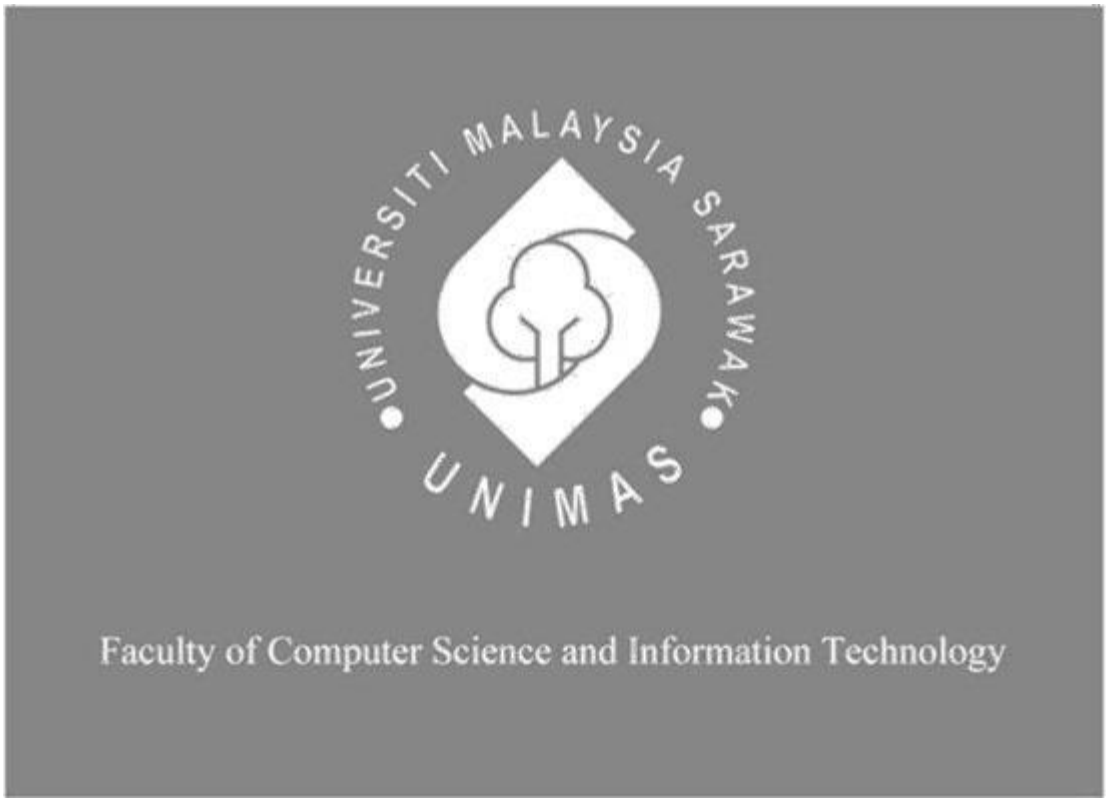

SellnBuy/Rent? – Resell and Buying or Renting Sneaker Application

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SDLC	System Development Life Cycle
MVP	Minimum Viable Product
UI/UX	User Interface / User Experience
DBMS	Database Management System
API	Application Programming Interface
FYP	Final Year Project

Abstract

This project introduces the design and development of a specialized mobile platform called SellnBuy Shoes, tailored specifically for the UNIMAS student community to facilitate the buying and renting of shoes. The platform addresses key e-commerce challenges such as secure transactions, verified seller authenticity, and real-time communication between users. Core features include a secure payment gateway, account verification, and detailed product listings, ensuring user safety and a positive experience. A comprehensive requirement analysis involving use case diagrams, sequence diagrams, activity diagrams, and user surveys identified essential user needs, which were integrated into the system design. The architecture comprises three primary roles: Admin, Seller, and Buyer, each with distinct functionalities to streamline operations. This platform not only enhances user experience but also provides a secure and efficient marketplace tailored to UNIMAS students.

Keywords: Buying and Renting Platform, UNIMAS Students, Mobile Application, Shoes Marketplace.

Abstrak

Projek ini memperkenalkan reka bentuk dan pembangunan platform mudah alih khusus yang dipanggil **SellnBuy Shoes**, yang direka khas untuk komuniti pelajar UNIMAS bagi memudahkan pembelian dan penyewaan kasut. Platform ini menangani cabaran utama e-dagang seperti transaksi yang selamat, pengesahan kesahihan penjual, dan komunikasi masa nyata antara pengguna melalui aplikasi 'Whatsapp'. Ciri utama termasuk gerbang pembayaran yang selamat, pengesahan akaun, pemesejan masa nyata, dan penyenaraian produk yang terperinci untuk memastikan keselamatan pengguna serta pengalaman yang positif. Analisis keperluan yang komprehensif, melibatkan rajah kes penggunaan, rajah jujukan, rajah aktiviti, dan tinjauan pengguna, telah mengenal pasti keperluan utama pengguna yang kemudian diintegrasikan ke dalam reka bentuk sistem. Seni bina platform ini terdiri daripada tiga peranan utama: **Admin, Penjual, dan Pembeli**, masing-masing dengan fungsi tersendiri bagi memperkemaskan operasi. Platform ini bukan sahaja meningkatkan pengalaman pengguna tetapi juga menyediakan pasaran yang selamat dan cekap yang disesuaikan khas untuk pelajar UNIMAS.

Kata kunci: Platform Jual Beli dan Penyewaan, Pelajar UNIMAS, Aplikasi Mudah Alih, Pasaran Kasut,

Chapter 1: Introduction

1.1 Introduction

Sneaker culture has evolved into a dynamic trend that resonates with students worldwide, including those at UNIMAS. Exclusive releases, limited-edition drops, and a robust resale market have turned sneakers into a popular focus for students who value fashion, functionality, and entrepreneurship. However, navigating this market can be challenging due to fluctuating prices, counterfeit products, and a lack of transparency. Additionally, students often need sneakers temporarily, like sports shoes for tournaments or special events, and may not want to commit to buying a new pair for a one-time need.

To address these challenges and provide a more versatile solution, we propose SellnBuy/Rent?, a mobile app designed specifically for UNIMAS students. This app allows students to buy, sell, and now rent sneakers for short-term needs, making the process easy, transparent, and trustworthy. With features such as price tracking, product authentication, and seamless communication between users, SellnBuy/Rent? will provide a reliable platform for students to engage confidently in sneaker trading. The new rental feature will offer students access to a range of sneakers for a set period, making it ideal for events like tournaments, where students can temporarily use sports shoes without committing to a full purchase.

In addition to this rental option, SellnBuy/Rent? will include an admin page to monitor user activities, manage sales and rentals data, and oversee product listings. This administrative system will provide real-time insights to quickly detect and prevent any suspicious activities, ensuring the platform's security and efficiency.

By focusing on the needs of UNIMAS students, SellnBuy/Rent? aims to offer a unique platform for buying, selling, and renting sneakers within the campus community. The app's combination of versatile transaction options, security features, and ease of use makes it a valuable final year project that directly supports the diverse needs of students, whether for long-term or temporary sneaker access.

This unique approach transforms SellnBuy/Rent? into more than just a transactional platform; it becomes a hub for fostering a sense of community among UNIMAS students. The app not only simplifies access to sneakers but also encourages sustainable practices by promoting reuse and rental over constant purchasing. Unlike traditional platforms that focus on high-end or global markets, SellnBuy/Rent? is designed to address the specific lifestyle, budget, and needs of a student demographic.

The app's local focus reduces shipping costs and delays, while its real-time communication and user authentication features ensure a safer and more personalized experience. These tailored functionalities and the emphasis on both long-term ownership and short-term rentals make SellnBuy/Rent? stand out as a practical and innovative solution for a targeted audience, bridging gaps that larger e-commerce platforms fail to address. This project aligns with the sustainability goals and economic constraints of university students, setting a benchmark for niche, community-driven marketplaces.

1.2 Problem statement

- **Inconsistent Pricing and Lack of Regulated Transactions for Resale and Rental**.
  Research shows that nearly **67% of students** find it difficult to identify fair pricing for second-hand or rental items, including sneakers, due to the lack of standardized pricing mechanisms (Campus Market Trends Report, 2024). This issue is exacerbated by unregulated peer-to-peer transactions, which may result in overpriced listings or difficulty understanding market values. For example, students often face wide price fluctuations for limited-edition or preloved sneakers, leading to confusion and financial strain. The absence of a system to track market trends and verify transaction legitimacy creates a barrier to affordable and transparent sneaker access, particularly for university students managing tight budgets.

- **High Cost and Inconvenience of Temporary Shoe Ownership**.
  A survey by UNIMAS Sports Club (2024) revealed that **78% of students** expressed a need for temporary footwear, such as sports shoes, but were unwilling to invest in new pairs for one-time events like campus tournaments or performances. Students often cite the high cost of sneakers as a primary reason for avoiding participation in sports or extracurricular activities. Without affordable and accessible rental options, they are forced to either overspend or forgo involvement, highlighting the gap in meeting temporary footwear needs.

- **Limited Availability of Localized Sneaker Platforms**
  Existing platforms such as NOVELSHIP cater to international markets, resulting in higher prices and shipping fees. There is a need for a localized solution that offers affordability and accessibility to students within the UNIMAS community

By bridging the gap between affordability, convenience, and transparency, SellnBuy/Rent? creates a sustainable and accessible solution for students, aligning with the growing trend of community-driven and environmentally conscious marketplaces.

1.3 Aims and Objectives

The objectives of this project are:

- **Develop a separated user-friendly platform for reselling & buying and rental sneakers** ensuring smooth navigation and an intuitive interface for both buyers and sellers.
- **Enable seamless listing and purchasing of sneakers,** with features like product filtering, price tracking, and search capabilities to enhance the user experience.
- **Introduce a rental system** that provides students with short-term sneaker access at reduced costs

1.4 Methodology:

The project will follow the System Development Life Cycle (SDLC) methodology to ensure a structured and efficient development process.

Phases of SDLC:

- **Requirement Analysis.**

  The initial phase of the project focuses on thoroughly understanding the specific needs of UNIMAS students regarding sneaker buying, selling, and renting. The objectives are to identify their pain points and expectations while also determining the requirements for efficient platform management. This phase involves conducting surveys and interviews with UNIMAS students to explore their preferences for pricing transparency, rental options, and usability. Additionally, research into existing platforms such as NOVELSHIP helps identify gaps like limited rental options, high prices, and a lack of localized services. Based on the feedback and research, features such as price tracking, product authentication, and rental systems are prioritized to form the Minimum Viable Product (MVP). This phase concludes with a comprehensive documentation of requirements that lay the foundation for the subsequent design and development phases.

- **Design Phase**.

  The design phase aims to create a user-centric and visually appealing interface tailored to students and administrators. It begins with wireframe development for key app screens, including the home page, sneaker listings, rental interface, user profiles, and admin dashboards. UI/UX design emphasizes clean aesthetics and smooth navigation, incorporating student feedback to optimize key workflows like listing products, searching for sneakers, and managing rentals. Interactive prototypes, developed using tools like Figma, showcase features such as product filtering and in-app communication. These prototypes undergo usability testing, ensuring that the design meets user expectations. Feedback from testing is used iteratively to refine the prototypes, producing high-fidelity designs ready for implementation.

- **Implementation Phase**.

  This phase involves building the core functionality of the app through iterative development cycles. The frontend focuses on creating a consistent and user-friendly interface for features like product listings and rental options adhering closely to approved prototypes. On the backend, a robust system manages user data, sneaker listings, rental records, and transactions, ensuring scalability and security. An admin panel is developed to monitor platform activities and manage sales and rentals. Integration of third-party APIs supports product authentication, secure payments, and analytics. Regular feedback from supervisors and test users ensures that the development aligns with the project's goals. This phase delivers a fully functional app incorporating all prioritized features, ready for rigorous testing.

- **Testing Phase**.

  The app undergoes comprehensive testing to ensure it is functional, secure, and user-friendly. Unit testing validates individual components, such as product listings and the rental system, while integration testing verifies seamless interaction between modules. Beta testing with selected UNIMAS students gathers insights on usability, performance, and satisfaction. Security testing ensures robust user authentication and payment processes. The testing phase resolves bugs and optimizes user workflows, producing an app ready for deployment.

- **Deployment Phase**.

  In this phase, the app is launched for real-world use within the UNIMAS community. It is initially published on platforms like the Google Play Store with restricted access to UNIMAS students. User onboarding materials, including guides and tutorials, are created to facilitate smooth navigation of app features. Analytics tools are set up to monitor performance, detect issues, and gather user insights. Feedback channels such as in-app forms are established to collect user suggestions and complaints. This phase ensures a successful launch and establishes a feedback loop for continuous improvement.

- **Maintenance Phase**.

  Post-launch, the focus shifts to ensuring the app remains reliable and relevant. Bug fixes address issues reported by users, and updates based on feedback enhance features like filtering options, expanded rentals, or additional security measures. Performance optimization includes regular backend improvements to ensure the app operates

smoothly. This ongoing process ensures that SellnBuy/Rent? adapts to the evolving needs of the UNIMAS community, providing a stable and user-centered experience.

1.5 Scope

The SellnBuy/Rent? project is designed as a mobile application exclusively for UNIMAS students, providing a secure and efficient platform for sneaker resale and rental within the university community. The system will include a user authentication process that requires students to register using their official UNIMAS credentials, ensuring that only verified users can participate. By restricting access to university members, the platform fosters a trusted environment where students can confidently engage in sneaker transactions without the risks associated with dealing with unknown sellers from external marketplaces. This authentication system will prevent fraudulent accounts and maintain a closed-loop marketplace that prioritizes student safety and convenience.

The platform will focus on offering a seamless buying, selling, and rental experience for sneakers. Users will be able to list their sneakers for sale or rent by providing detailed product descriptions, images, pricing information, and rental conditions. Buyers and renters will have access to a product search and filtering system that allows them to browse listings based on size, brand, price range, and availability. Additionally, messaging system will enable using Whatsapp to do communication between buyers, sellers, and renters, allowing them to negotiate prices, clarify product details, and arrange for meet-ups or deliveries within the university premises. This feature enhances transaction transparency and minimizes misunderstandings, making the sneaker exchange process more efficient and user-friendly.

The scope of SellnBuy/Rent? does not extend beyond the UNIMAS community, meaning that international or nationwide transactions will not be supported. Unlike global sneaker platforms such as NOVELSHIP or StockX, which cater to international buyers and sellers, this platform is specifically tailored to the needs of university students looking for affordable and accessible sneaker transactions. As a result, there will be no shipping or delivery service integration, and transactions will primarily take place within the campus, with buyers and sellers arranging meet-ups themselves. This localized approach ensures that the platform remains cost-effective and accessible while reducing the complications associated with logistics and cross-border payments.

By defining clear boundaries on what is included and excluded, SellnBuy/Rent? aims to deliver a focused, efficient, and user-friendly platform tailored to the needs of UNIMAS students. The system prioritizes security, affordability, and ease of use while avoiding unnecessary complexities that could hinder its adoption. Future updates may expand its capabilities, but for now, the platform will serve as a simple, campus-specific sneaker marketplace that connects students through a shared interest in sneaker culture and commerce

1.6 Significance of Project

- **Filling a Market Gap in Campus Commerce**

  SellnBuy/Rent? addresses a specific gap in the UNIMAS campus community by providing a platform for buying, selling, and renting sneakers. Currently, students lack a dedicated, transparent app that meets these needs within their peer network. By introducing this platform, SellnBuy/Rent? will help foster a safe, campus-specific marketplace, encouraging a shared economy and building trust within the student community.

- **Affordable Access to Temporary Footwear Needs**

  With the addition of a rental feature, SellnBuy/Rent? empowers students with a cost-effective solution to access sneakers temporarily, such as for sports tournaments, events, or other onetime needs. This feature eliminates the financial barrier of purchasing new shoes for shortterm use, offering an affordable alternative that supports student participation in campus activities.

- **Sustainability and Reduced Waste**

  By promoting resale and rental, SellnBuy/Rent? contributes to sustainability within the UNIMAS community. Reselling helps extend the life cycle of sneakers, while the rental option reduces the need for new purchases. This focus on reuse aligns with environmentally conscious practices, benefiting both students and the broader community.

