user to confirm -navigate to location page	**Pass**
10. Click on the location	-show list of address that are create by login user. -if press from create address, will pop up a message of the pick address and ask user to confirm. -if press use current location, will pop up the current address and show the map of the address. -navigate to payment receipt for car wash.	**Pass**
11. Click on the payment method	-show the vehicle type that has pick and the price for it. -show the package that has pick and the price for it. -the discount given based on the user tier. -pop up an animation and show user the point gain from this booking. -save the details into firebase -navigate to homepage	**Pass**

5.1.6 User Homepage (Carpet, Sofa & Mattress)

Steps to take	Expected Result	Actual Result(Pass/Fail)
1. Click on the "carpet, sofa & mattress" button at the home page	-navigate to the calendar page -show calendar	**Pass**
2. Click on the date	-show list of time to pick -after pick both date and time, will show message of the date and time pick and ask user to confirm -navigate to location page	**Pass**
3. Click on the location	-show list of address that are create by login user. -if press from create address, will pop up a message of the pick address and ask user to confirm. -if press use current location, will pop up the current address and show the map of the address. -navigate to select carpet, sofa & mattress service.	**Pass**
4. Click on the "select" button	-show the list of service provided -navigate to the select service page	**Pass**
5. Click on the "next" button	-show the list of available cleaning product for the service. -user can select the quantity that need cleaning for that product. -show the estimated cost for the product. -navigate to receipt page	**Pass**
6. Select payment method	-show the list of product name, quantity, and price per unit. -show the discount given based on user tier and the total price -pop up an animation show the point earn for the booking. -save details into firebase. -navigate to homepage	**Pass**
7. same step 2-6(for other type of mattress,sofa,carpet)	-same step 2-6(for other type of mattress,sofa,carpet)	**Pass**

5.1.7 User Homepage (Carpet, Sofa & Mattress)

Steps to take	Expected Result	Actual Result(Pass/Fail)
1. Click on the "lorry mover service" button at the home page	-navigate to the lorry mover service page -show the plan available of the service	**Pass**
2. Click on the date	-show list of time to pick -after pick both date and time, will show message of the date and time pick and ask user to confirm -navigate to location page	**Pass**
3. Click on the 'from' and 'to' location button	-pop up the list of the address that already created by users. -will update to the location from which text input user press.	**Pass**
4. Click the 'add new address' button	-pop up a modal to let user to key in new address that haven't create.	**Pass**
5. Click submit button in the 'add new address 'modal	-will update to the location which text input user press.	**Pass**
6. Click 'get current location' button	-will pop up the current location and the map to show user current location.	**Pass**
7. Click 'confirm'button in the get current location modal	-will update to the location which text input user press.	**Pass**
8. Click on "increment" button or "decrement" button.	-show update of the additional worker quantity	**Pass**
9. Click the 'submit' button	-navigate to the payment receipt	**Pass**
10. Select payment method	-show the receipt of the package that user choose. -show the total of additional worker with the price and also the discount given based on user tier. -pop up an animation to show the total point gain from this transaction -save the details into firebase -navigate to homepage	**Pass**

5.1.8 User Homepage (Wallet)

Steps to take	Expected Result	Actual Result(Pass/Fail)
1. Click on the 'wallet' button at the home page	-navigate to the wallet page -show the amount of money in the wallet.	**Pass**
2. Click on the 'Top up coin' button	-navigate on the top up page -show the list of available top up and also payment method -show textinput to let user key in their email and contact.	**Pass**
3. Click on the "next" buton in the top up page	-if the text input field is empty, will pop up a message' please fill in all fields' -if field is fill, will pop up 'top up succesfully' -save the details into the topuphistory firebase.	**Pass**
4. Click on the 'transaction history' button in the wallet page	-navigate to the top up history page -show the list of all the top up date and amount	**Pass**
5. Click on the 'filter' button on the top right of the transaction history page	-will pop up a modal to let user choose for the date to view the history.	**Pass**
6. Click on the date in the filter modal	-will render the data on the firebase based on the date input and display it	**Pass**

