

**A Second-Hand Clothing Application with Recommendation and Personal Wardrobe  
Management**

BY

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**FACULTY/INSTITUTE\* OF INFORMATION AND COMMUNICATION TECHNOLOGY**

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## **ABSTRACT**

Currently, the market is dominated in more general used second-hand application and few used second-hand clothing related applications. Therefore, this proposal is related to the development of a second-hand clothing application that is designed to enhance the user experience and improve the problems of existing applications. The project is to solve the problems of the existing application, such as the insufficient personal wardrobe management systems, lack of tool for providing outfit recommendation tools and insufficient trust in second-hand e-commerce transactions. These limitations are determined through the reading of the journal article, testing and review of the existing application in the market and the data from the survey. To solve this limitation, some comprehensive features such as a personal wardrobe management system with outfit planning that can also link with second-hand item market, outfit recommendation driven by generative ai, personalized recommendations based on their personal preferences will be included. In addition, the meet-up features will also be included that ensure buyers and sellers can have a more secure and convenient transactions. The methodology that was employed to develop this project is a hybrid methodology, which includes the agile and waterfall approaches. The tool that was used to develop this project is React Native with integrates Firebase as the storage for the information in this application.

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## **LIST OF ABBREVIATIONS**

<i>AI</i>	Artificial Intelligent
<i>UI</i>	User Interface
<i>UX</i>	User Experience

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## **CHAPTER 1 Introduction**

### **1.1 Problem Statement and Motivation**

Although the existing applications available in the Google Play Store provide function well, they remain areas for improvement or solve some technical and non-technical issues. Below are the improvements or problems identified:

#### **Problem Statement 1: Insufficient Personal Wardrobe Management System in Existing Second-Hand Application**

There is a lack of second-hand clothing applications offering personal wardrobe management systems for users. This will cause challenges for people who struggle with the organization and tracking of their clothing items. Without this personal wardrobe management system, people often forget the clothes, resulting in inefficient utilization of one's wardrobe space [1]. People will also frequently overlook clothing items, especially when they didn't store properly or were unnoticed [1]. Furthermore, the absence of a personal wardrobe management system in second-hand clothing applications will create an additional barrier for users. Instead of seamlessly integrating the existing closet content, users must manually retake the photo of the clothing items, insert the information if they want to sell their clothing items, resulting in wasted time and reduced efficiency. The lack of a streamlined management system not only hinder the user's ability to organize and maintain the wardrobe, but it also affects the user experience. Hence, it is important to have this feature that can improve user satisfaction and maximize the potential of second-hand applications to revolutionize sustainable fashion consumption.

#### **Problem Statement 2: Lack of tool for Providing Outfit Recommendations**

Many people are facing some challenges in deciding what to wear and what to buy to complement the existing clothes that they bought. Whether it's choosing the right outfit for a specific occasion or ensuring the new clothing perfectly matches the existing clothing that they bought, many of them need some guidance and advice.

Absence a tool that helps in selecting clothing, people may feel indecisive, and cause wasting time and may feel dissatisfied with their clothing choices. According to a finding from Segment in 2023 [2], 56% of consumers are more likely to become repeat buyers if the platform has a personalized experience. The result from Segment highlighted that an application should be improved by artificial intelligence so that it can foster customer loyalty.

Hence, it is important to have a tool that provides an outfit recommendation based on their personal preference, body type, size and so on. This tool not only can save their time, but it also reduces any uncertainty about dressing in various situations. With this easy access to guidance and advice, this tool allows people to make their fashion choices with more confidence and can express their own personal style early.

### **Problem Statement 3: Insufficient Trust in Second-Hand E-Commerce Transactions**

Many existing second-hand applications fail to incorporate any meet-up function. The absence of a meet-up feature not only hinders the ability of the user to inspect the item, Without the meet-up features, users may loss the opportunity to know the condition or quality of the item which can cause uncertainty and indecision when making a purchase. Besides, the lack of meet up feature diminishes the potential for building trust between buyers and sellers. Based on a report from SaleCycle [3], clothing and shoes are the product categories that are most commonly returned in online which also comprising a 56% of return. Besides, the report also highlighted that 80.2% of the item returned were due to the product being damaged or broken, while 64.2% were due to the items not matching in their online description. This report showed the difficulties faced by online sellers that affect customer satisfaction and the trust of customer. Therefore, it is important to have tools that include face-to-face transactions that provide a unique opportunity for a buyer and seller to communicate directly, ask questions, and so on, which can enhance the trust in this transaction. It really important because users can only depend on the pictures and description, which may be fake or not reflect the true condition of the item without this feature. To address this issue, it is important that a second-hand apps involve this

meet-up features into it so that it is safe, convenient that can increase the user satisfaction.

### **1.2 Project Objectives**

In this project, the objective that will be focus on developing a user-friendly second-hand clothing application that focusing on a streamlined second-hand clothing transaction process. In this transaction process, it will more be focusing on purchasing, selling, and bidding functionalities to increase the user satisfaction and engagement. It is also enabling users to post their clothing items that need to be sold, search for or browse the clothing items that are needed and can participate in a bidding event. This application also enables them to filter the posts based on their personal preferences and so on. Furthermore, it also has the social interaction features that enable user to comment or discuss on items which also fostering a sense of community.

Besides, this project will integrate with a personal wardrobe management system into the second-hand clothing application. Having this wardrobe management system, users will enable users to organize and manage their clothing inventory in more effective ways though categorization and tagging features. Users can easily identify specific clothing by just searching using this application which makes it more convenient for user. Users can add, delete, edit, and even move the clothing item between their personal wardrobe and the second-hand market in the application. It will also extensive information showing the number of clothes the user has put into this personal wardrobe management. In this personal wardrobe management system, it will contain the outfit planning which system will automatically generate a set of outfits after user pressed the suggestion button that provided based on the items in the wardrobe or clothing item from second-hand item market. If user want to buy a pant from the second-hand item market which matches with the existing clothing item which already in the personal wardrobe, user can also get ideas by pressing a button, which will navigate to the second-hand clothing item. that suggested. Suggested clothing items can also be saved in the app.

Furthermore, this project includes developing an outfit recommendation driven by generative AI, personalized recommendations based on their personal preferences and

## CHAPTER 1

so on. Recommendation chatbot is to address the challenges that people are facing in deciding what to wear or what to buy in second-hand marketing coordinating with their existing clothing. In addition, personalized recommendation also aims to recommend some second-hand clothing items that may interest by the users. By having this recommendation chatbot and personalized recommendation system, the system will analyze the user preference, body type, size and so on and generate the personalized clothing recommendations for them. This tool is not only simplifying the clothing selection process, but users can also have the confidence to make fashion decisions that match their personal preferences which enhances the overall experience within the application.

Lastly, this project also includes meet-up features within the application that can ensure a safe and convenient transaction between buyers and sellers. This involves some various enhancements that enable sellers to add a date for buyers to have a meet-up section, have the maximum number of buyers attend, and have a scheduling tool that enables users to coordinate meetups efficiently. This can streamline the meet-up process and foster trust between buyers and sellers because it enables them to view the quality and condition of the second-hand clothing items.

- The goal of the project is to develop a user-friendly second-hand clothing application that streamlines the transaction process with a focus on buying, selling and bidding of second-hand clothing item.
- To integrate a personal wardrobe management system into second-hand clothing application that provides efficient organization and tracking of the clothing inventory and seamless movement between personal wardrobe and second-hand marketplace.
- To implement outfit recommendations into second-hand clothing application that providing guidance and advice in clothing choosing or matching.
- To implement meet-up features that can ensure a safe and convenient transaction between buyers and sellers.

### **1.3 Project Scope**

The main objective for this project is to create an innovative and improved second-hand clothing application which named “Kellyon” that will revolutionize the user experience in the second-hand clothing market. At the end of this project, it will deliver a fully functional and user-friendly software application that can be accessed via mobile devices. It aimed at addressing the identified problem and add the additional features in the existing second-hand application which were a lack of a personal wardrobe management system, lack of recommendation tool, and insufficient meet-up features in the existing second-hand application. Hence, it will includes a personal wardrobe management system to allow users to organize and manage their clothing efficiently through tagging features and categorization. It will includes an outfit recommendation to provide some guidance or advice on clothing based on their personal preferences, size and so on. Lastly, it also provides meet-up features to enable buyers to have an opportunity to check the quality or condition of the second-hand clothing item. In conclusion, the project scope will include all the solutions or features that need to improve based on the problem and result in producing a comprehensive and innovative second-hand clothing application for users that enhances user satisfaction and is more convenient for users.

### **1.4 Impact, Significance and Contributions**

This project is dedicated to reshaping a second-hand clothing application by addressing some limitation present in the existing application, improving them and unique features that are different from other existing applications. Even though the existing second-hand clothing application offers an effective platform for users, it only offers limited functionality and simplicity. Having more features that provide convenience for users, or those features that can attract users to use those applications, is very important because provide provides a competitive advantage and helps fill an important gap in the market. As a result, the project, which is a second-hand clothing application that I will develop called "Kellyon," will have more upgraded versions than other second-hand applications. It enables users to more efficiently manage their clothing inventory and can drag and drop to the second marketplace without having to locate the clothing item from a physical wardrobe and take a picture of it. Besides, users can also get some personalized advice or guidance by using our outfit

recommendations and participating in a physical meeting with the seller to check the condition and quality of the clothing items. This initiative coincides with a growing global awareness of environmental sustainability and ethical consumption, which makes the project not only relevant but also emphasizes shaping the future of the fashion industry. Hence, this project offers a solution that meets the needs of the second-hand clothing market but also promotes sustainability and represents a significant development in the field to look forward to.

### **1.5 Project Background**

Due to the rise of online marketplaces, consumer attitudes have shifted toward sustainable fashion, growing environmental awareness has contributed to the enormous expansion in the second-hand clothes sector in recent years. Based on the report by ThredUp, the global market for second-hand clothing market is projected to reach \$77 billion by 2025, with a major contribution from online resale [4]. Second-hand clothing apps are in high demand because consumers are more conscious or aware of the environment which impacts fast fashion and seek alternatives to traditional retail.

There are some second-hand applications that have a significant gap in providing users with a personal management system, which may pose challenges for users to track their clothing items or directly drag and drop them to the second-hand market if they want to sell them. In addition, outfit recommendation and meet-up features weren't provided by Depop or other existing second-hand applications.

Fortunately, the emergence of artificial intelligence (AI) technology has provided a new opportunity to address those challenges. In this project, it has enhanced the user experience with an AI driven outfit recommendation system. It uses sophisticated algorithms that provided by third party to provide advice based on personal preference, body size, fashion trends, and so on [5]. In addition, having a meet-up feature allows customers to schedule the time to view the quality and condition of product, increasing the trust between buyers and sellers. Furthermore, having a personal wardrobe management system with outfit planning improved the efficiency and organization of managing the clothing item by tagging and classification [6].

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In a nutshell, the significance of this project lies in its potential to fill the gaps or solve the challenges in existing second-hand applications and will offer a brand-new platform that already caters to their diverse needs with also focusing on sustainability and ethical consumption. This application not only solves the current market deficiencies, but also used to shape the future application.

### **1.6 Report Organization**

In this report, the content will be divided into 7 chapters. Chapter 1 will introduce the project, covering the problem statement and motivation, objectives and scope of this project, impact, significance and project background. Chapter 2 will present a literature review of platforms such as Vestiaire Collective, Depop, Carousell, The Luxury Closet, and Getwardrobe. It will also include a table comparing features and justifying the features for the proposed application. Chapter 3 will describe the system methodology and approach, including the results of requirement gathering, user requirements, and system design diagrams. These will include Use Case diagrams, Use Case descriptions, Activity diagrams, and a TimeLine. Chapter 4 will focus on system design, covering the system block diagram, system architecture design, system components specifications, class diagrams, and prototypes. Chapter 5 will detail system implementation, including hardware and software setup, system operation, and screenshots of the application. Chapter 6 will involve system evaluation and discussion, including black-box testing, user testing, and objective evaluation. Chapter 7 will conclude the report with a summary of findings and recommendations.



## **CHAPTER 2 Literature Reviews**

### **2.1 Introduction on Literature Review**

In the chapter, a review will be conducted on a few second-hand applications such as Vestiaire Collective, Depop, Carousell and The Luxury Closet. Besides, this review will also be conducted on a personal wardrobe application named Getwardrobe. The review will include an overview of the application, advantages and disadvantages of each application. Additionally, a proposed solution will be presented to address any issue or problem stated that can help enhance their usability, efficiency, user experience and increase the user satisfaction.

### **2.2 Vestiaire Collective**

Vestiaire Collective is an online platform that specializes in the trading of second-hand luxury fashion items which was established in 2009. This platform is target for those who are fashion enthusiasts and collectors as it enables user to buy and sell a wide range of coveted items their clothing, shoes, accessories, vintage items, or luxury bags.

#### **2.2.1 Strengths of Vestiaire Collection**

##### **1. AI-Powered Recommendation**

Vestiaire Collective has personalized recommendations to users based on their preferred size that users inserted or determined by analyzing the most searched items recently on the home page as shown in Figure 2.1. This feature helps users to discover the relevant items they might be interested in, which can enhance their shopping experience.

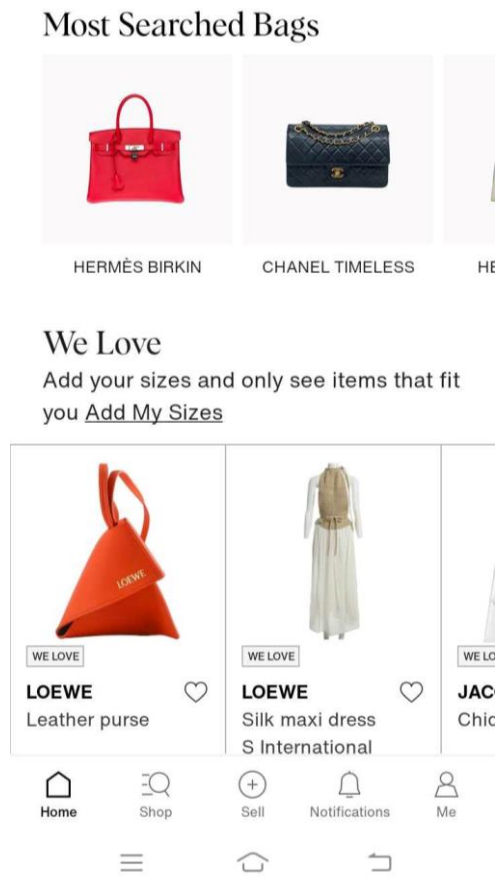


Figure 2.1 Screenshot of the item that recommended by the platform.

## 2. Advanced Search and Filter Option

Vestiaire Collective provide a range of advanced search and filtering features that enable users can effortlessly discover their desired items with ease and efficiency. This platform not only provide users basic keyword searches as shown in Figure 2.2, but it also provides personalized filter such as size personalized filter which will only show all the item based on the sizes that users inserted as shown in Figure 2.3. Besides, it also enable users to filter by size, brand, color, price, deals , discount , location and so on.

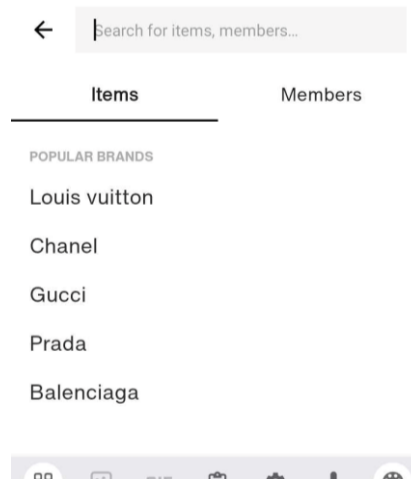


Figure 2.2 Screenshot of the keyword search features.

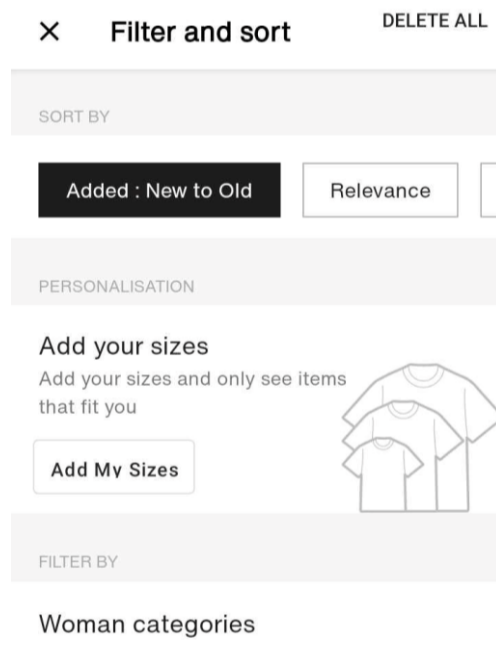


Figure 2.3 Screenshot of the size personalization feature.

## 2.2.2 Weakness of Vestiaire Collection

### 1. Lack of face-to-face interaction

Most of the items that sold it Vestiaire Collection are luxury items, but this platform lacks offer users meet-up features that would allow users to schedule and physically inspect the items before purchase. Lack of face-to-face interaction may provide a

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challenge for users who prefer to check the condition, quality, or verify their authenticity before purchasing. Besides, it may also limit the confidence of some users in completing transactions, as users may feel more comfortable inspecting the luxury item in person before making a purchase.

### 2. Absence of tracking features for items.

Vestiaire Collective doesn't provide any tracking features for users to track their items. It may create challenges for buyers and sellers seeking visibility and transparency for the whole purchasing process. Absence of tracking features may make buyer difficult for buyers to monitor the order status, whether the seller has already delivered the item or not. This lack of visibility can lead to uncertainty and frustration, especially for buyers eager to receive their purchases or sellers waiting for confirmation of successful delivery.

## 2.3 Depop

Depop is not just a second-hand marketplace, it also integrates with social media features that difference with other existing second-hand applications. It was founded by Simon Beckerman in 2011[7]. It not only allows users to buy and sell the items such as clothing, pants, shoes, accessories and so on, it also offers users a unique social networking experience. It does not only focus on transactions, but it also encourages users to interact with other users through a variety of social features. Depop also emphasizes creativity, individuality, and community involvement, making it popular among the younger generation.

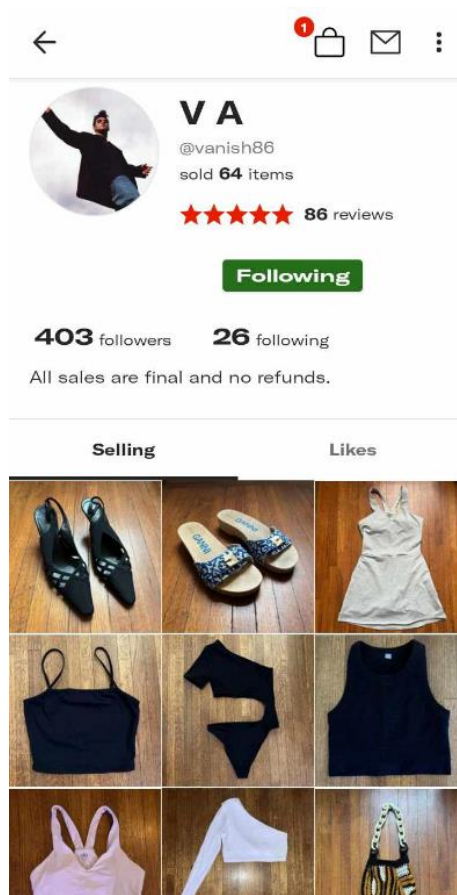
### 2.3.1 Strengths of Depop

#### 1. Social media integration

Depop is a fashion-centric second-hand application that focuses specifically on clothing, accessories, and unique style finds. Depop provides social media integration for users, which is unique among other existing second-hand applications. Besides, Depop provides user profiles that enable users to view the item that they need to sell, following even follower as shown in figure 2.4. Furthermore, it also enables users to

## CHAPTER 2

like, and save the item as shown in figure 2.5. This feature helps in fostering engagement and interaction among users.



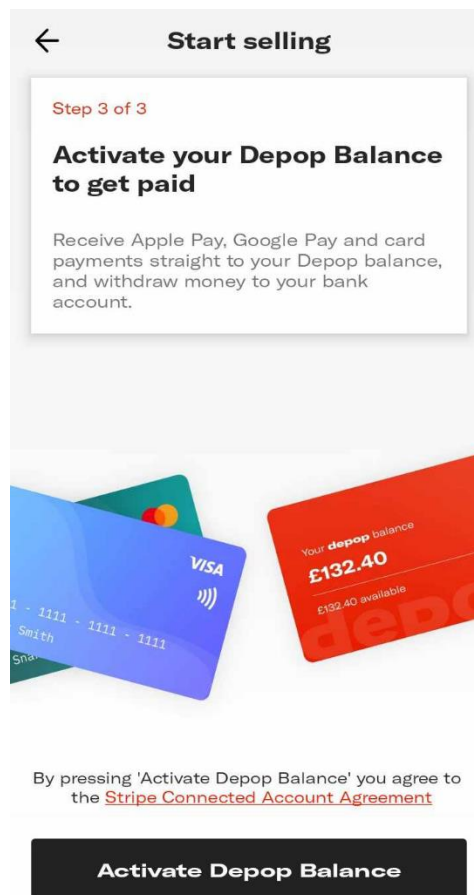
*Figure 2.4 Screenshot of the user profile.*



Figure 2.5 Screenshot of the item post.

2. Have their own payment system.

Depop includes a wallet feature that allows users to deposit funds from various sources, such as Apple Pay, Google Pay, and card payments into their Depop balance, as shown in Figure 2.6. It provides a more convenient and secure way for users to manage transactions within the platform. Besides, it also streamlined the transaction, which simplified the buying and selling experience.



*Figure 2.6 Screenshot of activate Depop balance option.*

### **2.3.2 Weakness of Depop.**

#### **1. Absence of restriction option for users.**

Depop does not offer users the ability to set restrictions, such as country or region. The absence of a restriction option for users can bring challenges for those sellers who only want to sell their items in specific geographic areas. For example, imagine that a seller is in Malaysia who just prefers to sell their item in their area. Without this restriction option, this seller may receive the purchase request from other country, leading to logistical complications and potential issues in shopping costs and shipping time. Besides, sellers may also encounter the language barriers or currency conversion challenges if deal will difference county buyers.

#### **2. Limited social interaction features**

Although Depop integrates with social media features, but Depop doesn't provide any social interaction features for users to discuss or exchange opinions about items. It only provides communication between buyers with sellers through direct messaging and don't have any features that allow users to leave comments. This lack of social interaction features may reduce the opportunity for users to seek advice, share insight or connect with other fashion enthusiasts. Therefore, it is important to have social interaction features that can create a more dynamic environment which allows all users to discuss, share opinions about every clothing item.

### **2.4 Carousell**

Carousell founded in 2012 by Quek Siu Rui, Lucas Ngoo and Marcus Tan [8]. Carousell is a popular second-hand application that enables individuals to search for the preloved item or discover any unique treasures at affordable prices. Besides, Carousell also offers a convenient platform for users to sell and buy a wide variety of item such as fashion, electronics, home goods, luxury, video gaming and so on.

#### **2.4.1 Strengths of Carousell**

1. AI-driven image recognition for listing creating.

Carousell offers an AI-driven image recognition feature for listing creation. When users upload an image of an item, the platform's sophisticated algorithms swiftly analyze the image content and suggest the most relevant category for the item as shown in Figure 2.7. This feature simplifies the selling process and also ensures that the listing is more accurate.



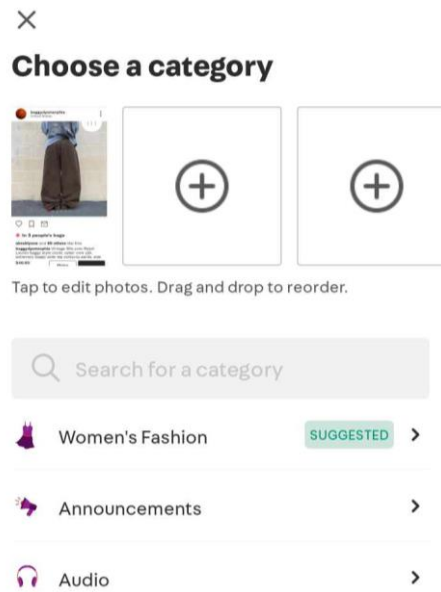


Figure 2.7 Screenshot of example AI-driven image recognition tools recognize image content.

## 2. AI-driven image search for browsing and discovery.

Carousell offers an AI-driven image search for browsing and discovery as shown in Figure 2.8. Having this feature, users no need to search the item by keyword. This feature improves the search experience by enabling users to search the similar item easily and quickly that can help in saving the time and effort in the browsing process.

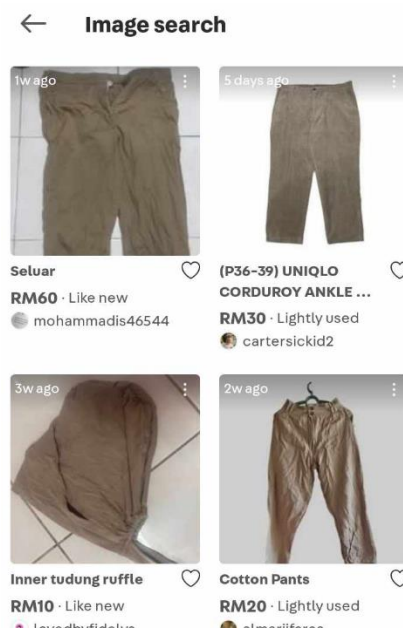
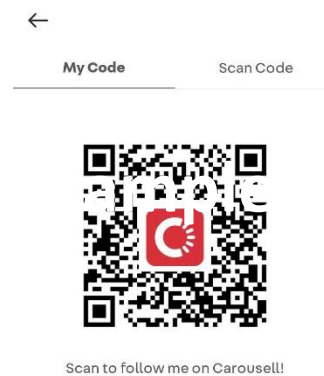


Figure 2.8 Screenshot of result after uploading a khaki pants.

## 3. QR generation for account

## CHAPTER 2

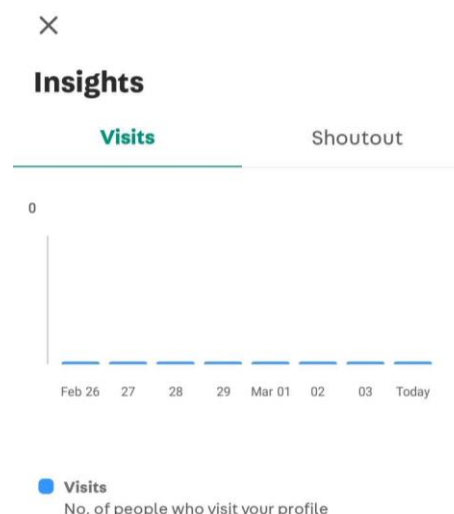
Carousell offers a QR code generation for user accounts that can in streamlining the process of connecting with other users as shown in Figure 2.9. Users can easily share their QR code when they want to exchange the contract information.



*Figure 2.9 Screenshot of example QR code*

#### 4. Statistics for Number of Profile Visits and Shoutouts.

Carousell offers users with statistics on the number of profile visits and frequency of shoutouts to potential users, as shown in figure 2.10. This feature allows users to provide valuable feedback which can help the users when making decision, identify the popular listings and also enhance their overall selling performance on the platform.



*Figure 2.10 Screenshot of statistics example*

### 2.4.2 Weakness of Carousell.

#### 1. Limited social interaction features

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Carousell also doesn't provide any social interaction features for users to discuss or exchange opinions about items same as Depop. It only provides communication between buyers with sellers through direct messaging and don't have any features that allow users to leave comments. This absence of social interaction features makes it harder for consumers to connect with other fashion enthusiasts. In the absence of these elements, users might feel alone. Hence, it is important to include social interaction features that can create a more dynamic environment which allows all users to discuss, share opinions about every clothing item.

### 2. Lack of option for filter item characteristics

Carousell faces a challenge in the form of a filtering option for item characteristics such as color, appearance, material and so on. It causes users to need to manually include these item details in the description so that other users can be search for them easily, but this may be less efficient and user-friendly. Therefore, it is better to implement a robust filtering system that allows users to filter based on specific characteristics which can increase the usability and facilitate the platform.

## **2.5 The Luxury Closet**

The luxury closet founded in 2011 is a second-hand platform that specializes in buying and selling luxury fashion items such as handbags, shoes, watch, clothing, and so on. It targets the audience that is seeking for the top luxury brands product such as Chanel, Gucci, Louis Vuitton, Rolex , Dior and so on. This platform offers handpicked pre-owned and new items with tags item from individual sellers around the world.

### **2.5.1 Strengths of The Luxury Closet**

#### 1. Detail Designer Filter

The luxury closet provides a detailed filtering option based on the designer's name as shown in Figure 2.11. The feature provides users with unparalleled precision in narrowing down search results to specific designer brands. It can help in ensuring a high-end shopping experience that matches the personal preferences.

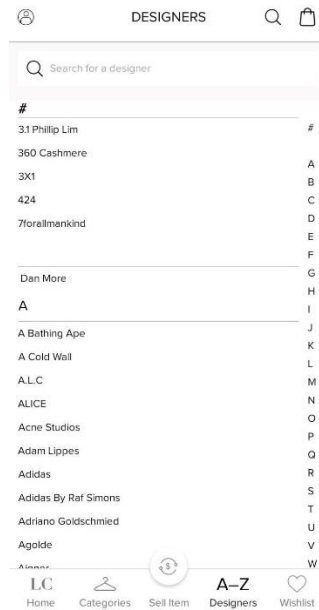
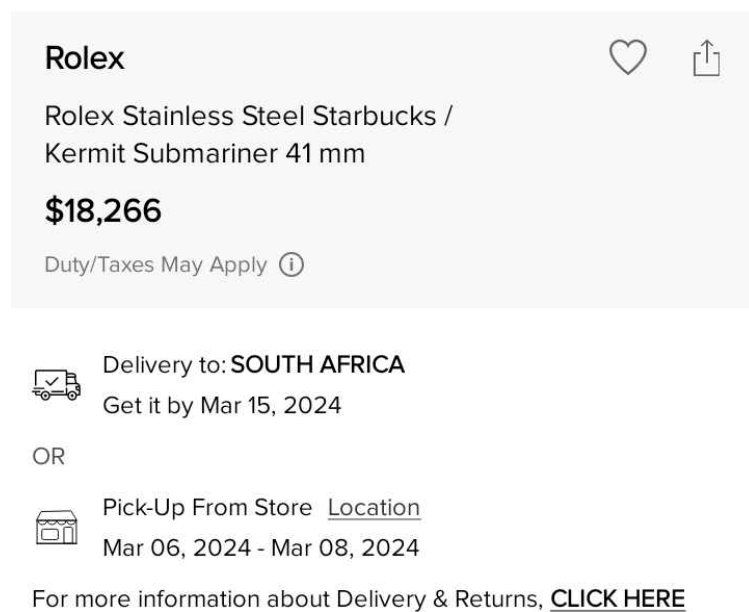


Figure 2.11 Screenshot of detail designer filter

## 2. Pick-up service

In the luxury closet, it offers the pick-up service for users as shown in Figure 2.12. This unique feature allows users have the option to collect their purchases in person and can mitigating the concern regarding with the missed packages. Having this features not only faster a sense of the trust between sellers and users but also enhances the overall user experiences as providing a shopping experience that tailored to the individual needs.