- **Promoting Entrepreneurship and Community Engagement**

  SellnBuy/Rent? encourages entrepreneurial skills among UNIMAS students by providing a platform where they can manage listings, handle transactions, and practice

negotiation. The app fosters a supportive community that allows students to connect over shared interests, promoting engagement and building stronger social ties within the university.

The SellnBuy/Rent? project holds significant value for the UNIMAS community by creating a dedicated, secure platform for buying, selling, and renting sneakers. It fills a unique campus market gap, providing affordable access to temporary footwear, like rentals for sports events, and enhancing security through product authentication. This project promotes sustainability by encouraging resale and rental, reducing waste, and supporting environmentally conscious practices. Additionally, SellnBuy/Rent? offers a practical learning opportunity for mobile app development and fosters entrepreneurship and community engagement among students, ultimately creating a convenient, trustworthy marketplace tailored to student needs.

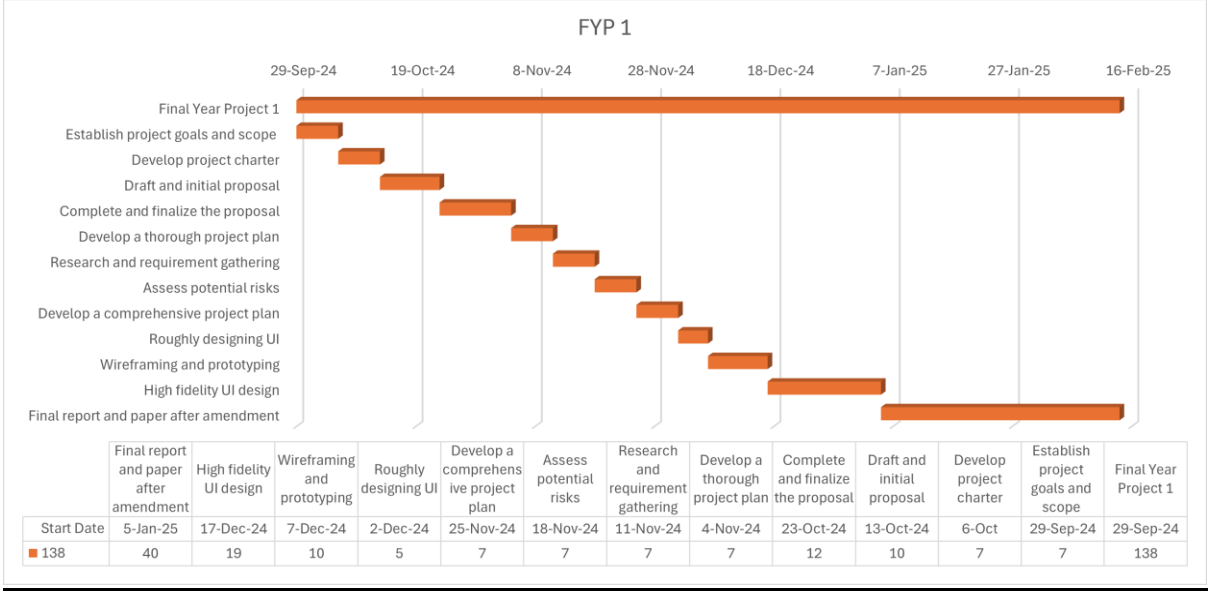
1.7 Project Schedule

The development of SellnBuy/Rent? Is schedule as shown in Table 1.1 to ensure that the system is developed systematically and efficiently according to time planned. The project is start from 29 September 2024 until 18 July 2025 which is 312 days in total.

Table 1.1 Project Schedule

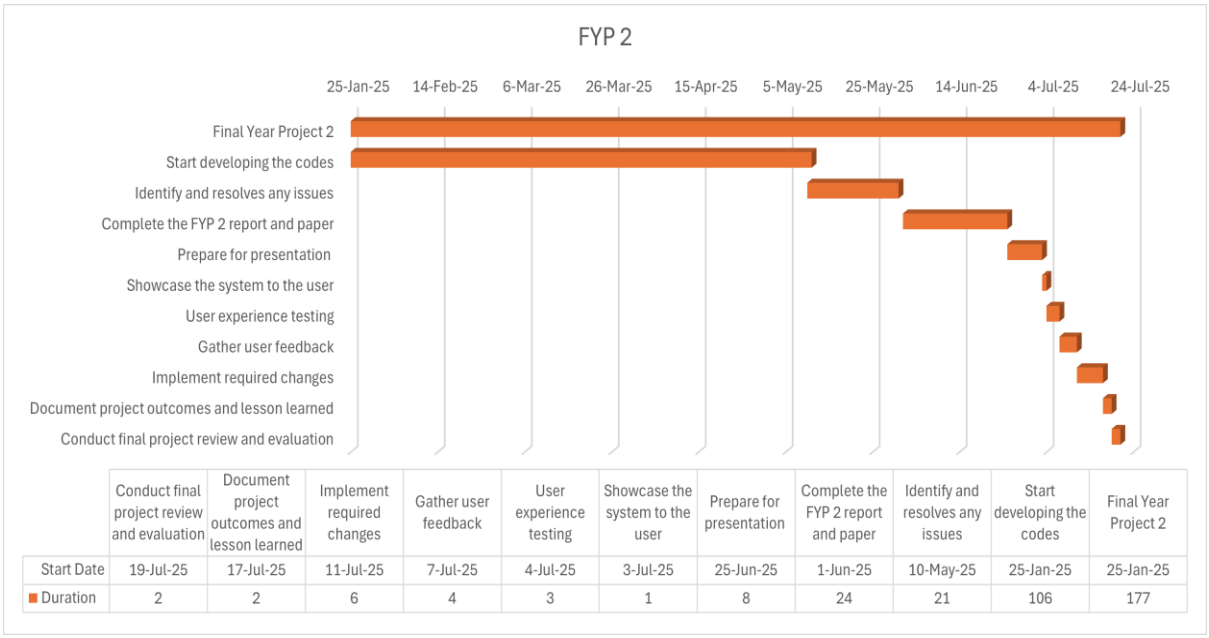
Task	Start Date	End Date	Duration
Phase 1: Initiation Phase	**29/09/2024**	**04/11/2024**	**36**
Establish project goals and scope	29/09/2024	06/10/2024	7
Develop project charter	06/10/2024	13/10/2024	7
Draft and initial proposal	13/10/2024	23/10/2024	10
Complete and finalize the proposal	23/20/2024	04/11/2024	12
Phase 2: Planning Phase	***04/11/2024***	***02/12/2024***	***28***
Develop a thorough project plan	04/11/2024	11/11/2024	7
Research and requirement gathering	11/11/2024	18/11/2024	7
Assess potential risks	18/11/2024	25/11/2024	7
Develop a comprehensive project plan	25/11/2024	02/12/2024	7
Phase 3: Design Phase	**02/12/2024**	**14/02/2025**	**74**
Roughly designing UI	02/12/2024	07/12/2024	5
Wireframing and prototyping	07/12/2024	17/12/2024	10
High fidelity UI design	17/12/2024	31/12/2024	14
Users experience testing	31/12/2024	05/01/2025	5
Final report and paper after amendment	05/01/2025	14/02/2025	40
Phase 4: Development Phase	**25/01/2025**	**31/05/2025**	**127**

Start developing the codes	25/01/2025	10/05/2025	106
Core development - User registration - Login - Product listings - Massaging system - Sneaker rental	25/01/2025	10/05/2025	106
Admin panel development	25/01/2025	10/05/2025	106
Identify and resolves any issues	10/05/2025	31/05/2025	21
Phase 5: Optimizing and Feeback	**01/06/2025**	**14/07/2025**	**49**
Complete the FYP2 report and paper	01/06/2025	25/06/2025	24
Prepare for presentation	25/06/2025	03/07/2025	8
Showcase the system to the user	03/07/2025	04/07/2025	1
Gather user feedback	04/07/2025	08/07/2025	4
Implement required changes	08/07/2025	14/07/2025	6
Phase 6: Project Closure	**14/07/2025**	**18/07/2025**	**4**
Document project outcomes and lesson learned	14/07/2025	16/07/2025	2
Conduct final project review and evaluation	16/07/2025	18/07/2025	2



	Final report and paper after amendment	High fidelity UI design	Wireframing and prototyping	Roughly designing UI	Develop a comprehensive project plan	Assess potential risks	Research and requirement gathering	Develop a thorough project plan	Complete and finalize the proposal	Draft and initial proposal	Develop project charter	Establish project goals and scope	Final Year Project 1
Start Date	5-Jan-25	17-Dec-24	7-Dec-24	2-Dec-24	25-Nov-24	18-Nov-24	11-Nov-24	4-Nov-24	23-Oct-24	13-Oct-24	6-Oct	29-Sep-24	29-Sep-24
138	40	19	10	5	7	7	7	7	12	10	7	7	138

Figure 1.1 Ghantt Chart on Project Timeline FYP 1



	Conduct final project review and evaluation	Document project outcomes and lesson learned	Implement required changes	Gather user feedback	User experience testing	Showcase the system to the user	Prepare for presentation	Complete the FYP 2 report and paper	Identify and resolves any issues	Start developing the codes	Final Year Project 2
Start Date	19-Jul-25	17-Jul-25	11-Jul-25	7-Jul-25	4-Jul-25	3-Jul-25	25-Jun-25	1-Jun-25	10-May-25	25-Jan-25	25-Jan-25
Duration	2	2	6	4	3	1	8	24	21	106	177

Figure 1.2 Ghantt Chart on Project Timeline FYP 2

1.8 Expected outcomes

The SellnBuy/Rent? project will result in a secure and user-friendly mobile application designed for UNIMAS students to buy, sell, and rent sneakers within their campus community. The platform will ensure safe transactions by restricting access to verified UNIMAS students, reducing fraud and scams commonly found on public marketplaces.

A key outcome is the introduction of a sneaker rental system, allowing students to rent sneakers for short-term needs like sports events instead of purchasing expensive new pairs. This will make sneakers more affordable and accessible while promoting sustainable consumption by reducing waste.

The platform will also feature data analytics to help users set fair prices based on past transactions. Additionally, an Whatsapp messaging allows direct communication between buyers, sellers, and renters, ensuring smooth and transparent transactions.

To maintain a safe and regulated marketplace, an admin dashboard will be implemented, enabling administrators to monitor listings, user activity, and reported issues. This will help prevent counterfeit sales and maintain trust among users.

Beyond providing a marketplace, the project will also support student entrepreneurship by giving students a platform to resell sneakers securely. It will serve as a valuable learning experience in mobile app development, applying structured development methodologies while solving a real-world problem for UNIMAS students. The SellnBuy/Rent? app aims to become a trusted and essential platform for sneaker transactions within the campus

Chapter 2: Literature Review

2.1 Introduction

This chapter provides a comprehensive review of the existing literature related to sneaker resale, rental platforms, and mobile applications tailored to student communities. It explores the global sneaker market's growth, emphasizing the challenges faced by buyers and sellers, such as counterfeit products, pricing disparities, and limited accessibility to localized platforms. Additionally, this chapter examines current applications, such as **NOVELSHIP**, highlighting their limitations in catering to student-specific needs, such as affordability, short-term sneaker rentals, and localized resale opportunities.

By analyzing relevant studies, reports, and existing platforms, this chapter aims to establish the foundation for the **SellnBuy/Rent?** app project. The insights drawn from this review will identify key gaps in existing solutions and underline the importance of a user-friendly platform tailored for UNIMAS students. Furthermore, it will provide an understanding of best practices in mobile app development, sustainability in consumer behavior, and user engagement strategies, all of which are critical to the success of this project.

2.2 Background Study

The rise of sneaker culture has transformed the footwear industry into a dynamic and thriving global market, driven by its fusion of fashion, athletics, and lifestyle. In 2024, the global sneaker market continues to flourish, with revenues surpassing $94.1 billion and projected growth fueled by increasing consumer demand for stylish yet functional footwear. Platforms such as StockX and NOVELSHIP have emerged as dominant players, catering to collectors and enthusiasts, especially for limited-edition and high-end sneakers. These platforms emphasize authenticity and exclusivity, but challenges such as inflated pricing, high shipping costs, and limited accessibility create barriers for specific demographics, including students (Blufashion, 2024; IMARC Group, 2024).

While NOVELSHIP specializes in premium sneaker resale, its focus on international markets leads to significant costs for buyers, particularly students in Malaysia. This highlights a critical gap in the market for a localized, affordable solution. Moreover, trends in sustainability and temporary product use, such as renting, remain largely untapped by these platforms, further alienating cost-conscious consumers like university students. This

underscores the need for tailored solutions that align with the financial constraints and I immediate needs of students.

The proposed **SellnBuy/Rent?** app directly addresses these gaps by providing a localized, student-centric platform that enables UNIMAS students to buy, sell, and rent sneakers. Unlike global platforms, SellnBuy/Rent? integrates a rental feature that caters to short-term needs, such as sports tournaments or formal events, reducing the financial burden of purchasing expensive sneakers. Furthermore, by focusing on a closed, campus-specific community, the app fosters trust and convenience, ensuring that transactions remain local and accessible.

The sneaker industry is also witnessing significant shifts in consumer preferences and innovations. The integration of sustainable practices, such as using recycled materials and eco-friendly manufacturing, reflects a growing demand for environmentally conscious products. Additionally, the rise of high-tech sneakers incorporating features like adaptive fit technology and performance tracking showcases the intersection of fashion and innovation (The Sneakers Pro, 2024). These trends, coupled with the booming resale market valued at $10.6 billion, emphasize the importance of authenticity, customization, and affordability for modern consumers (Collectinsure, 2024; IMARC Group, 2024).

By aligning with these global trends while addressing local challenges, SellnBuy/Rent? not only meets the immediate needs of UNIMAS students but also promotes sustainable practices through its emphasis on reuse and rentals. This innovative approach positions the platform as a practical and impactful solution for students, bridging the gap between affordability, sustainability, and convenience.

2.3 Review on Existing Systems:

NOVELSHIP is a renowned sneaker resale platform that specializes in limited-edition and luxury footwear. However, it primarily caters to international markets, which often results in higher prices and significant shipping costs for local buyers. Additionally, most of the sneakers on NOVELSHIP are sourced from overseas, making them less accessible and affordable for students, particularly those in UNIMAS, who often prioritize budget-friendly options.

Carousell, on the other hand, is a versatile marketplace for buying and selling a variety of goods, including sneakers. It provides a broader range of both new and pre-owned sneakers, making it more accessible than NOVELSHIP. However, Carousell lacks a community-specific focus and does not offer features tailored to the needs of students, such as affordable rental options or localized support. The absence of these targeted features can result in less relevance to students in UNIMAS who require cost-effective and temporary access to sneakers for specific occasions, such as sports events or formal gatherings.

Facebook Marketplace is another widely used platform for buying and selling goods, including sneakers. Its strength lies in its simplicity and wide reach, as users can easily find sellers and buyers within their local area. However, Facebook Marketplace lacks structured support for transactions, which can lead to trust issues, and it does not provide specialized features for a specific demographic like students. This absence of a student-centric approach, combined with the potential risks of dealing with unverified users, makes it less ideal for the unique needs of UNIMAS students.

In contrast, SellnBuy/Rent? distinguishes itself with a hyper-localized approach tailored specifically to the UNIMAS community. It introduces an innovative sneaker rental system, addressing short-term needs while promoting sustainability through reuse within the campus environment. This feature sets it apart from NOVELSHIP, Carousell, and Facebook Marketplace.

2.3.1 System NOVELSHIP

NOVELSHIP System Overview

NOVELSHIP is a specialized online marketplace designed for sneaker enthusiasts, offering a platform to buy, sell, and trade sneakers, streetwear, and collectibles. Its primary focus is on providing authentic products and catering to users seeking premium, often limited-edition items. The platform operates with several key functionalities to ensure a seamless and trustworthy experience.