7. Click the 'close' button on the modal	-close the modal	**Pass**
8. Click the 'back' button	-navigate back to the wallet page.	**Pass**

5.1.9 User Bottom Navigator (Home)

Steps to take	Expected Result	Actual Result(Pass/Fail)
1. Click on the 'Home' button	-navigate back to user home page.	**Pass**

5.1.10 User Bottom Navigator (Reward)

Steps to take	Expected Result	Actual Result(Pass/Fail)
1. Click on the 'Reward' button	-navigate to the reward page -show the total point of the login user in the top right -a search bar to let user search product -list of products that can exchange will point with photo, name, point needed.	**Pass**
2. Click on the '>' button on the reward page	-pop up a modal to show the latest 5 reward exchange history	**Pass**
3. Click on the 'view all' button on the modal	-navigate to the pointhistory page -list all the point history that has done by user.	**Pass**
4. Click on the 'filter' button on the top right	-will pop up a modal to let user choose for the date to view the history.	**Pass**
5. Click on the date in the filter modal	-will render the data on the firebase based on the date input and display it	**Pass**
6. Click the 'close' button on the modal	-close the modal	**Pass**
7. Click the 'back' button	-navigate back to reward page	**Pass**

5.1.11 User Bottom Navigator (Booking History)

Steps to take	Expected Result	Actual Result(Pass/Fail)
1. Click on the 'Booking history' button	-navigate to the booking history -list out all the booking make.	**Pass**
2. Click on the 'Current' button	-list out all the booking that has already assign cleaner by admin	**Pass**
3. Click on the 'Past' button	-list out all the booking that has already done.	**Pass**
4. Click on the 'Schedule' button	-list out all the booking that has make but not yet assign cleaner by admin	**Pass**
5. Click on 'show details' button	-will list out additional information for the booking	**Pass**

5.1.12 User Bottom Navigator (Address Book)

Steps to take	Expected Result	Actual Result(Pass/Fail)
1. Click on the 'Address Book' button	-navigate to the address book page -list out all address create by the user	**Pass**
2. Click the "location icon" button on the top right	-pop up an alert to ask user to enter address or cancel.	**Pass**
3. Click the 'Enter address' button	-pop up a modal to let user to insert their name, contact, state, city, postal, detail address, and label. -if the address is not a valid address, will pop up a message ' Failed to fetch coordinates for the entered address.Please check the address" -if it is a valid address, will pop up'Address saved successfully' -save the details into the addressbook firebase.	**Pass**
4. Click the 'cancel' button	-close the modal	**Pass**
5. Click the 'delete' button	-delete the address from the firebase.	**Pass**

5.1.13 Admin Homepage (Assign Cleaner Role)

Steps to take	Expected Result	Actual Result(Pass/Fail)
1. Click on the 'Assign Cleaner Role' button	-navigate to the assign cleaner role page -list out all the cleaner	
2. Click on the 'Select User' button	-pop up a modal of all cleaner and let admin to select.	
3. Click on the cleaner name	-will auto pop up the user details such as contact number, age, email,date of birth.	
4. Click on the 'cancel' button	-close the modal	
5. Click on the 'select your role'	-Let admin to assign which cleaning type are they in charge in.	
6. Click on the 'Assign role' button	-update the cleaning type role into the cleaner firebase. -navigate back to home page	

5.1.14 Admin Homepage (Add Reward)

Steps to take	Expected Result	Actual Result(Pass/Fail)
1. Click on the 'add reward' button	-navigate to the add reward page -text input to let admin key in reward details	
2. Click on the 'select image' button	-pop up a modal to let user choose 'take photo', 'choose from album' and 'cancel'.	
3. Click on the 'Take photo' button	-Auto open the user phone camera for taking photo.	
4. Click on the 'Choose from Album' button	-Auto open the user phone album to let them choose the picture from.	
5. Click on the 'cancel' button	-close the modal	
6. Click on the 'Add Product' button	-if detail is not fill in, pop up a message ' An error occurred while registering the product, please try again' -if detail is fill in, pop up a message 'product added successfully' -save the product into the reward firebase. -navigate back to homepage	