*Figure 2.12 Screenshot of pick up service's example*

3. Have the item verification process.

Due to The Luxury Closet emphasizes user trust, therefore it offers item verification process before users wants to sell any item in that platform. Each item will undergo various verification processes to ensure the quality of the produce and determine whether the item is real or not. By offering this process, The Luxury Closet provides users with confidence and they can shop with peace of mind as all the items in The Luxury Closet are real and high quality.

**2.5.2 Weakness of The Luxury Closet.**

1. Lack of visibility into seller's profile or background

Although The Luxury Closet provides a unique pick-up service, but it doesn't provide the seller's profile background, which includes the seller's photo, review, and so on. Without displaying the seller's information, users may feel uncertain about the seller's reliability, especially during the pick-up process. Besides, it may impact their purchasing decisions and overall trust in the platform.

## 2.6 Getwardrobe

Getwardrobe is a fashion application that offers the virtual closet which providing users with a personal wardrobe management system and outfit planning. Besides, Getwardrobe also provides various features such as listings that enable users to plan their shopping lists and so on.

### 2.6.1 Strengths of Getwardrobe

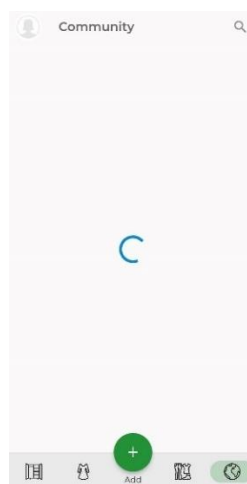
1. Have a smart personal wardrobe management system.

Getwardrobe offers a smart personal wardrobe by using an advanced image recognition technology which enables users to easily add their clothing items to their personal wardrobe by just simply taking photo or uploading photo. It streamlines the personal management process that enhancing the user experience.

### 2.6.2 Weakness of Getwardrobe.

1. Issues with the community page

In Getwardrobe's community page, there are issues with the response time and display errors. The page will fail to load the item on the community page and have a bug that prevents proper interaction as shown in Figure 2.13. Even after waiting for 15 minutes, users are still unable to access to the community features.



*Figure 2.13 Screenshot of issues with community page*

2. Image detection issues when recognizing the category of item.

When a user uploads an image to their smart personal wardrobe, but the image detection for the category is incorrect. For example, as depicted in Figure 2.14, the image that was uploaded is a dress, but the resulting of the category is perfume. This misclassification can lead to confusion and frustration for users browsing the platform, as they may encounter unrelated product listings.

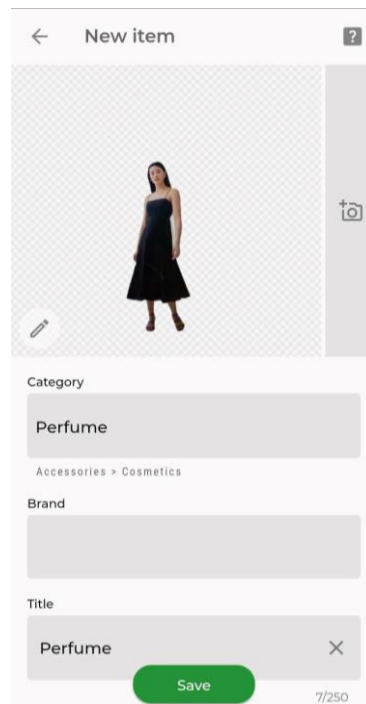


Figure 2.14 Screenshot of image detection issues when recognizing the item’s category

## 2.7 Table Comparison of features

Table 2.1 Table of comparison between the application.

	Vestiaire Collective	Depop	Carousell	The Luxury Closet	Getwardrobe	Proposed Application (Kellyon)
<b>Second-hand item marketplace</b>	/	/	/	/	X	/
<b>Personal wardrobe management</b>	X	X	X	X	/	/

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<b>system</b>						
<b>Outfit recommendation</b>	X	X	X	X	X	/
<b>Post Personalized recommendation</b>	/	/	/	X	X	/
<b>Meet-up features</b>	X	X	X	/	X	/
<b>QR generation for account</b>	X	X	/	X	X	X
<b>Advanced Search and Filter Option</b>	/	X	X	/	X	/
<b>Tracking features for items</b>	X	/	/	/	X	/
<b>Social interaction features(comment )</b>	/	X	X	X	X	/
<b>Social media integration (User profile)</b>	X	/	X	X	X	/
<b>AI-driven image recognition for listing creating</b>	X	X	/	X	/	/
<b>AI-driven image search for browsing and discovery</b>	X	X	/	X	X	X
<b>Own Payment system</b>	X	/	/	/	X	X
<b>Statistics for Number of Profile Visits and</b>	X	X	/	X	X	X



<b>Shoutouts</b>						
<b>item verification process</b>	X	X	/	/	X	X
<b>Make offer feature</b>	/	/	/	X	X	X
<b>Bidding system</b>	X	X	X	X	X	/

### 2.7.1 Justification of Features for Proposed Application

#### 1. Second-hand item marketplace

In this proposed application which named “Kellyon”, there will be a second-hand item marketplace which enable users to involve in a streamlined second-hand clothing transaction process. In this transaction process, focusing more on purchasing, selling, and bidding functionalities will increase user satisfaction and engagement.

#### 2. Personal wardrobe management system

There will also be a personal wardrobe management system for users. It will enable users to organize and manage their clothing inventory in more effective ways through categorization and tagging features. Other than that, it enables users to add, delete, edit, and even can move the clothing item between their personal wardrobe and the second-hand market in the application. It will also extensive information showing the number of clothes the user has put into this personal wardrobe management. Furthermore, it will contain the outfit planning which system will automatically generate a set of outfits after user pressed the suggestion button that provided based on the items in the wardrobe or clothing item from second-hand item market. User not only can match the clothes from personal wardrobe, they also can match the clothes from second-hand item market.

#### 3. Outfit recommendation

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Outfit recommendation will provide advice for users on what to wear or what to buy in the second-hand marketing coordinating with their existing clothing. With this feature, users can simply open a chat and inquire about what to wear or purchase.

### **4. Post Personalized Recommendation**

There will also be a post personalized recommendation which will be based on the searching, user preferences, and so on to recommend the second-hand clothing item for users. These recommendations will match personal preferences, ensuring a delightful shopping experience.

### **5. Meet-up features**

In this proposed application, it also includes meet-up features that can ensure the safe and convenient transaction between buyers and sellers. It enables sellers to add a date for buyer to have a meet-up section, having the maximum buyer attend, and a scheduling tool that enables users to coordinate meetups efficiently.

### **6. Advanced Search and Filter Option**

This proposed application will also offer a range of advanced search and filtering features that enable users to effortlessly discover their desired second-hand clothing item. Users can filter the second-hand clothing items by type, category, color, size, seller ratings, condition and so on. Having this feature, it also helps in streamlining the browsing process, saving user's time and effort and even increasing the user experience.

### **7. Tracking features for items**

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This proposed application will also provide tracking features for items to transparency for the whole purchasing process, Users can monitor the order status whether the seller already received the item or not. This tracking feature will provide peace of mind by ensuring that users are kept informed of their item. Having this tracking feature , it can foster the user trust and satisfaction which also enhances the user shopping experience.

### **8. Social interaction features (comment)**

This proposed application will also provide social interaction features that enable users to discuss or exchange opinions about the second-hand clothing item below the post. Users can leave comments below the post and communicate with difference users. Having a social interaction features that can create a more dynamic environment which allows all users to discuss, share opinions on every clothing item.

### **9. Social media integration (User profile)**

This proposed application will have a user profile page that serves as a personalization center for users to manage their posted and their saved second-hand items. Other users have the ability to view their posted second-hand item which is also the item that needs to be sold by the user in the user page. In addition, the application also provides an option for users to choose whether they want to save the item as a bookmark item for future purchases.

### **10. Bidding feature**

This proposed application also introduces a bidding feature. The seller has the autonomy to set the minimum amount of the second-hand clothing item, then the buyer can submit the bids based on their valuation of the item. Seller retains the option to select the desired amount of the bids. Having these bidding features can help in enhancing user engagement and promoting competitive pricing that encourages active participation from user

## **CHAPTER 3 System Methodology/Approach**

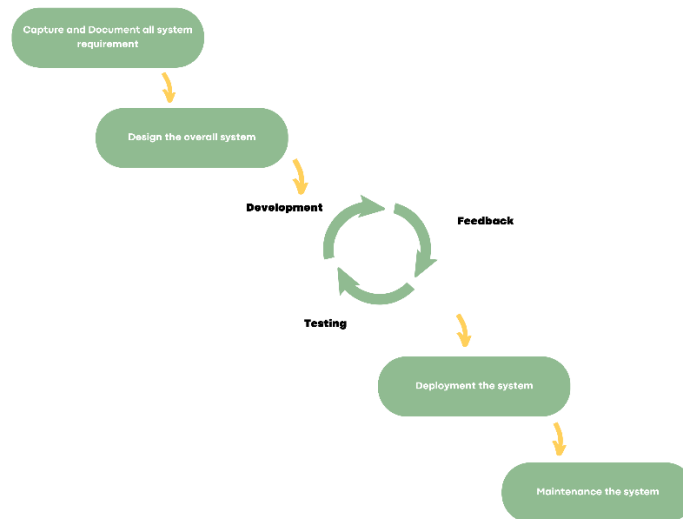
### **3.1 Methodology**

In developing this project, “Kellyon”, a second-hand clothing application, I have employed a hybrid methodology which incorporates the elements of Agile and Waterfall approaches, as illustrated in Figure 3.0. The development of this project will follow agile principles such as iterative development, continuous change, and adaptability, while also using structured phases of the waterfall approach [9].

This project will employ waterfall approaches such as the sequential progress and documentation [10]. This project will also follow well-defined phases, including requirements, design, implementation, integration and testing, deployment, and maintenance [10]. Comprehensive documentation will be maintained throughout the project life cycle that ensure clarity and accountability.

At the same time, agile approaches will more prioritize the flexibility of the project, which includes the iterative cycle of planning, building, testing, and reviewing. But I will not apply the agile sprint to this one-person project; the program will continue with the other agile values, such as responsiveness to change and incremental progress.

This hybrid approach aims to utilize the strengths of both agile and waterfall approaches to prove a structured but adaptable approach to change for project realization. The agile principle is responsible for the flexibility of the project, while the waterfall principle provides clarity and structure, which include comprehensive planning and documentation. This approach maximized efficiency and quality while accommodating the solo nature of the project.



*Figure 3.1 Hybrid process*

## 3.2 System Requirement

### 3.2.1 Software

#### 1. Visual Studio Code

The reason for chosen the Visual studio code is because it is lightweight but is a powerful developer technology such as graphical debugging, imported modules and so on [11]. Visual Studio Code also a tool for web and mobile technologies that can built-in support for Node.js development. By using this visual studio code, it can help in shortening the development process for this project.

#### 2. React Native

React Native is an open-source UI software framework that can use in developing this project and it is suitable to develop web or mobile application for IOS and Android [12]. React Native enable the developer to use the React framework which is JavaScript Library. By using this React Native, it also allows developer to develop their application more quickly.

#### 3. Firebase

To store the data in real time, the application that chosen to be used is Google Firebase. The reason of choosing Google Firebase is because it is a perfect tool that enable secure direct client-side code access to the database and

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contain many back ends service such as Cloud Function, Cloud Messaging, Authentication and so on.

### 4. Node.js

Node.js is a free open-source server that allows developer to run the JavaScript. For this project, I will use Node.js and visual studio code to build a fast mobile application.

### 5. Expo

Expo can provide a tool and service that can use in testing or previewing the React Native application in real-time [13]. It enables me to make the changes or update instantly. This Expo app allows developers to test the React Native application directly on the physical device.

## 3.2.2 Hardware

### 1. Laptop

The reason that involves the laptop in this project is because need to run the tools and write the code that use to developer a mobile application.

*Table 3.1 Table of laptop information.*

Description	Specifications
Model	Asus Vivobook A512FL
Processor	Intel i5 8265U
Operating System	Window 10
Memory	4GB ,DDR4-2666
Storage	512GB SSF

### 2. Android mobile device

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The reason that involves the mobile device in this project is because it can be used for testing the mobile application.

*Table 3.2 Table of android mobile device information.*

Description	Specifications
Model	Oppo A5s
Processor	Mediatek MT6765 Helio P35
RAM	2GB
Storage	32GB

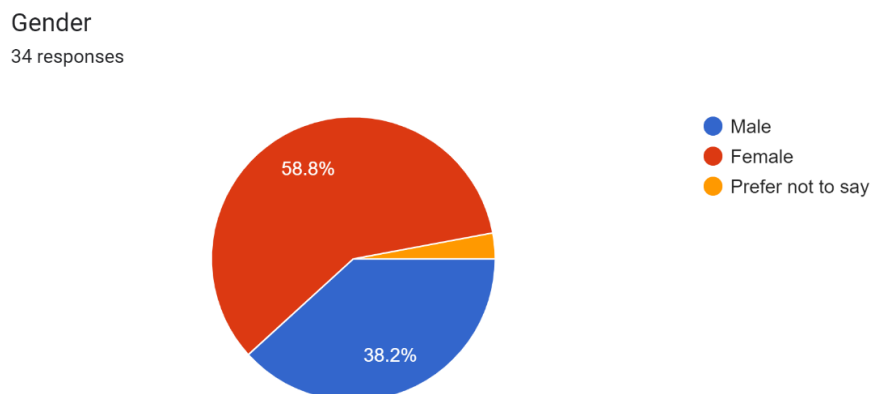
### 3.3 Requirement Gathering

#### 3.3.1 Methodologies

The primary aim of conducting this survey is to understand the needs and preferences of people regarding the project objectives of this project which include development of a second-hand application that has features such as personal wardrobe management system, outfit recommendations and meet up functionalities. The survey will include participants across various age groups, with a total of 34 participants that providing us with a rich dataset for an in-depth exploration of their perceptions. The gathered result will be collected and summarized below all the charts below to provide a clear and insightful representation of difference viewpoints and ethical considerations within the surveyed population.

#### 3.3.2 Data Analysis

Question 1:



*Figure 3.2 Percentage of the Participants' Gender*

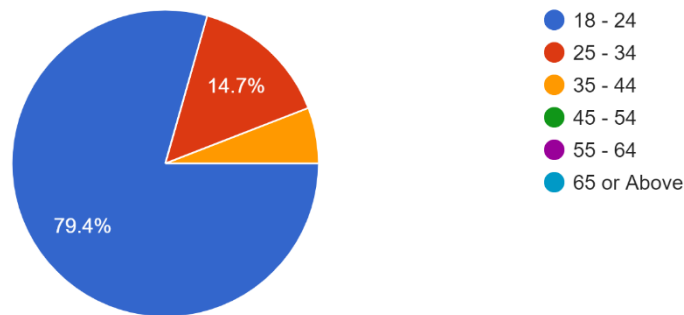
The majority of participants identified themselves as female which contains of 58.8% , followed by male which is the 38.2% . A minority of 2.9% of participants unwilling to disclose their gender.

Question 2:



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Age  
34 responses

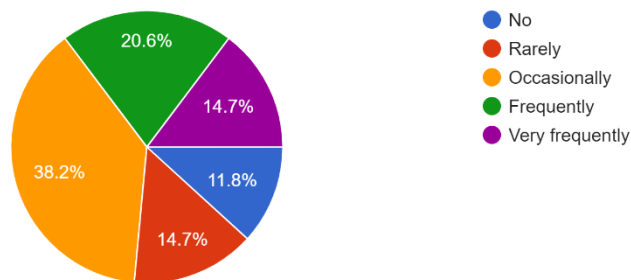


*Figure 3.3 Percentage of the participants' age*

According to the Figure 3.3, the largest age group was 18 to 24 years old , which contains 79.4% of participants , followed by the 25 to 34 years old which contains 14.7% of participants. Then will be the 35 to 44 years old of participants. There were no older respondents.

Question 3: How often do you shop for second-hand clothing?

How often do you shop for second-hand clothing?  
34 responses



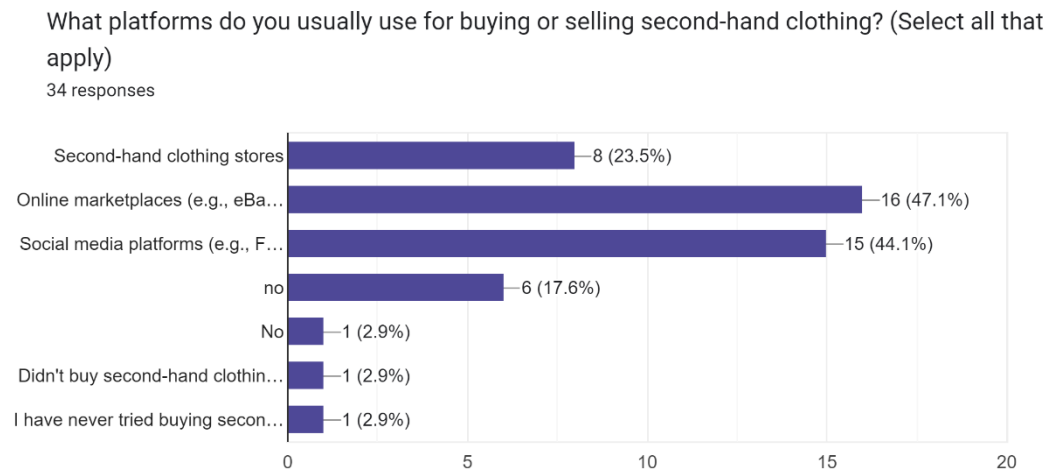
*Figure 3.4 Percentage of the second-hand clothing shopping frequency*

According to Figure 3.4, a large proportion of participants said they buy second-hand clothing occasionally, comprising 38.2% of total. Then, 20.6% of participants stated they buy second-hand clothing frequently. 14.7% of participants said they buy second-hand clothing very frequently. Similarly, 14.7% said they buy second-hand clothing rarely. 11.8% of participants said they didn't buy second-hand clothing. In

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conclusion, it can be inferred that most of the participants will still purchase second-hand clothing but not that frequently.

### Question 4:



*Figure 3.5 Percentage of the preferred platform used by participants in buying and selling the second-hand clothing.*

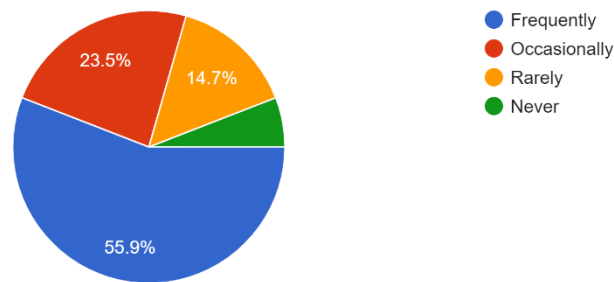
According to Figure 3.5, the most commonly that participants used for buying and selling the second-hand clothing is online marketplaces (e.g. eBay, Depop) , accounting for 47.1% . 44.1% of the participants used the social media platform (e.g. Facebook Marketplace, Instagram, Xiao Hong Shu) , followed by 23.5% of the participants buy physically in second-hand clothing stores. The remaining participants have not purchased second-hand clothes or tried any second-hand clothing application before.

### Question 5:

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Have you ever experienced difficulties in organizing or tracking your clothing items?

34 responses



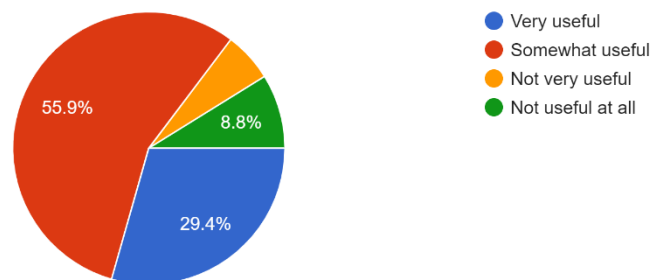
*Figure 3.6 Percentage of the participants who experiencing difficulties in organizing or tracking the clothing items.*

According to Figure 3.6, the majority of participants have difficulties in organizing or tracking the clothing items frequently which accounting comprising 55.9% of total , followed by occasionally which comprising of 23.5% of total However, there still have 14.7% of participants rarely have the difficulties and 5.9% of participants never have these difficulties.

### Question 6:

Would you find value in utilizing a personal wardrobe management system integrated with outfit planning functionalities within a second-hand clothing application?

34 responses



*Figure 3.7 Percentage of the participants' perception of personal wardrobe management system*

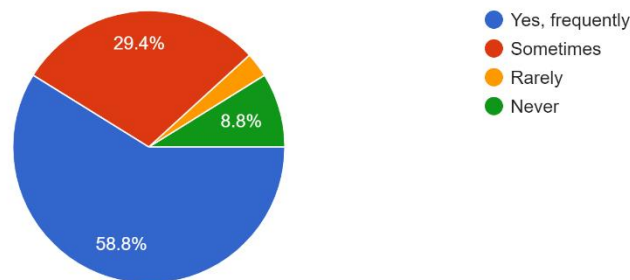
According to Figure 3.7, majority of participants believed the idea of personal wardrobe management system would be useful, with 55.9% of participants said it is

## CHAPTER 3

somewhat useful and 29.4% of participants said it is very useful. However, there still have participant stated that it is not useful which comprising 5.9% of total said not very useful and 8.8% of total said not useful.

### Question 7:

Do you often struggle with deciding what to wear?  
34 responses

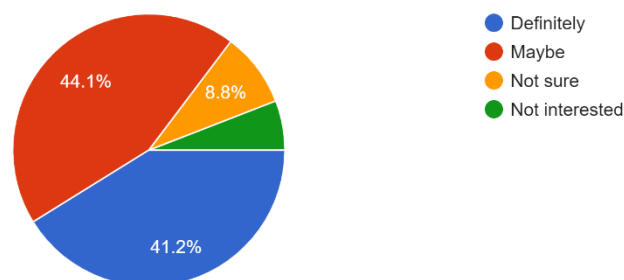


*Figure 3.8 Percentage of the participants who experiencing struggle with deciding what to wear*

According to Figure 3.8, majority of the participants struggle in deciding what to wear comprising 58.8% of total, followed by occasionally that comprising 29.4%. However, some participants rarely and never experience this struggle.

### Question 8 :

Would you appreciate a tool that provides outfit recommendations based on your personal preference, with the option to ask for recommendations through chatbot ?  
34 responses



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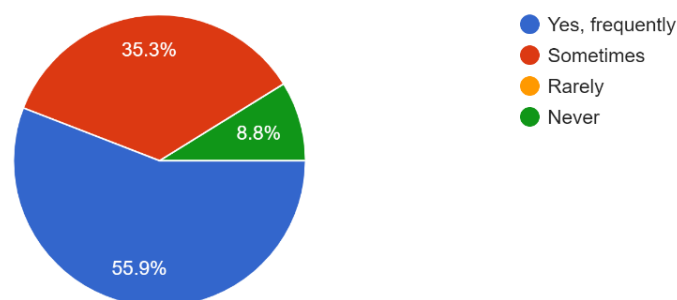
*Figure 3.9 Percentage of the participants' perception of outfit recommendations*

According to Figure 3.9, a significant number of participants expressed interest in this outfit recommendation tool based on personal preferences with comprising 44.1% of total said they might like it and 41.2% of total said they definitely like it. However, there some respondents are not interested and may not be sure on it.

### Question 9:

Have you ever hesitated to make a purchase on a second-hand clothing application due to concerns about the condition of the item?

34 responses



*Figure 3.10 Percentage of the participants who were hesitant to purchase due to concerns about the condition of the item*

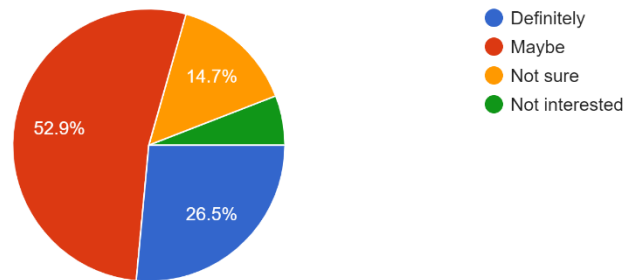
According to Figure 3.10, more than half of the participants reported hesitation to make purchase on second-hand clothing application due to concern about the condition of the item, which comprising of 55.9% said they frequently will have that hesitation on it and 33.3% sometimes. However, there still have the participants who didn't hesitate.

### Question 10 :

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Would you feel more comfortable making a purchase, especially for expensive and well-known brand shirts, if there was a meet-up feature allowin... receive it exclusively through in-person exchange.

34 responses



*Figure 3.11 Percentage of the participants' perception of meet up feature*

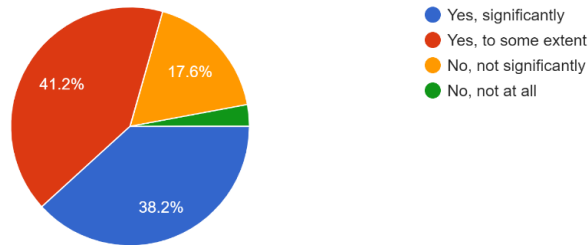
According to Figure 3.11, 26.5 % of the participants said they would definitely be interested in this meet-up feature and 52.9% of them said they might. However, there still have the participants not interested and not sure.

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### Question 11 :

Based on the problem statements presented, do you believe that a second-hand clothing application with the proposed features would enhance your user experience?

34 responses



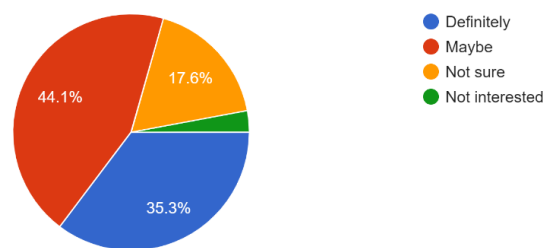
*Figure 3.12 Percentage of the participants' who believe the proposed features can enhance user experience.*

According to Figure 3.12, majority of participants believe that the proposed features can enhance user experience with 41.2% of participants said it would do so to some extent and 38.2% of participants it would do so significantly. However, there still have minority of participant not believe the proposed features can enhance user experience.

### Question 12 :

Would you be more inclined to use a second-hand clothing application that offers personal wardrobe management, outfit recommendations, and meet-up features?

34 responses



*Figure 3.13 Percentage of the participants' who that using the application with suggested features*

According to 3.13, majority of the participants will try to use that application with suggested features which comprising 44.1% of participants said they might and 35.3% of participants said definitely use it. However, there still have minority of participant not interested in the application with suggested feature.

### 3.3.3 Data Analysis Conclusion

Based on the data analysis, it proves that the target audience mainly consists of young women which between 18 years old and 24 years old. Besides, majority of the participants said they will purchase second-hand clothing item. Majority of the participants expresses that they have majority of the responders said they have the difficulties in organizing or tracking the clothing item frequently, have struggle in deciding what to wear and were hesitant to purchase the clothing item due to concerns about the condition of it.

In terms of proposed solution in second-hand clothing item, majority of the respondents believed the idea of personal wardrobe management with outfit planning would be useful, interest in the outfit recommendation tool based on personal preferences and meet up features. The potential value of these features is features. Importantly, participants also felt that these features can help in enhancing the user experiences and will try to use the second-hand application that contains those suggested features.

In summary, the analysis shows the importance of proposed second-hand application with these features which include personal wardrobe management system with outfit planning outfit recommendations through chatbot and meet up features. This is because these features can effectively address some of the struggle from the target audience. It also proves that these suggested features really can help in improving the user experience and attract more users to use it. There is compelling evidence to support development of this suggested feature in second-hand clothing application.



### 3.4 User Requirement

#### 3.4.1 Functional Requirements

*Table 3.3 Table of Functional Requirements.*

<b>Functional Requirement</b>	<b>Description</b>
Personal Wardrobe Management System	<ul style="list-style-type: none"> <li>• Able to organize and manage clothing items</li> <li>• Able to categorize and track their clothing items</li> </ul>
Outfit Recommendations	<ul style="list-style-type: none"> <li>• Provide personalized outfit recommendations</li> <li>• Generate outfit suggestions based on user preferences and clothing items in their wardrobe</li> </ul>
Meet up functionality	<ul style="list-style-type: none"> <li>• Have meet-ups between users for exchanging or selling second-hand clothing items.</li> <li>• Arrange meet-ups through the application</li> </ul>
Second-Hand Clothing Purchase and Sale	<ul style="list-style-type: none"> <li>• Buying and selling second-hand clothing items within the app.</li> <li>• Include features for listing, browsing, and purchasing second-hand clothing.</li> </ul>
Condition Verification and Assurance	<ul style="list-style-type: none"> <li>• Provide details and assurances about the condition of second-hand items</li> <li>• Provide meet-ups to let them check the clothing items conditions</li> </ul>

### 3.4.2 Non-Functional Requirements

*Table 3.4 Table of Non-Functional Requirements.*

<b>Non-Functional Requirement</b>	<b>Description</b>
<b>Usability</b>	<ul style="list-style-type: none"> <li>• User-friendly interface</li> <li>• Ease of use</li> </ul>
<b>Performance</b>	<ul style="list-style-type: none"> <li>• Perform efficiently with minimal loading times and quick response to user actions.</li> <li>• Smooth and responsive experience when managing wardrobe items and receiving recommendations.</li> </ul>
<b>Security</b>	<ul style="list-style-type: none"> <li>• Ensure the security and privacy of user data</li> </ul>
<b>Reliability</b>	<ul style="list-style-type: none"> <li>• Stable and reliable, with minimal crashes or bugs.</li> </ul>
<b>Accessibility</b>	<ul style="list-style-type: none"> <li>• Accessible to users with disabilities, providing features like text-to-speech and high-contrast modes.</li> </ul>

### 3.5 System Design Diagram

#### 3.5.1 Use Case Diagram

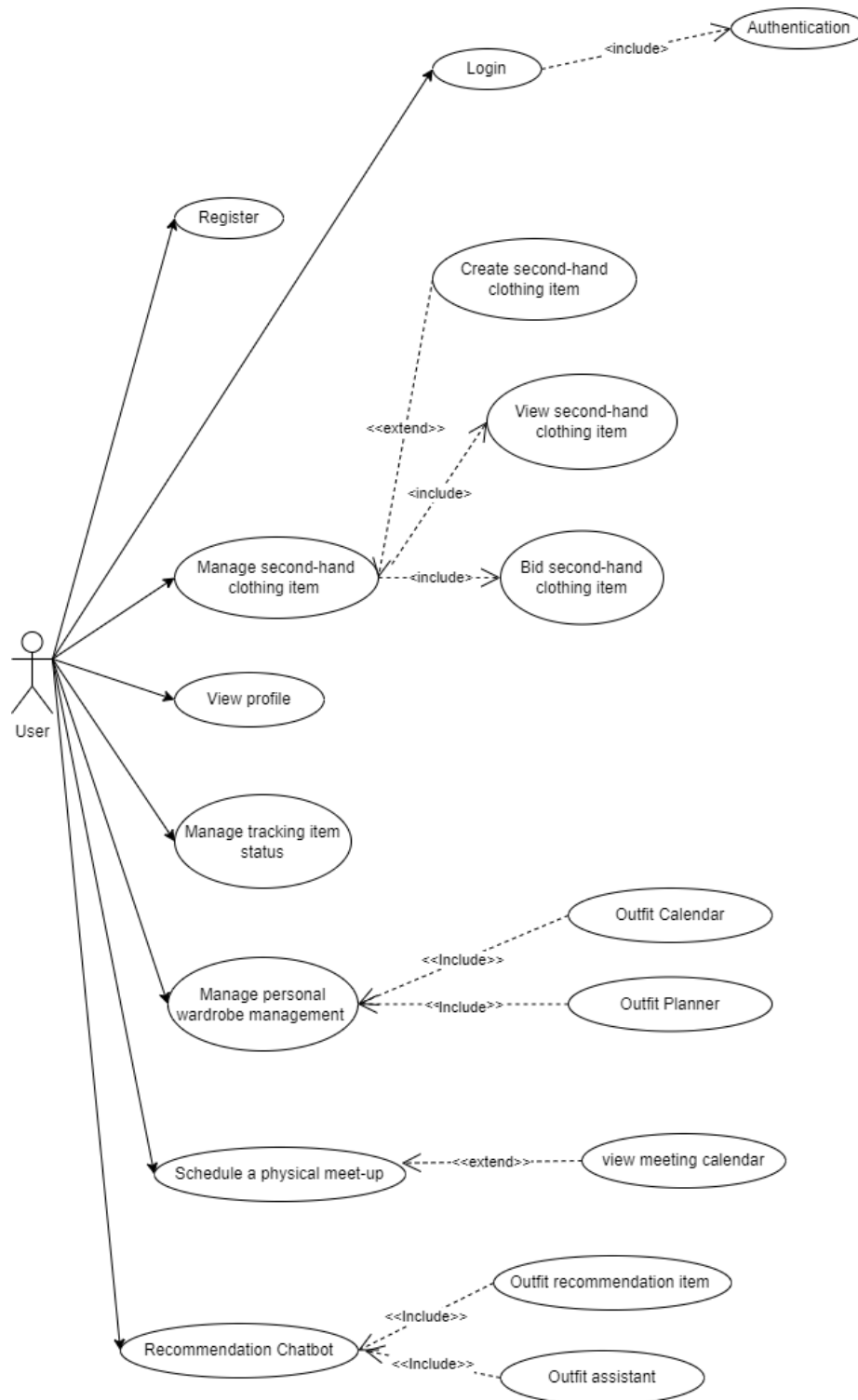


Figure 3.14 Use Case Diagram of Second-Hand Application

## CHAPTER 3

### 3.5.1.1 Register

#### Use Case Description:

Use Case Name: Register	ID: 1	Importance Level: High
Primary Actor: User	Use Case Type: Details, Essentials	
Stakeholders and Interests: User: Register for a new account		
Brief Description: This use case description will show how user register a new account		
Trigger: User enters the system Type: Internal		
Relationships: Association: User Extend: None Include: None Generalization: None		
Normal Flows of Events: <ol style="list-style-type: none"><li>1. User clicked "Sign up."</li><li>2. Users inserts required information.</li><li>3. System validates the required information.</li><li>4. Required information are validated.</li><li>5. User's information recorded and entered the system.</li></ol>		
SubFlows: None		
Alternate/Exceptional Flows: 3a. User entered the not match confirm password. 3b. User re-enter the correct confirm password.		