- **Home Screen**

  The home dashboard of the NOVELSHIP app from Figure 2.1 is designed to offer users a personalized shopping experience. At the top, a search bar enables users to find specific products quickly. Below this, there are clearly labeled categories such as Sneakers, Apparel, and Trading Cards, allowing users to navigate directly to their area of interest. The interface prominently displays a Recommended for You section tailored to the user's preferences, showcasing sneakers and other items that align with past interactions. Beneath this, a Recently Viewed section allows users to revisit products they have recently checked, ensuring a seamless browsing experience. A clean layout ensures that product images and names are easily visible, enhancing the browsing experience. The bottom navigation bar includes essential tabs such as Home, Search, Wishlist, and Profile, ensuring smooth access to different parts of the app. The listing page (Figure 2.2) provides users with powerful filtering tools to refine their search results. At the top, users can select product categories such as Sneakers, Apparel, or Collectibles. Below that, users can filter products by Size Types (e.g., Men, Women, Youth) and other attributes like Prices, Colors, and Release Year. The page also includes toggles for specific preferences like Custom Shoes, Trending Deals, and Under Retail.

- **User Dashboard and Navigation**

  The user dashboard in the NOVELSHIP application provides a centralized interface where users can efficiently manage their account and related activities. From figure 2.3, at the top of the dashboard, users can view and edit their profile details, ensuring their personal information is always up to date. Below this section, the dashboard is structured into key functional areas, such as Buying, Selling, Storage, and Wishlist, among others. For instance, the **Buying** section allows users to track their purchase

history and manage ongoing orders, while the **Selling** section enables them to oversee sneaker listings, monitor sales progress, and initiate sales processes. Additionally, the Storage feature offers users the option to store their sneakers securely at NOVELSHIP's facilities. Other notable features include the **Wishlist**, where users can save sneakers they are interested in purchasing, and the **Posts** and **News** sections, which keep users informed about trending sneakers and ongoing promotions. Furthermore, users can manage promo codes and request payouts for completed sales through dedicated sections in the dashboard. This intuitive and comprehensive design ensures seamless navigation, enabling users to access and manage all their sneaker-related activities with ease.

- **User Authentication**

  The login and sign-up page of the NOVELSHIP application provides users with a seamless and user-friendly interface to access their accounts. As shown in Figure 2.4, users are presented with multiple login and registration options, including signing in with Google, Facebook, Apple, or via email. This flexibility ensures that users can conveniently choose their preferred method of authentication. Below the social login buttons, an email login option is available, allowing users to enter their credentials manually. Once credentials are entered, users can click the "Continue" button to proceed. The page is minimalistic and clean, ensuring a straightforward user experience while maintaining the app's premium aesthetic. By offering multiple login methods, NOVELSHIP enhances accessibility for a diverse range of users and ensures a quick onboarding process for both new and returning customers.

- **Transaction Workflow**

  The transaction workflow in the NOVELSHIP application is designed as figure 2.5 to streamline the purchase process while maintaining transparency. When a user selects a sneaker, they are presented with detailed product information, including the size, SKU, and price, which ensures they make informed decisions. At this stage, users can apply promo codes or select a preferred payment method, with any applicable discounts reflected instantly. Following this, users can choose between adding a shipping address for delivery or opting for the storage service provided by NOVELSHIP. The application clearly displays any additional costs, such as processing and shipping fees, along with taxes, ensuring users are fully aware of the total cost. Once satisfied with the details, users can confirm their order with a single action, completing the transaction. This well-

structured process minimizes confusion and enhances user satisfaction, emphasizing transparency and convenience throughout the purchasing journey.

- **Limitations and Areas for Improvement**

  While NOVELSHIP offers a reliable system for sneaker transactions, it does have limitations. The global nature of the platform often results in high shipping costs and extended delivery times, especially for users in specific regions. Moreover, as depicted in Figure X, its strict refund and return policies have been criticized for their lack of flexibility.

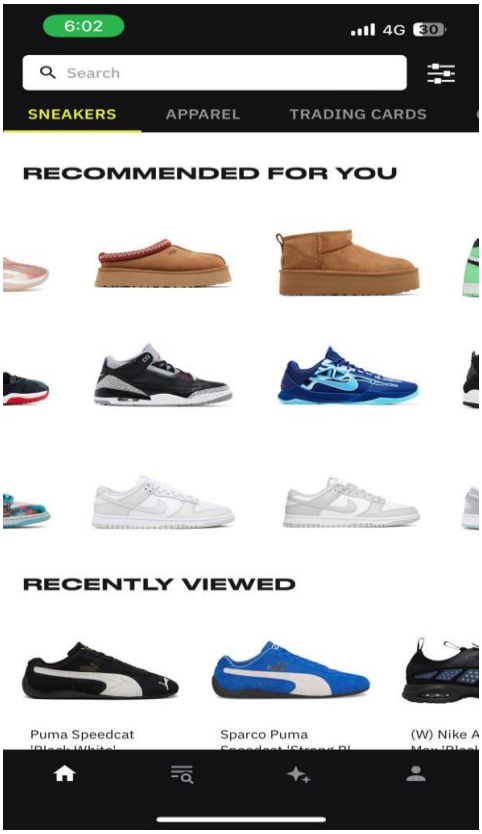


Figure 2.1 Homepage for NOVELSHIP

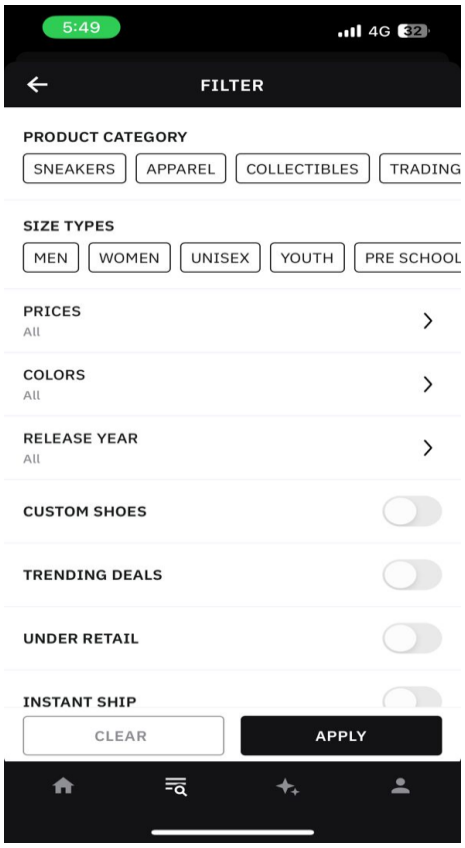


Figure 2.2 Filter page in NOVELSHIP

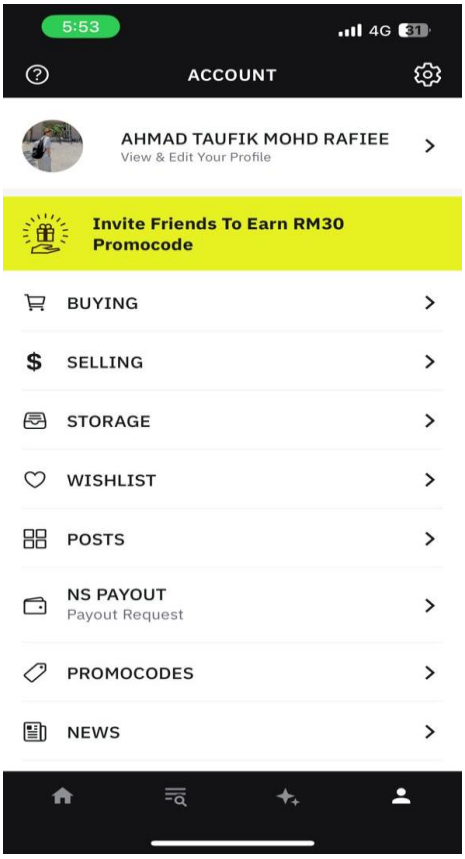


Figure 2.3 User dashboard in NOVELSHIP

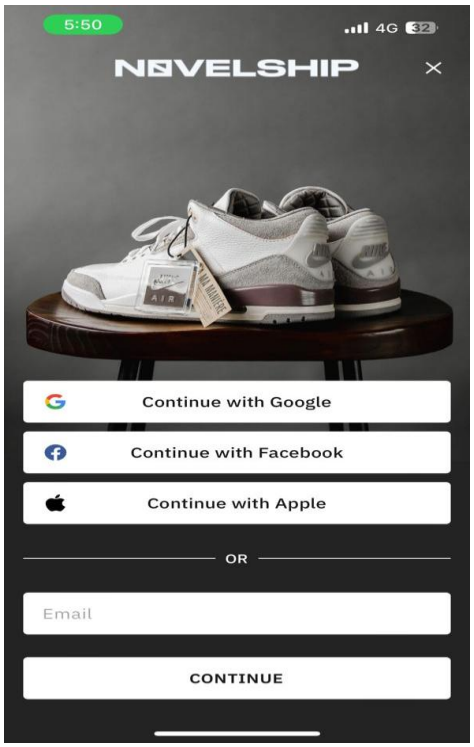


Figure 2.4 Login/Sign up page for NOVELSHIP

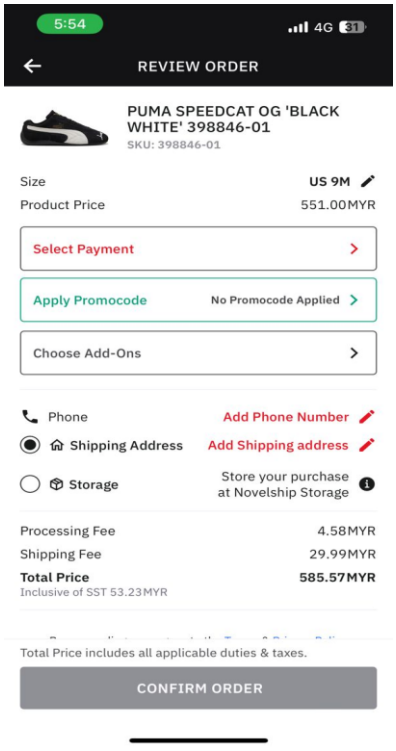


Figure 2.5 Transaction Flow for NOVELSHIP

2.3.2 System in Carousell

Carousell is a mobile and web-based platform that allows users to buy, sell, or trade a variety of items, ranging from fashion and electronics to vehicles and property. It operates as a consumer-to-consumer (C2C) marketplace, empowering individuals to list and discover items conveniently. With an intuitive interface, Carousell caters to users across different age groups, offering both localized and international options for trade. Its features, including in-app promotions and user reviews, make it one of the leading e-commerce platforms in Southeast Asia.

- **Home Screen**

  On the home screen, based on Figure 2.6, Carousell displays a clean and functional layout, featuring categorized listings that are easy to navigate. Users can scroll through images of products, along with essential details like pricing, condition, and seller reputation. The inclusion of filters and a search bar enables users to refine their browsing experience, whether they are looking for a specific brand, price range, or item condition. The home screen also integrates seller promotion tools, which allow featured listings to gain more visibility, ensuring sellers reach a broader audience.

- **User Authentication**

  The user authentication page in the Carousell application, as shown in Figure 2.7, provides a seamless process for users to create or log in to their accounts. It offers multiple options for authentication, including Google, Facebook, Apple, and email, ensuring flexibility and accessibility for various users. Below the authentication buttons, users are presented with the option to sign up later, catering to those who prefer to explore the application before registering. Additionally, the page emphasizes compliance with user data regulations by linking the Terms of Service and Privacy Policy, allowing users to review them before proceeding. This design ensures a secure, user-friendly onboarding experience.

- **Product Listing (Figure 2.8)**

  The product listings page on Carousell provides detailed information about individual items for sale. It displays high-quality images, the product name, price, and essential details like condition, brand, and size. Buyers have options such as “Make Offer,” “Chat,” “Add to Cart,” or “Buy,” allowing for flexibility in purchasing or negotiating. A “Buyer Protection” badge ensures secure transactions. Users can also save the

product by tapping the heart icon. This page helps buyers make informed decisions while offering sellers an organized platform to showcase their items effectively.

- **Chatbox page (Figure 2.9)**

  The chatbox feature enhances interaction between buyers and sellers by providing a secure and direct messaging system. From figure 2.10, buyers can inquire about product details, negotiate prices, and discuss transaction planning in real-time. The messages are displayed in a chronological thread, making it easy to follow up on conversations. Additionally, the chatbox provides a sense of safety and convenience, as communication occurs within the app, minimizing the need for external contact details. This feature ensures that both parties can resolve queries effectively, leading to smoother transactions.

- **User Dashboard**

  The User Dashboard in the Carousell application is a central hub for managing listings and profile activities. Based on figure 2.11, we can see that it allows users to view all their listed items, complete with details like price, condition, and timestamps, as well as track sold items. A search bar and filters enable quick navigation and refinement of listings, while insights on views and interactions help users optimize their sales. Tabs for "Listings," "Reviews," and "About" organize content efficiently, supporting sellers in managing feedback and profile information. The dashboard includes promotional tools for boosting item visibility and a top section displaying the username, notifications, and messages for staying updated. A bottom navigation bar ensures easy access to other key app sections, such as browsing items, updates, and account settings, making the dashboard a comprehensive workspace for sellers.