5.1.15 Admin Homepage (Assign Cleaner)

Steps to take	Expected Result	Actual Result(Pass/Fail)
1. Click on the 'Assign cleaner' button	-navigate to the booking details page. -list all the booking that still didn't assign cleaner.	
2. Click on the 'show details' button	-Show the additional details of the booking. Different for every cleaning type.	
3. Click on the 'Assign cleaner' button	-navigate to the assign cleaner page. -list the order details of the booking.	
4. Click on the 'Assign cleaner' button	-pop up a modal listing all cleaner that are responsible for this cleaning type.	
5. Click on the 'confirm assign' button	-if no cleaner are click, will pop up a message 'Please select at least one cleaner'. -update the cleaner to this booking details order. -navigate back to booking details page	
6. Click on the 'cancel' button	-Close the modal.	

5.1.16 Admin Homepage (Edit Price)

Steps to take	Expected Result	Actual Result(Pass/Fail)
1. Click on the 'Edit price' button	-navigate to the edit price page -list out all the product name and price save in the firebase.	
2. Click the 'edit icon' button	-pop up a modal that let user key in the new price for the product.	
3. Click the 'save' button	-update the new price into the firebase -navigate back to edit price page	
4. Click on the 'cancel' button	-close the modal.	

5.1.17 Admin Homepage (Cleaner Details)

Steps to take	Expected Result	Actual Result(Pass/Fail)
1. Click on the 'Cleaner Details' button	-navigate to the cleaner details page -list all the cleaner with their information	
2. Click on the 'filter icon' button	-pop up a modal to let user select cleaning type.	
3. Click on the 'Office cleaning' button	-list all the cleaner that have the role of office cleaning	
4. Repeat step 3 for different cleaning service	-Repeat step 3 for different cleaning service	
5. Click on the 'reset filter' button	-reset the filter and list back all the cleaner.	

5.1.18 Admin Homepage (Customer Details)

Steps to take	Expected Result	Actual Result(Pass/Fail)
1. Click on the 'Customer Details' button	-navigate to the customer details page -list all the customer with their information	
2. Click on the 'filter icon' button	-pop up a modal to let user select tier	
3. Click on the 'bronze tier button	-list all the cleaner that have the bronze tier	
4. Repeat step 3 for different tier	-Repeat step 3 for different tier	
5. Click on the 'reset filter' button	-reset the filter and list back all the customer.	

5.1.19 Admin Bottom navigator (Home)

Steps to take	Expected Result	Actual Result(Pass/Fail)
1. Click on the 'Home' button	-navigate back to user home page.	**Pass**

5.1.20 Admin Bottom navigator (Sales Dashboard)

Steps to take	Expected Result	Actual Result(Pass/Fail)

1. Click on the 'salesdashboard' button	-navigate to the salesdashboard page -list the total order, top 5 cleaners, and the top 5 cleaning type. -the graph for the total sales -the button to select the date	
2. Click on the 'monthly' button	-pop up a text input showing today month and year.	
3. Click on the 'textinput' button	-pop up a calendar to let user choose for month and the year -update the graph based on the month and year selected.	
4. Click on the 'Quarterly' button	-pop up button for user to select which quarter	
5. Click on the 'quarter' button	-if press q1, will update the graph to show the total sales of Jan, feb, march. -if press q2, will update the graph to show the total sales of apr,may,jun. -if press q3, will update the graph to show the total sales of july,aug,sep -if press q4, will update the graph to show the total sales of oct,nov,dec.	
6. Click on the 'Half year'button	-pop up button to let user choose 1st half or 2nd half.	
7. Click on the '1st half or 2nd half' button	-if click 1st half, will update the line graph showing the sales for January to June. -if click 2nd half, will update the graph showing the sales for July to December.	
8. Click on the 'year' button	-will pop up the current year along with the previous and next year button	
9. Click on the 'previous year' button	-will update the graph to see previous year sales	
10. Click on the 'next year' button	-will update the graph to see next year sales.	
11. Click on the 'setting' button	-pop up the modal to show different type of graph.	
12. Click on the 'top cleaner' button	-update the page to show the cleaner sales graph	
13. Repeat step 2-10	-Repeat step 2-10	