*Table 3.5 Use Case Description (Register)*

**Activity Diagram:**

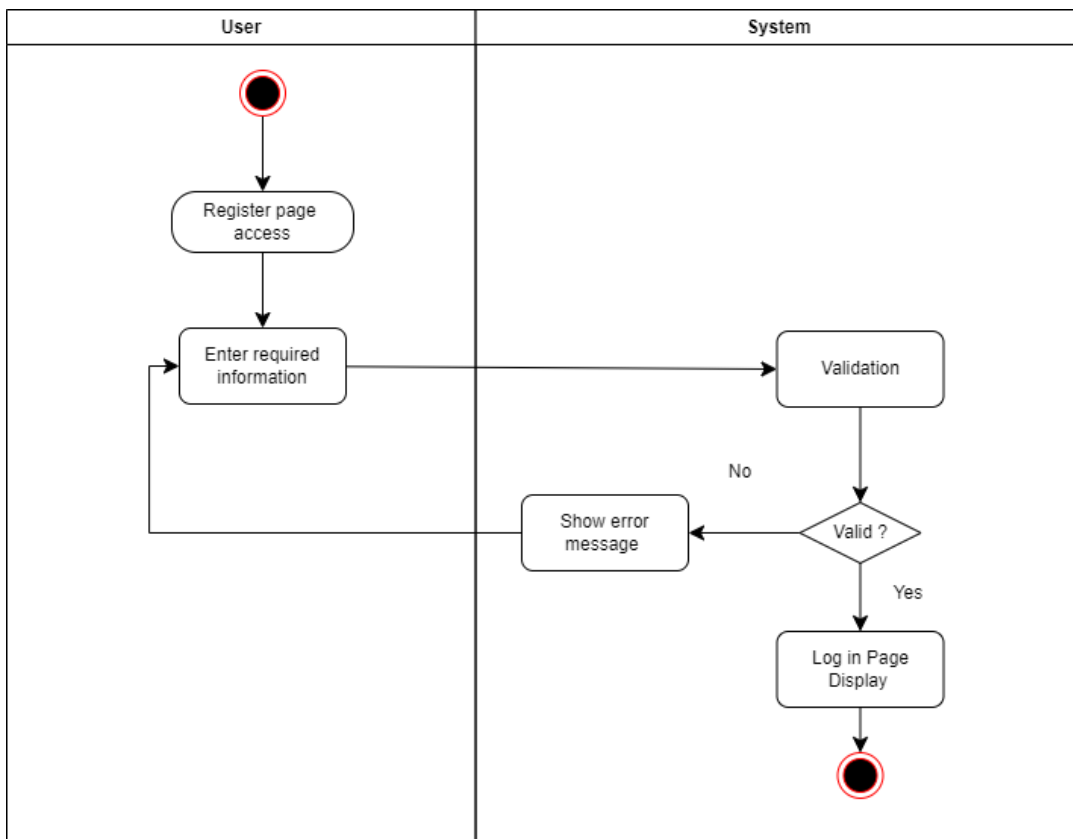


Figure 3.15 Activity Diagram (Register)

3.5.1.2 Login

**Use Case Description:**

Use Case Name: Login	ID: 2	Importance Level: High
Primary Actor: User	Use Case Type: Details, Essentials	
Stakeholders and Interests:		
User: Login to use all functions of the system that provided for user.		
Brief Description: This use case description will show how user login to the system		
Trigger: Users enter the system		
Type: Internal		
Relationships:		
Association: User		

Extend: Authentication, Forget password Include: None Generalization: None
Normal Flows of Events: <ol style="list-style-type: none"><li>1. Users enter email and password or login using Google account.</li><li>2. Email and Password are validated.</li><li>3. Users enter the system.</li></ol>

*Table 3.6 Use Case Description (Login)*

Activity Diagram :

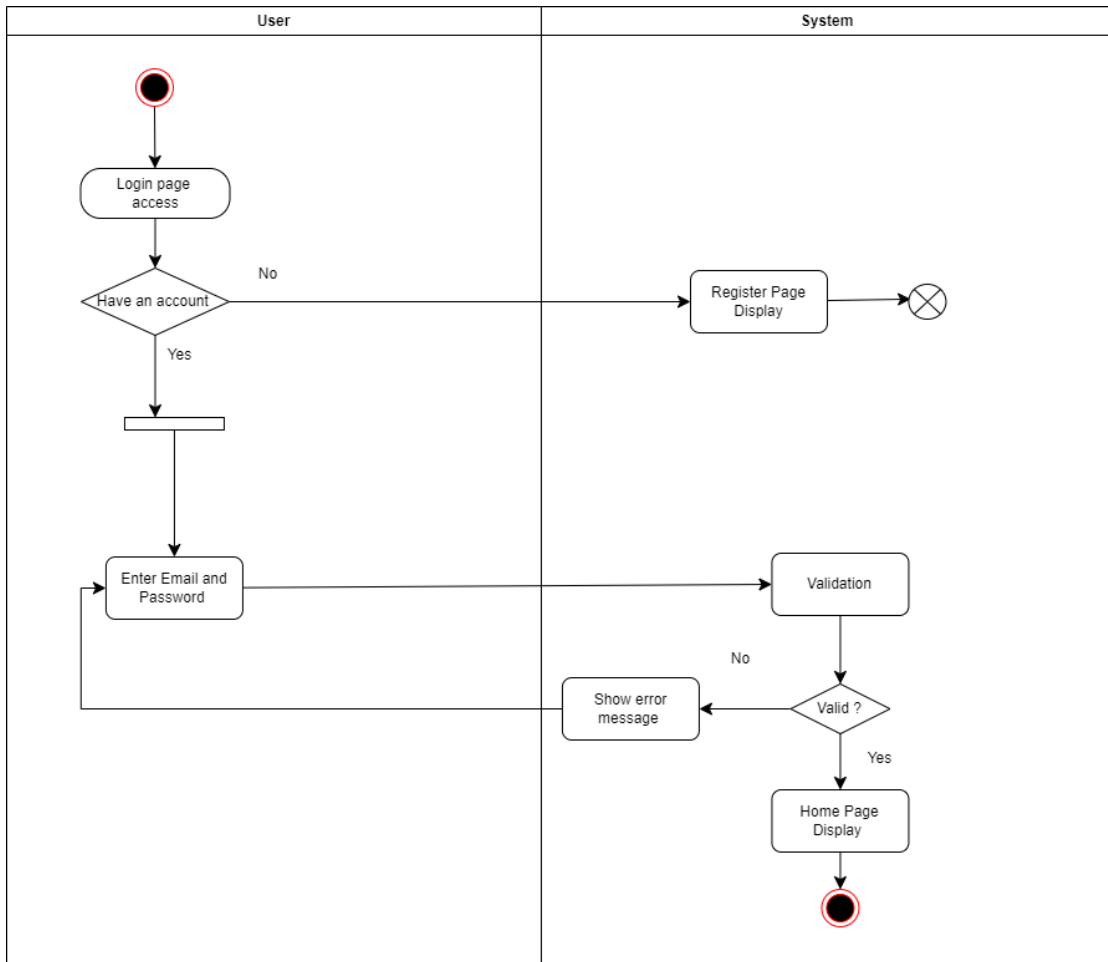


Figure 3.16 Activity Diagram (Login)

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### 3.5.1.3 Manage Second-hand clothing item

#### Use Case Description:

Use Case Name: Manage second-hand clothing item	ID: 3	Importance Level: High
Primary Actor: User	Use Case Type: Details, Essentials	
Stakeholders and Interests: User: To manage the second-hand clothing item information.		
Brief Description: This use case description will show how user manage second-hand clothing item.		
Trigger: User navigates to the Home page. Type: Internal		
Relationships: Association: User		



<p>Extend: View second-hand clothing item          Include: Create second-hand clothing item          Generalization: None</p>
<p>Normal Flows of Events:</p> <ol style="list-style-type: none"> <li>1. User log into the system.</li> <li>2. User selects home page.</li> <li>3. User views all second-hand clothing item.</li> <li>4. User chooses the function in each second-hand clothing item.</li> </ol> <p>If user want to create second-hand clothing item          The S-1: Create second-hand clothing item will be performed.</p> <p>If user want to save second-hand clothing item as future purchase.          The S-2: Save second-hand item will be performed.</p> <p>If user want to share the second-hand clothing item          The S-3: Share second-hand clothing item will be performed.</p> <p>If user want to comment under the second-hand clothing item.          The S-4: Comment second-hand clothing item will be performed.</p>
<p>SubFlows:</p> <p>S-1: Create second-hand clothing item.</p> <ol style="list-style-type: none"> <li>1. User inserts all required information, including details such as brand, <u>size</u>, color , condition and price.</li> <li>2. User uploads image of second-hand clothing item.</li> <li>3. The second-hand clothing item is created upon submission.</li> </ol> <p>S-2 Save second-hand clothing item.</p> <ol style="list-style-type: none"> <li>1. Upon selecting “Save” option, the selected second-hand clothing item will be added to the user’s shopping card for future purchase or consideration.</li> </ol> <p>S-3 Share second-hand clothing item.</p> <ol style="list-style-type: none"> <li>1. User selects the recipient to share the second-hand clothing item with.</li> <li>2. The selected second-hand clothing item is then sent to the chosen recipient.</li> </ol> <p>S-4 Comment second-hand clothing item.</p> <ol style="list-style-type: none"> <li>1. User navigates to the second-hand clothing item they wish to comment on.</li> <li>2. User leaves comment in the designed comment section.</li> </ol>
<p>Alternate/Exceptional Flows:          None</p>

*Table 3.7 Use Case Description (Manage Second-hand clothing item )*

Activity Diagram :

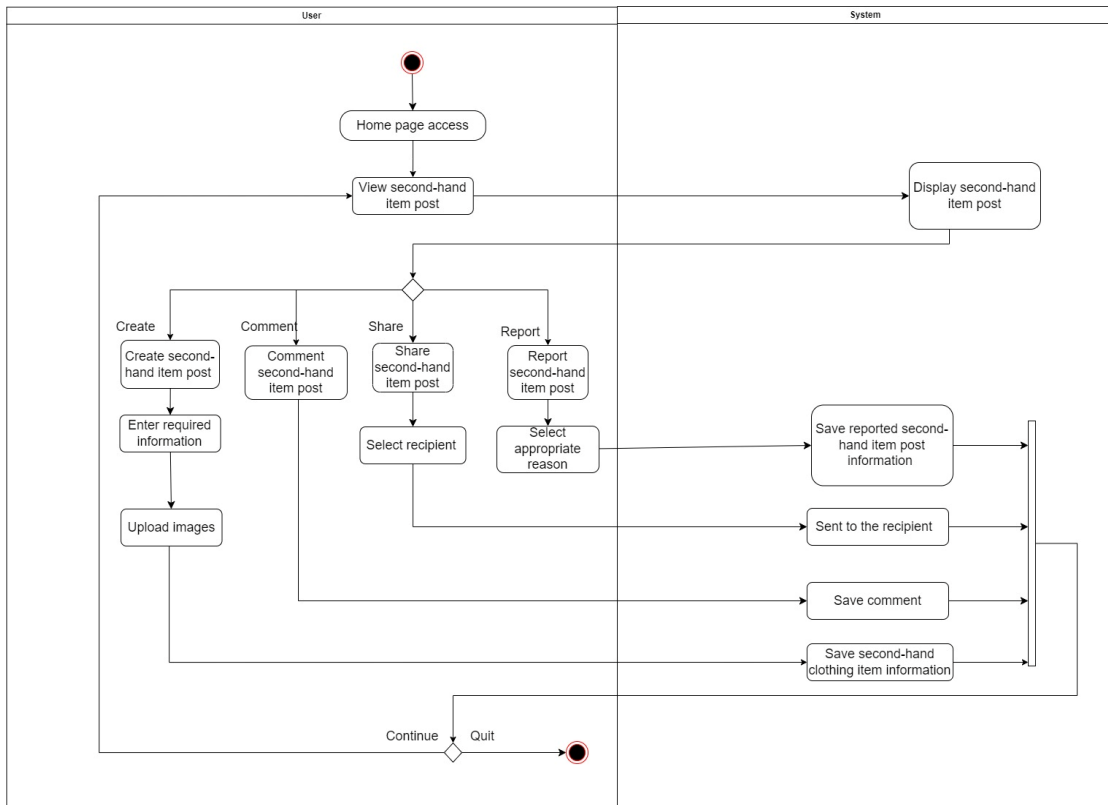


Figure 3.17 Activity Diagram (Manage Second-hand clothing item )

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### 3.5.1.4 View Profile

#### Use Case Description:

Use Case Name: View Profile	ID: 4	Importance Level: High
Primary Actor: User	Use Case Type: Detail, Essentials	
Stakeholders and Interests: User: To view their own or others' profile.		
Brief Description: This use case description will show how users view profiles.		
Trigger: User navigates to the profile page. Type: Internal		
Relationships: Association: User Extend: None Include: None Generalization: None		
Normal Flows of Events: <ol style="list-style-type: none"><li>1. User navigates to the profile page.</li><li>2. All second-hand clothing items created by the user will be displayed.</li><li>3. User chooses the function in the profile page. If user wants to delete the second-hand clothing item The S-1: Delete second-hand clothing item will be performed. If user wants to edit their own personal information The S-3: Edit Personal Information will be performed.</li></ol>		
SubFlows: <ul style="list-style-type: none"><li>• S-1: Delete second-hand clothing item:<ol style="list-style-type: none"><li>1. User selects the second-hand clothing item they want to delete.</li><li>2. User confirms the deletion action.</li></ol></li><li>• S-3: Edit Personal Information:<ol style="list-style-type: none"><li>1. User updates the personal information.</li><li>2. System will update it upon submission.</li></ol></li></ul>		

Alternate/Exceptional Flows:

- None.

Table 3.8 Use Case Description (View Profile)

Activity Diagram :

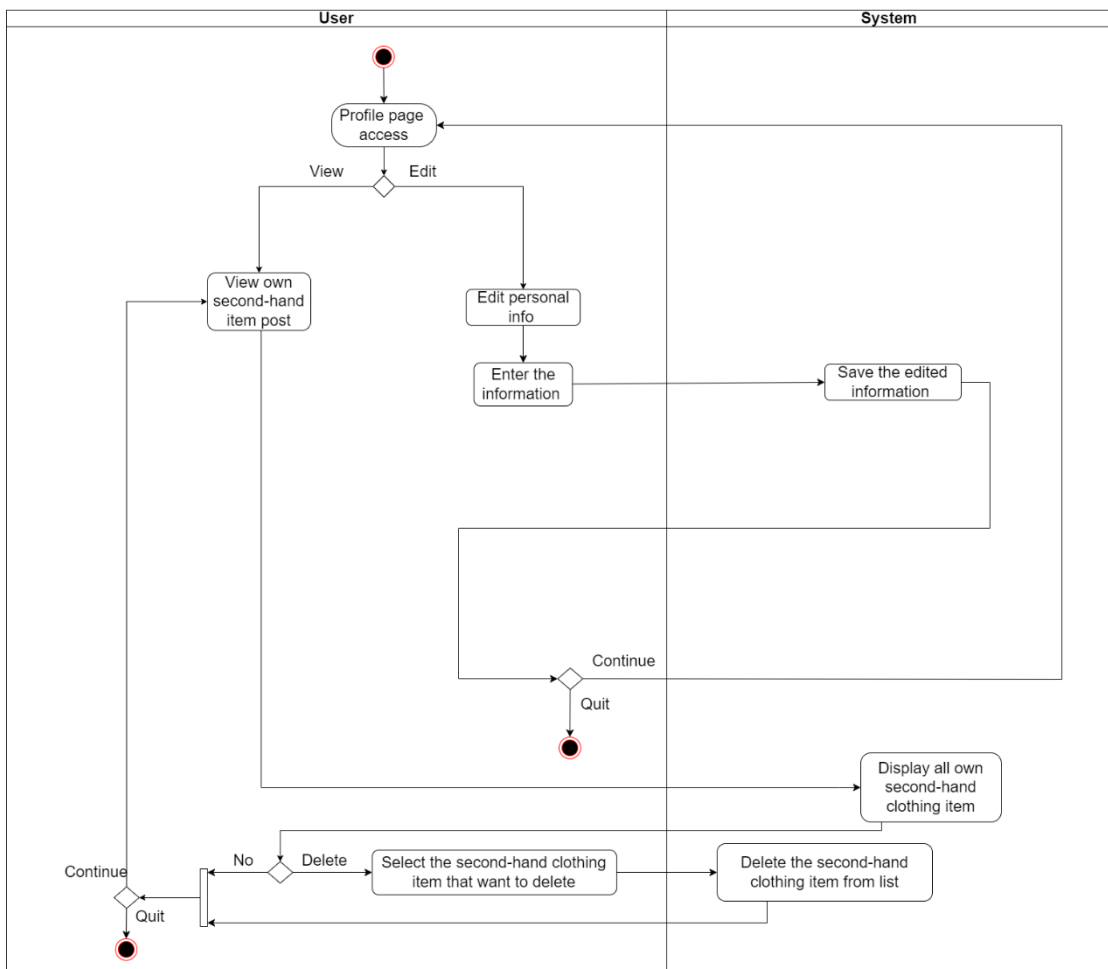


Figure 3.18 Activity Diagram (View Profile)

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### 3.5.1.5 Manage tracking item status

#### Use Case Description :

Use Case Name: Manage tracking item status	ID: 5	Importance Level: High
Primary Actor: User	Use Case Type: Details, Essentials	
Stakeholders and Interests: User: To manage item tracking status		
Brief Description: This use case description will show how user manage tracking item status.		
Trigger: User navigates to the tracking item page Type: Internal		
Relationships: Association: User Extend: None Include: None Generalization: None		
Normal Flows of Events: 1. User navigates to tracking item page. 2. User views all second-hand clothing tracking item status. If user want to modify the tracking item status. The S-1: Update second-hand clothing tracking item status will be performed.		
SubFlows: S-1 Update second-hand clothing tracking item status. 1. User selects the second-hand clothing item that they want to modify the tracking status. 2. User selects the new tracking status from the options which include shipped, delivered, pending and so on. 3. System updates the tracking status of the selected item after user done.		
Alternate/Exceptional Flows: None		

Table 3.9 Use Case Description (Manage tracking item status)

**Activity Diagram :**

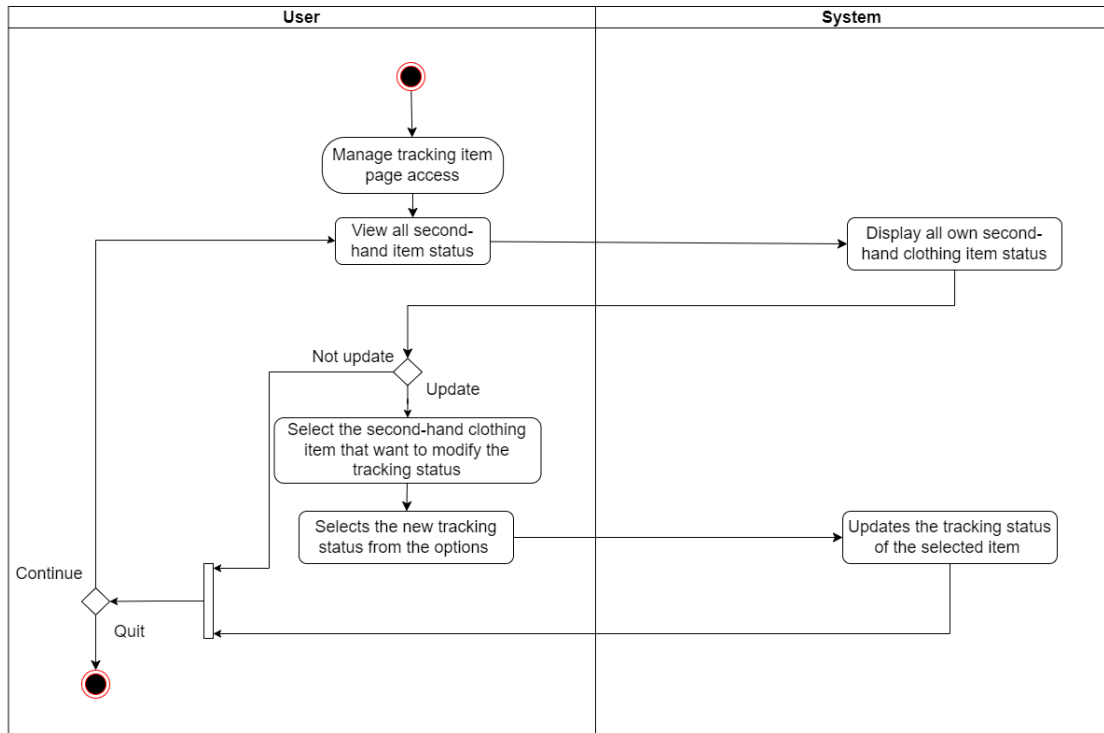


Figure 3.19 Activity Diagram (Manage tracking item status)

3.5.1.6 Manage personal wardrobe management

**Use Case Description:**

Use Case Name: Manage personal wardrobe management	ID: 6	Importance Level: High
Primary Actor: User	Use Case Type: Details, Essentials	
Stakeholders and Interests: User: To manage personal wardrobe management		
Brief Description: This use case description will show how user manage personal wardrobe management.		
Trigger: User navigates to the personal wardrobe management page Type: Internal		
Relationships: Association: User Extend: None		

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<p>Include: Outfit Calendar, Outfit Planner          Generalization: None</p>
<p>Normal Flows of Events:</p> <ol style="list-style-type: none"> <li>1. User navigates to personal wardrobe management page.</li> <li>2. User chooses the function in personal wardrobe management page.</li> </ol> <p>If user want to create clothing item          The S-1: Create clothing item will be performed.</p> <p>If user want to delete clothing item          The S-2: Delete clothing item will be performed.</p> <p>If user want to modify clothing item          The S-3: Modify clothing item will be performed.</p> <p>If user want to add the clothing item to second-hand market          The S-4: Add to second-hand clothing item will be performed.</p>
<p>SubFlows:</p> <p>S-1: Create clothing item.</p> <ol style="list-style-type: none"> <li>1. User inserts all required information, including details such as brand, size and color.</li> <li>2. User uploads image of clothing item.</li> <li>3. The clothing item is created upon submission.</li> </ol> <p>S-2: Delete clothing item.</p> <ol style="list-style-type: none"> <li>1. User selects the clothing item they wish to delete from their listings.</li> <li>2. System removes the selected clothing item from user's listings.</li> </ol> <p>S-3: Modify clothing item.</p> <ol style="list-style-type: none"> <li>1. User selects the clothing item they wish to modify from their listings.</li> <li>2. User makes change to the details or images of the clothing item.</li> <li>3. System updates the modified information of the clothing item.</li> </ol> <p>S-4: Add to second-hand clothing item.</p> <ol style="list-style-type: none"> <li>1. User selects the clothing item they wish to sell.</li> <li>2. System adds the selected clothing item to the user's second-hand clothing inventory, allowing the user to share the item in posts.</li> </ol>
<p>Alternate/Exceptional Flows:          None</p>

Table 3.10 Use Case Description (Manage personal wardrobe management)

**Activity Diagram :**

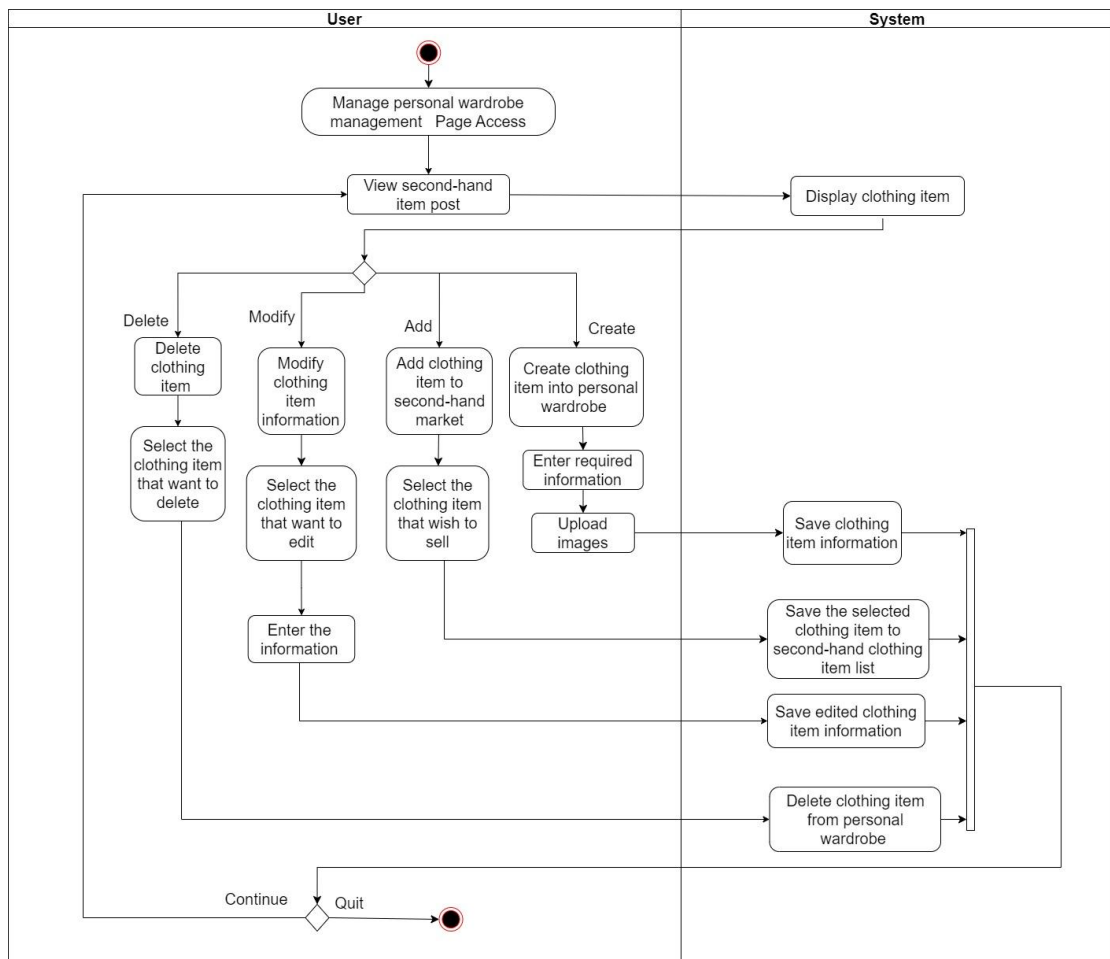


Figure 3.10 Activity Diagram (Manage personal wardrobe management)

3.5.1.7 Schedule a physical meet-up

**Use Case Description:**

Use Case Name: Schedule a physical meet-up	ID: 7	Importance Level: High
Primary Actor: User	Use Case Type: Details, Essentials	
Stakeholders and Interests: User: To schedule a physical meet-up		
Brief Description: This use case description will show how user schedule a physical meet-up		
Trigger: User navigates to the schedule physical meet-up page		
Type: Internal		
Relationships:		



<p>Association: User          Extend: View meeting calendar          Include: None          Generalization: None</p>
<p>Normal Flows of Events:</p> <ol style="list-style-type: none"> <li>1. User navigates to schedule physical meet-up page.</li> <li>2. User chooses the function in schedule physical meet-up page.          If user want to schedule a meet-up              The S-1: Schedule a meet-up will be performed.          If user want to delete the meeting schedule              The S-2: Delete meeting schedule will be performed.          If user want to modify schedule information              The S-3: Modify schedule information will be performed.          If user want to view meeting calendar              The S-4: View meeting calendar will be performed.</li> </ol>
<p>SubFlows:</p> <p>S-1: Schedule a meet-up.</p> <ol style="list-style-type: none"> <li>1. User inserts all required information such as date, time and location for meet-up.</li> <li>2. System saves the meeting schedule upon submission.</li> </ol> <p>S-2: Delete meeting schedule.</p> <ol style="list-style-type: none"> <li>1. User selects the meeting schedule they wish to delete.</li> <li>2. System removes the meeting schedule from meeting calendar.</li> </ol> <p>S-3: Modify schedule information.</p> <ol style="list-style-type: none"> <li>1. User selects the meeting schedule they wish to modify.</li> <li>2. User makes change to the details of the meeting schedule.</li> <li>3. System updates the modified information of the meeting schedule.</li> </ol> <p>S-4: View meeting calendar.</p> <ol style="list-style-type: none"> <li>1. User accesses the calendar interface that displaying all scheduled meetings.</li> </ol>
<p>Alternate/Exceptional Flows:          None</p>