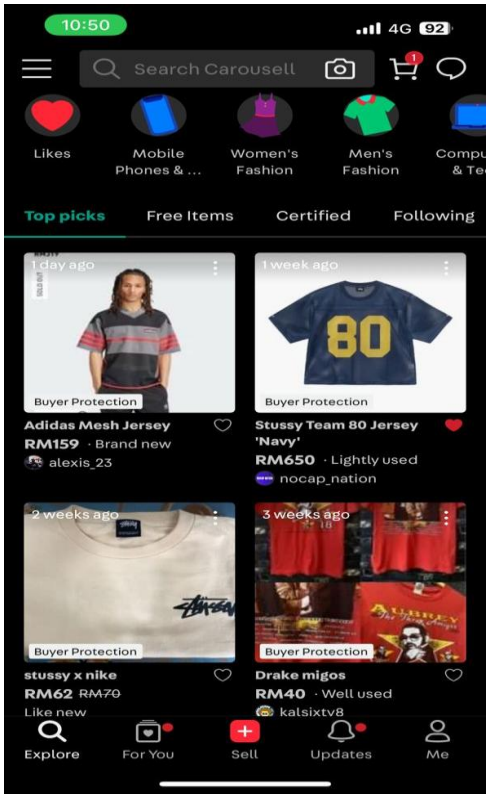


Figure 2.6 Home Screen for Carousell

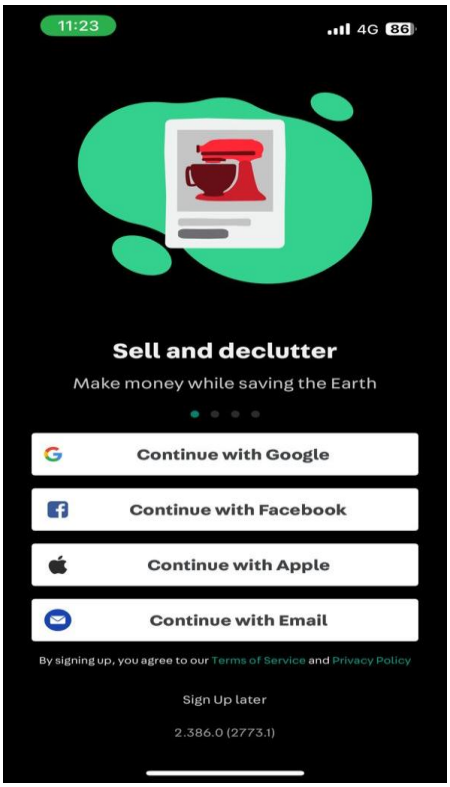


Figure 2.7 Login/Sign up for Carousell

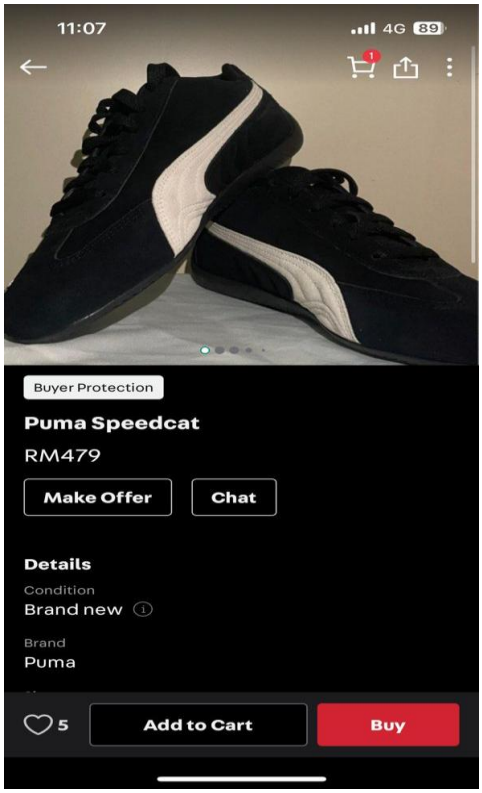


Figure 2.8 Product Listing in Carousell

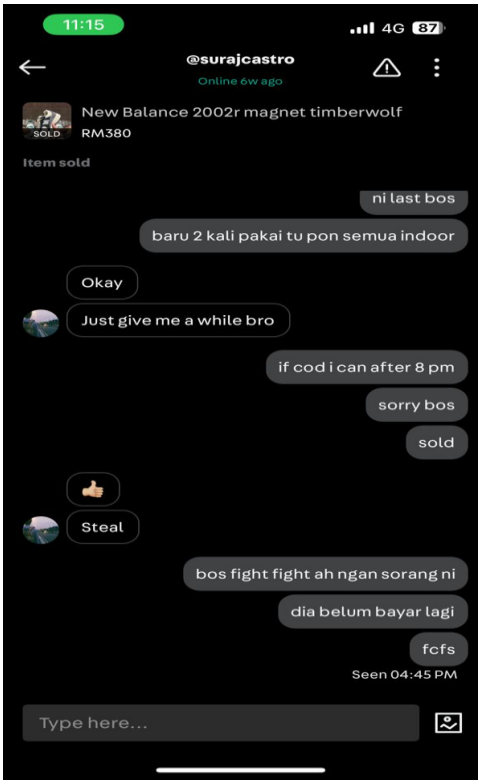


Figure 2.9 Chatbox in Carousell

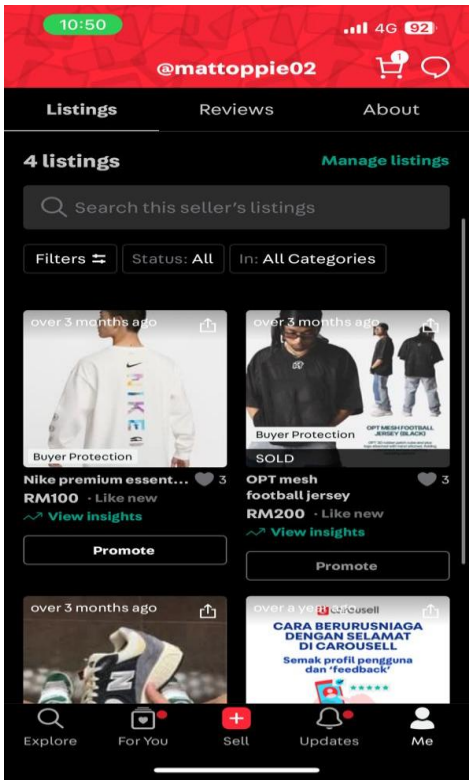


Figure 2.10 User Dashboard in Carousell

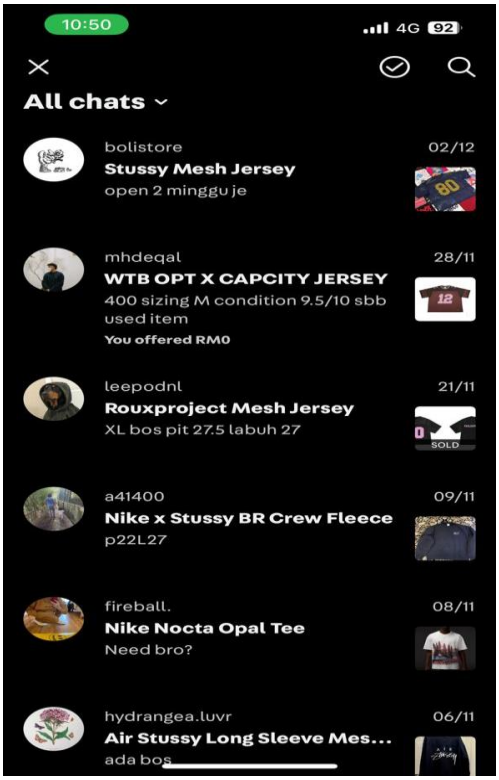


Figure 2.11 Chat list in Carousell

2.3.3 System in Facebook Marketplace

Facebook Marketplace is a feature within the Facebook app that allows users to buy, sell, and discover items in their local community. It provides a convenient platform for individuals to list items for sale, search for items they need, and interact with potential buyers or sellers through the app. The Marketplace organizes listings into categories such as vehicles, electronics, furniture, and more, making it easy for users to navigate and find what they are looking for. Figure 2.12 shown how to go to facebook marketplace from Facebook's main page application.

- **Home Screen**

  The Home Screen is the primary browsing interface where users can explore personalized listings and trending items based on their location and preferences. As shown in figure 2.13, facebook marketplace features tabs like "Sell," "For You," and "Categories," enabling quick navigation between creating listings, viewing recommendations, and exploring categorized items. A search bar allows users to search for specific products, while a location button adjusts the area for listings. Listings are displayed with images, prices, and titles, which can be clicked for more details. The navigation bar at the bottom includes buttons for accessing the main Facebook feed, video content, friend suggestions, notifications, and other features.

- **Listing Page (Figure 2.14)**

  This page is designed for users managing their listings or selling items. Key elements include a "+ Create Listing" button for adding new items, tabs for accessing the inbox, active listings, announcements, and insights on performance metrics such as views and clicks. Users can view a summary of their performance, including seller ratings, earnings, and follower growth. Functional buttons on this page let sellers answer buyer inquiries, edit or delete listings, and track their sales performance.

- **Categories Page**

  The Categories Page is shown in figure 2.15, organizes listings into predefined groups, making it easier for users to find specific items. Top categories like Vehicles, Electronics, and Furniture are prominently displayed, along with buy-and-sell groups for community-specific transactions. A "Saved Items" section provides quick access to bookmarked listings, while the "All Categories" button expands into niche options,

including antiques or arts and crafts. Clicking on a category filters listings accordingly, and the "Buy-and-Sell Groups" button redirects users to relevant community groups.

- **Chatlist**

  The chat list page (Figure 2.16) represents the Marketplace Inbox, which provides an overview of conversations between users regarding listings. Each row corresponds to a conversation, displaying the seller's name, item title, and a brief status update, such as "Listings similar to…" or "Joe marked the listing…". The message timestamp is visible to indicate when the last activity occurred in the chat. Profile images or placeholders accompany each row, providing visual identification of the user. The functionality of this page allows users to click on a specific conversation to view or continue the chat, facilitating communication about listed items.

- **User Dashboard**

  This page offers a comprehensive interface for managing Marketplace activities. As refer to figure 2.17, the user's name and profile picture are displayed at the top, along with an option to view their Marketplace profile. Key features include shortcut buttons for "Saved items," "Inbox," "Reviews," and "Recently viewed," providing quick access to important sections. Below, the "Selling" category includes features like "Your listings," "Quick actions," "Marketplace followers," and "All selling activities," which streamline the management of a user's selling activity. The "Preferences" section lets users manage their followed items, while the "Account" section offers options for configuring location and notifications. At the bottom, the navigation bar allows users to switch seamlessly between different areas of the app, such as Home, Video, Friends, Marketplace, Notifications, and Menu. This dashboard is designed for efficient navigation and easy access to user-specific tools

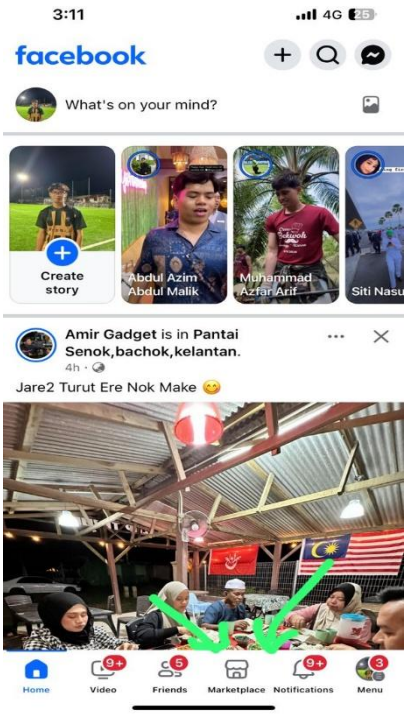


Figure 2.12 How to go to Facebook Marketplace

Figure 2.13 FB Marketplace HomePage

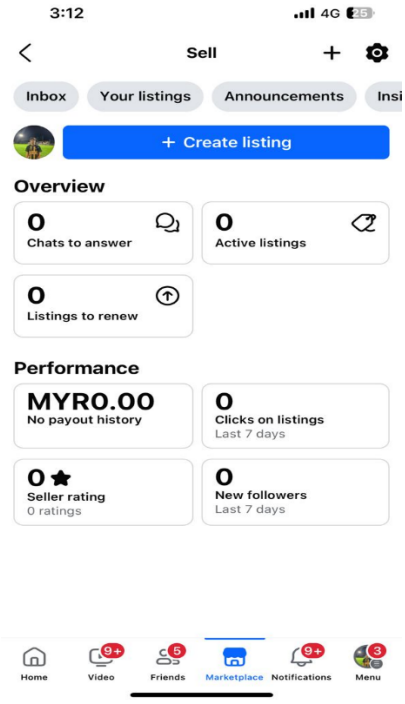


Figure 2.14 Categories sorting page

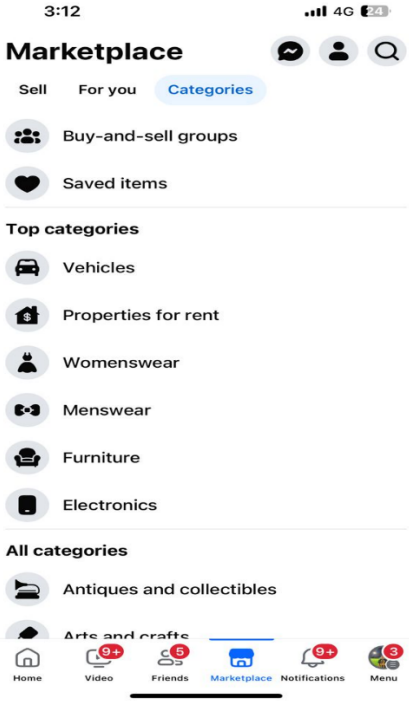


Figure 2.15 Listing/Selling Page

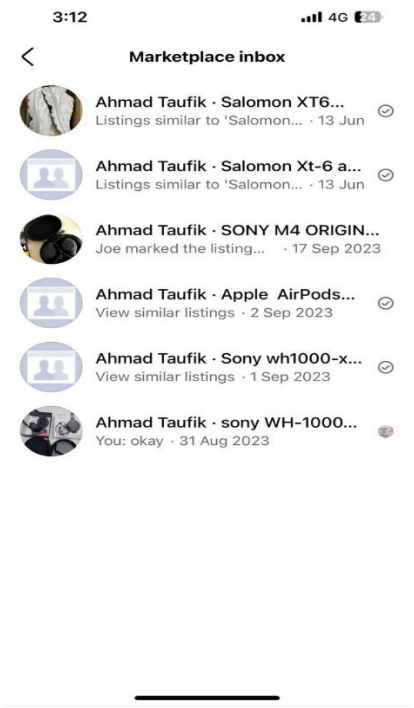


Figure 2.16 Chat list page

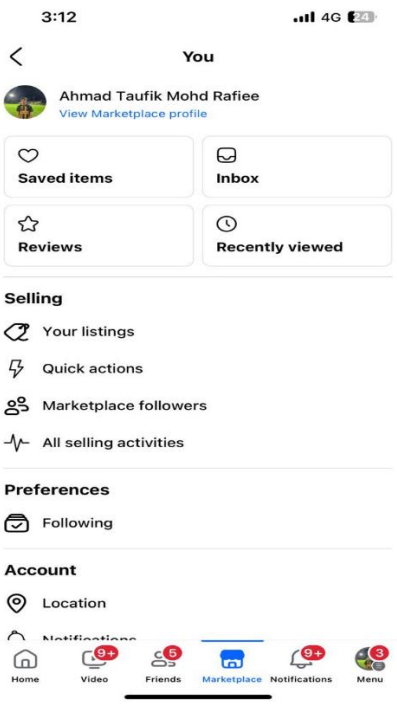


Figure 2.17 User dashboard in FB Marketplace

2.4 Comparison between Existing System and Proposed System

Table 2.1 Comparison between Existing System and Proposed System

Systems / Features	Existing Systems		
	NOVELSHIP	**Carousell**	**Facebook Marketplace**
Pre-owned sneakers for sale	/	/	/
Sneaker renting option	x	**x**	**x**
Affordable sneaker option	x (some of the sneakers is affordable)	/	/
Local seller in Malaysia	x	/	/
Sneaker Authentication	/	x	**x**
Sell or buy options	/	/	/
Communication information of the sneakers owner	x	/	/
Face to face meet-up with the dealer	x	/	/

2.5 Conclusion

The literature reviewed in this chapter provides a comprehensive understanding of the growing sneaker resale market and the challenges faced by its users, particularly university students. Major global platforms like NOVELSHIP have established as key player, offering rare and limited-edition sneakers. However, their focus on global consumers often results in inflated prices and high shipping fees, limiting accessibility for local demographics such as students at UNIMAS (Hypebeast, 2024; BlockApps Inc., 2024). Furthermore, trends in sustainability and community-building emphasize the need for platforms that promote sneaker reuse and affordability (Blufashion, 2024)(Collectinsure, 2024).

By addressing these gaps, the SellnBuy/Rent? app aims to offer a localized, student-centered solution that facilitates buying, selling, and renting sneakers within a campus community. The integration of rental services, direct communication, and reduced costs aligns with key consumer demands for authenticity, affordability, and sustainability (CNBC, 2024; IMARC Group, 2024). This review underscores the relevance and potential impact of the proposed platform, which not only meets the needs of the target audience but also contributes to broader trends in sustainable consumption and community-driven commerce.

Chapter 3: Requirement Analysis and Design

3.1 Introduction

This chapter aims to provide a comprehensive explanation of the methodology selected for the development of the proposed system. It includes a detailed analysis of the processes and procedures involved, offering a clear understanding of how the project will be executed. The methodology chosen for this project is the System Development Life Cycle (SDLC), a structured approach widely used in system development. The subsequent sections will explains deeper into the SDLC, outlining its various phases and justifying its selection as the most suitable methodology for this project.