14. Click on the 'top cleaning type' button	-update the page to show the cleaning type sales graph	
15. Repeat step 2-10	- Repeat step 2-10	

Chapter 6

Conclusion

In conclusion, the identified problem statements shed light on critical areas within the e-cleaning service application that necessitate attention and strategic intervention. These challenges, if left unaddressed, could impede the application's ability to thrive in a competitive market landscape. Firstly, the absence of a loyalty program represents a missed opportunity to cultivate lasting relationships with customers. In today's business environment, where customer retention and loyalty are paramount, implementing a well-designed loyalty program can serve as a powerful tool for encouraging repeat business, increasing customer satisfaction, and ultimately boosting profitability. By offering rewards, personalized deals, and exclusive benefits, businesses can foster a sense of appreciation and recognition among their customer base, thus solidifying their loyalty and trust.

Secondly, the rigidity of the service offerings poses a significant barrier to meeting the diverse and evolving needs of customers. In an era characterized by personalized experiences and on-demand services, consumers expect flexibility and choice in the services they receive. By introducing customizable options, such as flexible cleaning schedules or room-specific cleaning packages, businesses can empower customers to tailor the service to their preferences, thereby enhancing satisfaction and engagement. Moreover, offering a range of service tiers or subscription-based models can cater to varying usage patterns and budget constraints, further enhancing the application's appeal and relevance in the market.

Lastly, having an integrated administrative dashboard is critical for optimizing operations and improving decision-making inside the e-cleaning service application. By combining key performance indicators, user analytics, and service-related data into a single interface, the dashboard overcomes inefficiencies created by manual data collecting and fragmented reporting. It provides real-time insights on sales, cleaner performance, and service types, hence allowing greater operational management, cross-departmental collaboration, and data-driven plans. This tool will

not only increase production but also promote morale among administrative employees by decreasing frustrations caused by wasteful operations. Finally, the dashboard will enable management to promote continual growth while ensuring the platform's scalability in response to changing customer demands.

In conclusion, addressing these identified challenges is imperative for the e-cleaning service application to thrive and succeed in today's dynamic business landscape. By prioritizing customer-centric initiatives, such as loyalty programs, flexible service offerings, and robust feedback mechanisms, businesses can differentiate themselves, build trust and loyalty among customers, and ultimately drive sustainable growth and success in the long term.

Looking ahead, future enhancements will include the integration of a real-time tracking feature, enabling users to monitor the location of the cleaner 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: Y3S2	**Study week no.: 10**
Student Name & ID: Lim Ming Xuan(21ACB06838)	
Supervisor: Dr Noraini Binti Ibrahim	
Project Title: E-clean House Apps for Kampar Residential	

1. WORK DONE

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

- Implemented function for the other cleaning type of booking
- Implemented loyalty point gain on every transaction

2. WORK TO BE DONE

- **Creating the loyalty page to enable user to exchange prize with the loyalty points**
- **Loyalty point history where when use will have a '- 'sign and '+' sign for point gains.**
- **Date filtering to view the point gain or use on the specific date**

3. PROBLEMS ENCOUNTERED

- Interface problem as every cleaning service is providing different service and also require different information.
- If a transaction fails or is canceled after completion, the system may still reward loyalty points. To avoid abuse, appropriate rollback methods or checks must be included.

4. SELF EVALUATION OF THE PROGRESS

Overall, progress has been steady despite encountering some challenges. The initial groundwork has been laid, and there is a clear direction for moving forward with the project. However, there is room for improvement in time management and overcoming obstacles encountered during the research process. Moving forward, I aim to address these challenges proactively and maintain a proactive approach to project management.

Supervisor's signature

Student's signature

FINAL YEAR PROJECT WEEKLY REPORT

(Project II)

Trimester, Year: Y3S2	**Study week no.: 11**
Student Name & ID: Lim Ming Xuan(21ACB06838)	
Supervisor: Dr Noraini Binti Ibrahim	
Project Title: E-clean House Apps for Kampar Residential	

1. WORK DONE

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

- Done making a page for admin to add the loyalty prize
- The loyalty page for user to exchange is done with the interface and function
- Loyalty point history able to auto add a '+' or '- 'sign based on the point is gain or use.
- Filtering date for loyalty point history can be set to view by show all, today, last 7 days, 1 month, 3 months, custom

2. WORK TO BE DONE

- Booking details for user to review their schedule booking
- Booking history for booking that have done
- Accepted booking details where the booking is already view by admin and already assign cleaner.