*Table 3.11 Use Case Description (Schedule a physical meet-up )*

**Activity Diagram :**

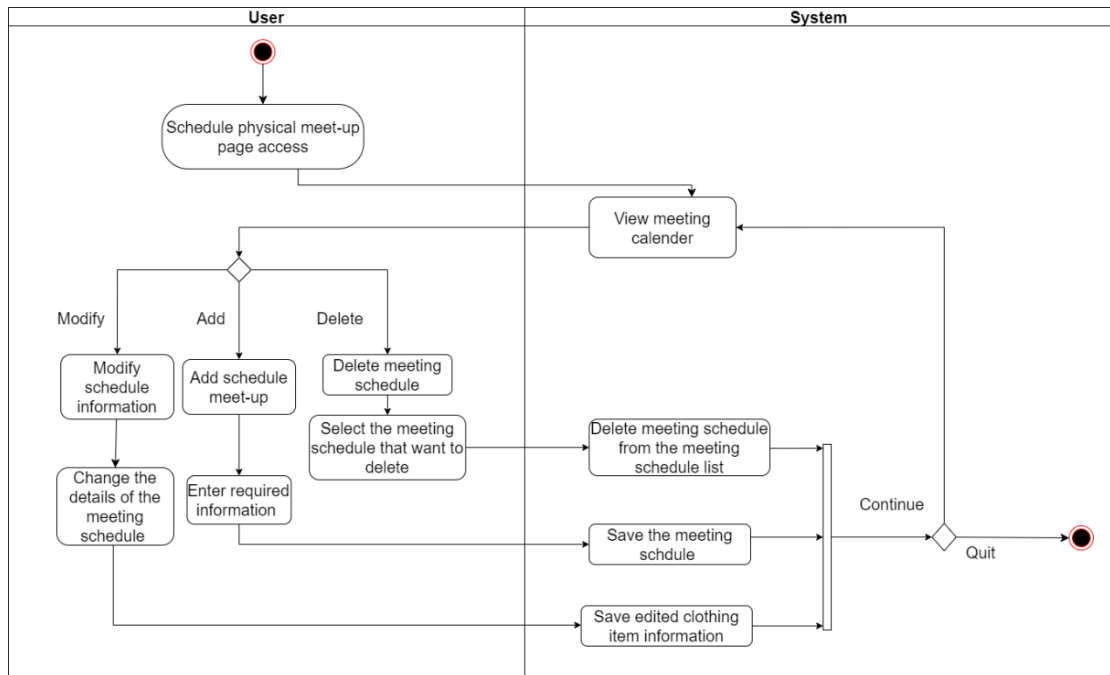


Figure 3.11 Activity Diagram (Schedule a physical meet-up)

3.5.1.8 Recommendation Chatbot

Use Case Description:

Use Case Name: Recommendation Chatbot	ID: 8	Importance Level: High
Primary Actor: User	Use Case Type: Details, Essentials	
Stakeholders and Interests: User: To use the outfit recommendation		
Brief Description: This use case description will show how user use the outfit recommendation GPT.		
Trigger: User navigates to the outfit recommendation Type: Internal		
Relationships: Association: User Extend: None Include: Outfit recommendation item, Outfit assistant Generalization: None		
Normal Flows of Events:		

<ol style="list-style-type: none"> <li>1. User navigates to outfit recommendation</li> <li>2. User sends the outfit recommendation request or question.</li> <li>3. System analyzes the request or question from user.</li> <li>4. System sends back the suggestion for user based on the analyzed data.</li> <li>5. User receives the outfit recommendation</li> </ol>
<p>SubFlows: None</p>
<p>Alternate/Exceptional Flows: None</p>

Table 3.12 Use Case Description (Recommendation Chatbot)

**Activity Diagram:**

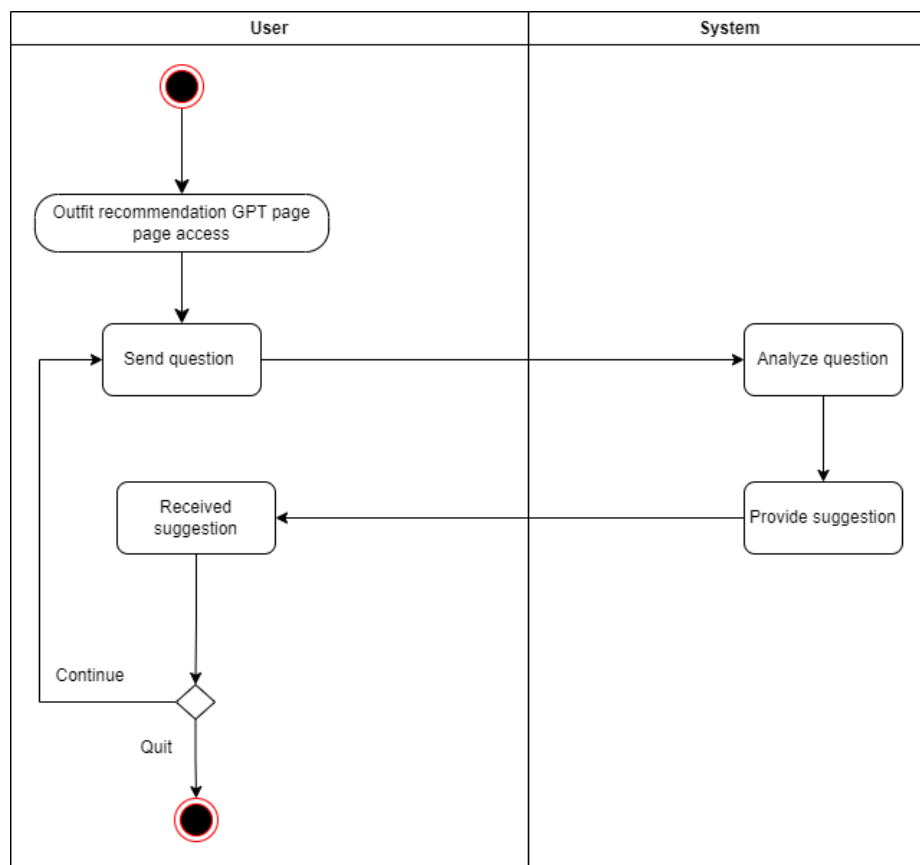


Figure 3.12 Activity Diagram (Recommendation Chatbot)

# CHAPTER 3

## 3.6 Timeline

### 3.6.1 Final Year Project 1

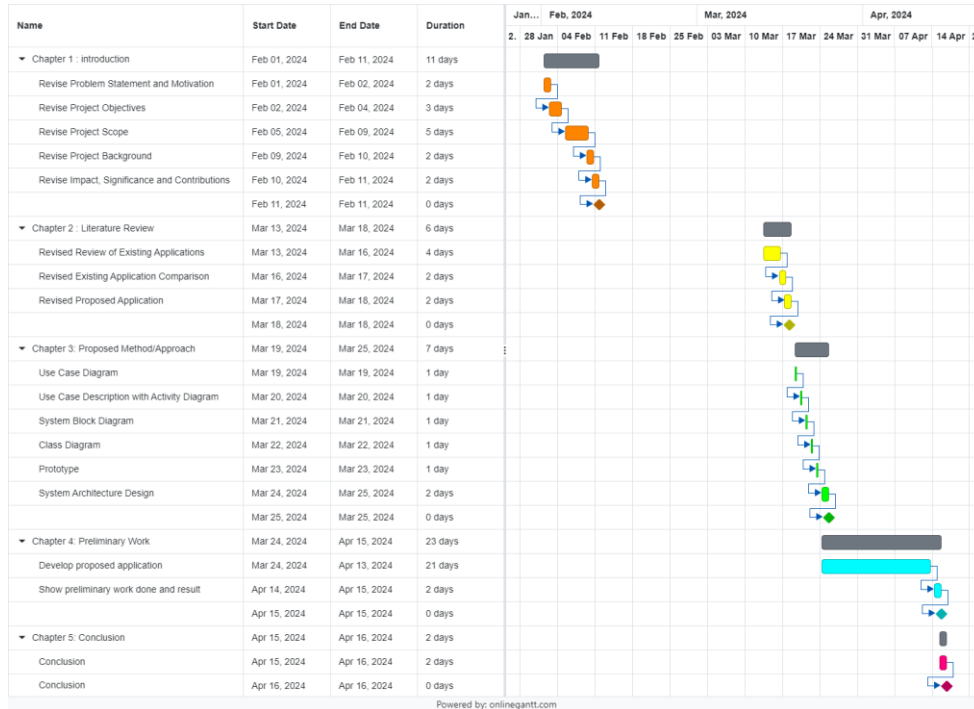


Figure 3.23 Gantt Chart for FYP 1

### 3.6.2 Final Year Project 2

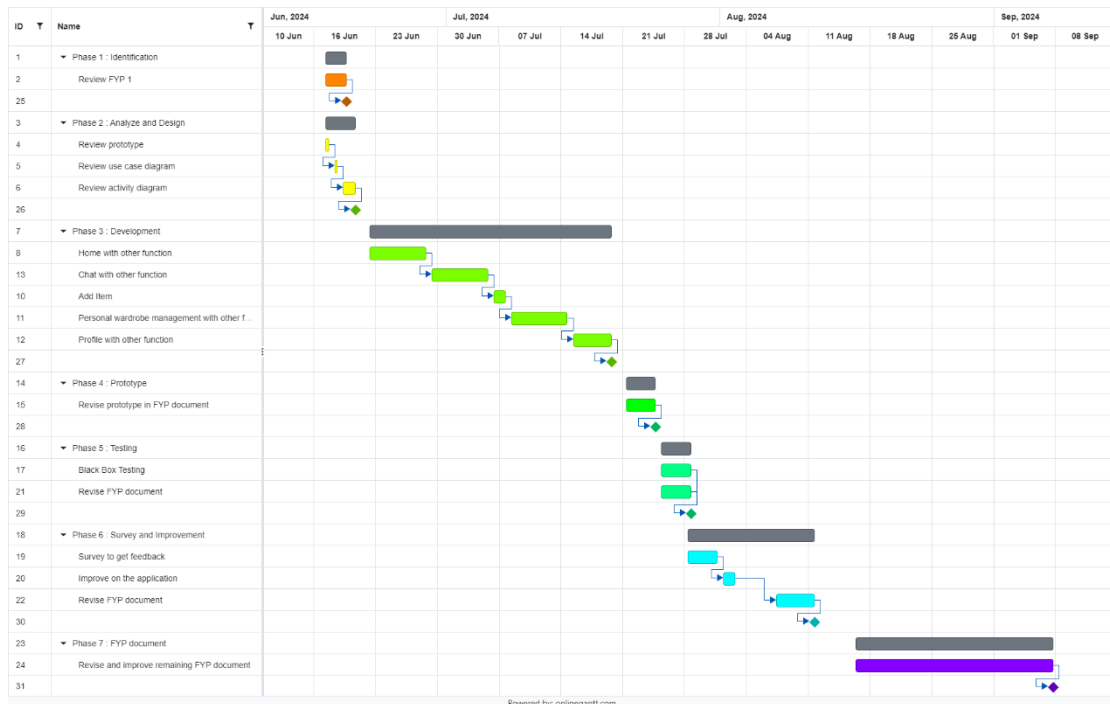


Figure 3.24 Gantt Chart for FYP

## CHAPTER 4 System Design

### 4.1 System Block Diagram

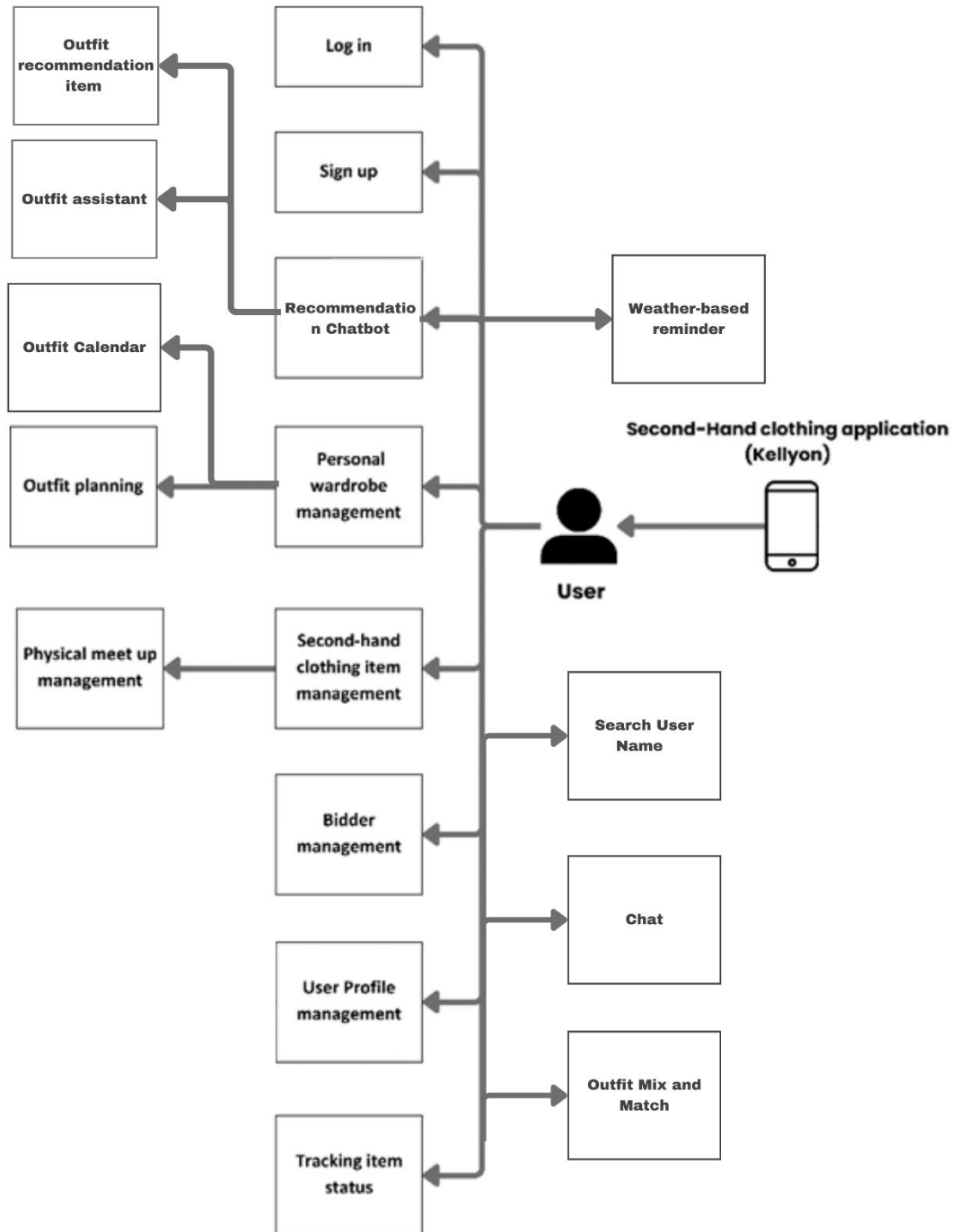


Figure 4.1 System Block Diagram of second-hand clothing application

### **Description of block diagram**

This system block diagram presents an overview of the second-hand clothing application named 'Kellyon'. Users are involved with various functions to either sell or buy second-hand items and other functions that are provided by this application.

The system offers essential functionalities such as “Log in” and “Sign up”, and several other features designed to enhance the user experience. It contains “Personal wardrobe management” which enables users to create, delete and modify the items. This features also includes recommendation which suggests item that based on user preference, frequently views items, saved item and so on. It also includes will provide the item post that is near to the users. “Outfit Planning” is which enables users can receive suggestions for their outfits and “Outfit Calendar” which provides a calendar view whether users can see their saved outfits. It also contains “Recommendation Chatbot” which enable users to choose whether want to have “Outfit assistant” mode or “Outfit recommendation item” mode that both also can send messages and ask for suggestions or recommendations about their outfit but difference purpose.

Furthermore, it also contains “Second-hand clothing item management” which enable users to create, save, share, comment and delete the second-hand clothing item. The system also involves “Physical Meetup Management”, which help facilitate the scheduling of physical meetings by allowing users to view, modify, and delete schedule details. “Bidder management” enables users to select and manage bids. 'Search Username' enables users to search for another user's name and navigate to their profile, while 'Chat' allows users to message each other.

“User Profile Management” is a profile that enables user to view, manage posts and so on. It also provides “tracking item status” which allows users to conveniently check and update the status of their items. A 'Weather-based Reminder' suggests what to wear based on the current weather conditions.

Last but not least, it also contains “Outfit Mix and Match” which allows user to experience with the different clothing combinations whether from their own personal wardrobe or secondhand marketplace. Outfits saved from the Mix and Match page will be displayed in the Outfit Calendar.

## 4.2 System Architecture Design (Client-server architecture)

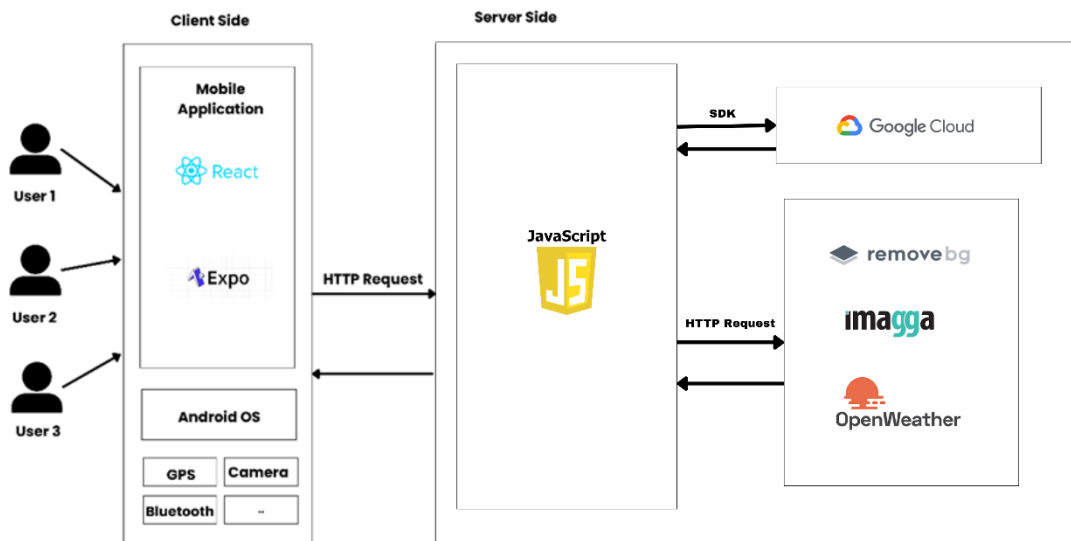


Figure 4.2 System Architecture Design of second-hand clothing application

### Client-server architecture description

In the client-server architecture of this second-hand clothing application, the user will interact with the application through their mobile application which developed using React and Expo framework. It provides interface which includes various features and functionalities offered by applications to all users.

On the server side, the architecture is powered by JavaScript, which uses to handle incoming HTTP requests and manages server-side operations. The application also integrated with several key services to deliver its features. This application utilizes the google cloud SDK to manage the user authentication, Firestore database, storage and generative ai. Besides, this application also utilizes other third-party services by accessed using direct HTTP request. Remove.bg is used for background removal in images, Imagga provides advanced image tagging and color extraction, and OpenWeather gets the real-time weather data to assist users in outfit planning.

The combination of client-side and server-side technologies, as well as the integration of various third-party services, ensure a powerful and user-friendly experience for all users of the application.

### 4.3 System Components Specifications

Table 4.1 Table of System Components Specifications

Module	Description	Technical Specifications	Interfaces
<b>Log In / Sign Up</b>	Manages user authentication, enabling users to register for the application and log in.	<ul style="list-style-type: none"> <li>• Firebase Authentication, which is used to control safe user entry.</li> <li>• Secure user credential storage and encrypted data transfer.</li> </ul>	<ul style="list-style-type: none"> <li>• Input: User credentials through the mobile app.</li> <li>• Output: Authentication token and access to user-specific features and data.</li> </ul>
<b>Personal Wardrobe Management</b>	Maintains the user's wardrobe items, enabling the creation, removal, and view items.	<ul style="list-style-type: none"> <li>• Firestore Database for storing wardrobe items</li> <li>• Structured as collections and documents in Firestore</li> <li>• Integrated with Firebase Authentication for secure access.</li> </ul>	<ul style="list-style-type: none"> <li>• Input: User interactions through the app (add, delete, modify items).</li> <li>• Output: Updated wardrobe data and displayed in the interface.</li> </ul>
<b>Outfit Planning &amp; Calendar</b>	Enables users to plan outfits and view saved outfit on a calendar.	<ul style="list-style-type: none"> <li>• Firestore Database for storing outfit planning data.</li> <li>• React Native for calendar UI.</li> </ul>	<ul style="list-style-type: none"> <li>• Input: User selects outfits and scheduling them in the calendar.</li> <li>• Output: Display of saved outfits under the calendar when clicked.</li> </ul>
<b>AI Chatbot</b>	Provides users with outfit recommendations	<ul style="list-style-type: none"> <li>• Google Cloud Generative AI SDK for AI-driven responses.</li> <li>• Firestore for storing user data and preferences.</li> </ul>	<ul style="list-style-type: none"> <li>• Input: User chat through the chatbot interface.</li> <li>• Output: AI-generated text responses sent back to the user in the chat interface.</li> </ul>
<b>Second-hand Clothing Management</b>	Manages second-hand clothing items, including creating, saving, commenting, and deleting items.	<ul style="list-style-type: none"> <li>• Firestore Database for storing item data.</li> <li>• Imagga for image tagging and color extraction. Firebase Storage for storing item images.</li> </ul>	<ul style="list-style-type: none"> <li>• Input: User performs on the item (create, save, delete, etc.).</li> <li>• Output: Updated second-hand</li> </ul>



			clothing data.
<b>Personalized Post Recommendation</b>	Generates personalized post recommendations for users based on their activity and preferences.	<ul style="list-style-type: none"> <li>• Google Cloud Generative AI SDK for generating recommendations.</li> </ul>	<ul style="list-style-type: none"> <li>• Output: AI-generated post recommendations displayed in the user's feed.</li> </ul>
<b>Physical Meetup Management</b>	Makes it easier for users to plan and coordinate in-person meetings.	<ul style="list-style-type: none"> <li>• Firestore Database for storing data</li> </ul>	<ul style="list-style-type: none"> <li>• Input: User-selected meeting times and locations.</li> <li>• Output: Updated meet up clothing data.</li> </ul>
<b>Bidder Management</b>	Allows users to place and manage bids on second-hand clothing items.	<ul style="list-style-type: none"> <li>• Firestore Database for bid storage</li> </ul>	<ul style="list-style-type: none"> <li>• Input: User bids through the app.</li> <li>• Output: Updated bidding data.</li> </ul>
<b>User Profile Management</b>	Manages user profiles, including viewing and managing posts and personal information.	<ul style="list-style-type: none"> <li>• Firestore Database for profile data.</li> <li>• Integrated with other app modules.</li> <li>• Firebase Storage for user profile pictures</li> </ul>	<ul style="list-style-type: none"> <li>• Input: User updates to profile information</li> <li>• Output: Updated profile data visible to the user.</li> </ul>
<b>Weather-based Recommendation</b>	Provides outfit suggestions based on real-time weather conditions.	<ul style="list-style-type: none"> <li>• OpenWeather API for weather data retrieval</li> </ul>	<ul style="list-style-type: none"> <li>• Output: Real-time outfit recommendations based on weather conditions displayed to the user.</li> </ul>
<b>Mix and Match</b>	Allows users to mix and match clothing items and save their preferred combinations.	<ul style="list-style-type: none"> <li>• Remove.bg for background removal</li> <li>• Firestore Database for storing saved combinations.</li> </ul>	<ul style="list-style-type: none"> <li>• Input: User-selected clothing items.</li> <li>• Output: Saved outfit combinations displayed in the interface.</li> </ul>
<b>Add Item</b>	Allows users to add new items to their wardrobe or second-hand listings with detailed image	<ul style="list-style-type: none"> <li>• Imagga API for image tagging and color extraction</li> <li>• Firebase Storage for storing uploaded images and related data.</li> </ul>	<ul style="list-style-type: none"> <li>• Input: Images uploaded by users.</li> <li>• Output: Tagged and categorized items added in the column.</li> </ul>

	analysis.		
<b>Search User Name / Email</b>	Allows users to search for other users by name / email and view their profiles.	<ul style="list-style-type: none"> <li>• Firestore Database for user data.</li> </ul>	<ul style="list-style-type: none"> <li>• Input: User-entered search terms.</li> <li>• Output: Search results displayed in the user interface.</li> </ul>
<b>Chat</b>	Provides a messaging platform for users to communicate with each other.	<ul style="list-style-type: none"> <li>• Firestore Database for storing chat messages.</li> </ul>	<ul style="list-style-type: none"> <li>• Input: User messages entered in the chat interface.</li> <li>• Output: Messages displayed in real-time within the chat interface</li> </ul>
<b>Tracking Item Status</b>	Allows users to track the status of their listed or purchased second-hand items.	<ul style="list-style-type: none"> <li>• Firebase Database for any related documents or images.</li> </ul>	<ul style="list-style-type: none"> <li>• Input: User pressed button.</li> <li>• Output: Updated status information displayed in the interface.</li> </ul>

## 4.4 Class Diagram

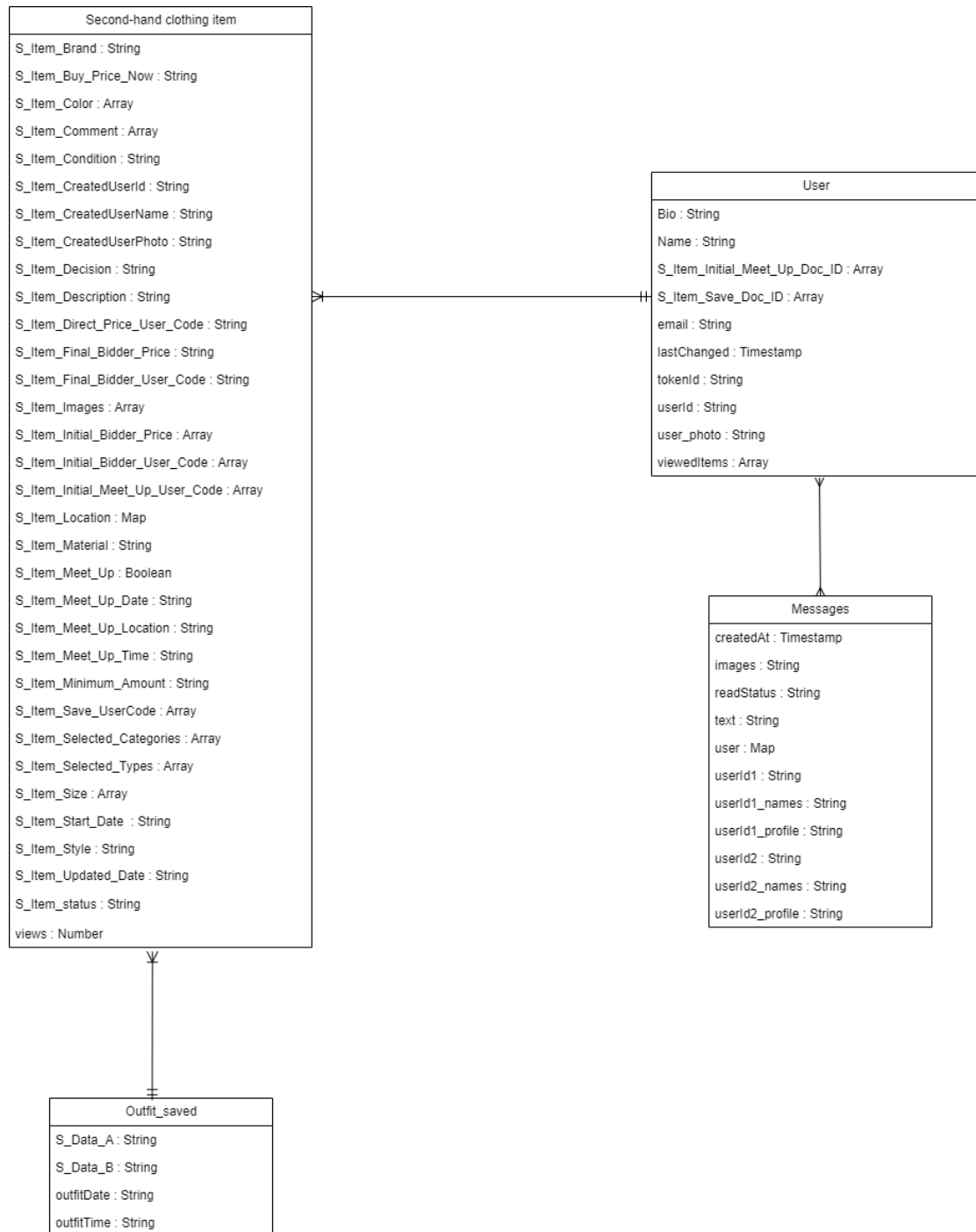


Figure 4.3 Class Diagram of second-hand clothing application

## 4.5 Prototype

### 4.5.1 Sign up page and log in page

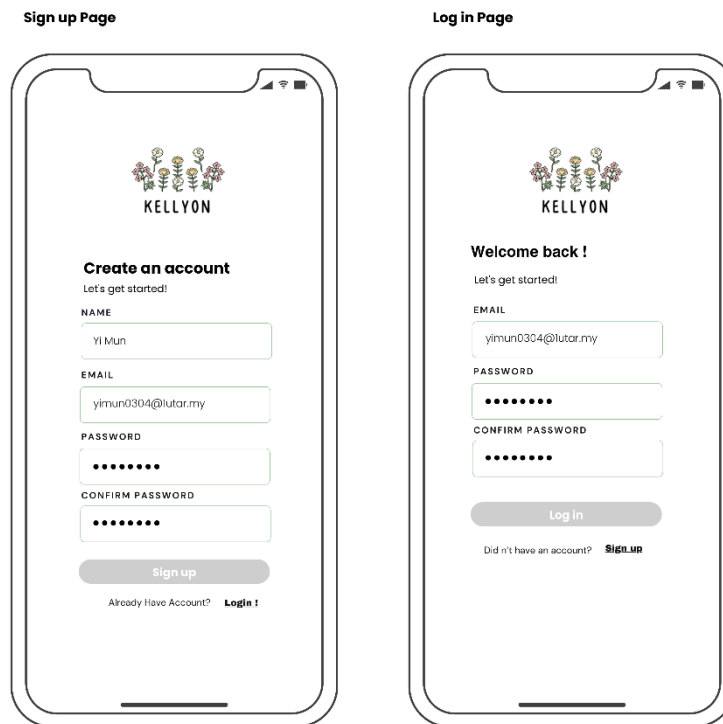


Figure 4.4 Prototype of sign-up page and log in page

#### 1. Sign Up Page

Sign Up Page is where that allows new users to create an account for access to the application. This system may need users to insert some information such as username, email address and password. The system also requires the confirm password to allow users to double check the password before submitting.

#### 2. Log in Page

Log in page allows registered users to enter credentials to access their account. The system will authenticate the users with their email address and password.