3.2 Brief Description of Methodology

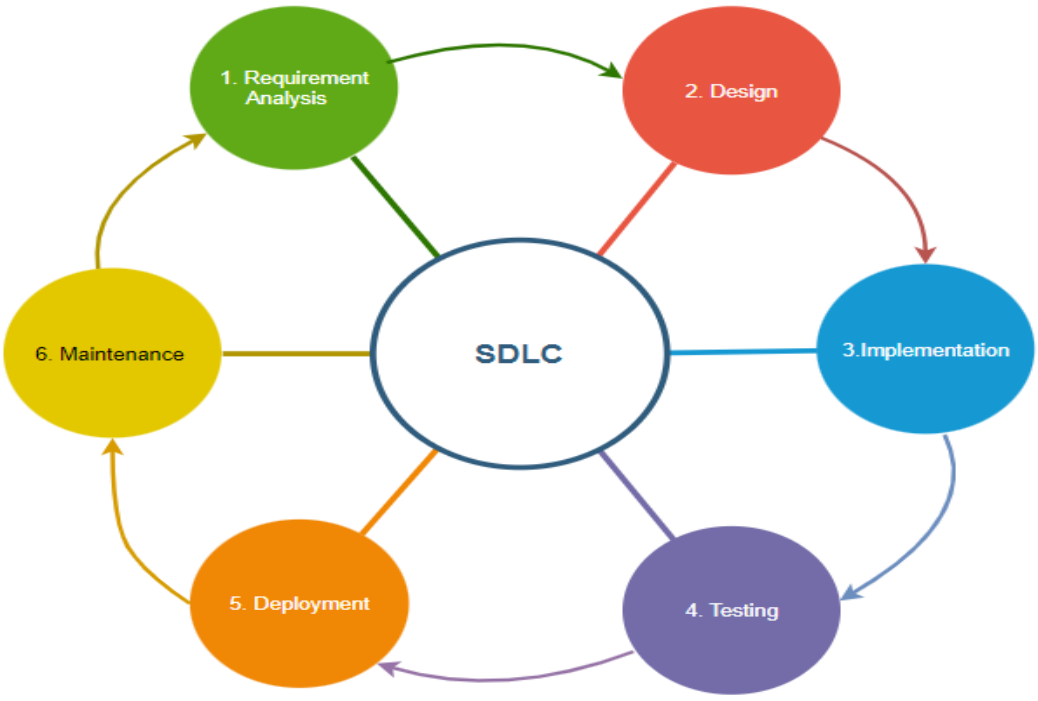


Figure 3.1 SDLC phases

The System Development Life Cycle (SDLC) is a structured methodology designed to guide the process of planning, creating, testing, deploying, and maintaining information systems. The SDLC is divided into six key phases. The first phase, Requirement Analysis, focuses on gathering and analyzing user needs to ensure the system meets its intended purpose. This involves understanding goals, desired functionalities, and any constraints. The Design

phase follows, where a blueprint of the system is developed, outlining its architecture, interface, and data flow to ensure a methodical approach to implementation. In the Implementation phase, developers translate the design into functional code, bringing the planned features to life. The system then undergoes rigorous Testing, including unit, integration, and system tests, to identify and resolve any issues. After testing, the Deployment phase delivers the system to its intended environment, often accompanied by user training, data migration, and configuration. Finally, the Maintenance phase ensures the system remains functional and efficient over time, addressing updates, troubleshooting, and enhancements.

SDLC is chosen for this project because it provides a highly structured and organized framework, ensuring that each phase is completed systematically and reducing the risk of overlooking critical elements. Its focus on identifying potential risks early in the process helps mitigate challenges and ensures better project outcomes. Unlike iterative methodologies like Agile or Scrum, SDLC is well-suited for projects where requirements are clearly defined at the outset, making it ideal for systems with complex workflows or stringent regulatory requirements. The emphasis on thorough documentation in SDLC allows stakeholders to track progress effectively and provides a reference for future enhancements. Additionally, the inclusion of detailed testing and maintenance phases ensures the system's reliability and longevity, making SDLC a robust choice for projects requiring meticulous planning and execution.

3.3 Requirement Analysis

This chapter will focus on the requirement planning phase in SellnBuy/Rent? Application. A questionnaire will be shared with the general public especially UNIMAS students to collect opinion on the platform. These survey will be used to determine the feasibility and relevance of a function of the proposed system. A set of functional, hardware, and software requirements will be decided in this chapter.

3.3.1 Requirement Elicitation and Questionnaire

The requirement elicitation was conducted by distributing questionnaire through the Googe Form. The questionnaire is categorized into two categories which are students and lecturer. A total number of 48 students and 1 lecturer have responded to the survey. The survey was conducted to gather and analyse user requirements. There are two sections in the questionnaire where section A describes demographic analysis, section B is about understanding students and lecturer's preferences. As for the preference, the survey questions are attached in Appendix A. The information obtained through the questionnaire is evaluated and the information is graphically visualised as shown below

3.2.1.1 Section A: Demographic Information / General Perception and Awareness

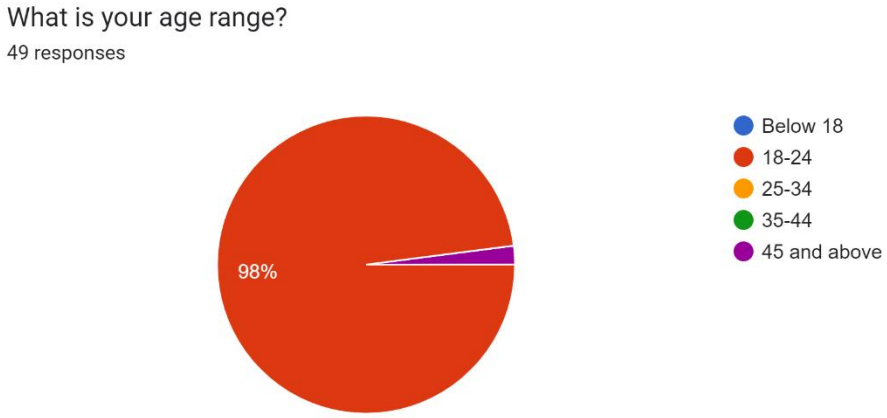


Figure 3.2 Age range

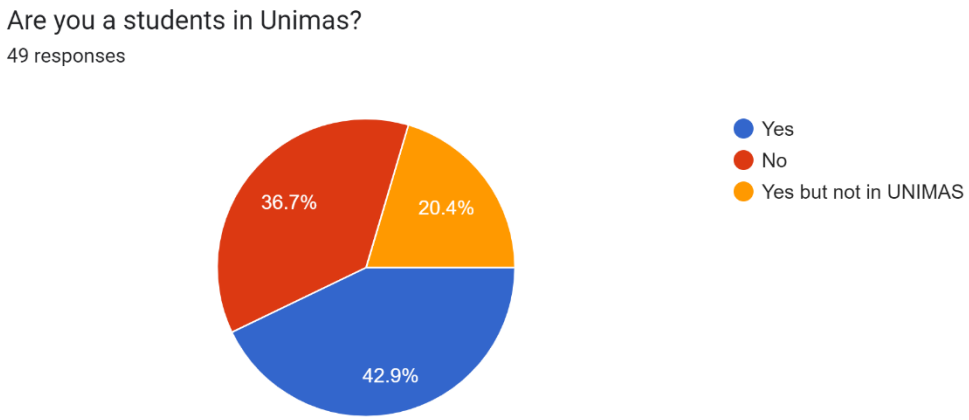


Figure 3.3 Category

This survey involved 49 respondents which consists of 48 students and 1 lecturer. As shown in Figure 3.2, 48 person (98%) of the respondents was range between 18-24 years old and only one person (2%) is above 45 years old. Figure 3.3 illustrate the percentages of respondent's universities. The majority of the respondents are students in UNIMAS. The survey involved 49 respondents with 21 person (42.9%) is UNIMAS students. While for respondents that are not study in UNIMAS is 10 person (21.4%) and 18 (36.7%) are weather already graduated or else.

3.2.1.1 Section B: Understanding Students/Lecturers Preference

Part A: User Experience

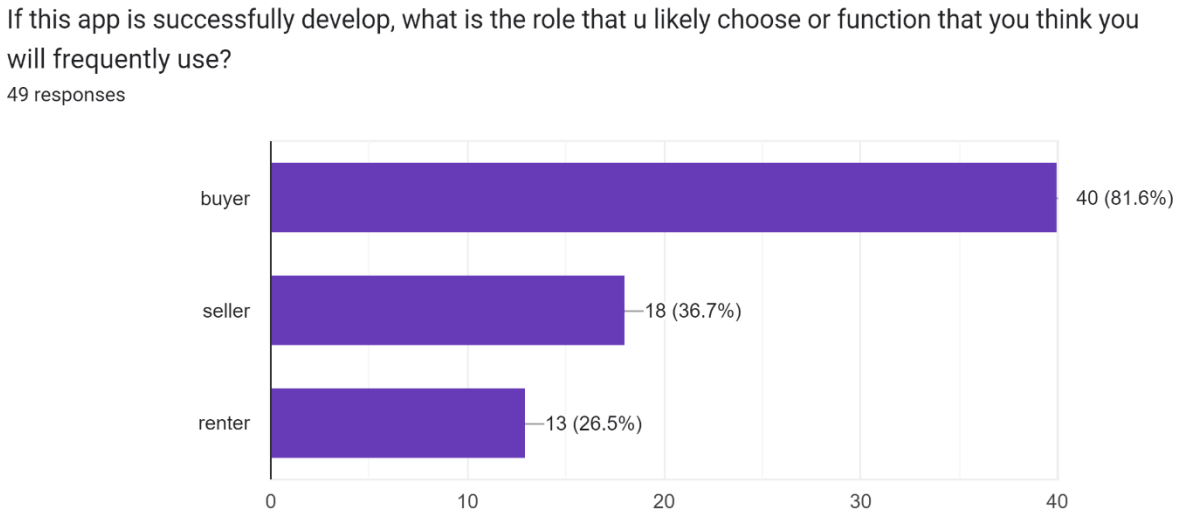


Figure 3.4 Role selection chart

Figure 3.4 illustrates the distribution of user preferences for roles in the SellnBuy/Rent? platform. Among the 49 respondents, a significant majority of 40 users (81.6%) indicated that they would primarily use the platform as buyers, emphasizing a strong demand for purchasing shoes rather than renting or selling. This suggests that the platform should prioritize buyer-centric features such as easy product discovery, detailed listings, and streamlined communication with sellers. Meanwhile, 18 users (36.7%) showed interest in acting as sellers, reflecting a moderate willingness to list products on the platform. This points to the need for seller tools like product management features, image uploading, and efficient listing capabilities. Lastly, 13 users (26.5%) expressed interest in the renting feature, indicating a niche but valuable user base that prefers temporary shoe rentals instead of permanent ownership. The lower percentage for renters suggests this feature should be secondary but still accessible, with clear visibility for those specifically interested.

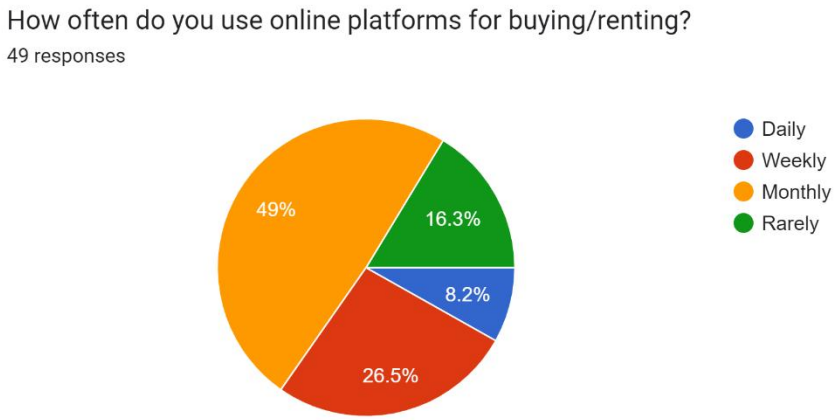


Figure 3.5 Frequency of Using Online Platform

Figure 3.5 explores how frequently respondents use online platforms for buying or renting shoes. Between the 49 participants, nearly half (49%) reported using such platforms on a monthly basis, indicating occasional but consistent interest in online shoe transactions. This behaviour suggests that the platform should offer personalized reminders or updates about new listings to re-engage infrequent users. Meanwhile, 26.5% of respondents access platforms weekly, indicating a slightly higher engagement level. The lower percentages for daily users (8.2%) and rare users (16.3%) show that daily use of such platforms is uncommon, possibly due to the nature of shoe purchases being more occasional rather than habitual. This data can guide the platform to focus on features that support periodic engagement, such as sales events, seasonal offers, or notification systems for new listings.

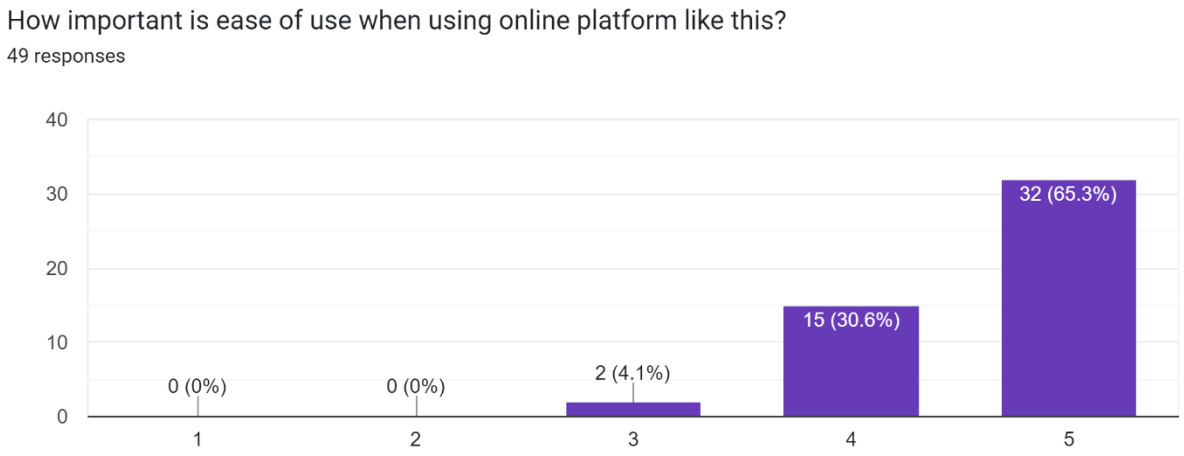


Figure 3.6 Ease of Use Importance

Figure 3.6 emphasizes the importance of ease when using the platform. A majority, with 32 out of 49 participants (65.3%), rated ease of use as extremely important by selecting the highest score of 5. Additionally, 15 respondents (30.6%) rated it a 4, showing a strong collective preference for a user-friendly experience. Only two respondents (4.1%) rated the importance lower at a 3, and no participants selected the lowest ratings (1 or 2). This data reveals that users prioritize simplicity and intuitive navigation, suggesting the need for a clean, user-friendly interface. Features like minimalistic design, clearly labelled actions. Since a complex interface may discourage engagement, ensuring accessibility across all age groups and technical skill levels is crucial for the platform's success.

Part B: Platform Features

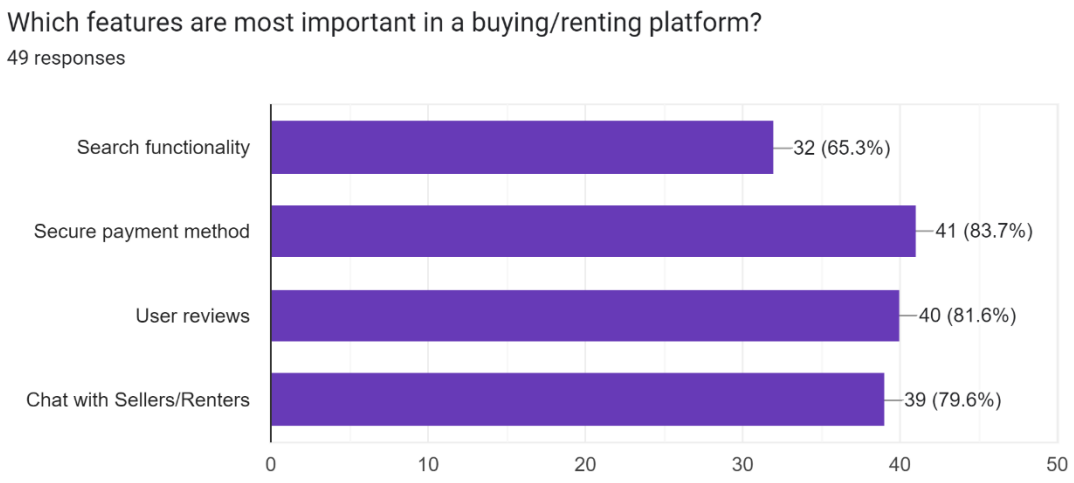


Figure 3.7 Platform Features Importance

Figure 3.7 presents the importance of various features in a buying and renting platform, based on feedback from 49 respondents. The secure payment method was identified as the most crucial feature, with 83.7% (41 out of 49) of participants emphasizing its importance. This indicates a strong user preference for safe and reliable transactions, reducing the risk of scammer. Moreover, user reviews were selected by 81.6% (40 respondents), suggesting that buyers and renters highly value feedback from other users when making purchasing decisions. Chat with Sellers/Renters was also considered significant, with 79.6% (39 participants) highlighting the need for direct communication to inquire about products and negotiate terms effectively. Lastly, search functionality was marked important by 65.3% (32 respondents), indicating the necessity for a streamlined product discovery experience, even though it ranked slightly lower than other features. Overall, the findings suggest that users prioritize transaction security, transparency through reviews, and efficient communication, while search functionality remains essential for a user-friendly platform.