3. PROBLEMS ENCOUNTERED

- Difficult in the filtering date for the custom as when the start and end date is set to the same date, it cant show any data as the start and end date will begin on 00:01 of the date.

4. SELF EVALUATION OF THE PROGRESS

Overall, progress has been steady despite encountering some challenges. The initial groundwork has been laid, and there is a clear direction for moving forward with the project. However, there is room for improvement in time management and

overcoming obstacles encountered during the research process. Moving forward, I aim to address these challenges proactively and maintain a proactive approach to project management.

Supervisor's signature

Student's signature

FINAL YEAR PROJECT WEEKLY REPORT

(Project II)

Trimester, Year: Y3S2	**Study week no.: 12**
Student Name & ID: Lim Ming Xuan(21ACB06838)	
Supervisor: Dr Noraini Binti Ibrahim	
Project Title: E-clean House Apps for Kampar Residential	

1. WORK DONE

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

- User can view their booking history
- User can view all their schedule booking
- User can view all the booking that already confirm and assign cleaner by admin
- Admin can assign cleaner based on the role cleaner have to the booking.

2. WORK TO BE DONE

- Dashboard
- Cleaner can view for the booking assign to them by admin
- Google Map API
- Filtering date for dashboard

3. PROBLEMS ENCOUNTERED

- Assign cleaner by admin has a minor problem as the cleaner that are already on the same date and time still pop up for other booking on the same date and time.

4. SELF EVALUATION OF THE PROGRESS

Overall, progress has been steady despite encountering some challenges. The initial groundwork has been laid, and there is a clear direction for moving forward with the project. However, there is room for improvement in time management and overcoming obstacles encountered during the research process. Moving forward, I

aim to address these challenges proactively and maintain a proactive approach to project management.

Supervisor's signature

Student's signature

FINAL YEAR PROJECT WEEKLY REPORT

(Project II)

Trimester, Year: Y3S2	**Study week no.: 13**
Student Name & ID: Lim Ming Xuan(21ACB06838)	
Supervisor: Dr Noraini Binti Ibrahim	
Project Title: E-clean House Apps for Kampar Residential	

1. WORK DONE

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

- Done creating dashboard of total sales graph, cleaner sales graph, and cleaning type sales graph for admin.
- Cleaner can view only the booking that admin assign to them
- Integrate google map API for cleaner to bring them to user location
- Filtering date for dashboard

2. WORK TO BE DONE

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

3. PROBLEMS ENCOUNTERED

- The total order, top 5 sales, and top 5 cleaning type will not change according to the date set to the graph; it only brings the overall.
- API`integration.

4. SELF EVALUATION OF THE PROGRESS

Overall, progress has been steady despite encountering some challenges. The initial groundwork has been laid, and there is a clear direction for moving forward with the project. However, there is room for improvement in time management and overcoming obstacles encountered during the research process. Moving forward, I aim to address these challenges proactively and maintain a proactive approach to project management.