## 4.5.2 Home

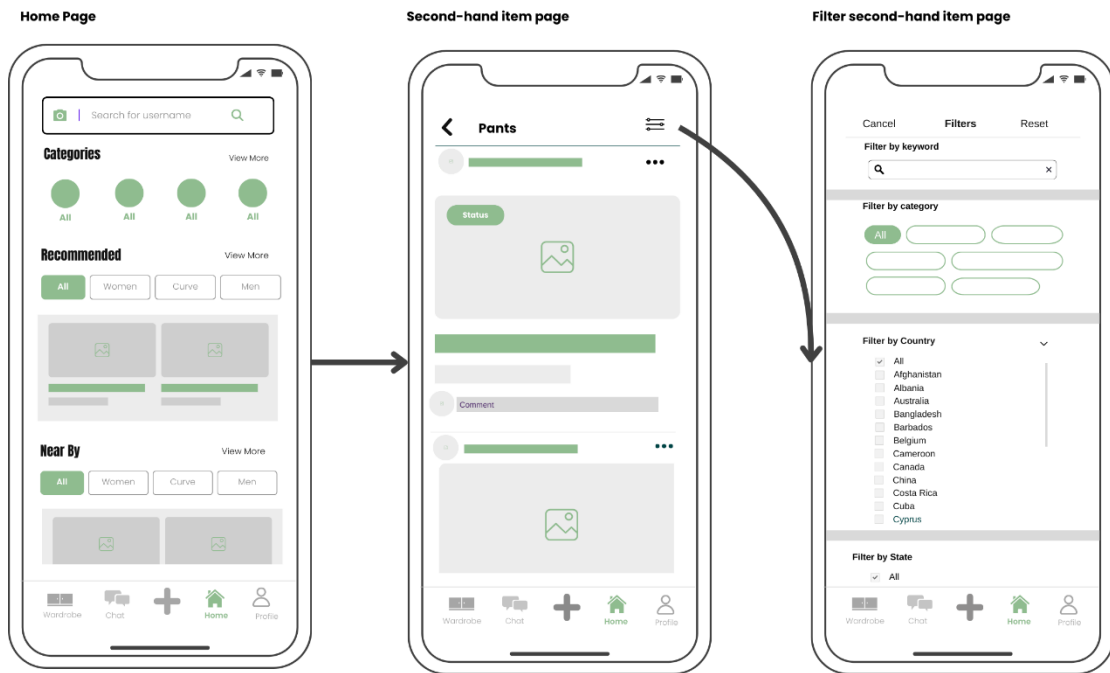


Figure 4.5 Prototype of home

### 1. Home Page

The home page serves as the central hub for users which providing multiple features that easy to navigate or explore of all second-hand clothing item. Users can search for specific username and explore the categories using the icon that provided. Besides, it also provides personalized recommendations of second-hand clothing item based on user's preferences. It also will show the nearby second-hand clothing item. This can help in enhancing users' convenience especially to those who seeking for physical meet-up options or urgently needed clothing items.

### 2. Second-hand item page

The second-hand item page will display second-hand clothing items within the selected category. Each post will include detailed information. Users also have the option to interact with seller which includes placing bid, leaving comments, sharing or

book for physical meet up. It also enables them to save posts, ensuring a trustworthy marketplace experience. Additionally, it also will show all the status of the post such as sold, available, reserved , and unavailable.

### 3. Filter second-hand item Page

The filter second-hand item page provides users with advanced filtering option to refine their search results. Users can filter by selecting categories, types, colors, sizes, minimum prices, conditions, and so on. This enables users to quickly narrow down their options and find their second-hand clothing item by using a short period, which enhancing the user browsing experience.

### 4.5.3 Chat

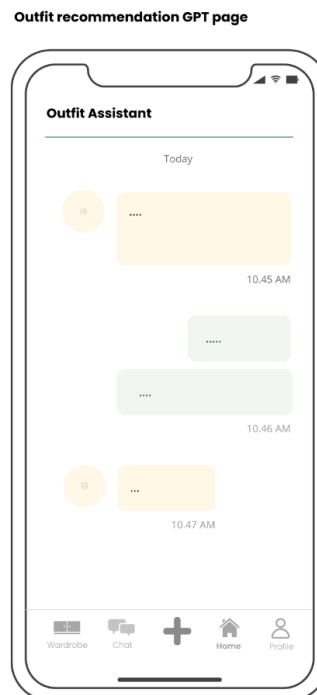


Figure 4.6 Prototype of Chat

#### 1. AI Chatbot page

The **AI Chatbot** enables users to seek for fashion advice by sending the message to the system. Users can ask about outfit suggestion to seek for opinions. This feature can enhance user engagement and provide valuable assistance in fashion decision-making that contributes to enhance user experience.

4.5.4 Wardrobe

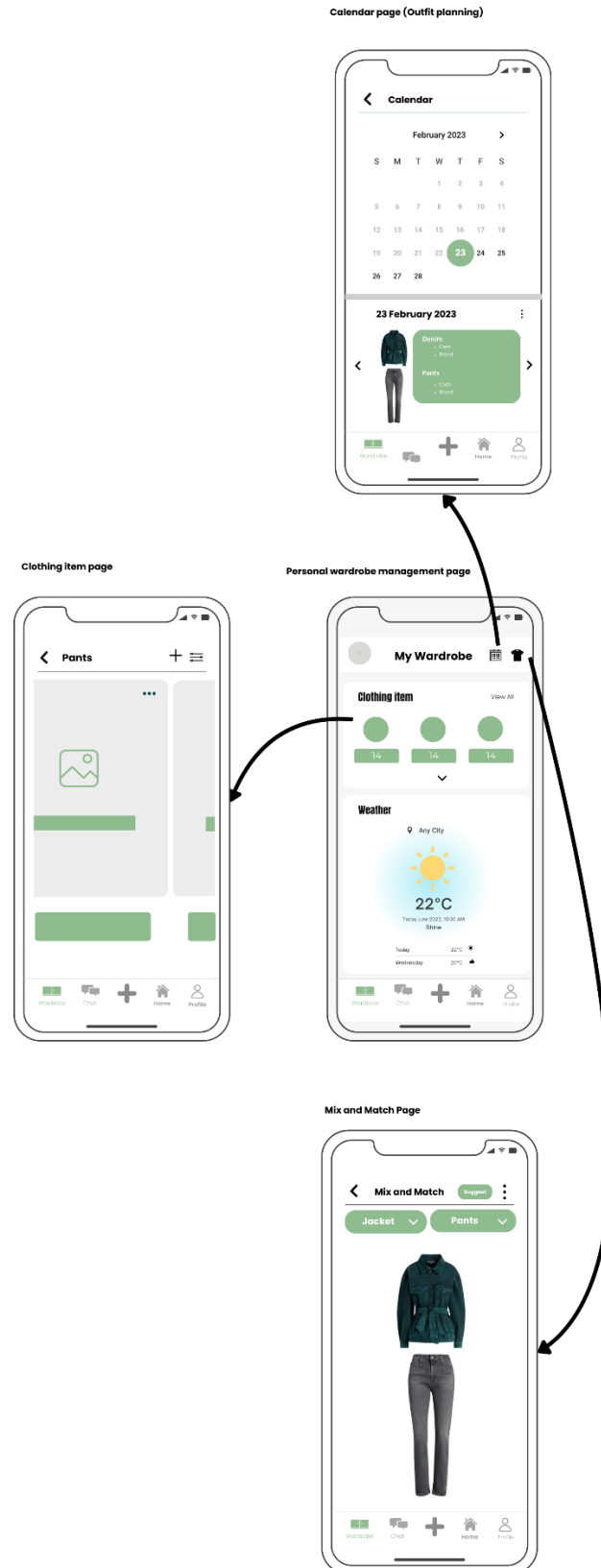


Figure 4.7 Prototype of Wardrobe

### **1. Personal wardrobe management page**

The personal wardrobe management page serves as a centralized interface for all wardrobe-related functions for the users. It will provide a dashboard displaying the number pants, clothes and so on that saved by user. Users can also easily access each clothing item by clicking on respective icon that provided in dashboard. It also will provide weather detail for users to view for deciding their outfit for the day.

### **2. Clothing item page**

The Clothing Item Page displays all the clothing items corresponding to the icon selected by the user. Users have the option to add new clothing item inside too. It also provides users option to filter their wardrobe based on some filtering option such as color, style and so on. It also enables users to modify the detail of clothing item or delete it. Additionally, the system allows users to list clothing items on the second-hand market if they wish to sell them.

### **3. Mix and Match page**

The Mix and Match Page offers users a feature to mix and match their clothing items to create outfits. After assembling an outfit, users can save and share it. The page also includes filtering options for organizing clothing items which user not only can match the clothes from personal wardrobe, they also can match the clothes from second-hand item market. Besides, it also has a "suggest" button, which automatically recommends outfits based on the items in the wardrobe or clothing item from second-hand item market.

### **4. Calendar page (Outfit planning)**

This calendar page also known as the outfit planning page which displays saved outfits on a calendar interface. User can click to the specific dates and view the outfit saved for those days. Each date on the calendars can saved few of the outfits that providing user with an organized view of their planned outfit.



4.5.5 Profile

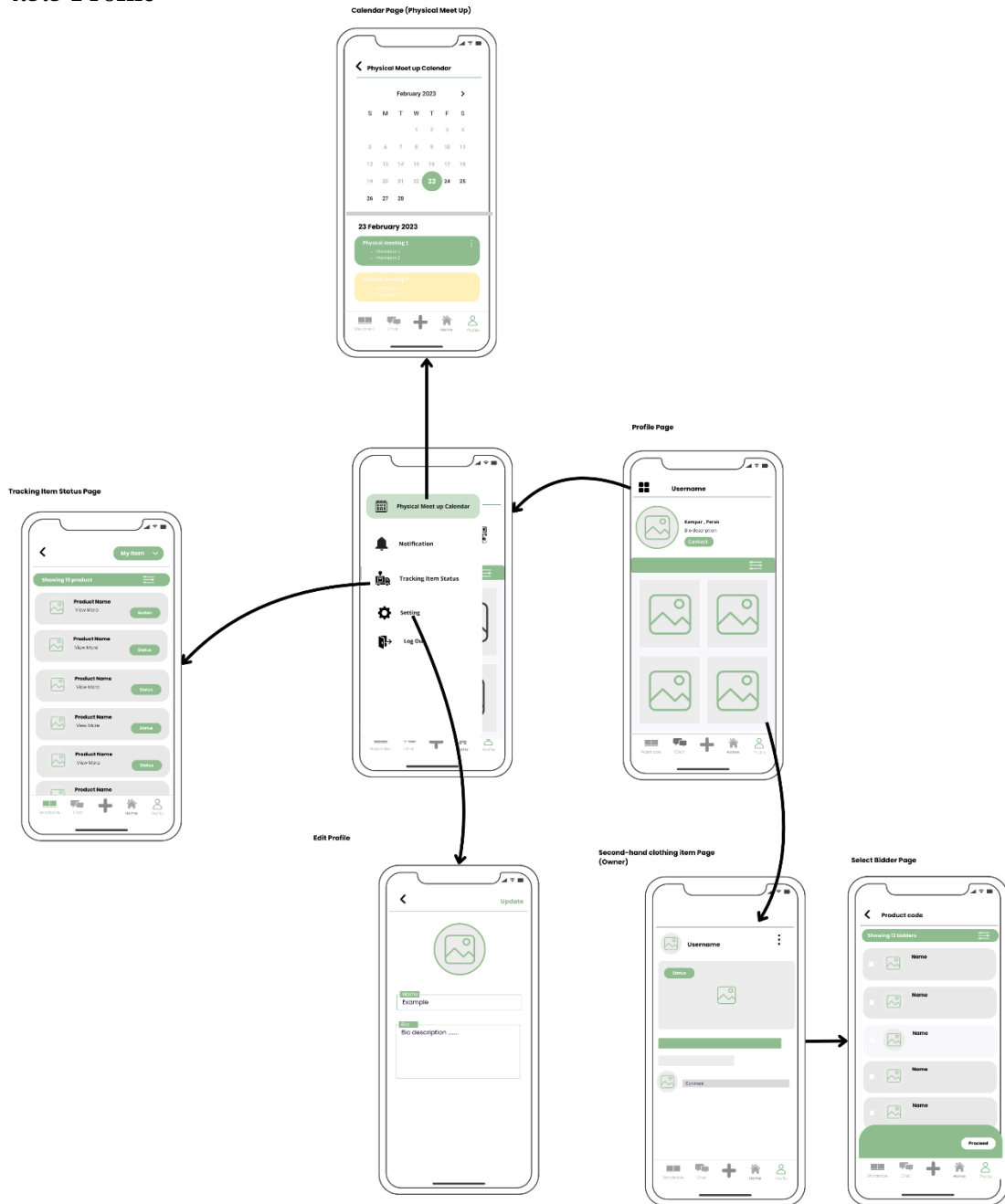


Figure 4.8 Prototype of Profile

1. Profile page

The profile page serves as a comprehensive hub for user information and activity related to second-hand clothing applications. This page will display the user's detail and all the second-hand clothing item that created by the users. Besides, it offers various features for user convenience, including access to the physical meet-up calendar, notifications, tracking item status, options to scan and modify personal information and so on.

## **2. Second-hand clothing Item Page and Select Bidder Page**

When users click on the one of the second-clothing item post that display in Profile page , users will be navigated to second-clothing item page and they can view the detailed information about the second-hand clothing item. Users also have the option to modify or delete the post. Besides, users can navigate to the Select Bidder Page, where they can choose the desired bidder for the item among the available options. It allows users to make informed decisions regarding the sale of their second-hand clothing items.

## **3. Calendar Page (Physical Meet Up)**

The Calendar Page for Physical Meet-Up provides users with a visual representation of their scheduled meetings. Users can click on the specific dates to view the details of upcoming physical meet-ups scheduled for those days. Users also have option to delete the meeting schedule or modify the schedule information. It allows users easily manage their meet up appointments.

## **5. Tracking item status page**

The tracking item status page serves as a platform for users to monitor the status of their second-hand clothing items. Users can track the delivery progress of the item they have purchased. Users who are selling clothing items, the page allows them to update the tracking status of the items they have shipped, providing buyers with visibility into the shipping process.

## **6. Update Personal Information Page**

The Update Personal Information Page allows users to modify or update their personal details stored within the system. Users can change username, bio and so on. This page ensures that users have control over their personal data and can keep their information accurate and up to date.

### 4.5.6 Add Post

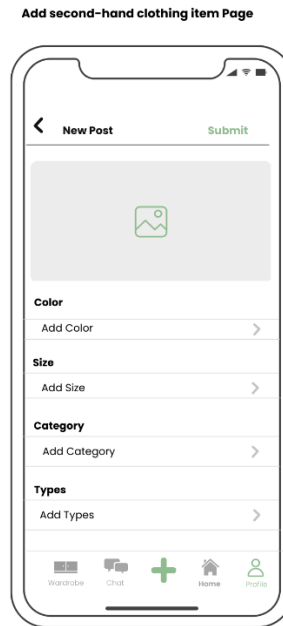


Figure 4.9 Prototype of Add Post

#### 1. Add second-hand clothing item page

The Add second-hand clothing item page enable users to create a second-hand clothing item post to sell their product. Users may require inserting all the necessary information that required for listing, which to ensure to get the details about the second-hand clothing item.

## CHAPTER 5 System Implementation

### 5.1 Hardware

The hardware that used to develop this second-hand clothing application which is stated in Table and the android mobile phone that used for testing which is also stated in Table 5.1.

Description	Specifications
Model	Asus Vivobook A512FL
Processor	Intel i5 8265U
Operating System	Window 10
Memory	4GB ,DDR4-2666
Storage	512GB SSF

*Table 5.1 Table of laptop information.*

Description	Specifications
Model	Oppo A5s
Processor	Mediatek MT6765 Helio P35
RAM	2GB
Storage	32GB

*Table 5.2 Table of android mobile device information.*

### 5.2 Software

To set up a React Native development environment, it required installing and configuring Node.js, Expo, React Native and Visual Studio Code. Node.js provides the runtime environment to execute the JavaScript which also allows developers to write the server-side scripts in JavaScript. React Native is an open-source UI software

## CHAPTER 5

framework that can be used in developing this project [12]. Expo can provide a tool and service that can be used in testing or previewing the React Native application in real-time on a physical device [13]. Visual Studio Code is a tool for web and mobile technologies that has built-in support for Node.js development.

Steps Taken to Setup Software:

- Install Node.js from website by downloading and running the installer.
- Install Visual Studio Code from website by downloading and running the installer.
- Use command “expo init ProjectName to create a react native project.
- Start the project by running it via command prompt.
- Download Expo then Scan QR code to test the project.

### **5.3 Google Firebase**

Firebase serves as a strong backbone for our second-hand clothing application, providing a suitable tool and service that are critical to its functionality. Firebase also provides a range of services including cloud storage, real time database, authentication, analytics and so on. During the initial stages of development, Firebase authentication is integrated with the second-hand clothing application to secure user access and verifying the user's identity. Firebase cloud storage also integrates with the second-hand clothing application that can be used to store and manage application data.

Steps Taken to Set Up Firebase and configured Firebase services that needed:

- Created a Firebase account.
- Add a new project with provided a name for the project.
- Integrated the Firebase SDK to the project that created.
- Configured Authentication for user sign-in

- Configured Cloud Storage for file storage.

## 5.4. Setting and Configuration

This section will show the key settings and configurations necessary for this application. These configurations ensure that the project is correctly set up and the application builds and run smoothly across different environments.

### 5.4.1 Top-Level Build Configuration (build.gradle)

This top-level 'build.gradle' file is used for setting the global configuration options that need to be applied to all sub-projects or modules within the project. This includes setting up the build environment, controlling dependencies, and necessary characteristics.

Key configurations:

- SDK and Tools Versions:

These properties are to define the version of the Android SDK, build tools and Kotlin that are used across the project. Having these settings can ensures the consistency across all modules.

```

ext {
    buildToolsVersion = findProperty('android.buildToolsVersion') ?: '34.0.0'
    minSdkVersion = Integer.parseInt(findProperty('android.minSdkVersion') ?: '23')
    compileSdkVersion = Integer.parseInt(findProperty('android.compileSdkVersion') ?: '34')
    targetSdkVersion = Integer.parseInt(findProperty('android.targetSdkVersion') ?: '34')
    kotlinVersion = findProperty('android.kotlinVersion') ?: '1.9.23'

    ndkVersion = "26.1.10909125"
}

```

*Figure 5.1 Screenshot of SDK and Tools Version*

- Repositories and Dependencies

This block lists the repositories from which dependencies are retrieved as well as the classpath dependencies that are necessary for this Android build tools and React Native Gradle plugin, among other things, in order to create the project.

```

repositories {
    google()
    mavenCentral()
}
dependencies {
    classpath('com.android.tools.build:gradle')
    classpath('com.facebook.react:react-native-gradle-plugin')
    classpath('org.jetbrains.kotlin:kotlin-gradle-plugin')
}

```

*Figure 5.2 Screenshot of Repositories and Dependencies*

### 5.4.2 Module-Level Build Configuration (app/build.gradle)

The module-level build.gradle file located in the app directory is use for configuring how the Android app module is built. It will include all the setting specific to the application such as the SDK versions, application ID, dependencies and so on.

#### Key Configurations:

- **Android SDK and Build Tools:**

This section is to defines the Android SDK version to minimum SDK version, application ID and the target SDK Version. Besides, it also contains the version information such as version code and version name.

```

android {
    ndkVersion rootProject.ext.ndkVersion

    buildToolsVersion rootProject.ext.buildToolsVersion
    compileSdk rootProject.ext.compileSdkVersion

    namespace "com.awesomeproject"
    defaultConfig {
        applicationId "com.awesomeproject"
        minSdkVersion rootProject.ext.minSdkVersion
        targetSdkVersion rootProject.ext.targetSdkVersion
        versionCode 1
        versionName "1.0"
    }
}

```

*Figure 5.3 Screenshot of Android SDK and Build Tools*

- **Signing Configurations**

This signing configs is importance for generating the signed APKs during development and for distribution in production environments.

```

signingConfigs {
  debug {
    storeFile file('debug.keystore')
    storePassword 'android'
    keyAlias 'androiddebugkey'
    keyPassword 'android'
  }
}

```

*Figure 5.4 Screenshot of Signing Configurations*

- **Build Types**

In order to optimize the program for production, the “release” build type is set up to use Proguard for code minification.

```

buildTypes {
  debug {
    signingConfig signingConfigs.debug
  }
  release {
    // Caution! In production, you need to generate your own keystore file.
    // see https://reactnative.dev/docs/signed-apk-android.
    signingConfig signingConfigs.debug
    shrinkResources (findProperty('android.enableShrinkResourcesInReleaseBuilds')?.toBoolean() ?: false)
    minifyEnabled enableProguardInReleaseBuilds
    proguardFiles getDefaultProguardFile("proguard-android.txt"), "proguard-rules.pro"
  }
}

```

*Figure 5.5 Screenshot of Build Types*

### 5.4.2 Project Configuration (settings.gradle)

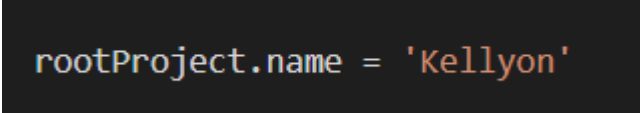
This “settings.gradle” is used to ensure the proper integration of React Native and Expo within the project, specific configuration script are utilized.

#### Key Configurations:

- **Root project name**

The name for this root project is “Kellyon.






```
rootProject.name = 'Kellyon'
```

*Figure 5.6 Screenshot of root project name*

- Dependency Management

This dependencyReslutionManagement used to specify the source of the dependency versions for React Native libraries to ensure consistency across the project.

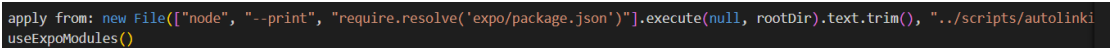


```
dependencyResolutionManagement {
  versionCatalogs {
    reactAndroidLibs {
      from(files(new File(["node", "--print", "require.resolve('react-native/package.json')"].execute(null, rootDir).text.trim()), "../grad
    }
  }
}
```

*Figure 5.7 Screenshot of Dependency Management*

- Expo Integration

This script is used to automatically set up the Expo modules in the project, which includes a file that helps to link the Expo components.

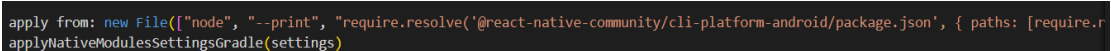


```
apply from: new File(["node", "--print", "require.resolve('expo/package.json')"].execute(null, rootDir).text.trim(), "../scripts/autolinki
useExpoModules()
```

*Figure 5.8 Screenshot of Expo Integration*

- Native Modules Configuration

This script is used for setting the configuration needed for React Native modules, which makes sure that the native components are working properly.



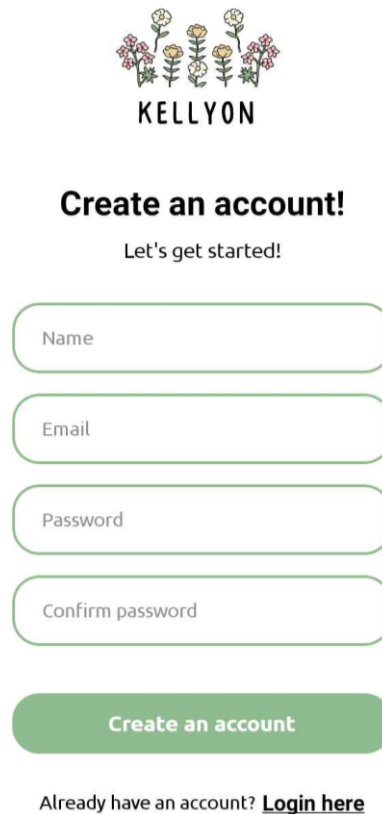
```
apply from: new File(["node", "--print", "require.resolve('@react-native-community/cli-platform-android/package.json', { paths: [require.r
applyNativeModulesSettingsGradle(settings)
```


*Figure 5.9 Native Modules Configuration*

## 5.5 System Operation

### 5.5.1 Sign up

Sign up page is where that allows new users to create an account for this second-hand clothing application. When user inserted all the required information that needed from the system. The Firebase authentication will generate a unique user ID (UID) for the user as shown in Figure 5.10 and data will be saved as shown in Figure 5.11.



  
**Create an account!**  
Let's get started!

Name

Email

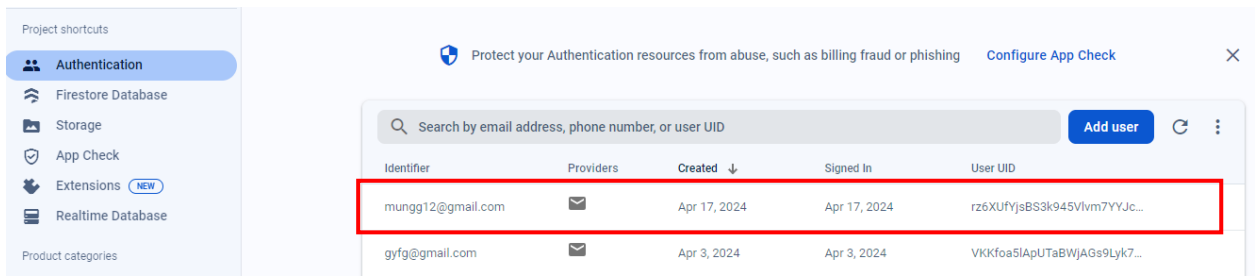
Password

Confirm password

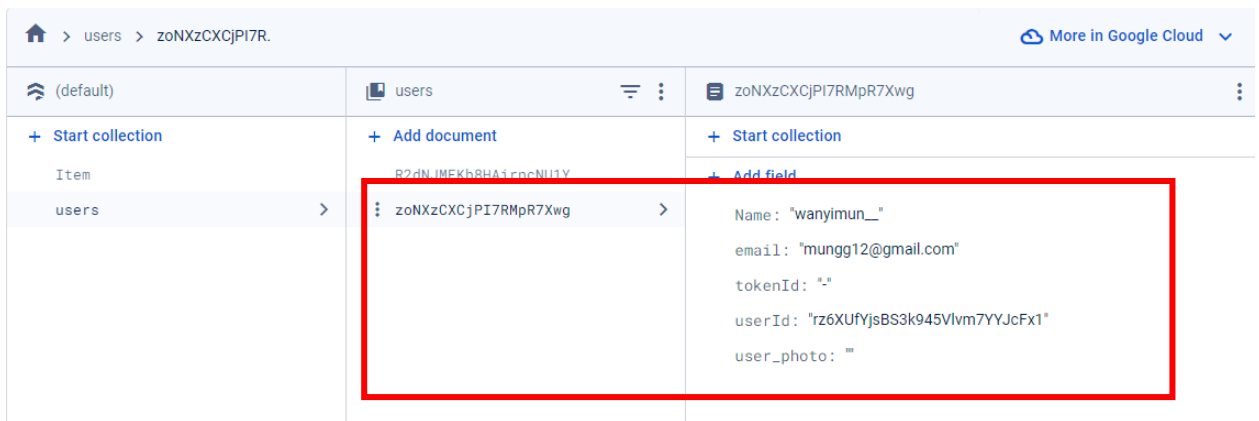
**Create an account**

Already have an account? [Login here](#)

*Figure 5.10 Screenshot of Sign-up Page*



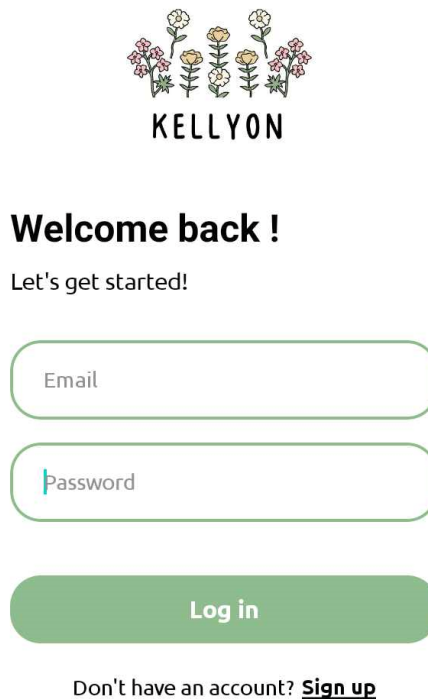
*Figure 5.11 Screenshot of Unique user (UID) of new user generated by Firebase Authentication*



*Figure 5.12 Screenshot of new user's data successfully saved*

### 5.5.2 Login

Log in page allows registered users to enter credentials to access their account and only those successfully authenticated with email address and password can enter to the second-hand clothing application.



*Figure 5.13 Screenshot of Log in Page.*

### 5.5.3 Home

This home pages serves as a central hub for users which providing multiple features that enable users to navigate or explore of the second-hand clothing item as shown in Figure 5.14. It will provide nearby posts and recommended posts based on user preferences, frequently viewed posts, and more. Users can choose to search using the categories icon provided, and the system will display all items within the selected category, as shown in Figure 5.15.

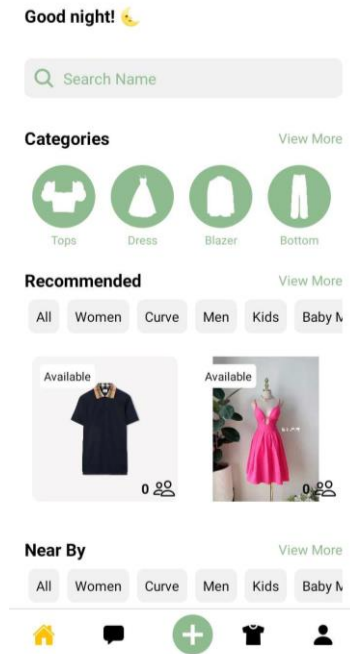


Figure 5.14 Screenshot of Home Page

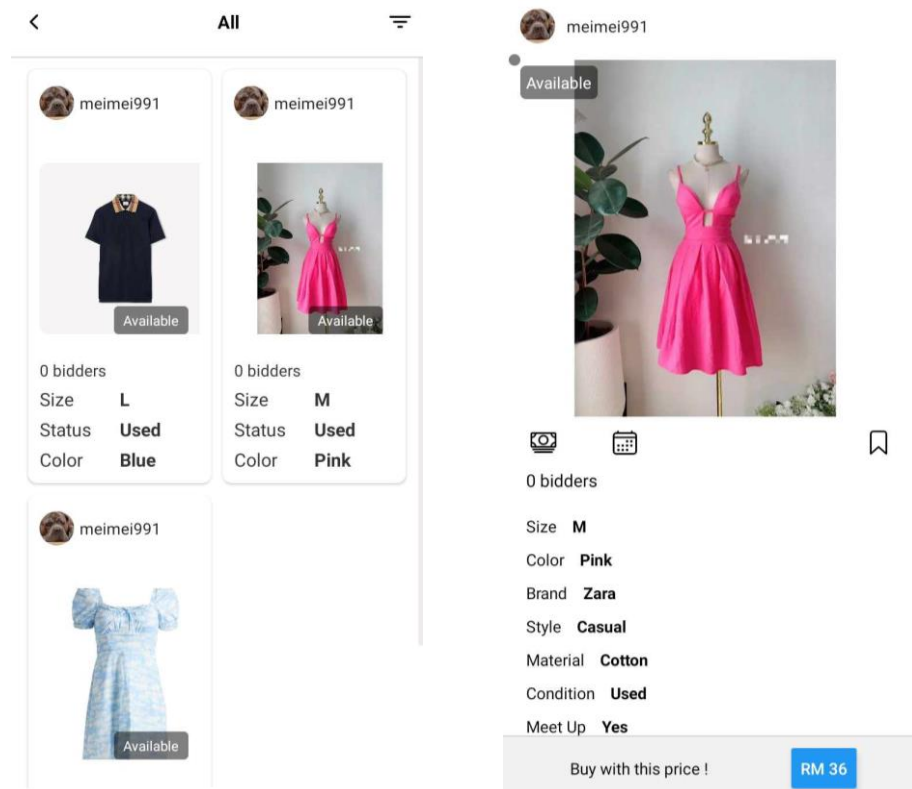
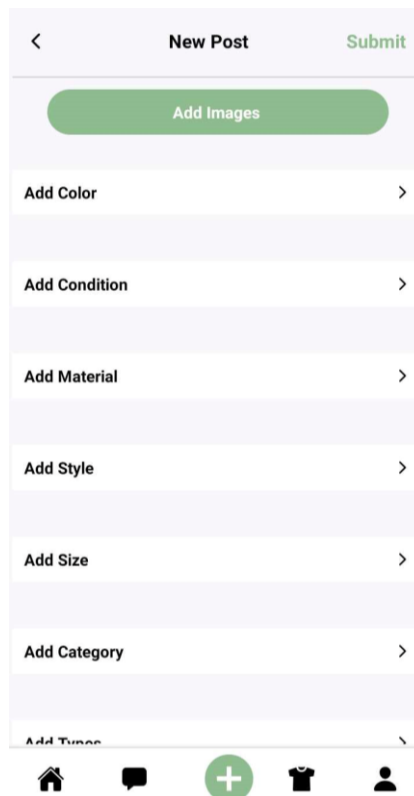


Figure 5.15 Screenshot of result of showing the selected category.