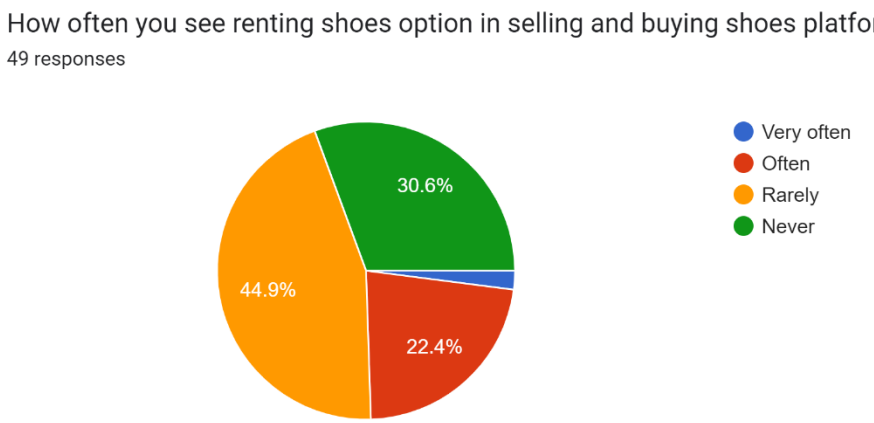


Figure 3.8 Renting Shoes Option Chart

Figure 3.8 shows the varying levels of visibility for shoe rental options among 49 respondents. The largest number which is 22 respondent (44.9%), indicated that they "Rarely" encounter rental options, followed closely by15 respondent (30.6%) who responded with "Never." This indicates that over 75% of respondents have minimal or no exposure to shoe rental services on such platforms. Meanwhile, 11 person (22.4%) reported seeing this feature "Often," suggesting that some platforms may already offer it but are not widely recognized. Only 2% of respondents marked "Very often," highlighting that shoe rental services are significantly underrepresented in the current marketplace. The data suggests a gap in the availability or marketing of such services, potentially presenting an opportunity for platforms to explore rental options more prominently.

Part C: Trust and Security

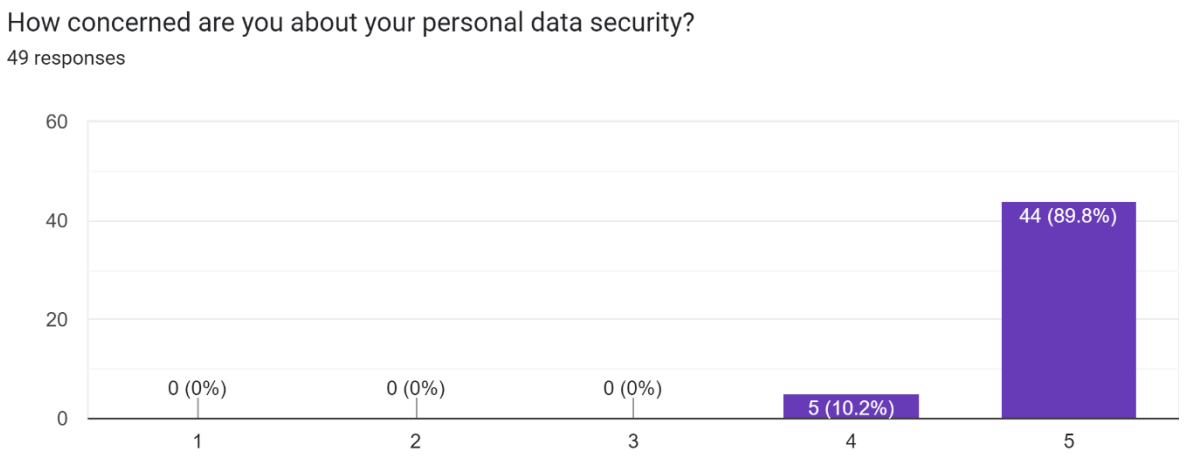


Figure 3.9 Personal Data Security

Figure 3.9 illustrates the level of concern regarding personal data security. Between 49 respondents, the majority of 44 respondents (89.8%) rated the level of concern about personal data security with a 5, the highest score and only 5 respondents (10.2%) choose 4. From here, we can see that users highly value their personal data among the platforms. Developers should prioritize the database to make sure users' information is safe and not being used by fraud.

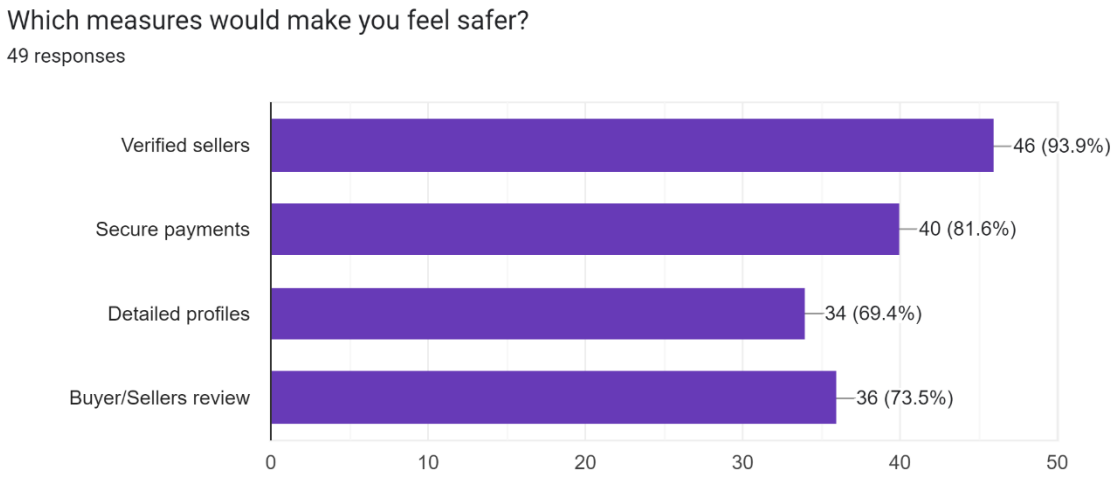


Figure 3.10 Safety Measure Chart

Figure 3.10 highlights user preferences for safety features on buying and renting platforms. Out of 49 respondents, the majority of 45 respondent (93.9%) expressed that verified sellers are the most critical measure for ensuring safety, indicating a strong desire for identity confirmation before transactions. Secure payment methods followed closely with 40 respondent (81.6%) support, showing the importance of financial transaction security. Buyer and seller reviews were also significant, with 36 respondent (73.5%) prioritizing them as a key factor for safety, emphasizing the need for feedback and reputation systems. Lastly, detailed user profiles were chosen by 34 respondent (69.4%) of participants, reinforcing the importance of transparency and user background information. This data suggests that platforms focusing on verification, secure payments, and detailed user transparency can significantly enhance user trust and safety.

Part D: Design and Usability

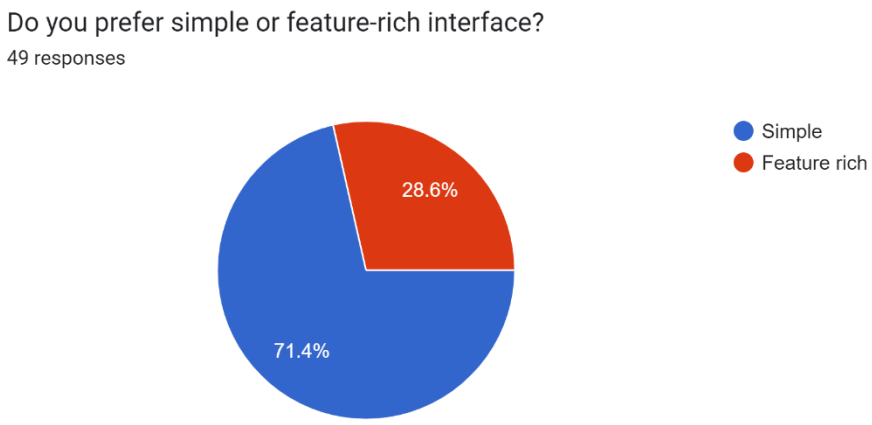


Figure 3.11 Platform Feature

Figure 3.11 shows that majority among 49 respondents is prefer simpler interface for the platform. 35 (71.4%) of the respondents chose a simple interface while 14 (28.6%) preferred feature-rich interfaces. This shows that most respondents need a simple interface for better and smooth experiences when using SellnBuy/Rent?. Developer must focus on designing and developing user-friendly platform to achieve user satisfactions.

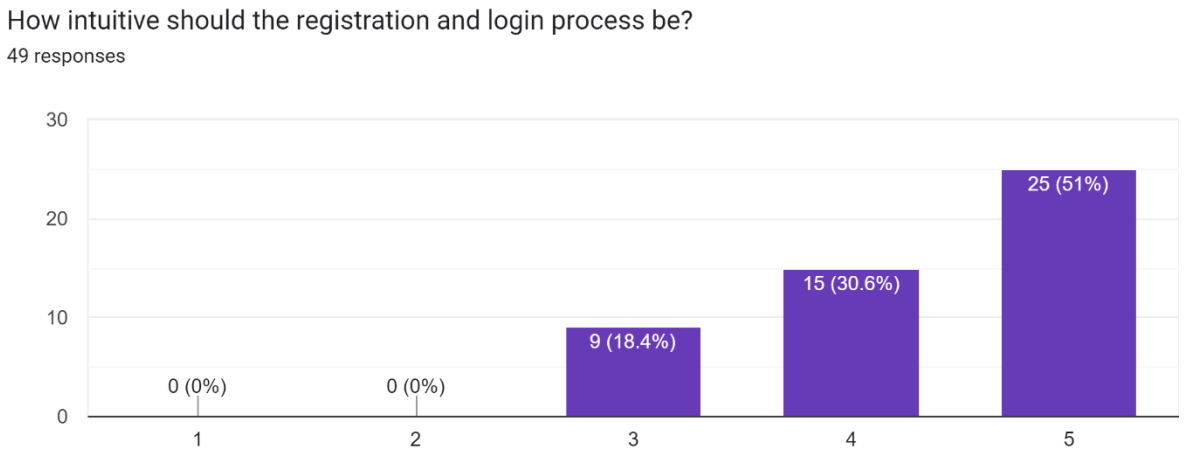


Figure 3.12 Registration and Login Process Chart

Figure 3.12 emphasizes the importance of user-friendliness in platform design. Among 49 respondents, the majority of 25 respondent (51%) rated the importance of an intuitive registration and login process with a 5, the highest score. An additional, 15 respondent (30.6%) rated it a 4, while 9 respondent (18.4%) selected a 3. Notably, no participants rated it below 3, showing a clear consent on the need for a basic and efficient registration process. The data indicates that users highly value a frictionless onboarding experience, which can influence their willingness to engage with the platform. Developers should prioritize minimal steps, clear instructions, and user guidance to enhance the sign-up experience.

3.4 Software Requirements

Table 3.1 Software Requirement

Software	**Requirement**
Operating System	Windows 10
Development Software	Visual studio code, Android Studio, Emulator, Firebase, Visual Paradigm
Scripting language	Flutter, Dart, JavaScript
Database	MySQL

Table 3.1 outlines the software requirements essential for the development of SellnBuy/Rent?. The project relies on Windows 10 as the operating system, with Firebase serving as the local server environment and Visual Studio Code as the code editor. Visual Paradigm is utilized for system and database design. Additionally, flutter structures the web content, Dart manages dynamic content and database communication, JavaScript adds interactivity, and MySQL oversees data storage and retrieval. Together, these tools streamline the development and maintenance process, ensuring an efficient workflow for the creation of SellnBuy/Rent?.

3.5 Hardware Requirements

Table 3.2 Hardware Requirements

Hardware	**Requirement**
Laptop	Support Firebase, Visual Studio Code, Visual Paradigm
Mobile Phone	Can run as Emulator
Processor	Intel Core i5-12500H
RAM	16 GB
Storage	1 TB

Table 3.2 shows the hard requirements that is required for development of SellnBuy?Rent. The hardware requirements for SellnBuy?Rent development include a laptop that supports Firebase, Visual Studio Code, and Visual Paradigm. It should be equipped with an Intel Core i5-12500H processor, 16 GB of RAM, and 1 TB of storage. This project also requires Mobile Phone to run as emulator that used for testing and run the code. These specifications ensure efficient performance and enough storage capacity for development tasks.

3.6 Use Case Diagram

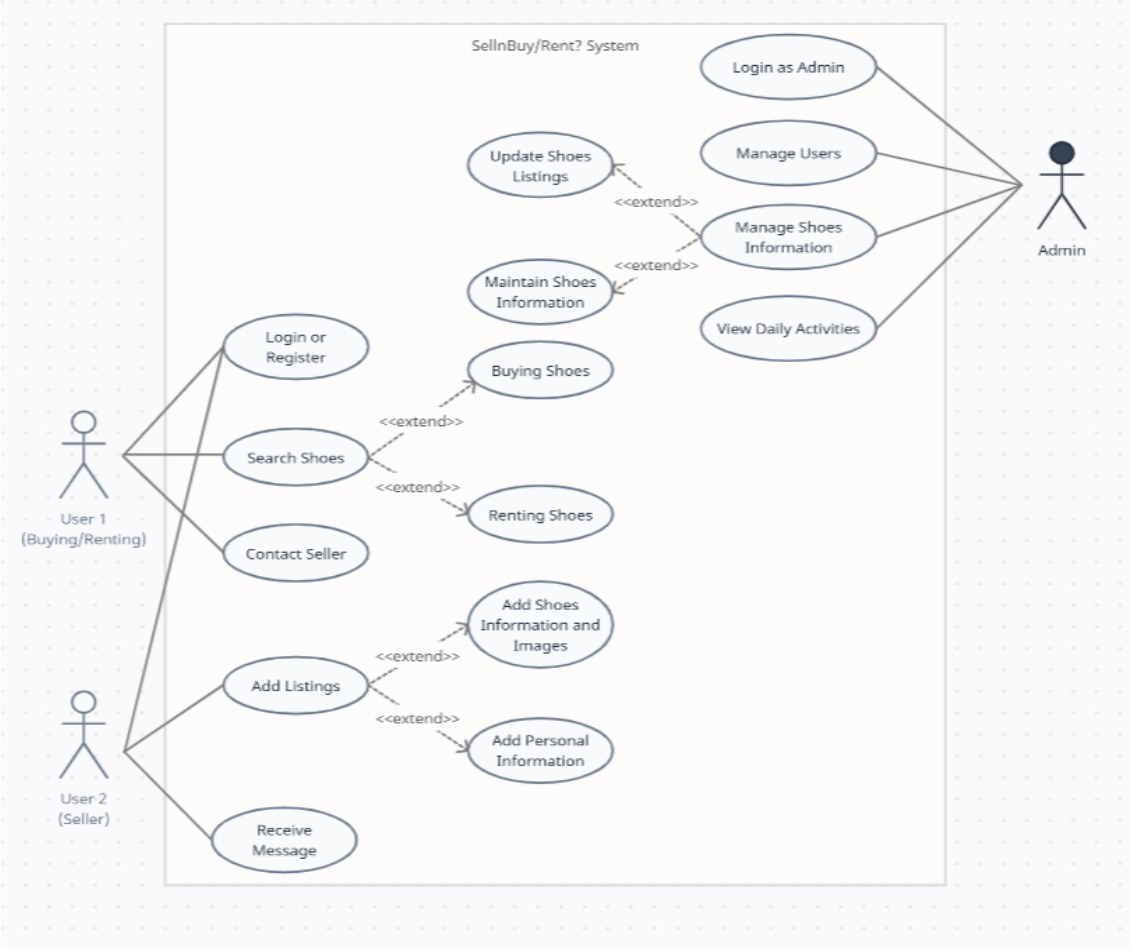


Figure 3.13 Use case Diagram for SellnBuy/Rent?

The use case diagram illustrates the interactions between three key actors which are User 1 (Buyer/Renter), User 2 (Seller), and the Admin include in the SellnBuy/Rent? system. User 1 represents individuals who wish to buy or rent shoes, while User 2 consists of individuals selling or renting their shoes on the platform. The Admin oversees and manages the system to ensure smooth operations.