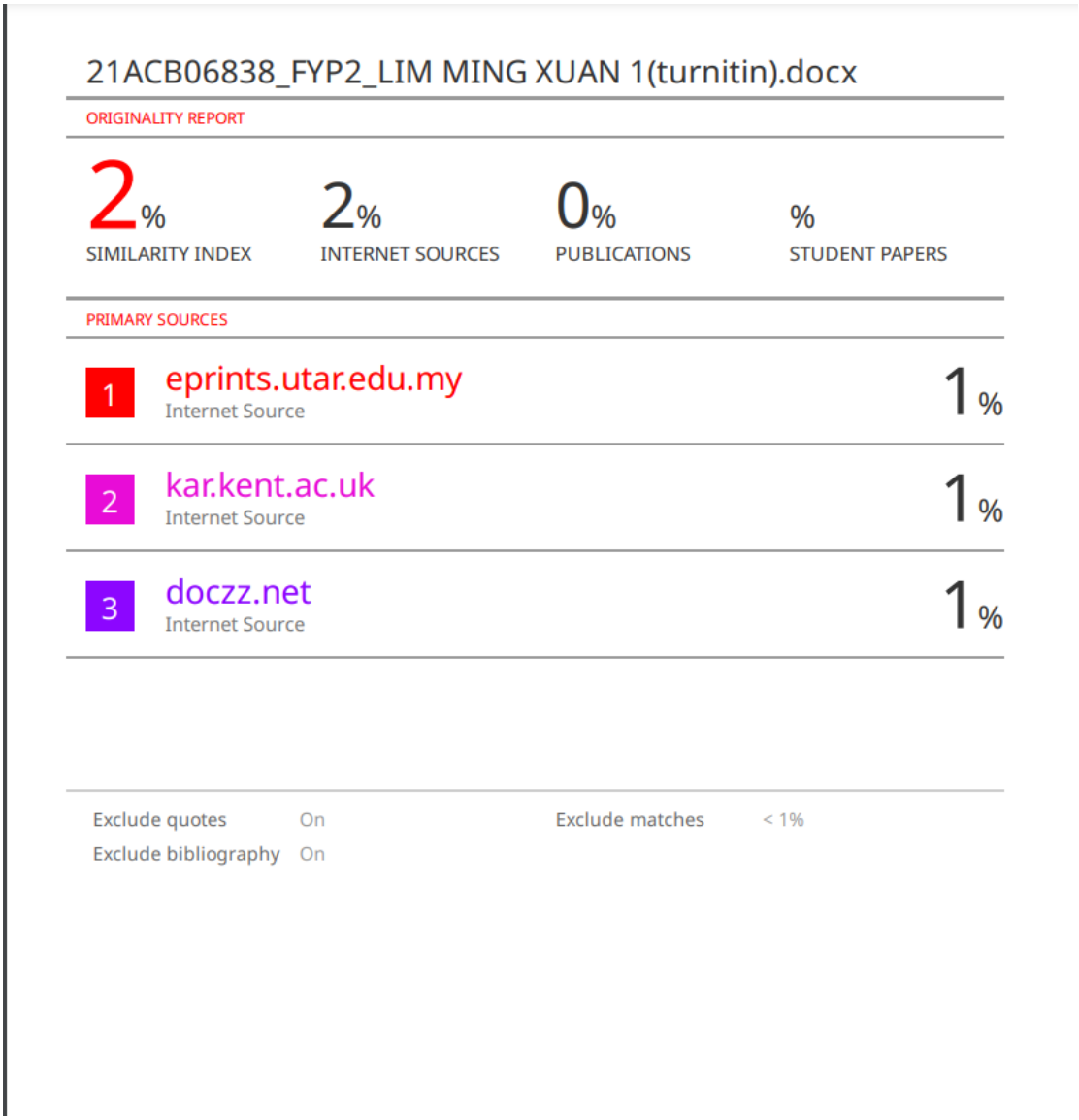
Supervisor's signature

Student's signature

POSTER


E-CLEAN HOUSE APPS FOR
KAMPAR RESIDENTIAL
FACULTY OF INFORMATION AND TECHNOLOGY
UTAR
UNIVERSITI TUNKU ABDUL RAHMAN
Introduction
Smartphone apps revolutionize service access, offering cleaning guides and remote booking.
E-clean house apps simplify finding reliable services, crucial for cleanliness in homes.
objectives
• to enhance customer retention and engagement
• to improve satisfaction and trust
• to enhance service quality and communication
Project Developer
Lim Ming Xuan
Project Supervisor
Dr Noraini Binti Ibrahim

PLAGIARISM CHECK RESULT



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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.

Signature of Supervisor

Name: Dr. Noraini binti Ibrahim

Date: 13/09/2024

Signature of Co-Supervisor

Name: _____

Date: _____

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√	Abstract
√	Table of Contents
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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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