#### 5.5.4 Add Post (Secondhand marketplace)

Add Post page which is a page that enables users to create a second-hand clothing item post to sell their product. Users may need to insert all the necessary information, as shown in Figure 5.16. After a user inserts an image, the image processing begins, as shown in Figure 5.17. This process automatically helps users select the type and color from the images. After the user inserts all the necessary information, the data will be saved in the Google firebase as shown in Figure 5.18.



*Figure 5.16 Screenshot of Add Post Page*

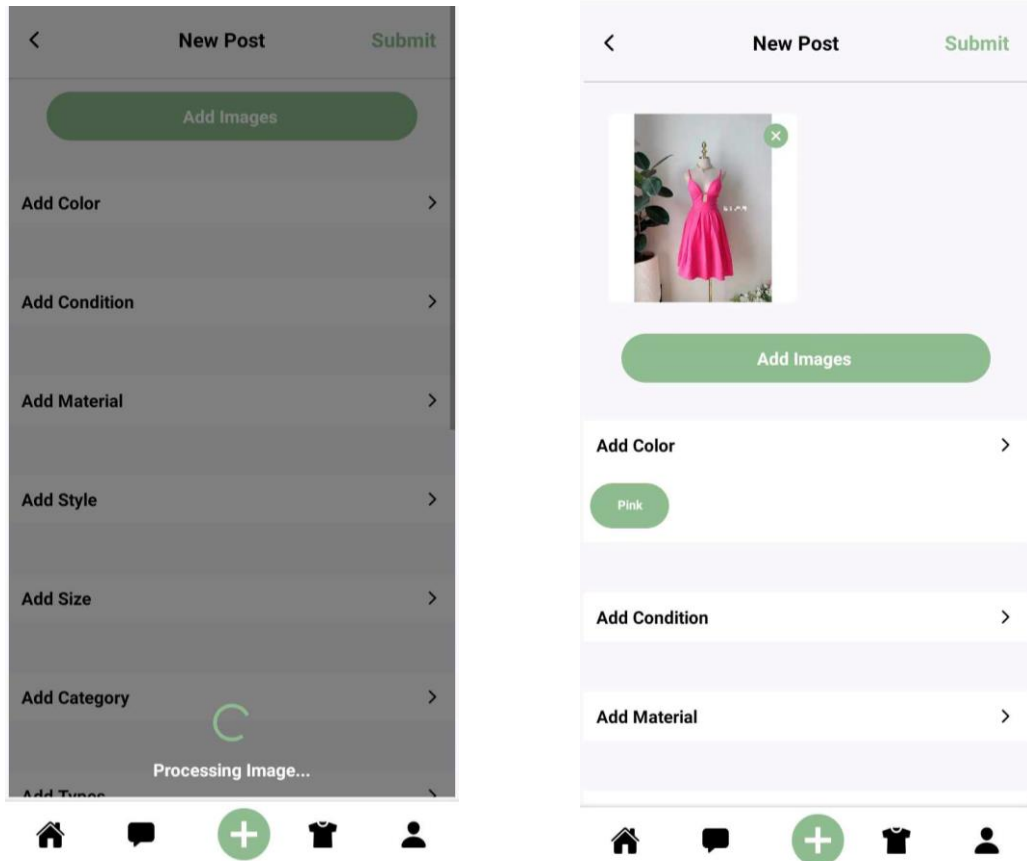


Figure 5.17 Screenshot of Image detection Process

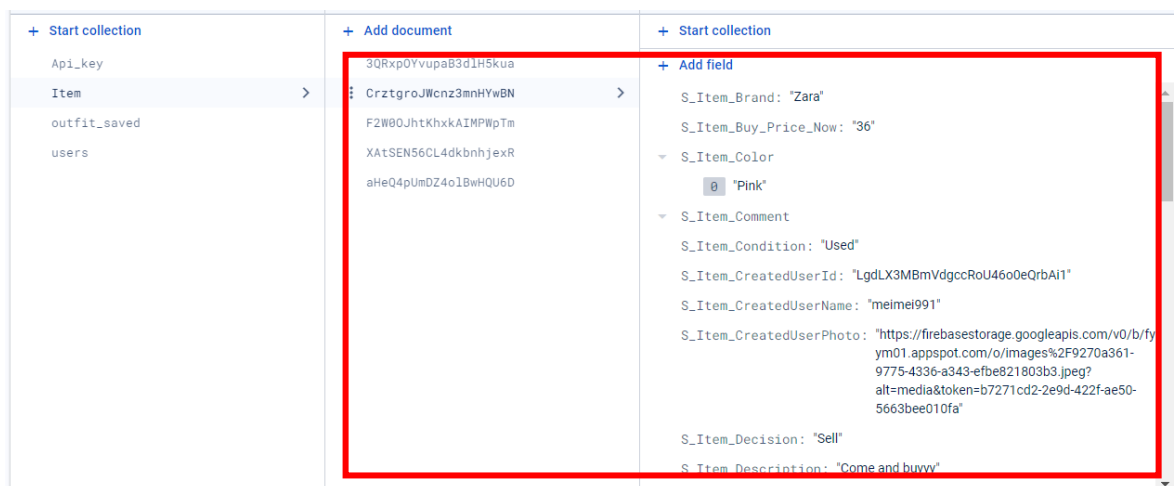


Figure 5.18 Screenshot of Post Successfully Saved in Database

### 5.5.5 Search Name / Email

The Search Name / Email Page allows users to search for usernames and navigate to specific profiles.

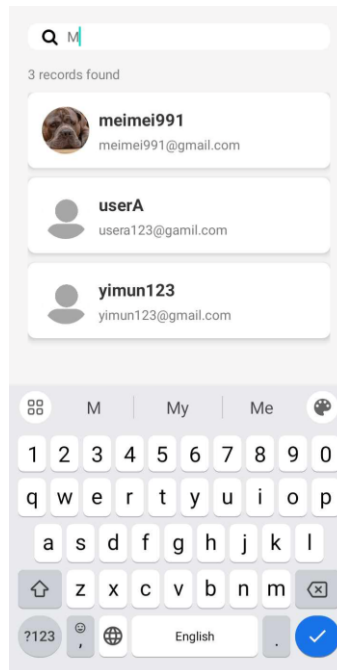
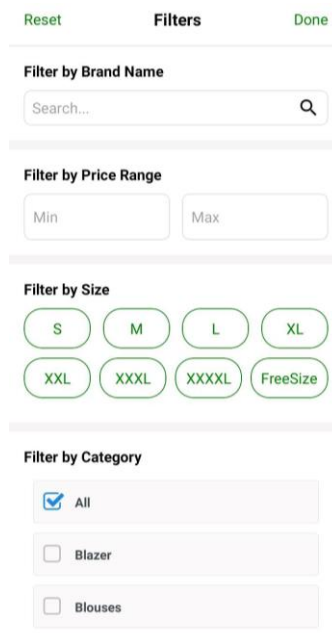


Figure 5.19 Screenshot of Search Name / EmailPage

### 5.5.6 Filter

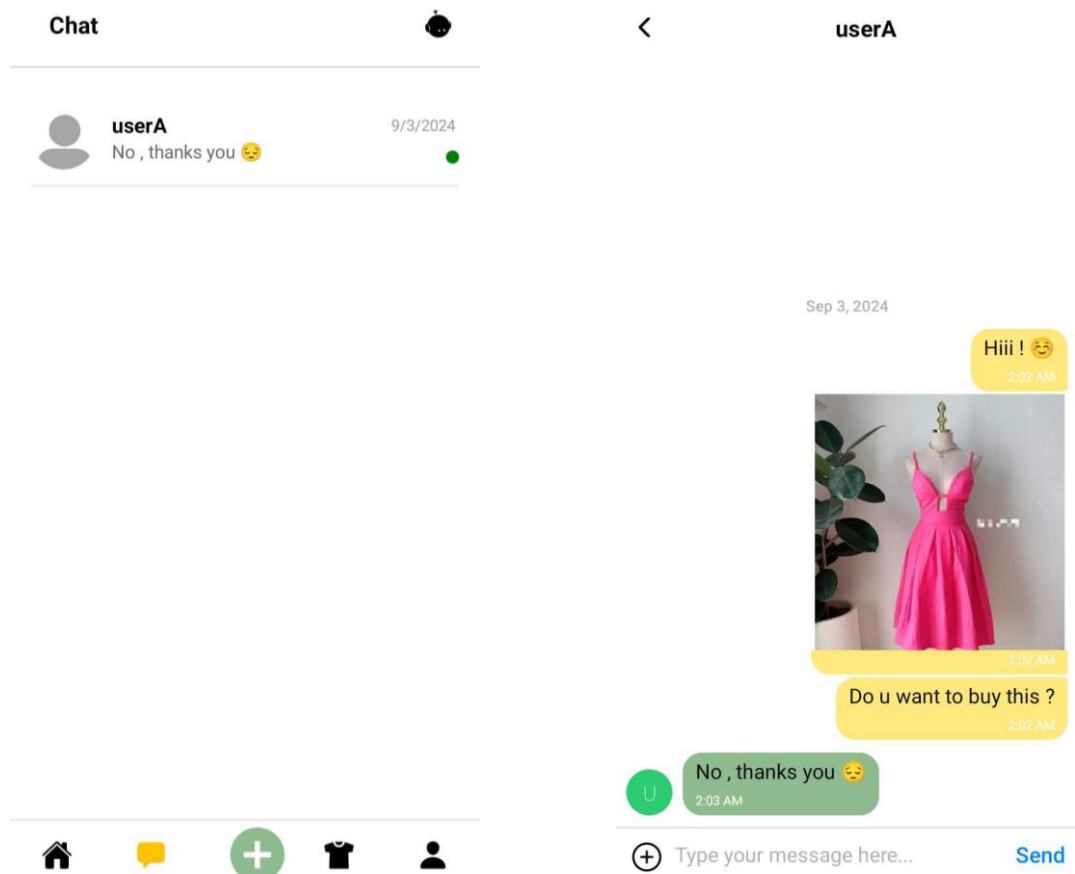
The Filter Page allows users to filter the post based on brand name, size, category, type , color , meet up and delivery.





*Figure 5.20 Screenshot of Filter Page***5.5.7 Chat**

The Chat Page enables users to engage in conversations with friends, interact with sellers, and connect with others on the platform.

*Figure 5.21 Screenshot of Chat Page***5.5.8 AI Chat**

The AI chatbot allows users to choose between two modes as initially shown in Figure 5.22: Assistant Mode and Recommend Item Mode. In Assistant Mode, depicted in Figure 5.23, users can send messages to request recommendations for their outfits. In Recommend Item Mode, shown in Figure 5.24, users can enter a keyword, and the system will recommend an item based on that keyword from the second-hand marketplace.

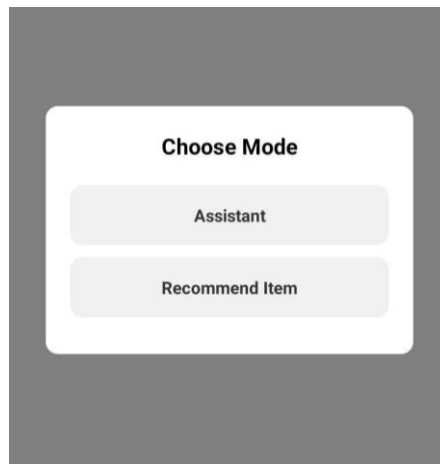


Figure 5.22 Screenshot of Mode Selection Page

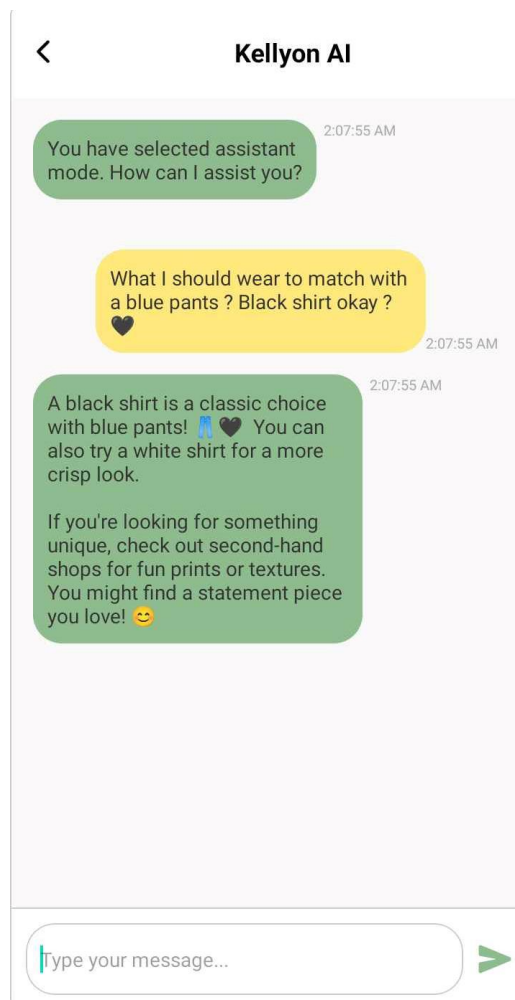
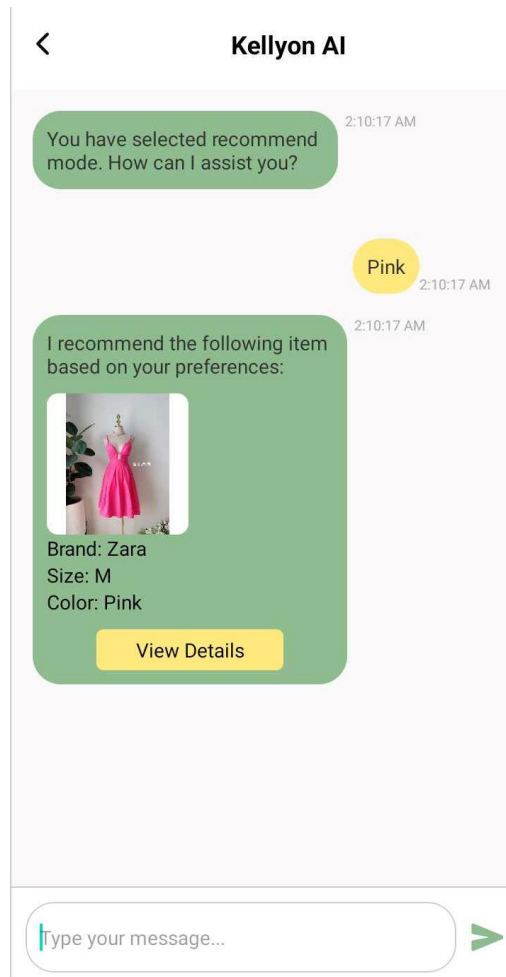


Figure 5.23 Screenshot of Assistant Mode



*Figure 5.24 Screenshot of Recommend Item Mode*

### **5.5.9 My Wardrobe (Personal Wardrobe Management)**

The My Wardrobe Page features a dashboard that displays the number of clothing items a user has saved in their virtual wardrobe, as illustrated in Figure 5.25. Additionally, this page includes a weather module that provides users with outfit suggestions tailored to current weather conditions in Figure 5.26.

When the user selects an icon in the dashboard, it navigates to the page that displays that specific item as shown in Figure 5.27. Also, it has options for users to choose from, as shown in Figure 5.28, including adding clothing for sale, editing information, and deleting. Besides, it also enables to add the clothing item to personal wardrobe as shown in Figure 5.29 with image detection and help to determine the category and color.

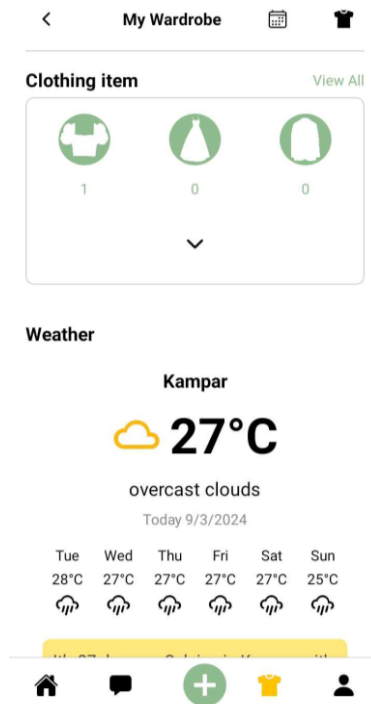


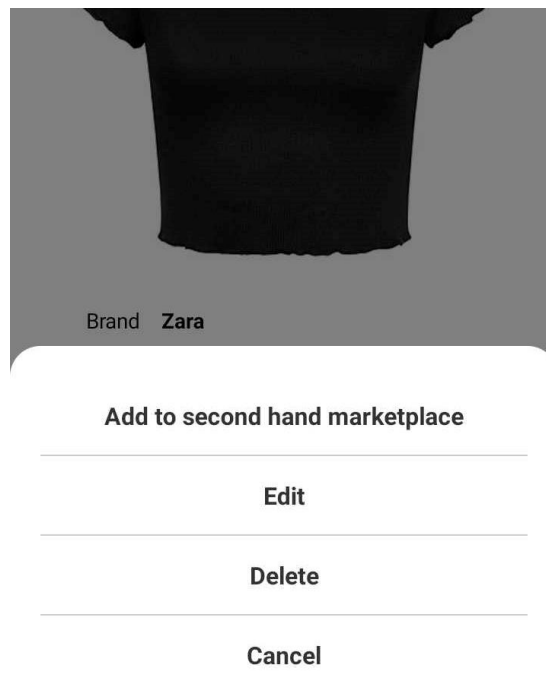
Figure 5.25 Screenshot of My Wardrobe Page



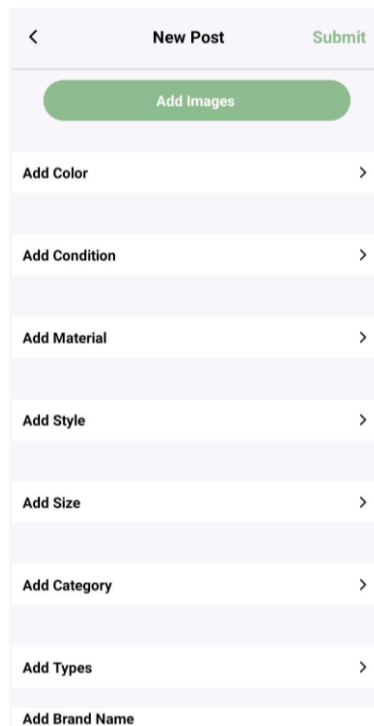
Figure 5.26 Screenshot of Outfit Suggestions



*Figure 5.27 Screenshot of Display the clothing item from personal wardrobe*



*Figure 5.28 Screenshot of Option for processing the clothing item from personal wardrobe*



The screenshot shows a mobile application interface for adding a new post. At the top, there is a navigation bar with a back arrow on the left, the text "New Post" in the center, and a "Submit" button on the right. Below the navigation bar is a large green button labeled "Add Images". Underneath this are several input fields, each with a right-pointing chevron icon: "Add Color", "Add Condition", "Add Material", "Add Style", "Add Size", "Add Category", "Add Types", and "Add Brand Name".

*Figure 5.29 Screenshot of Add Clothing item to personal wardrobe*

#### **5.5.10 Mix and Match**

The Mix and Match Page allows users to pair clothing items from the second-hand marketplace or their E-cupboard. Additionally, it features a 'Suggest' button that recommends outfits to users. Furthermore, this page provides the option for users to save outfits after creating matches in Figure 5.30.

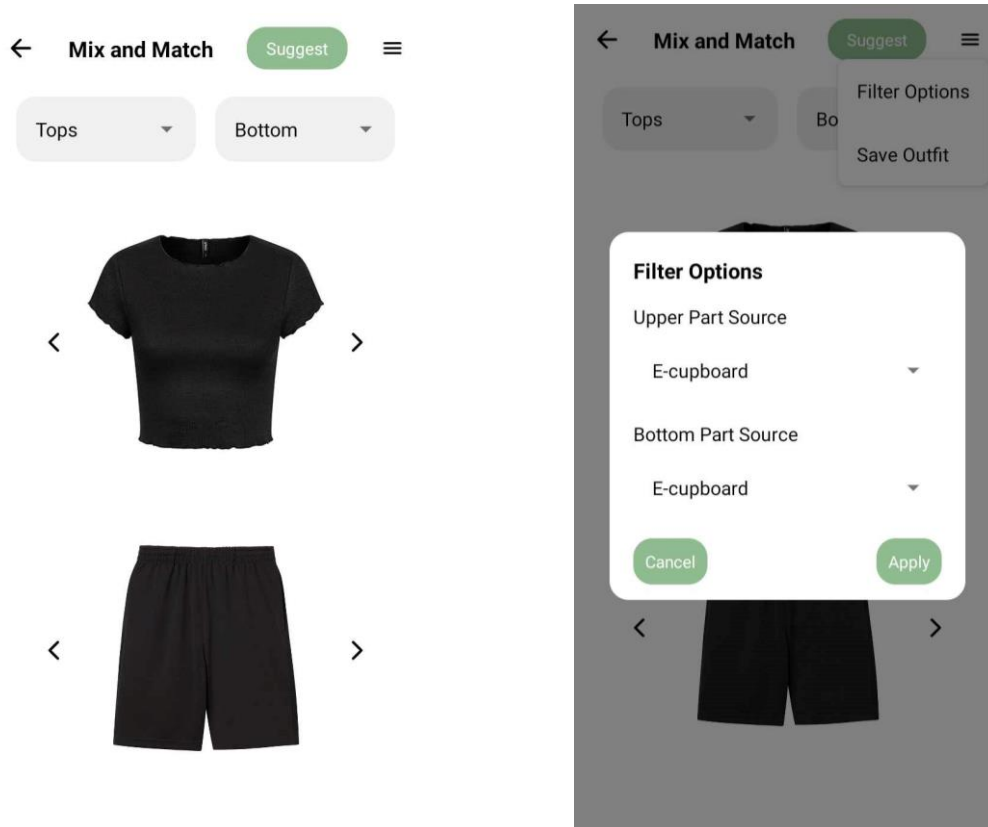


Figure 5.30 Screenshot of Mix and Match Page

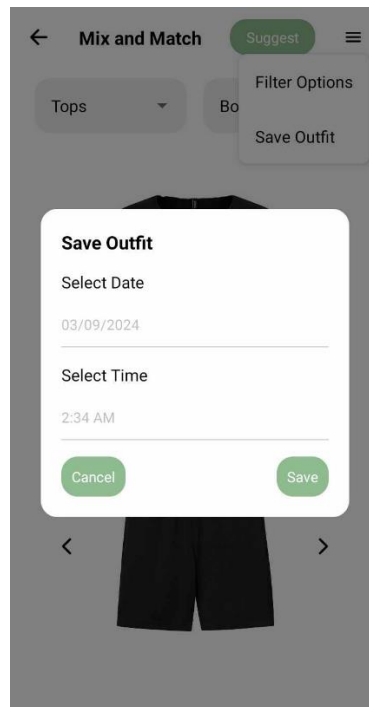


Figure 5.22 Screenshot of Save Outfit

### 5.5.11 Calendar (Saved Outfit)

The Calendar Page displays all the outfits saved from the Mix and Match Page.

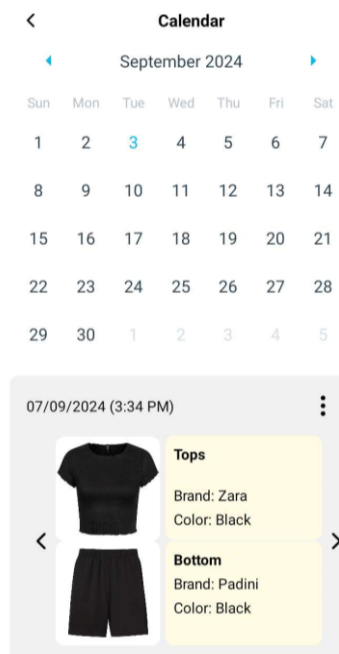
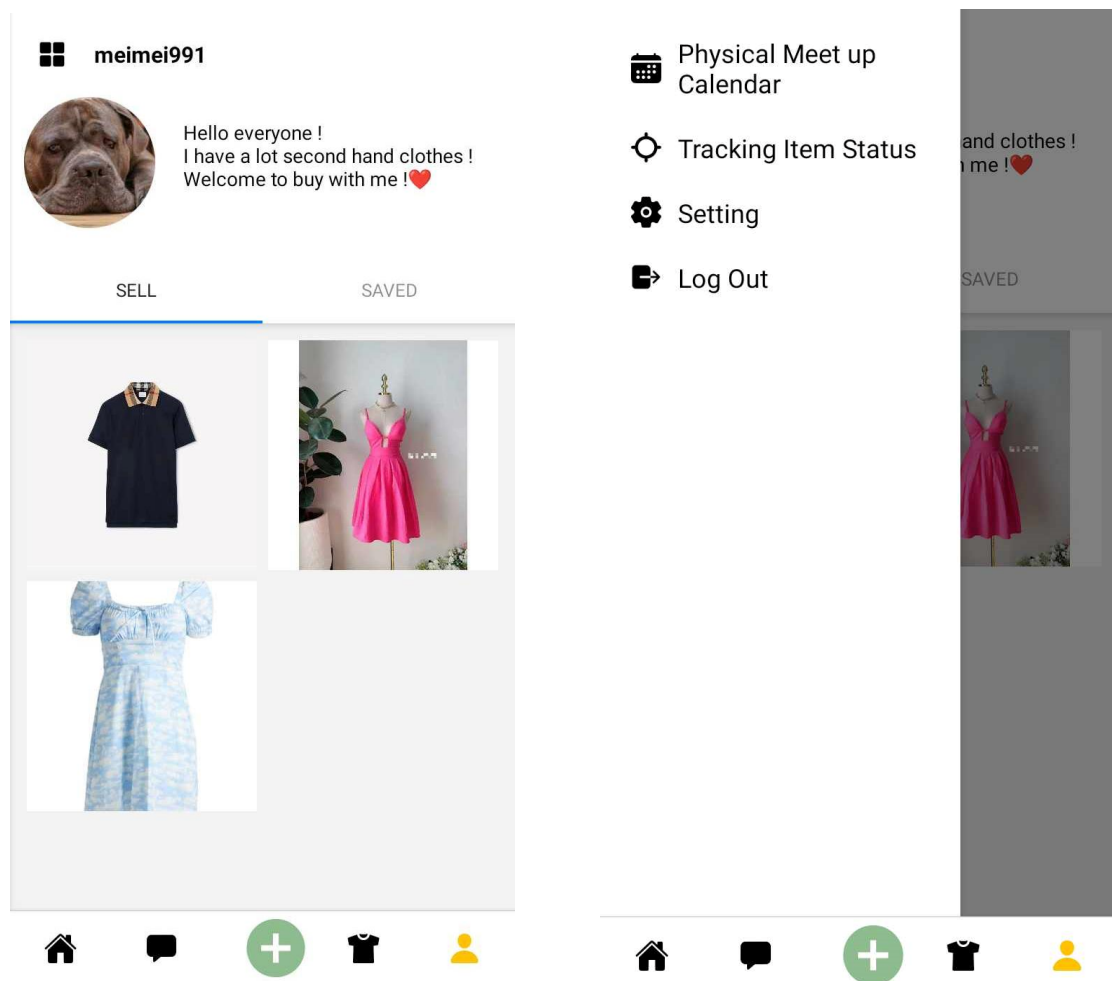


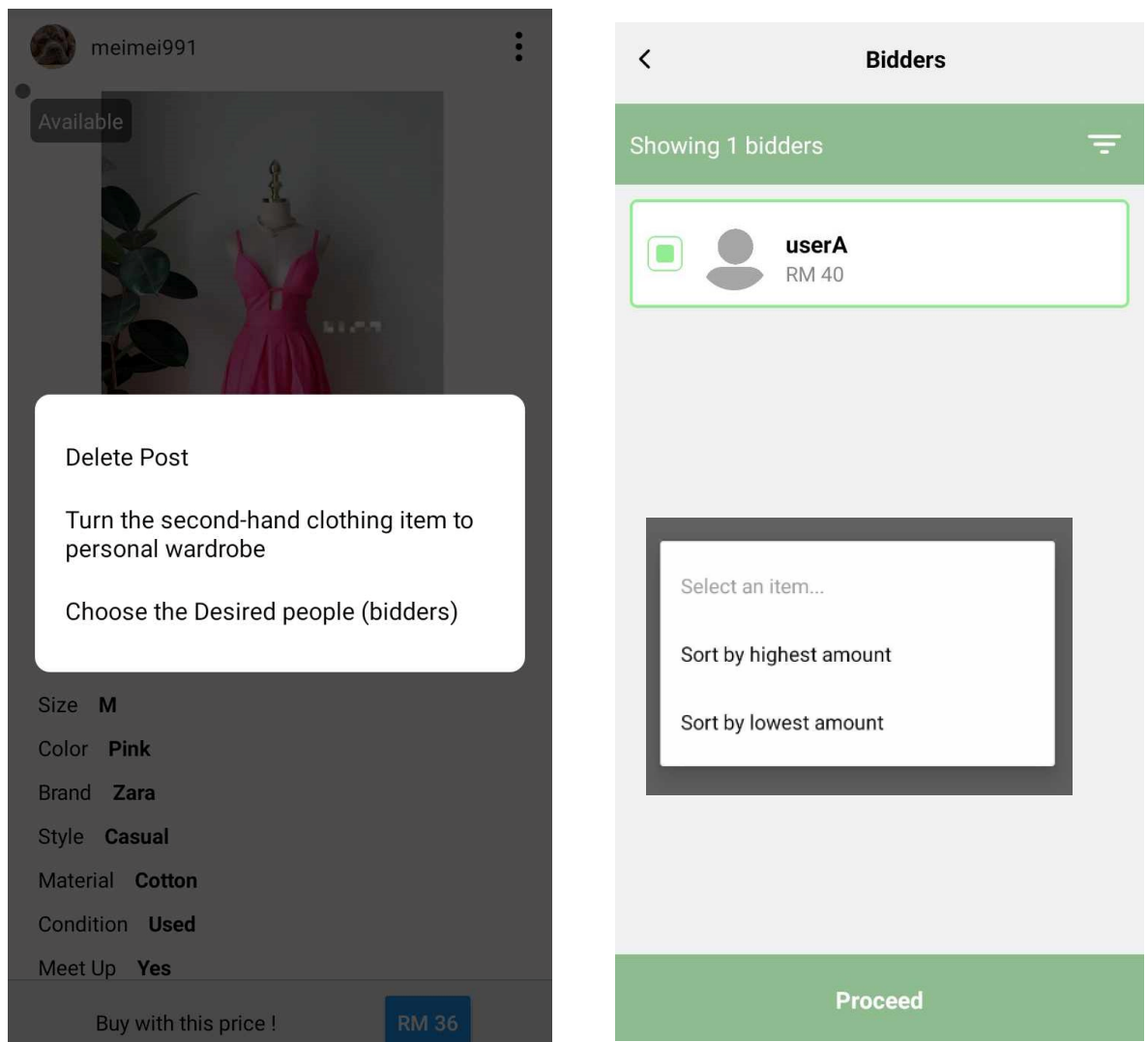
Figure 5.32 Screenshot of Calendar Page (Saved Outfit)



### 5.5.12 Profile

The profile page serves as a comprehensive hub for user information and activity related to second-hand clothing applications. Here, users can seamlessly navigate through a collection of second-hand clothing items they're selling. Users can choose not to sell each post, which will then automatically be returned to their personal wardrobe. Furthermore, users can select their preferred bidders as well as delete the post.