User 1 can log in or register to access the platform and view the available shoe listings. They can search for shoes, select the ones they are interested in, and contact sellers to make inquiries or negotiate terms. Once satisfied, User 1 can either purchase or rent the shoes, with both processes requiring prior actions such as searching and selecting items.

User 2 also begins by logging in or registering and is primarily involved in updating shoe listings on the platform. This includes adding new items, editing details, or managing inventory. Additionally, User 2 can communicate with potential buyers or renters through the "Contact Seller" use case.

The Admin has a supervisory role and handles various critical system functionalities. These include managing users by approving or suspending accounts, maintaining accurate shoe information on the platform, and overseeing the daily activities of the system, such as transactions or user actions. The Admin is also responsible for system updates to enhance features and ensure smooth operations.

The relationships between use cases, such as "include" dependencies, indicate necessary steps for a complete process. For example, buying or renting shoes includes the actions of searching and selecting items. Overall, this use case diagram serves as a blueprint for understanding the system's functionality and helps ensure clarity in the development process.

3.6.1 Use Case Description

The use case description details the interactions and steps for achieving specific functionalities within the system for students, lecturers, and administrators, as shown in Table 3.3 – Table 3.8.

Table 3.3 Use Case Description for login and register account

Attribute	Details
Use case diagram	Login or Register
Actor	User 1 & 2 (Buyer/Seller/Renter)
Description	Allows user to create an account or log in to access platform features like buying, renting or selling shoes.
Precondition(s)	- Users need to have internet access - The platform is already available on the device - Users must not have an account before register
Postcondition(s)	-User is authenticated - User navigated to HomePage
Basic Path	1. User selects “Login” or “Sign up” 2. Enters email and password (log in) 3. Enter registration information (sign up) 4. System validates credentials
Alternate Path	Invalid credentials when login trigger an error message
Exception	System downtime or sensor issues. 1. The system shows the error to inform users that the system is facing downtime 2. Users need to check internet connection and try to reload to page again Users does not complete the registration form or there is any error prompt for any text box information

	1. The system displayed the error to inform users that the registration form is not complete.

Table 3.4 Use Case Description for View Shoes

Attribute	Details
Use case diagram	View Shoes
Actor	User 1 & 2 (Buyer/Renter/Seller)
Description	Allows users to browse shoe listings
Precondition(s)	- Users logged into the platform
Postcondition(s)	-Shoes are displayed on the screen
Basic Path	1. User complete registration or login to the platform 2. The system retrieves available listings 3. Shoes are displayed
Alternate Path	N/A
Exception	Users disconnected to the system 1. The system shows the error to inform users that the system is disconnected 2. Users need to reload the page again when connected to the internet.

Table 3.5 Use Case Description for Search Shoes

Attribute	Details
Use case diagram	Search shoes
Actor	User 1 (Buyer/Renter)
Description	Enables users to search for specific shoes based on criteria like size, brand or price
Precondition(s)	Shoes are listed in database
Postcondition(s)	-Users receives search results that match the criteria
Basic Path	1. User inputs search criteria in the search bar 2. System processes the query 3. Results are displayed
Alternate Path	No results is appeared because no database that matched with users criteria.
Exception	No shoes available in the listing database. 1. The system shows the error to inform users that there is no result for the criteria needed. 2. Search something else in the search bar.

Table 3.6 Use Case Description for Rent Shoes

Attribute	Details
Use case diagram	Rent shoes
Actor	User 2 (Renter)
Description	Allows users to list their shoes
Precondition(s)	- Label selected shoes are available for rent - Complete the shoes information such as the price regarding the duration of renting, the terms and condition, and events that suits with the shoes - Provide user information
Postcondition(s)	- Rental listing is successfully listed and visible to potential customers. - Users confirm the rental by add labelling to the listing.
Basic Path	1. User selects the "Rent shoes" option 2. System prompts for rental duration 3. Users complete the shoes information 4. Users upload images of the shoes. 5. Users provide personal information. 6. Users confirm the rental by add labelling to the listing. 7. User submits the listing. 8. User manually update the status when the shoe is no longer available for the period of rental.
Alternate Path	1. System retrieves shoe listing due to lack of informations.
Exception	Shoe listings not published 1. Users receives an error message and is advised to try again later.

	2. If the information not complete, it is flagged for review and not published immediately.

Table 3.7 Use Case Description for Sell Shoes

Attribute	Details
Use case diagram	Sell shoes
Actor	User 2 (Seller)
Description	Allows seller to list their shoes for sale on this platform. The seller provides product details, sets a price, upload images, and make the listing available for potential buyers
Precondition(s)	- User must be registered and logged into the application - The seller's account must be verified
Postcondition(s)	- The shoe listing is successfully created and visible to potential buyers - The system notifies the seller about listing approval or errors during submission
Basic Path	1. Seller logs into the app. 2. Seller navigates to the "Sale Shoes" page 3. Seller enters shoe details. For example, brand, size, condition and price 4. Seller upload images of the shoes. 5. Seller submits the listing. 6. User manually update the status when the shoe is no longer available

Alternate Path	System retrieves shoe listing due to lack of information.
Exception	Shoe listings not published 1. Users receives an error message and is advised to try again later. 2. If the information not complete, it is flagged for review and not published immediately.

Table 3.8 Use Case Description for Buying and Renting Shoes

Attribute	Details
Use case diagram	Buying and renting shoes
Actor	User 1 (Buyer and renter)
Description	Enables users to either purchase or rent shoes through the platform. Users can browse available listing, view detailed descriptions, and choose between buying the shoes outright or renting them for a specified period.
Precondition(s)	- Sellers must have created and published shoe listings. - Buyer must have access to the platform to view listings. - Admin must have privileges to manage and update listing statues.
Postcondition(s)	- Successful rental or purchase initiated through buyer-seller communication - Accurate listing status to reflect availability
Basic Path	1. Buyer browses the shoe listings. 2. Buyer selects a desired shoe to buy or rent 3. System displays detailed information about the shoe, including its availability status 4. Buyer contacts the seller directly through the provided contact method (Social Media). 5. Buyer and seller finalized terms for purchase or rental outside the platform.
Alternate Path	If buyer attempts to contact seller for an unavailable shoe: 1. Buyer may report the listing to admin if it appears outdated.
Exception	-

Table 3.9 Use Case Description for Manage Users

Attribute	Details
Use case diagram	Manage Users
Actor	Admin
Description	Capable to add, update, or delete user accounts, monitor user activity, and manage permissions.
Precondition(s)	- Admin must log in with valid credentials
Postcondition(s)	- User data is updated, added, or deleted in the database.
Basic Path	1. Admin logs in. 2. Admin navigates to "Manage Users". 3. Admin selects action (add, update, delete). 4. Admin inputs details and submits. 5. System updates database.
Alternate Path	-
Exception	System prompts admin to edit details if admin adding user that already exist

Table 3.10 Use Case Description for Manage Shoe Listings

Attribute	Details
Use case diagram	Manage Shoe listings
Actor	Admin
Description	Manage and oversee all shoe listings, including verification, updates and deletions
Precondition(s)	- Admin must log in with valid credentials
Postcondition(s)	- Listings are updated, approved or deletions as per admin actions.
Basic Path	1. Admin logs in. 2. Navigates to "Manage Listings". 3. Selects a listing. 4. Updates/approves/deletes. 5. Database reflects changes.
Alternate Path	N/A
Exception	Listings flagged for review are evaluated and removed if inappropriate.

Table 3.11 Use Case Description for View Daily Activities

Attribute	Details
Use case diagram	View Daily Activities
Actor	Admin
Description	Admin can review daily activity logs to monitor login, and flagged interactions.
Precondition(s)	- System maintains activity logs.
Postcondition(s)	- Admin has an overview of platform performance and user activities
Basic Path	1. Admin logs in. 2. Navigates to "Daily Activities". 3. Selects date/timeframe. 4. System displays activity logs. 5. Admin identifies anomalies and takes corrective actions.
Alternate Path	N/A
Exception	Log data unavailable for selected timeframe due to system error.

3.7 Sequence Diagram

The sequence diagram for SellnBuy/Rent? in Figure 3.14 – 3.20 to illustrate the sequence between objects or components in a system over time.

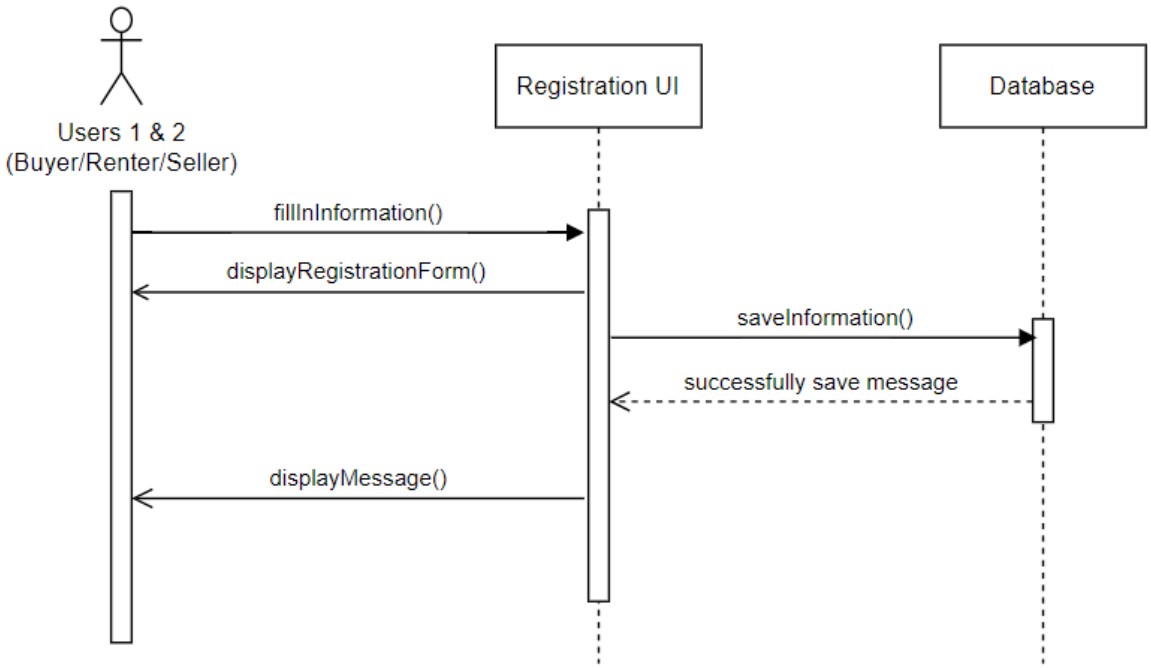


Figure 3.14 Sequence Diagram for Register Account

The **Register Account** sequence diagram illustrates the process of a new user signing up for an account. The user starts by entering their personal details, such as name, email, and password, into the registration form. The system then validates these inputs to check for any missing or incorrect information. If the data is valid and the email is not already registered, the system stores the user details in the database. Once the account is successfully created, a confirmation message is displayed to the user. However, if any issue arises, such as an already registered email, the system prompts an error message to inform the user.

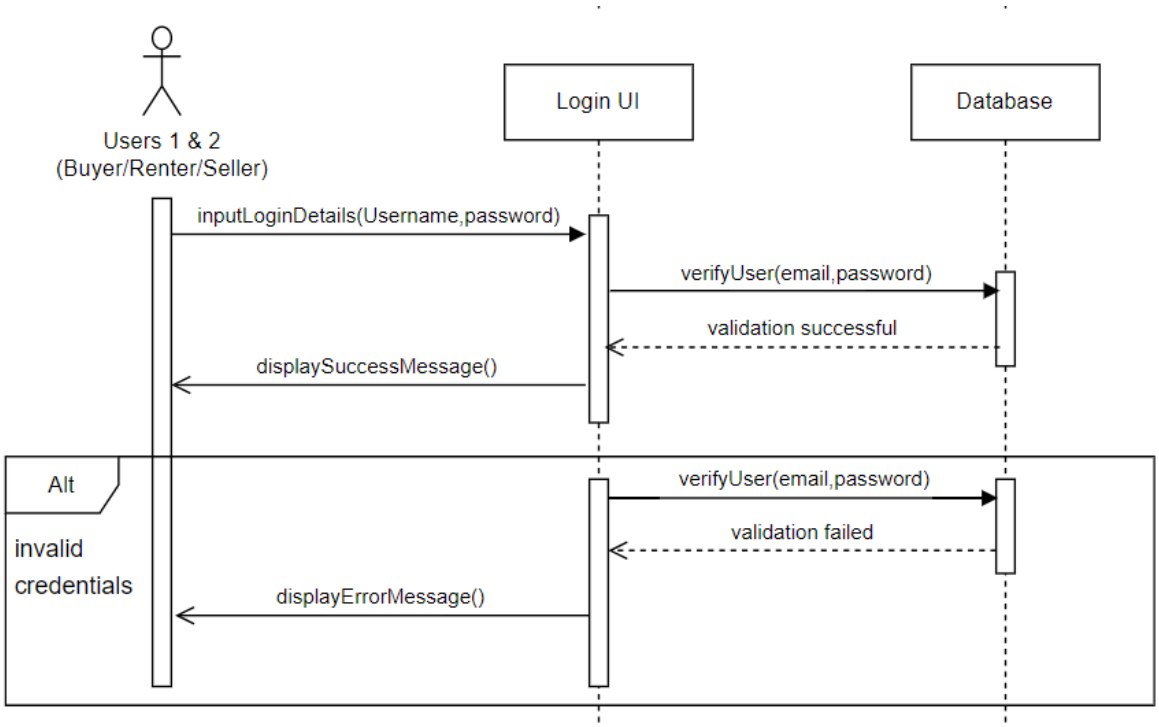


Figure 3.15 Sequence Diagram for Login Account

The **Login Account** sequence diagram represents the authentication process when a user attempts to access their account. The user provides their email and password, which the system verifies against stored credentials in the database. If the credentials match, the user is granted access to their account and redirected to the homepage. However, if the login details are incorrect, the system displays an error message, prompting the user to re-enter the correct credentials. This process ensures that only authorized users can access the system.

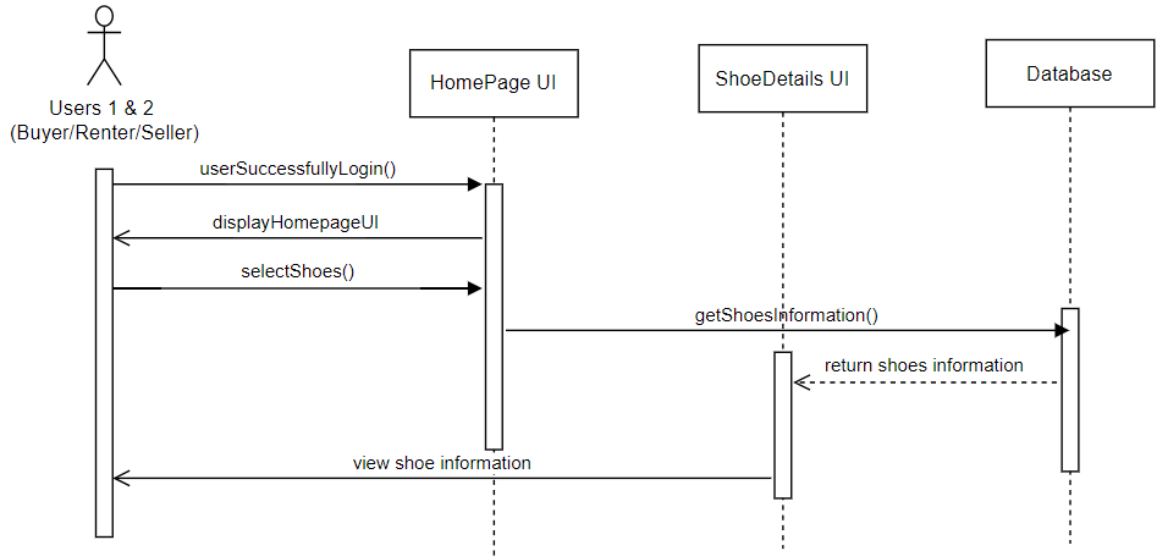


Figure 3.16 Sequence Diagram for View Shoes

The **View Shoes** sequence diagram depicts how users browse available shoe listings on the platform. When the user navigates to the shoe section, the system retrieves all relevant products from the database and displays them on the screen. This includes product images, descriptions, and prices. The diagram showcases the interaction between the user and the system, ensuring that the browsing experience is seamless and efficient.