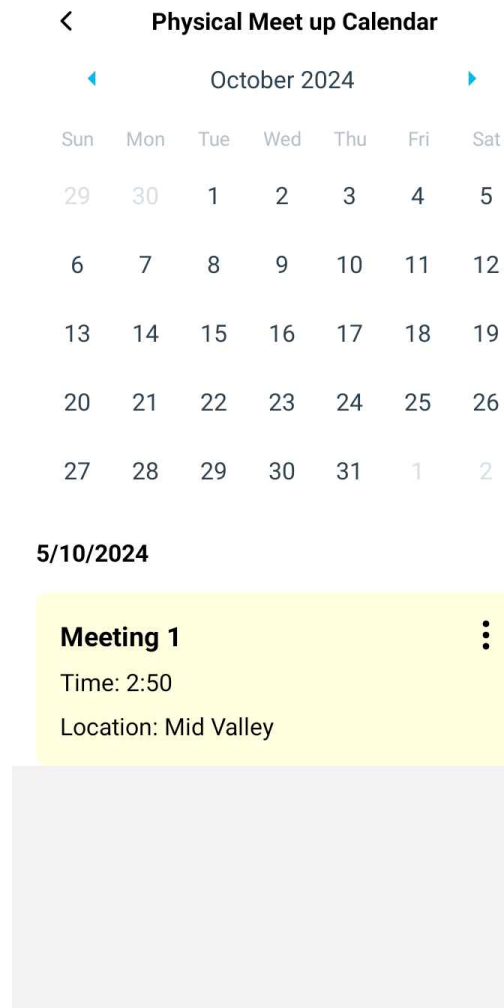




*Figure 5.33 Screenshot of Profile Page*

### 5.5.13 Physical Meet Up Calendar

The Physical Meet Up Calendar Page is a feature that displays a calendar. When users click on a date, it shows the details of the scheduled physical meetups, allowing buyers to view or inspect clothing items in person.



*Figure 5.34 Screenshot of Physical Meet Up Calendar Page*

#### **5.5.14 Tracking Item Status**

The Tracking Item Status Page allows users to update an item's status of "My Item" which the items that I sell and "My Purchases" which the items that I buy. Additionally, it also enables user to view its history.

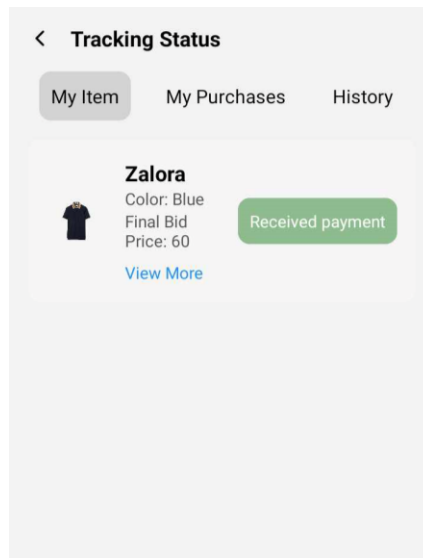


Figure 5.35 Screenshot of Tracking Item Status Page

### 5.5.15 Update Profile

The Update Profile page allows users to update their name, bio, and profile picture.

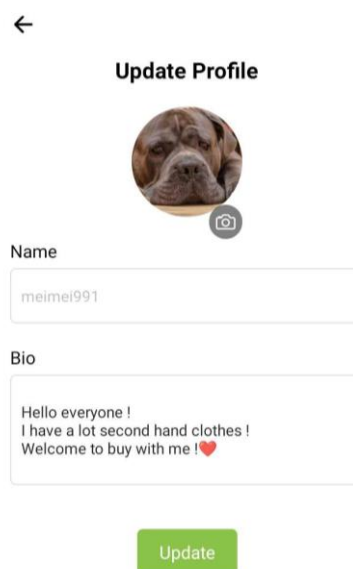


Figure 5.36 Screenshot of Update Profile Page

## Chapter 6 SYSTEM EVALUATION AND DISCUSSION

### 6.1 Black Box Testing

In this evaluation, black-box testing is employed to validate the system's functionality. By focusing on the inputs and outputs, this approach ensures that the application behaves as expected without examining its internal code structure.

#### 6.1.1 Register Page

*Table 6.1 Table of Register Page Test Cases.*

Test Case	Expected Result	Actual Result	Status
Render the Register Page correctly	The screen renders with the logo, input fields (Name, Email, Password, Confirm Password), and buttons.	The screen renders with the logo, input fields (Name, Email, Password, Confirm Password), and buttons.	Pass
Empty name field	Show error alert	Show error alert	Pass
Empty email field	Show error alert	Show error alert	Pass
Empty password field	Show error alert	Show error alert	Pass
Empty confirm password field	Show error alert	Show error alert	Pass
Wrong name email format	Show error alert	Show error alert	Pass
Email already exists	Show error alert	Show error alert	Pass

Password not same with confirm password	Show error alert	Show error alert	Pass
All field insert and password same with confirm password	User data is stored to the database and navigate to the “Home” Page	User data is stored to the database and navigate to the “Home” Page	Pass

### 6.1.2 Login Page

*Table 6.2 Table of Login Page Test Cases.*

Test Case	Expected Result	Actual Result	Status
Render the Login Page correctly	The screen renders with the logo, input fields (Email, Password), and buttons.	The screen renders with the logo, input fields (Email, Password), and buttons.	Pass
Empty email field	Show error alert	Show error alert	Pass
Empty password field	Show error alert	Show error alert	Pass
Wrong name email format	Show error alert	Show error alert	Pass
Email does not exist	Show error alert	Show error alert	Pass
Email and Password does not correct	Show error alert	Show error alert	Pass
All field insert and email with password correct	Navigate to the “Home” Page	Navigate to the “Home” Page	Pass

**6.1.3 Home Page***Table 6.3 Table of Home Page Test Cases.*

<b>Test Case</b>	<b>Expected Result</b>	<b>Actual Result</b>	<b>Status</b>
Render the Home Page correctly	The screen renders with search name / email, icon and so on.	The screen renders with search name / email, icon and so on.	Pass
Press Search Name	Navigate to Search Names page	Navigate to Search Names page	Pass
Press Tops Icon (Categories)	Navigate to Display page to display the Tops item	Navigate to Display page to display the Tops item	Pass
Press Dress Icon (Categories)	Navigate to Display page to display the Dress item	Navigate to Display page to display the Dress item	Pass
Press Blazer Icon (Categories)	Navigate to Display page to display the Blazer item	Navigate to Display page to display the Blazer item	Pass
Press Bottom Icon (Categories)	Navigate to Display page to display the Bottom item	Navigate to Display page to display the Bottom item	Pass
Press Jacket Icon (Categories)	Navigate to Display page to display the Jacket item	Navigate to Display page to display the Jacket item	Pass
Press Jumpsuit Icon (Categories)	Navigate to Display page to display the Jumpsuit item	Navigate to Display page to display the Jumpsuit item	Pass
Press Swimware Icon (Categories)	Navigate to Display page to display the Swimware item	Navigate to Display page to display the Swimware item	Pass
Press “View More” (Categories)	Navigate to Display page to display all item	Navigate to Display page to display all item	Pass
Recommended item	Provide recommended item based on user preference, saved item and so on	Provide recommended item based on user preference, saved item and so on	Pass

Press “All” Button (Recommended)	Navigate to Display page to display all recommended item	Navigate to Display page to display all recommended item	Pass
Press “Women” Button (Recommended)	Navigate to Display page to display item that for women	Navigate to Display page to display item that for women	Pass
Press “Curve” Button (Recommended)	Navigate to Display page to display item that for curve	Navigate to Display page to display item that for curve	Pass
Press “Men” Button (Recommended)	Navigate to Display page to display item that for men	Navigate to Display page to display item that for men	Pass
Press “Kids” Button (Recommended)	Navigate to Display page to display item that for kids	Navigate to Display page to display item that for kids	Pass
Press “Baby Meternity” Button (Recommended)	Navigate to Display page to display item that for Baby Meternity	Navigate to Display page to display item that for Baby Meternity	Pass
Press “View More” (Recommended)	Navigate to Display page to display all recommended item	Navigate to Display page to display all recommended item	Pass
Press recommended item	Display the recommended item with all the detail	Display the recommended item with all the detail	Pass
Press “All” Button (Near By)	Navigate to Display page to display all item that is near by the current user	Navigate to Display page to display all item that is near by the current user	Pass
Press “Women” Button (Near By)	Navigate to Display page to display item that for women that is near by the current user	Navigate to Display page to display item that for women that is near by the current user	Pass
Press “Curve” Button (Near By)	Navigate to Display page to display item that for curve that is near by the current user	Navigate to Display page to display item that for curve that is near by the current user	Pass



Press “Men” Button (Near By)	Navigate to Display page to display item that for men that is near by the current user	Navigate to Display page to display item that for men that is near by the current user	Pass
Press “Kids” Button (Near By)	Navigate to Display page to display item that for kids that is near by the current user	Navigate to Display page to display item that for kids that is near by the current user	Pass
Press “Baby Maternity” Button (Near By)	Navigate to Display page to display item that for Baby Maternity that is near by the current user	Navigate to Display page to display item that for Baby Maternity that is near by the current user	Pass
Press “View More” (Near By)	Navigate to Display page to display all item that is near by the current user	Navigate to Display page to display all item that is near by the current user	Pass
Press nearby item	Display the nearby item with all the detail	Display the nearby item with all the detail	Pass

#### 6.1.4 Search Name / Email Page

*Table 6.4 Table of Search Name / Email Page Test Cases.*

Test Case	Expected Result	Actual Result	Status
Render the Search Name / Email Page correctly	The screen renders with the search bar with search icon.	The screen renders with the search bar with search icon.	Pass
Enter a valid name/email	Displays corresponding user card(s) as the user types	System displays corresponding user card(s) as the user types	Pass

Select a user card	Navigate to the user's profile page	Navigate to the user's profile page	Pass
Enter a non-existent name / email	Didn't display anything and display 0 records found.	Didn't display anything and display 0 records found.	Pass
Enter name/email, then clear input	Didn't display anything and display 0 records found.	Didn't display anything and display 0 records found.	Pass
Navigate to current user's own profile	When selecting their own user card, system navigates to the "owner profile page" correctly	When selecting their own user card, system navigates to the "owner profile page" correctly	Pass

### 6.1.5 Display All Item Page

*Table 6.5 Table of Display All Item Page Test Cases.*

Test Case	Expected Result	Actual Result	Status
Render the Display All Item Page correctly	The screen renders with all items and some icon.	The screen renders with all items and some icon.	Pass
Press "Back" Icon	Navigate to the home page	Navigate to the home page	Pass
Display all item	When navigate to this page	When navigate to this page	Pass
Press "Filter" Icon	Navigate to filter page	Navigate to filter page	Pass

**6.1.6 Display Each Item Page***Table 6.6 Table of Display Each Item Page Test Cases.*

<b>Test Case</b>	<b>Expected Result</b>	<b>Actual Result</b>	<b>Status</b>
Render the Display Each Item Page correctly	The screen successful render with all the detail of item	The screen successful render with all the detail of item	Pass
Bid the item and higher the minimum bid price (User not owner of the post)	Successful bid and save in the database	Successful bid and save in the database	Pass
Bid the item and lower the minimum bid price (User is owner of the post)	Unable user to bid	Unable user to bid	Pass
Bid the item (User is owner of the post)	Unable to bid and Show error alert	Unable to bid and Show error alert	Pass
Add meet up and the date is not expired (User is not owner of the post)	Successful add meet up and save to the database	Successful add meet up and save to the database	Pass
Add meet up and the date is expired (User is not owner of the post)	Unable user to add meet up and Show error alert	Unable user to add meet up and Show error alert	Pass
Add meet up (User is the owner of the post)	Unable to add the meet up and Show error alert	Unable to add the meet up and Show error alert	Pass
Press Buy now price (User is not owner of the post)	Save to the database	Save to the database	Pass
Press Buy now price (User is the owner of the post)	Unable to proceed and Show error alert	Unable to proceed and Show error alert	Pass

Save Item	Successful to add to the database	Successful to add to the database	Pass
Send text for comment	Display to the page and save in the database	Display to the page and save in the database	Pass
Press Profile Avatar	Navigate to the User Profile or Owner User Profile	Navigate to the User Profile or Owner User Profile	Pass

### 6.1.7 Filter Page

*Table 6.7 Table of Filter Page Test Cases.*

Test Case	Expected Result	Actual Result	Status
Render the Filter Page correctly	The screen successful render with all filter options.	The screen successful render with all filter options.	Pass
Select a single filter (e.g., brand name)	Only items matching the selected brand are displayed.	Only items matching the selected brand are displayed.	Pass
Select multiple filters (brand, size, and color)	Items matching all selected filters are displayed.	Items matching all selected filters are displayed.	Pass
Apply filters and press "Done"	The page updates to show filtered items in Display page and closes the filter UI.	The page updates to show filtered items in Display page and closes the filter UI.	Pass
Change filters multiple times and press "Done"	Items reflect the latest selected filters.	Items reflect the latest selected filters.	Pass
Insert a price range	Items within the selected price range	Items within the selected price range	Pass

	are displayed.	are displayed.	
Reset filters after selection	All filters are cleared, and all items are displayed.	All filters are cleared, and all items are displayed.	Pass
Select 'Meetup' in delivery options	Only items available for meetup are displayed.	Only items available for meetup are displayed.	Pass
Select 'Delivery' in delivery options	Only items available for delivery are displayed.	Only items available for delivery are displayed.	Pass
Select size using a dropdown menu	Items of the selected size are displayed.	Items of the selected size are displayed.	Pass
Apply all and some filters simultaneously	Items matching both the selected category and type, or more are displayed.	Items matching both the selected category and type, or more are displayed.	Pass
Use filters with no resulting matches	Display page will not display anything	Display page will not display anything	Pass

### 6.1.8 Chat List Page

*Table 6.8 Table of Chat List Page Test Cases.*

Test Case	Expected Result	Actual Result	Status
Render Chat List Page correctly	The screen renders with user list and icon	The screen renders with user list and icon	Pass
Press Long to the user chat lists	Display option for user to proceed	Display option for user to proceed	Pass
Press "Mark as Unread"	Update UI display and database	Update UI display and database	Pass

Press “Clear All Messages”	Update UI display and delete message in database	Update UI display and delete message in database	Pass
Press “View Profile”	Navigate to user profile	Navigate to user profile	Pass
Press “Cancel”	Close the option for user to proceed	Close the option for user to proceed	Pass
Press one of the user chat lists	Navigate to that specific user Chat screen page	Navigate to that specific user Chat screen page	Pass
Press AI Icon	Navigate to the AI chat page	Navigate to the AI chat page	Pass

### 6.1.9 AI Chat Page

*Table 6.9 Table of AI Chat Page Test Cases.*

Test Case	Expected Result	Actual Result	Status
Render AI Chat Page correctly	The screen renders with user list and icon	The screen renders with user list and icon	Pass
Choose “Assistant mode”	Navigate to Assistant mode	Navigate to Assistant mode	Pass
Choose “Recommend Item”	Navigate to Recommend Item mode	Navigate to Recommend Item mode	Pass
Send message (Assistant / Recommend Item)	Update UI display and system send message to user	Update UI display and system send message to user	Pass
Press “Back” Icon	Navigate to Chat List Page	Navigate to Chat List Page	Pass

**6.1.10 Display Other User Page***Table 6.10 Table of Display Other User Page Test Cases.*

<b>Test Case</b>	<b>Expected Result</b>	<b>Actual Result</b>	<b>Status</b>
Render to Other User page correctly	The screen renders with all user detail and Sell Item detail	The screen renders with all user detail and Sell Item detail	Pass
Empty Sell Item	Display “No item for sale yet”	Display “No item for sale yet”	Pass
Press “Message” button	Navigate to the chat screen	Navigate to the chat screen	Pass

**6.1.11 Chat Screen Page***Table 6.11 Table of Chat Screen Page Test Cases.*

<b>Test Case</b>	<b>Expected Result</b>	<b>Actual Result</b>	<b>Status</b>
Render to Chat Screen correctly	The screen renders with design of the message box and icon	The screen renders with design of the message box and icon	Pass
Send Text	Update UI display and save to database	Update UI display and save to database	Pass
Send Image	Update UI display and save to database	Update UI display and save to database	Pass
Long press message	Provide option to proceed	Provide option to proceed	Pass
Press “Delete Message”	Update UI display and delete message from database	Update UI display and delete message from database	Pass
Press “Cancel”	Disable the option for user to proceed	Disable the option for user to proceed	Pass

**6.1.12 Add Post (Second Clothing Item)***Table 6.12 Table of Add Post (Second Clothing Item) Page Test Cases.*

<b>Test Case</b>	<b>Expected Result</b>	<b>Actual Result</b>	<b>Status</b>
Render to Add Post Screen correctly	The screen renders with button, text input and so on.	The screen renders with button , text input and so on.	Pass
Press “Back” Icon	Navigate to Home page	Navigate to Home page	Pass
Empty Images	Show error alert	Show error alert	Pass
Empty Color	Show error alert	Show error alert	Pass
Empty Condition	Show error alert	Show error alert	Pass
Empty Material	Show error alert	Show error alert	Pass
Empty Style	Show error alert	Show error alert	Pass
Empty Size	Show error alert	Show error alert	Pass
Empty Color	Show error alert	Show error alert	Pass
Empty Category	Show error alert	Show error alert	Pass
Empty Types	Show error alert	Show error alert	Pass
Empty Brand Name	Show error alert	Show error alert	Pass
Empty Buy Now Price	Show error alert	Show error alert	Pass
Empty Minimum Bid Amount	Show error alert	Show error alert	Pass
Toggle the switch to enable “Meetup”	Display meetup variable for user to	Display meetup variable for user to	Pass



	insert	insert	
Press 'Submit' with the required variable.	Add item to the database	Add item to the database	Pass
Press 'Submit' without the required variable.	Show error alert	Show error alert	Pass

### 6.1.13 E-cupboard page

*Table 6.13 Table of E-cupboard Page Test Cases.*

Test Case	Expected Result	Actual Result	Status
Render to e-cupboard correctly	The screen renders with UI display with weather data and weather recommendation for outfit	The screen renders with UI display with weather data and weather recommendation for outfit	e-cupboard
Press Expand icon	Display UI display (all icon)	Display UI display (all icon)	
Press Tops Icon	Navigate to Display page to display the Tops item	Navigate to Display page to display the Tops item	Pass
Press Dress Icon	Navigate to Display page to display the Dress item	Navigate to Display page to display the Dress item	Pass
Press Blazer Icon	Navigate to Display page to display the Blazer item	Navigate to Display page to display the Blazer item	Pass
Press Bottom Icon	Navigate to Display page to display the Bottom item	Navigate to Display page to display the Bottom item	Pass
Press Jacket Icon	Navigate to Display page to display the Jacket item	Navigate to Display page to display the Jacket item	Pass
Press Jumpsuit	Navigate to Display	Navigate to Display	Pass

Icon	page to display the Jumpsuit item	page to display the Jumpsuit item	
Press Swimware Icon	Navigate to Display page to display the Swimware item	Navigate to Display page to display the Swimware item	Pass
Press “View More”	Navigate to Display page to display all item	Navigate to Display page to display all item	Pass
Press Back icon	Navigate to Home Page	Navigate to Home Page	Pass
Press Calendar icon	Navigate calendar page (outfit)	Navigate calendar page (outfit)	Pass
Press Shirt icon	Navigate to mix and match page	Navigate to mix and match page	Pass

#### 6.1.14 Calendar page

*Table 6.14 Table of Calendar Page Test Cases.*

Test Case	Expected Result	Actual Result	Status
Render to calendar correctly	The screen renders with calendar	The screen renders with calendar	Pass
Press Back icon	Navigate to E-cupboard page	Navigate to E-cupboard page	Pass
Press the data in the calendar	Update UI display and display the saved outfit	Update UI display and display the saved outfit	Pass
Press Option icon	Provide option for user to delete item	Provide option for user to delete item	Pass
Press Left / Right Icon	Update UI display and display next item	Update UI display and display next item	Pass

#### 6.1.15 Mix and Match Page

Table 6.15 Table of Mix and Match Page Test Cases.

Test Case	Expected Result	Actual Result	Status
Render to mix and match correctly	The screen renders with item	The screen renders with item	Pass
Press Suggest	Navigate to Outfit recommend page	Navigate to Outfit recommend page	Pass
Press Back icon	Navigate to E-cupboard page	Navigate to E-cupboard page	Pass
Press Category icon	Provide category option for user to proceed	Provide category option for user to proceed	Pass
Press Left/Right icon	Update UI design and display the next item	Update UI design and display the next item	Pass
Press Option icon	Provide option for user to proceed	Provide option for user to proceed	Pass
Press “Filter Options”	Provide option for user to proceed	Provide option for user to proceed	Pass
Select “E-cupboard” in “Filter Options”	Update the item from e-cupboard	Update the item from e-cupboard	Pass
Select “Second-hand market” in “Filter Options”	Update the item from second-hand marketplace	Update the item from second-hand marketplace	Pass
Save outfit when Upper and Bottom have photo	Outfit saved to the database	Outfit saved to the database	Pass
Save outfit when Upper and Bottom without photo	Unable to save the database and Show error alert	Unable to save the database and Show error alert	Pass

### 6.1.16 Recommended outfit Page

*Table 6.16 Table of Recommended outfit Page Test Cases.*

<b>Test Case</b>	<b>Expected Result</b>	<b>Actual Result</b>	<b>Status</b>
Render to Recommended Display Screen correctly	Screen renders with header and images from both item sets.	Screen renders with header and images from both item sets.	Pass
Navigate to item details from itemsA	Correct navigation to "Ecupboard_Item_Each" with itemId.	Correct navigation to "Ecupboard_Item_Each" with itemId.	Pass
Navigate to item details from itemsB	Correct navigation to "Item_Each" with itemId.	Correct navigation to "Item_Each" with itemId.	Pass
Press Back Icon	Navigate to E-cupboard page	Navigate to E-cupboard page	Pass
Display all images correctly	All images are displayed correctly.	All images are displayed correctly.	Pass
Handle missing image URL	Default placeholder image shown for missing images.	Default placeholder image shown for missing images.	Pass

**6.1.17 Display E-cupboard Item Page***Table 6.17 Table of Display E-cupboard Item Page Test Cases.*

<b>Test Case</b>	<b>Expected Result</b>	<b>Actual Result</b>	<b>Status</b>
Render to Display E-cupboard Item page correctly	The screen renders with item	The screen renders with item	Pass
Press Add icon	Navigate to Add Item (E-cupboard)	Navigate to Add Item (E-cupboard)	Pass
Press Option icon	Provide option for user to proceed	Provide option for user to proceed	Pass
Select “Add to secondhand marketplace” in option	Navigate to the Add item (from e-cupboard to second-hand marketplace)	Navigate to the Add item (from e-cupboard to second-hand marketplace)	Pass
Select “Edit” in option	Display the item information for user to display	Display the item information for user to display	Pass
Select “Delete” in option	Delete the item from database	Delete the item from database	Pass
Select “Cancel” in option	Close the option for user to proceed	Close the option for user to proceed	Pass

**6.1.18 Add Post (E-cupboard) Page***Table 6.18 Table of Add Post (E-cupboard) Page Test Cases.*

<b>Test Case</b>	<b>Expected Result</b>	<b>Actual Result</b>	<b>Status</b>
Render to Add Post Screen correctly	The screen renders with button, text input and so on.	The screen renders with button, text input and so on.	Pass
Press “Back” Icon	Navigate to	Navigate to	Pass

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	previous page	previous page	
Empty Images	Show error alert	Show error alert	Pass
Empty Color	Show error alert	Show error alert	Pass
Empty Condition	Show error alert	Show error alert	Pass
Empty Material	Show error alert	Show error alert	Pass
Empty Style	Show error alert	Show error alert	Pass
Empty Size	Show error alert	Show error alert	Pass
Empty Color	Show error alert	Show error alert	Pass
Empty Category	Show error alert	Show error alert	Pass
Empty Types	Show error alert	Show error alert	Pass
Empty Brand Name	Show error alert	Show error alert	Pass
Press 'Submit' with the required variable.	Add item to the database	Add item to the database	Pass
Press 'Submit' without the required variable.	Show error alert	Show error alert	Pass

**6.1.19 Add Post (From e-cupboard to second-hand marketplace) Page**

*Table 6.19 Table of Add Post (From e-cupboard to second-hand marketplace) Page Test Cases.*

<b>Test Case</b>	<b>Expected Result</b>	<b>Actual Result</b>	<b>Status</b>
Render to Add Post Screen correctly	The screen renders with button, text input and so on.	The screen renders with button, text input and so on.	Pass
Press “Back” Icon	Navigate to Home page	Navigate to Home page	Pass
Empty Images	Show error alert	Show error alert	Pass
Empty Color	Show error alert	Show error alert	Pass
Empty Condition	Show error alert	Show error alert	Pass
Empty Material	Show error alert	Show error alert	Pass
Empty Style	Show error alert	Show error alert	Pass
Empty Size	Show error alert	Show error alert	Pass
Empty Color	Show error alert	Show error alert	Pass
Empty Category	Show error alert	Show error alert	Pass
Empty Types	Show error alert	Show error alert	Pass
Empty Brand Name	Show error alert	Show error alert	Pass
Empty Buy Now Price	Show error alert	Show error alert	Pass
Empty Minimum	Show error alert	Show error alert	Pass

Bid Amount			
Toggle the switch to enable “Meetup”	Display meetup variable for user to insert	Display meetup variable for user to insert	Pass
Press 'Submit' with the required variable.	Add item to the database	Add item to the database	Pass
Press 'Submit' without the required variable.	Show error alert	Show error alert	Pass

### 6.1.20 Owner User Profile Page

*Table 6.20 Table of Owner User Profile Page Test Cases.*

Test Case	Expected Result	Actual Result	Status
Render to Current User Profile correctly	The screen renders with user detail and item detail	The screen renders with user detail and item detail	Pass
Press “Sell” Section	Display item that for sell	Display item that for sell	Pass
Press “Saved” Section	Display item that for saved	Display item that for saved	Pass
Press Each Item	Navigate to the item (Current user)	Navigate to the item (Current user)	Pass
Press Option Icon	Display all option for user to proceed	Display all option for user to proceed	Pass
Press “Physical Meet Up Calendar”	Navigate to the calendar (Meet Up)	Navigate to the calendar (Meet Up)	Pass
Press “Tracking Item Status”	Navigate to the Tracking Item Status Page	Navigate to the Tracking Item Status Page	Pass



Press “Setting”	Navigate to the Setting Page	Navigate to the Setting Page	Pass
Press “Log Out”	Navigate to Home Page	Navigate to Home Page	Pass

### 6.1.21 Display Each item (Current user) Page

*Table 6.21 Table of Display Each item (Current user) Page Test Cases.*

Test Case	Expected Result	Actual Result	Status
Render to Display Each item correctly	The screen renders with all the detail of item that can sell and already sold	The screen renders with all the detail of item that can sell and already sold	Pass
Bid the item and lower the minimum bid price (User is owner of the post)	Unable user to bid	Unable user to bid	Pass
Bid the item (User is owner of the post)	Unable to bid and Show error alert	Unable to bid and Show error alert	Pass
Add meet up (User is the owner of the post)	Unable to add the meet up and Show error alert	Unable to add the meet up and Show error alert	Pass
Press Buy now price (User is the owner of the post)	Unable to proceed and Show error alert	Unable to proceed and Show error alert	Pass
Save Item	Successful to add to the database	Successful to add to the database	Pass
Send text for comment	Display to the page and save in the database	Display to the page and save in the database	Pass

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Press Profile Avatar	Navigate to the Owner User Profile	Navigate to the User Profile or Owner User Profile	Pass
Press Option icon	Provide option for user to proceed	Provide option for user to proceed	Pass
Select “Delete Post”	Delete post from database	Delete post from database	Pass
Select “Turn the second-hand clothing item to personal wardrobe”	Update the item detail from database	Update the item detail from database	Pass
Select “Choose the Desired people (people)”	Navigate to bidder page	Navigate to bidder page	Pass

**6.1.22 Calendar Meet Up Page***Table 6.22 Table of Calendar Meet Up Page Test Cases.*

<b>Test Case</b>	<b>Expected Result</b>	<b>Actual Result</b>	<b>Status</b>
Render to calendar meet up page correctly	The screen renders with calendar and the detail of meeting	The screen renders with calendar and the detail of meeting	Pass
Press Back icon	Navigate to the current profile page	Navigate to the current profile page	Pass
Press to the day and the day has meet up	Display the detail of meeting	Display the detail of meeting	Pass
Press to the day and the day didn't has meet up	Display "No meetings available for this data"	Display "No meetings available for this data"	Pass
Press Option icon	Provide option for user to proceed	Provide option for user to proceed	Pass
Select "View Details" in option	Navigate to the display item page	Navigate to the display item page	Pass
Select "Delete Meeting" in options	Delete the meeting and update in the database	Delete the meeting and update in the database	Pass

**6.1.23 Tracking Item Status Page***Table 6.23 Table of Tracking Item Status Page Test Cases.*

<b>Test Case</b>	<b>Expected Result</b>	<b>Actual Result</b>	<b>Status</b>
Render the Tracking Item Status Page correctly	Display "My Item" , "My Purchases" and "History"	Display "My Item" , "My Purchases" and "History"	Pass
Fetch and display	The correct items	The correct items	Pass

items based on the selected tab	(MyItem, MyPurchasesItem, History) are fetched and displayed.	(MyItem, MyPurchasesItem, History) are fetched and displayed.	
Display "My Item" items correctly	When "MyItem" tab is selected, items created by the current user are displayed.	When "MyItem" tab is selected, items created by the current user are displayed.	Pass
Display "My Purchases" items correctly	When "MyPurchasesItem" tab is selected, items the user purchased are displayed.	When "MyPurchasesItem" tab is selected, items the user purchased are displayed.	Pass
Display "History" items correctly	When "History" tab is selected, completed transactions (sold/purchased) are shown.	When "History" tab is selected, completed transactions (sold/purchased) are shown.	Pass
Handle "Successful" filter in "My Purchases" tab	When "Successful" filter is selected, only successful purchase transactions are shown.	When "Successful" filter is selected, only successful purchase transactions are shown.	Pass
Handle "Unsuccessful" filter in "My Purchases" tab	When "Unsuccessful" filter is selected, only unsuccessful purchase transactions are shown.	When "Unsuccessful" filter is selected, only unsuccessful purchase transactions are shown.	Pass
Handle status update for "My Item"	When an item in the "MyItem" tab is updated (e.g., payment received), the status is updated successfully.	When an item in the "MyItem" tab is updated (e.g., payment received), the status is updated successfully.	Pass
Handle status update for "My Purchases"	When an item in the "MyPurchasesItem" tab is updated (e.g., marked as paid), the status is updated successfully.	When an item in the "MyPurchasesItem" tab is updated (e.g., marked as paid), the status is updated successfully.	Pass

Press Back Icon	Navigate to current user profile	Navigate to current user profile	Pass

### 6.1.24 Setting Page

*Table 6.24 Table of Setting Page Test Cases.*

Test Case	Expected Result	Actual Result	Status
Render the Setting Page correctly	The "Update Profile" screen renders with Name, Bio fields, and an Update button	The "Update Profile" screen renders with Name, Bio fields, and an Update button	Pass
Fetch user data on component load	User's current data (Name, Bio, profile picture) is fetched from Firestore and displayed on the screen	User's current data (Name, Bio, profile picture) is fetched from Firestore and displayed on the screen	Pass
Successfully update user profile	User's profile is updated with the new Name, Bio, and profile picture, and a success alert is shown	User's profile is updated with the new Name, Bio, and profile picture, and a success alert is shown	Pass
Prevent name update if changed within 60 days	Alert message "You can only change your name every 60 days" is displayed if the user tries to change their name within 60 days of the last update	Alert message "You can only change your name every 60 days" is displayed if the user tries to change their name within 60 days of the last update	Pass
Enable name field after 60 days	Name field is editable after 60 days	Name field is editable after 60 days	Pass
Upload profile picture successfully	User picks an image from the gallery, and it is uploaded successfully to Firebase Storage, with the new image URL displayed	User picks an image from the gallery, and it is uploaded successfully to Firebase Storage, with the new image URL displayed	Pass

Handle image upload error	Show error alert	Show error alert	Pass
Show default profile image when no image is provided	If no profile image is provided by the user, a default image is displayed	If no profile image is provided by the user, a default image is displayed	Pass
Press Back button	Navigate to current profile page	Navigate to current profile page	Pass
Update button becomes clickable after profile changes	The "Update" button becomes clickable only after the user has made changes to their profile	The "Update" button becomes clickable only after the user has made changes to their profile	Pass
Prevent update with missing mandatory fields	Alert message shown when Name field is empty	Alert message shown when Name field is empty	Pass

### 6.1.25 Choose Bidders Page

Table 6.25 Table of Choose Bidders Page Test Cases.

Test Case	Expected Result	Actual Result	Status
Render the Choose Bidders screen correctly	Screen renders with bidders list and controls.	Screen renders with bidders list and controls.	Pass
Fetch and display item and bidders data	Item and bidders are fetched and displayed.	Item and bidders are fetched and displayed.	Pass
Select a bidder from the list	Bidder is highlighted and stored in state.	Bidder is highlighted and stored in state.	Pass
Prevent proceeding without selecting bidder	Alert shown if no bidder is selected.	Alert shown if no bidder is selected.	Pass
Proceed after selecting a bidder	Item updated, success alert shown.	Item updated, success alert shown.	Pass
Sort bidders by highest bid	Bidders sorted by highest price.	Bidders sorted by highest price.	Pass

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Sort bidders by lowest bid	Bidders sorted by lowest price.	Bidders sorted by lowest price.	Pass
Show error on item data fetch failure	Error logged if item fetch fails.	Error logged if item fetch fails.	Pass
Show error on bidder data fetch failure	Error logged if bidder fetch fails.	Error logged if bidder fetch fails.	Pass
Press Back Icon	Navigate to the current profile page	Navigate to the current profile page	Pass
Show default profile picture if none provided	Default picture shown for bidders without photo.	Default picture shown for bidders without photo.	Pass

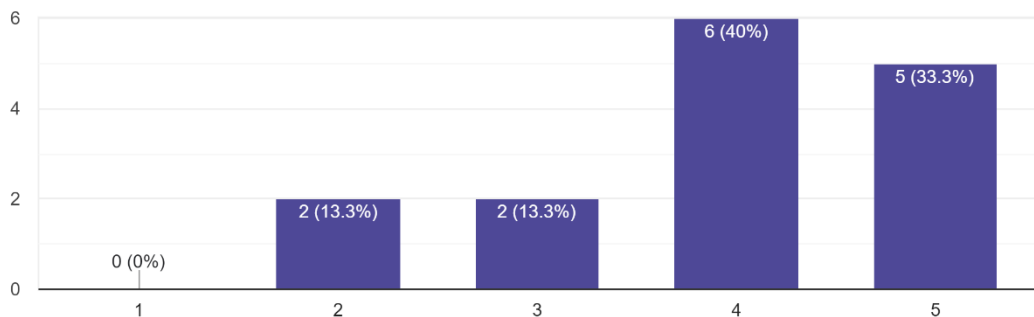
## 6.2 User Testing

User evaluation of the second-hand application, featuring recommendations and personal wardrobe management, was carried out using a Google Form survey. This is used to gather the user insight which to access the overall usability, efficiency and the feedback from user after using the application. This input can be leveraged to identify opportunities for improvement and guide informed decisions about future adjustments to the product or service.

### Question 1

How would you rate the overall user experience of the application?

15 responses



*Figure 6.1: Bar Chart of User Experience with the Application.*

According to Figure 6.1, majority of the responder rated the application overall experience highly, with most of the responder choose 4 to 5. A few of user gave 2 to 3 which indicating some dissatisfaction. The general feedback from responder is positive, but still need to improve for a small group of the users.

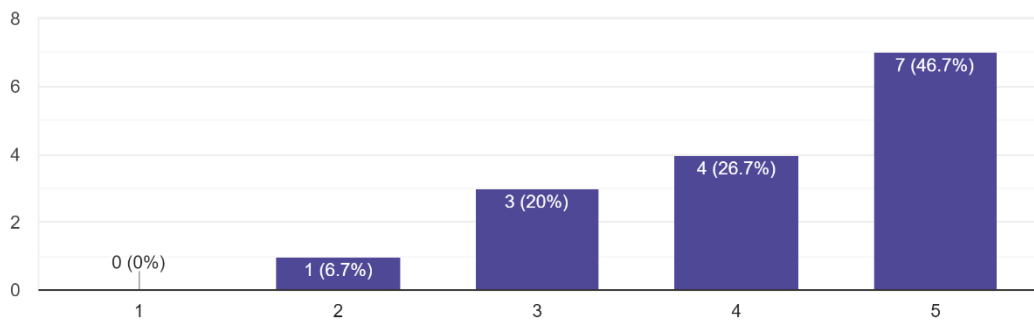
### Question 2



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How easy was it to navigate through the app's interface (e.g., browsing items, managing your wardrobe)?

15 responses



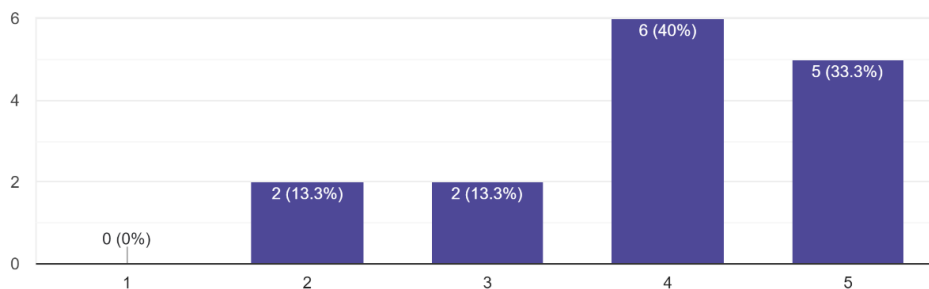
*Figure 6.2 Bar Chart of ease of navigation.*

According to Figure 6.2, majority of the responder rated the application overall experience highly, with most of the responder choose 4 to 5. A few of user gave 2 to 3 which indicating some dissatisfaction for the ease of navigation. Although majority of the user find the app easy to navigate, but there is still has users may experience some of the challenges which is needed to improve by improving the UI design or simplifying the navigation flow.

### Question 3

How satisfied are you with the recommendation feature? Does it provide relevant and personalized suggestions?

15 responses



*Figure 6.3 Bar Chart of Ratings for Recommendation Feature.*

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According to Figure 6.3, ratings rate for recommendation feature were mostly positive, but there are few users gave lower ratings which showing the dissatisfaction with personalization. This also indicates that the recommendation features perform well for most users but could benefit from further refinement to enhance the personalization for some users.

### Question 4

Did you encounter any technical issues or bugs while using the app (e.g., slow loading times, crashes)? If so, please describe.

15 responses

No
Yes (crashes)
Yes . a bit slow loading
Yes. It has some minor bugs but still perform well.
Yes (Improve UI design)
Yes (slow at times)
Yes , crashes
None

*Figure 6.4 Result of technical issues or bugs.*

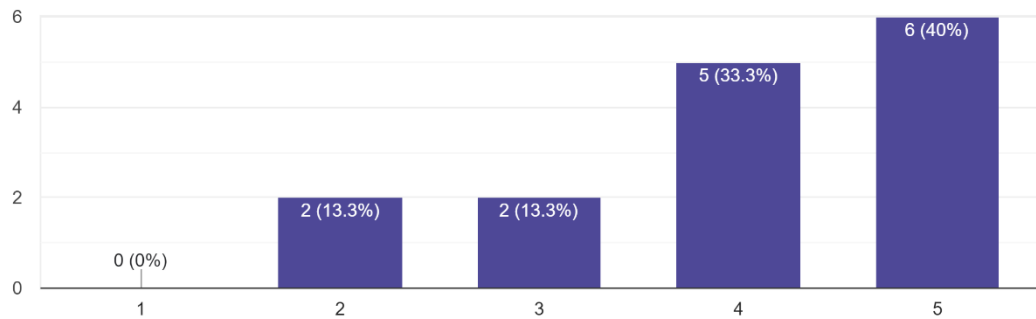
According to Figure 6.4, several users reported technical issues such as crashes and slow loading. Some also said the bugs occurred occasionally, while some said did not experience any issues. These is needed to address the technical issues such as crashes and slow performance to ensure a smooth experience.

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### Question 5

How useful did you find the personal wardrobe management feature? Does it help you in organizing your clothing items?

15 responses



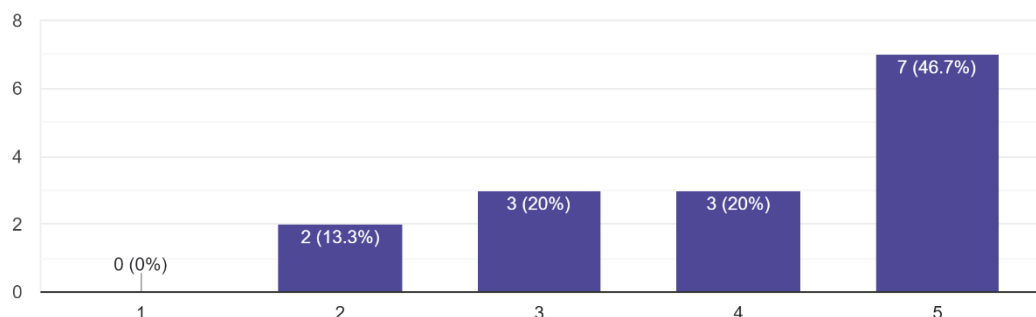
*Figure 6.5: Bar Chart on the Usefulness of the Personal Wardrobe Management Feature.*

According to Figure 6.5, majority of the user selected wardrobe management feature between 4 to 5 which indicating it is very useful but there is still have respondents gave a lower rating of 2. The wardrobe management feature is generally useful but still need to be improved.

### Question 6

Was the process of buying or selling second-hand items through the app straightforward and efficient?

15 responses



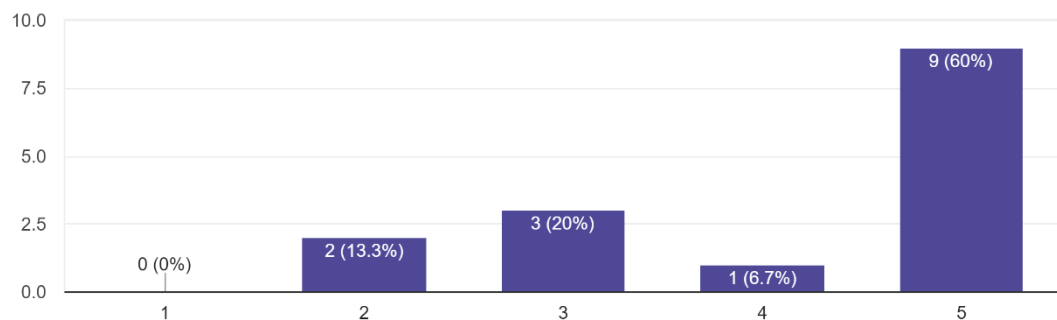
*Figure 6.6: Bar Chart on the Ease and Clarity of the Buying and Selling Process.*

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According to Figure 6.6 , Majority of the user found that the buying and selling process is easy and straightforward, but there is still gave lower ratings which means that the process is generally effective but still has the opportunities to improve it.

### Question 7

Do you feel that the app offers enough variety in terms of second-hand products available?  
15 responses



*Figure 6.7: Bar Chart of the Variety of Available Second-Hand Items.*

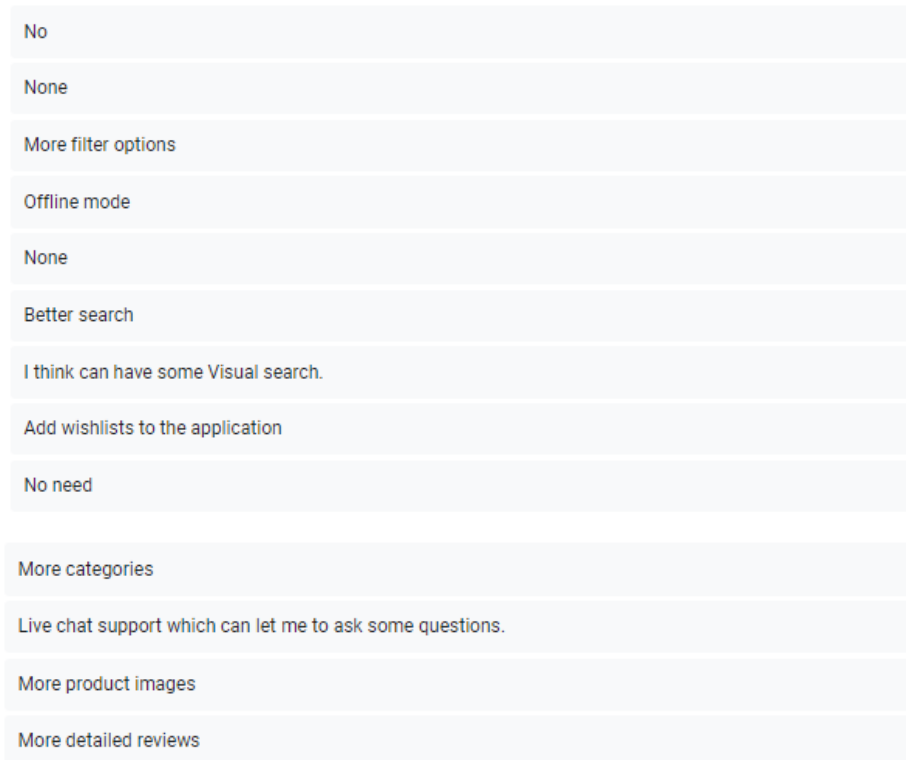
According to Figure 6.7, most of the user choose 5 which indicating that the selection of second-hand products is satisfactory, but there is still need more variety. This second-hand application offers a good range of the products for most users, but adding the variety could attract more users and meet the needs.

### Question 8

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Is there any feature you feel is missing or could be added to improve your experience? If yes, please describe.

15 responses



No
None
More filter options
Offline mode
None
Better search
I think can have some Visual search.
Add wishlists to the application
No need
More categories
Live chat support which can let me to ask some questions.
More product images
More detailed reviews

*Figure 6.8: Results of Suggested Improvement Features.*

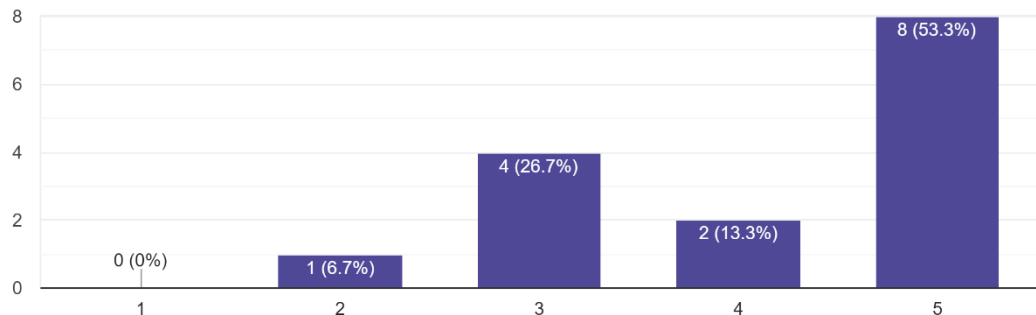
According to Figure 6.8, users suggested several features such as more filter options, an offline mode, visual search, wishlists, better UI design, live chat support, and more detailed reviews. These features will also be included in the future improvements.

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### Question 9

How would you rate the app's performance in terms of speed and responsiveness?

15 responses



*Figure 6.9: Bar Chart of App Performance in Terms of Speed and Responsiveness.*

According to Figure 6.9, most of the users rated the app's performance highly but some of the users also reported that the app slows in the performance, particularly when has the bugs or crashes. The apps are performed well for most users but still can be improved for the overall performance and responsiveness.

### Question 10

Would you recommend this app to others looking for second-hand products or personal wardrobe management? Why or why not?

15 responses



*Figure 6.10: Results of Users' Likelihood to Recommend the App to Others*

According to Figure 6.10 , Majority of the respondents indicated they would recommend the app but there is few respondents were hesitant and said “no” or

“maybe”, but overall the app has the strong potential for user recommendations, but improvements in performance still need to be made it.

### 6.3 Objective Evaluation

#### Objective 1:

**Develop a user-friendly second-hand clothing application that streamlines the transaction process with a focus on buying, selling, and bidding of second-hand clothing items.**

- The project successfully achieved the goal for developing a user-friendly second-hand clothing application named “Kellyon” that streamlined the transaction process. The core features of the application such as Home page that allows users to browse and view second-hand clothing items. Besides, it allows user to create clothing item with image tagging processing, save, comment, and delete items. Additionally, it also has the chat features which enable them to communicate with each other. This application also allows users to place and manage bids on second-hand clothing items. Furthermore, this application also allows users to track the status of their listed or purchased second-hand items and profile to display user information and their clothing collection

#### Objective 2:

**Integrate a personal wardrobe management system into the second-hand clothing application that provides efficient organization and tracking of the clothing inventory and seamless movement between personal wardrobe and second-hand marketplace.**

- This project also successfully integrates personal wardrobe system. The application contains Personal wardrobe which allows user to organize their clothing, track their wardrobe which also allows them to move items between their personal wardrobe and the second-hand marketplaces. It also enables users to add, edit, categorized the clothing items, and combined with the

features that enable users to sell the clothing item can ensure the efficient wardrobe management and enables users to interact with the marketplace which fulfilling this objective. Additionally, it contains mix and match page using image background removal that allows users for creative clothing combinations and outfit planning.

### **Objective 3:**

**Implement outfit recommendations into the second-hand clothing application that provide guidance and advice in clothing choosing or matching.**

- This project also successfully achieved the goal for implementing an outfit recommendation by incorporating features such as the AI Chatbot with Assistant Mode for personalized outfit suggestions and Recommend Item Mode for marketplace recommendations based on keyword. Additionally, this application also includes Mix and Match with suggests clothing combinations from both the user's wardrobe and the marketplace, providing users with guidance in choosing and matching outfits. Besides, it also includes post recommendations based on user preferences and saved item, weather-based outfit recommendations and so on. These functionalities enable users to receive a real-time fashion advice which met the objective. Last but not least, it also includes the weather-based reminder which provide suggestion on outfit based on weather.

### **Objective 4:**

**Implement meet-up features that can ensure a safe and convenient transaction between buyers and sellers.**

- This project successful achieved its objective of implementing a safe and convenient transaction process between buyers and sellers by introducing the Meet up features and Physical Meet-Up Calendar. Sellers can schedule meetups for buyers by specifying the location, date, and time. Buyers can then participate in these meet-ups. The Meet-Up Calendar allows users to schedule



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and view meet-up that set or join by user which providing a secure way to exchange items in person.

## Chapter 7 Conclusion and Recommendation

### 7.1 Conclusion

In conclusion, this project which is a second-hand clothing application named “Kellyon” will be focus on developing a user-friendly second-hand clothing application that focusing on a streamlined second-hand clothing transaction process. It will also include some features such as, search and filter option, tracking features for item, social interaction features, social media integration bidding features and so on. Importantly, this application also includes some additional features that help in solving people's struggles and limitations from the exiting second-hand applications such as Vestiaire Collective, Depop, Carousell, The luxury Closet and Getwardrobe. First limitation is insufficient personal wardrobe management system that cause challenges for those people who struggle with organization or tracking of their clothing items and also create additional barriers for users who need to manually retake the photo of the clothing items, insert the information if they want to sell their clothing items, resulting in wasted time and reduced efficiency. The next limitation is lack of tool for providing outfit recommendations that can provide guidance and advice on outfits for user. Last limitation is insufficient trust and transparency in existing second-hand applications which lack of meet up features. These limitations have already been handled well in this application because it provides a personal wardrobe management system with outfit planning, outfit recommendations, and a meet up features.

This application is developed using a hybrid methodology which incorporates the elements of Agile and Waterfall approaches. The project employs waterfall methodologies for sequential progress and comprehensive documentation, ensuring the planning. At the same time, agile approaches are employed to prioritize the flexibility of the project, which includes the iterative cycle of planning, building, testing, and reviewing. By adopting this hybrid methodology, this application can adapt to the requirement while also maintaining the structured progress. Furthermore, it is developed by using React Native and integrating well with Firebase to manage and organize the data from Firebase in this preliminary stage.

Last but not least, this application not only meets the needs of the consumer that seeks second-hand clothing with social media integration that can help in creating a community among them but also meets the needs of those who need the personal wardrobe management system with outfit planning, outfit recommendations, and meet-up features.

### **7.2 Future Plan and Recommendation**

Reflecting on the development and the time allocation of this project, I would say there is still room for improvement in this application. Feedback from our user surveys in user testing has highlighted the demand for several new features, including advanced filtering options, offline functionality, visual search, and live chat support. These improvements are planned as part of the roadmap to enrich the app feature and user engagement.

Additionally, I plan to automate certain processes within the application to reduce manual input. This will include integration with real-time shipping APIs and payment gateways to streamline the user experience significantly. Last but not least, I will focus on enhancing the user interface and user experience (UI/UX) to attract and engage users more effectively.

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# FINAL YEAR PROJECT WEEKLY REPORT

(Project II)

<b>Trimester, Year:</b> Y4S1	<b>Study week no.:</b> 2
<b>Student Name &amp; ID:</b> Wan Yi Mun (20ACB03797)	
<b>Supervisor:</b> Dr Ramesh Kumar Ayyasamy	
<b>Project Title:</b> A Second-Hand Clothing Application with Recommendation and Personal Wardrobe Management	

## 1. WORK DONE

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

- Review FYP 1
- Review Prototype
- Review Use Case Diagram
- Review activity diagram
- Schedule using Gantt Chart

## 2. WORK TO BE DONE

- Review FYP 1
- Review Prototype
- Review Use Case Diagram
- Review activity diagram
- Schedule using Gantt Chart

## 3. PROBLEMS ENCOUNTERED

- No problem so far.

## 4. SELF EVALUATION OF THE PROGRESS

- No problem so far.

Supervisor's signature

Student's signature

# FINAL YEAR PROJECT WEEKLY REPORT

(Project II)

<b>Trimester, Year:</b> Y4S1	<b>Study week no.:</b> 4
<b>Student Name &amp; ID:</b> Wan Yi Mun (20ACB03797)	
<b>Supervisor:</b> Dr Ramesh Kumar Ayyasamy	
<b>Project Title:</b> A Second-Hand Clothing Application with Recommendation and Personal Wardrobe Management	

## 1. WORK DONE

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

- Develop the application

## 2. WORK TO BE DONE

- Develop the application

## 3. PROBLEMS ENCOUNTERED

- No problem so far.

## 4. SELF EVALUATION OF THE PROGRESS

- No problem so far.

Supervisor's signature

Student's signature

# FINAL YEAR PROJECT WEEKLY REPORT

(Project II)

<b>Trimester, Year:</b> Y4S1	<b>Study week no.:</b> 6
<b>Student Name &amp; ID:</b> Wan Yi Mun (20ACB03797)	
<b>Supervisor:</b> Dr Ramesh Kumar Ayyasamy	
<b>Project Title:</b> A Second-Hand Clothing Application with Recommendation and Personal Wardrobe Management	

## 1. WORK DONE

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

- Develop the application

## 2. WORK TO BE DONE

- Develop the application

## 3. PROBLEMS ENCOUNTERED

- No problem so far.

## 4. SELF EVALUATION OF THE PROGRESS

- No problem so far.

\_\_\_\_\_  
Supervisor's signature

\_\_\_\_\_  
Student's signature



# FINAL YEAR PROJECT WEEKLY REPORT

(Project II)

<b>Trimester, Year:</b> Y4S1	<b>Study week no.:</b> 8
<b>Student Name &amp; ID:</b> Wan Yi Mun (20ACB03797)	
<b>Supervisor:</b> Dr Ramesh Kumar Ayyasamy	
<b>Project Title:</b> A Second-Hand Clothing Application with Recommendation and Personal Wardrobe Management	

## 1. WORK DONE

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

- Revise prototype in FYP document
- Create Test Case to test the application
- Create Google Form
- Create Google Form for survey

## 2. WORK TO BE DONE

- Revise prototype in FYP document
- Create Test Case to test the application
- Create Google Form for survey

## 3. PROBLEMS ENCOUNTERED

- No problem so far.

## 4. SELF EVALUATION OF THE PROGRESS

- No problem so far.

Supervisor's signature

Student's signature

# FINAL YEAR PROJECT WEEKLY REPORT

(Project II)

<b>Trimester, Year:</b> Y4S1	<b>Study week no.:</b> 10
<b>Student Name &amp; ID:</b> Wan Yi Mun (20ACB03797)	
<b>Supervisor:</b> Dr Ramesh Kumar Ayyasamy	
<b>Project Title:</b> A Second-Hand Clothing Application with Recommendation and Personal Wardrobe Management	

## 1. WORK DONE

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

- Improve the application
- Revise FYP document
- Improve remaining FYP document

## 2. WORK TO BE DONE

- Improve the application
- Revise FYP document
- Improve remaining FYP document

## 3. PROBLEMS ENCOUNTERED

- No problem so far.

## 4. SELF EVALUATION OF THE PROGRESS

- No problem so far.

Supervisor's signature

Student's signature

# FINAL YEAR PROJECT WEEKLY REPORT

(Project II)

<b>Trimester, Year:</b> Y4S1	<b>Study week no.:</b> 12
<b>Student Name &amp; ID:</b> Wan Yi Mun (20ACB03797)	
<b>Supervisor:</b> Dr Ramesh Kumar Ayyasamy	
<b>Project Title:</b> A Second-Hand Clothing Application with Recommendation and Personal Wardrobe Management	

## 1. WORK DONE

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

- Successful done the application with document
- Check and prepare data for running the application during presentation

## 2. WORK TO BE DONE

- Successful done the application with document
- Check and prepare data for running the application during presentation

## 3. PROBLEMS ENCOUNTERED

- No problem so far.

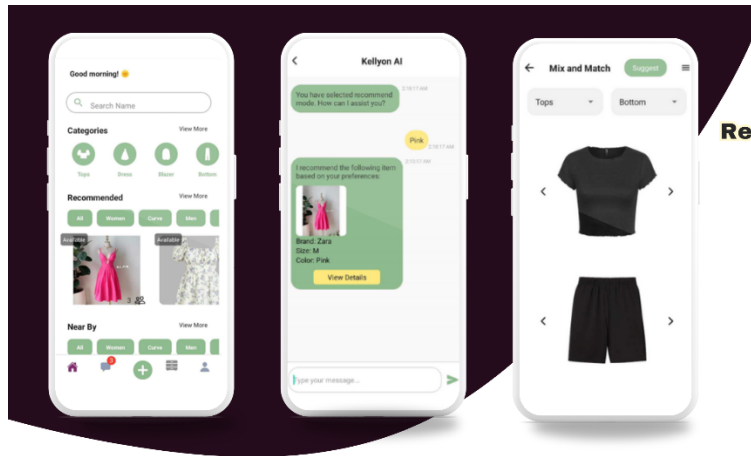
## 4. SELF EVALUATION OF THE PROGRESS

- No problem so far.

Supervisor's signature

Student's signature

# POSTER



## A Second-Hand Clothing Application with Recommendation and Personal Wardrobe Management

### ABSTRACT

Currently, the market is dominated by more general second-hand applications, with only a few focusing specifically on second-hand clothing. Therefore, this project aims to develop a second-hand clothing application designed to enhance user experience and address the shortcomings of existing applications. Areas for improvement were identified through a review of journal articles, testing of existing applications in the market, and analysis of survey data.

### PROBLEM STATEMENT

- Insufficient Personal Wardrobe Management System in Existing Second-Hand Application
- Lack of tool for Providing Outfit Recommendations
- Insufficient Trust in Second-Hand E-Commerce Transactions

### PROJECT OBJECTIVES

- The goal of the project is to develop a user-friendly second-hand clothing application that streamlines the transaction process with a focus on buying, selling and bidding of second-hand clothing item.
- To integrate a personal wardrobe management system into second-hand clothing application that provides efficient organization and tracking of the clothing inventory and seamless movement between personal wardrobe and second-hand marketplace.
- To implement outfit recommendations into second-hand clothing application that providing guidance and advice in clothing choosing or matching.
- To implement meet-up features that can ensure a safe and convenient transaction between buyers and sellers.

### METHODOLOGY



### CONCLUSION

"Kellyon" not only meets the needs of consumers seeking second-hand clothing with social media integration, which can help create a community among them, but also meets the needs of those who require a personal wardrobe management system with outfit planning, recommendations, and meet-up features

**PROJECT DEVELOPER : WAN YI MUN (20ACB03797)**

**PROJECT SUPERVISOR : DR RAMESH KUMAR AYYASAMY**

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<b>Full Name(s) of Candidate(s)</b>	Wan Yi Mun
<b>ID Number(s)</b>	20ACB03797
<b>Programme / Course</b>	Bachelor of Information System (Honours) Business Information System
<b>Title of Final Year Project</b>	A Second-Hand Clothing Application with Recommendation and Personal Wardrobe Management

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\_\_\_\_\_  
 Signature of Co-Supervisor

Name: Dr Ramesh Kumar Ayyasamy

Name: \_\_\_\_\_

Date: 10/09/2024

Date: \_\_\_\_\_



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Student Name	Wan Yi Mun
Supervisor Name	Dr Ramesh Kumar Ayyasamy

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