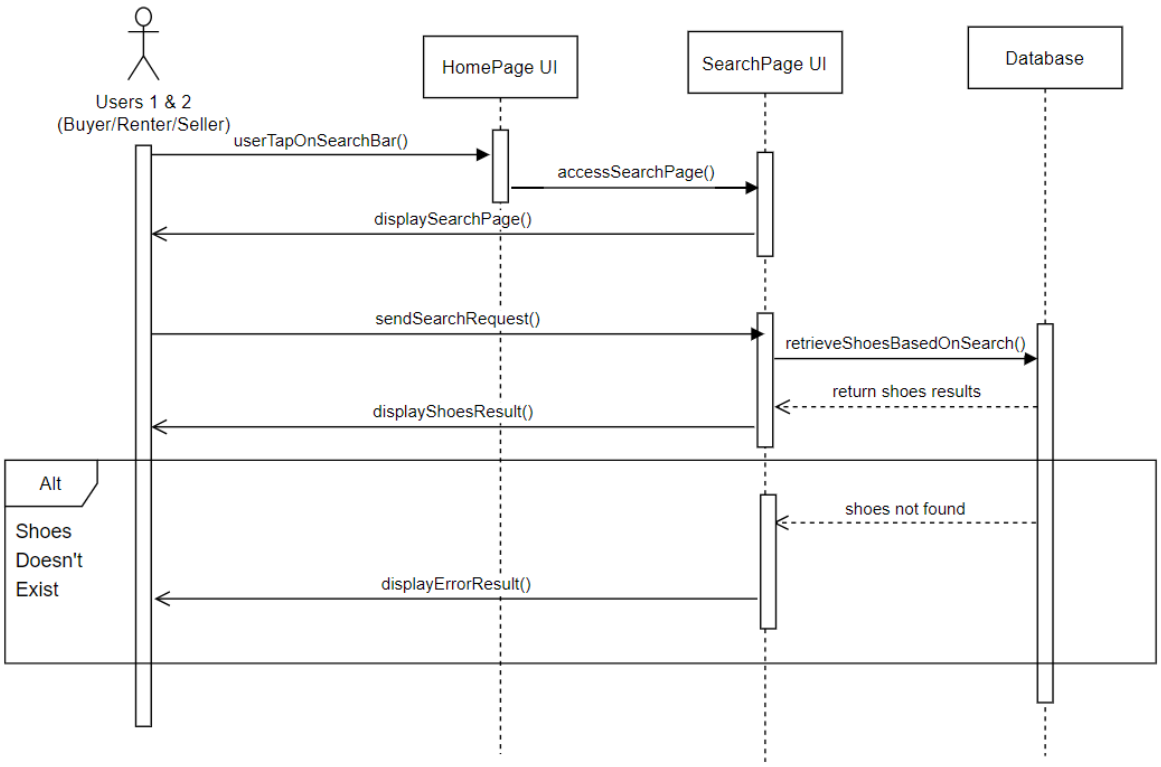


Figure 3.17 Sequence Diagram for Search Shoes

The **Search Shoes** sequence diagram details how users can look for specific products. The process begins when the user enters a keyword into the search bar. The system processes the search query, retrieves matching items from the database, and then displays the results to the user. If no products match the search criteria, the system informs the user with a "No Results Found" message. This feature enhances user experience by allowing customers to find their desired products quickly.

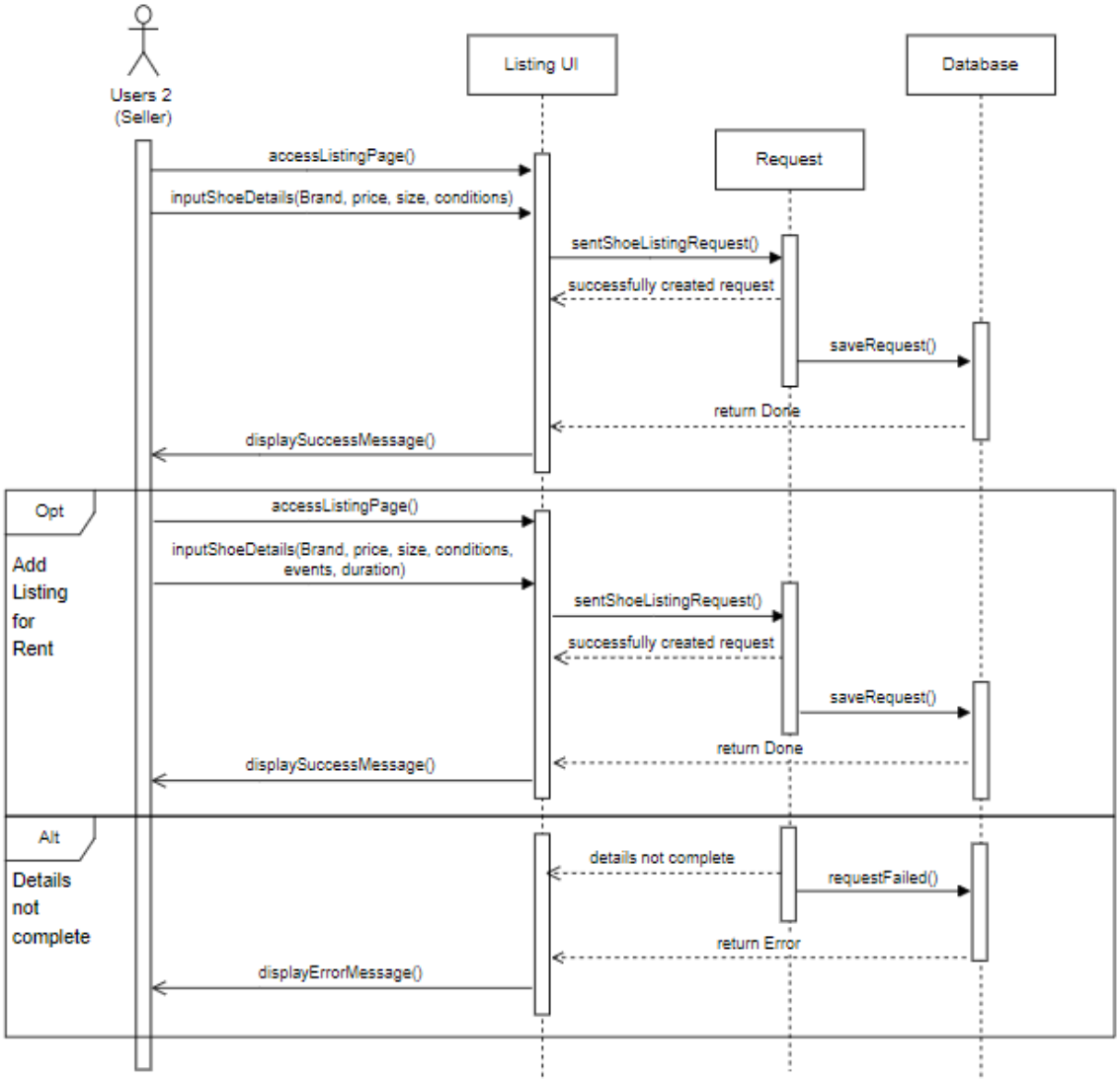


Figure 3.18 Sequence Diagram for Add Listing

The **Add Listing** sequence diagram explains the steps sellers take to list a product for sale. A seller starts by navigating to the "Add Listing" page and entering product details, such as the title, description, price, and category, along with uploading images. The system then validates the input to ensure all required fields are filled. If the information is correct, the system saves the listing in the database, making it available for buyers to view. If any required details are missing, an error message prompts the seller to complete the necessary fields. This function is essential for enabling sellers to list and manage their products efficiently.

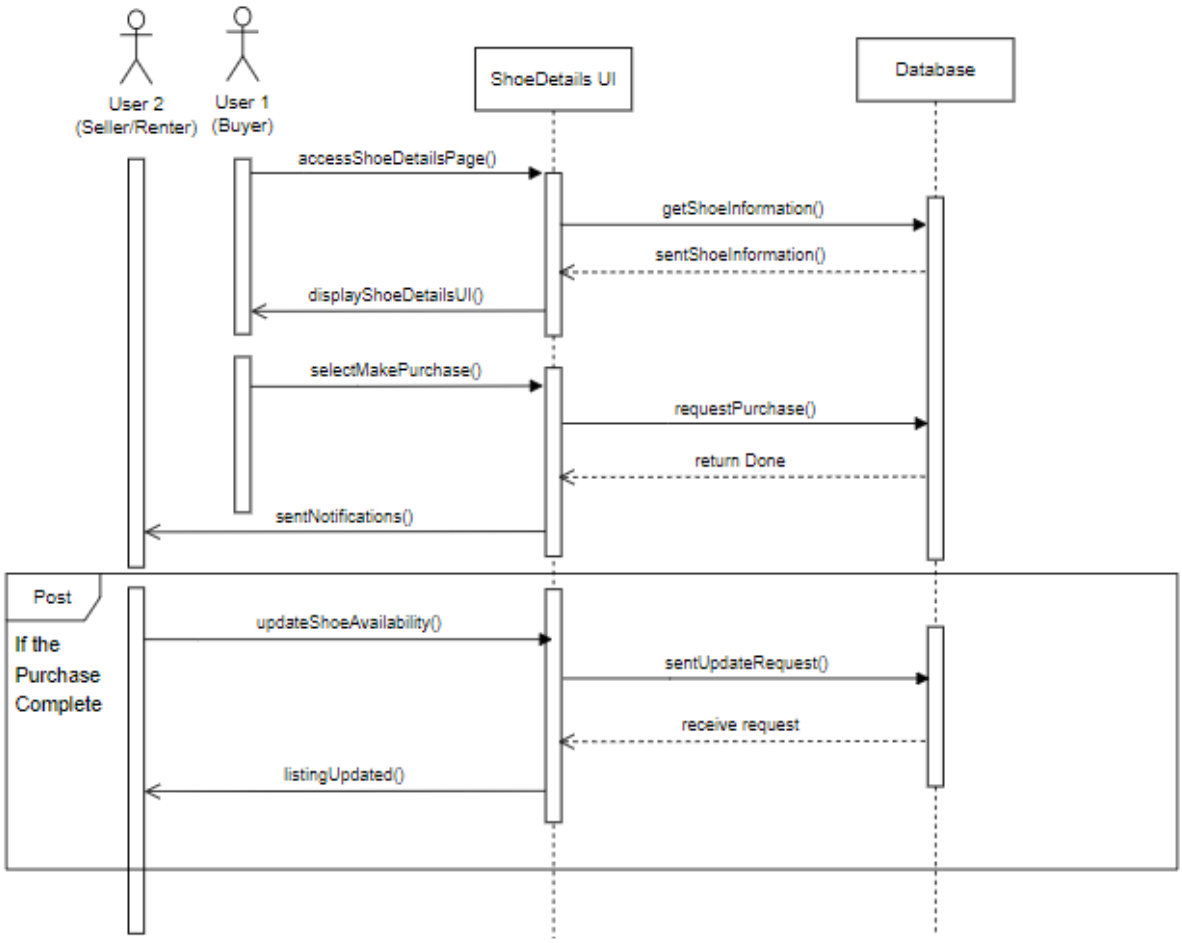


Figure 3.19 Sequence Diagram for Make Purchase

The **Make Purchase** sequence diagram outlines the buying process within the platform. The user first selects an item and adds it to their cart. When ready to proceed, they navigate to the checkout page, enter their payment details, and confirm the purchase. The system then processes the payment, updates the database to reflect the purchase, and provides a confirmation message to the user. If payment fails, an error message appears, prompting the user to retry or select a different payment method. This diagram highlights the essential steps for ensuring a smooth purchasing experience.

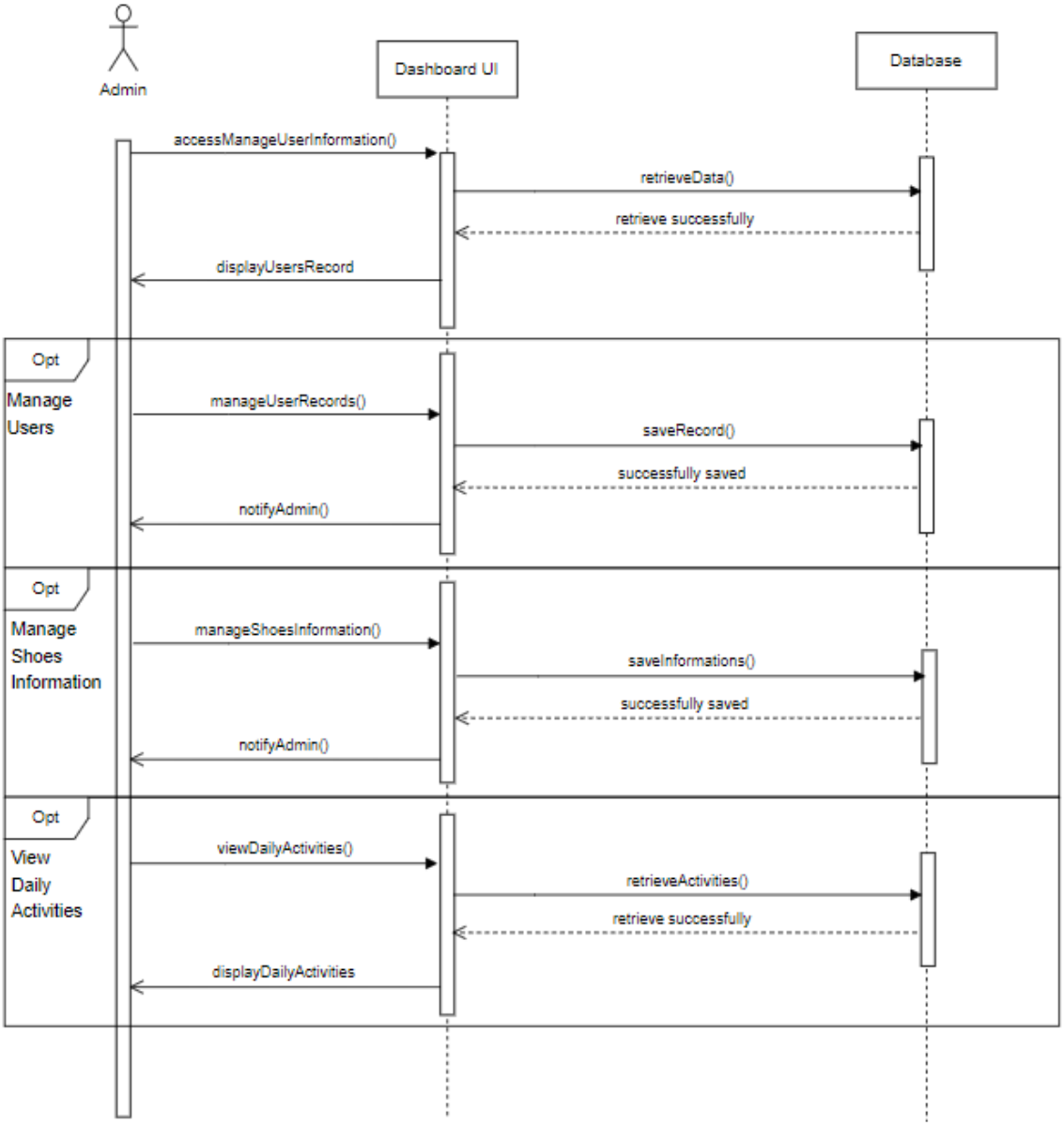


Figure 3.20 Sequence Diagram for Admin Dashboard

The **Admin Dashboard** sequence diagram showcases how administrators manage the platform. The admin logs in using their credentials and gains access to various management functions, such as monitoring user activities, reviewing and approving product listings, handling reported issues, and overseeing transactions. The system retrieves and displays relevant data from the database to help the admin manage platform operations effectively. This feature ensures smooth operations and helps maintain a secure marketplace.

3.8 Activity Diagram

The activity diagram for SellmBuy/Rent?, shown in Figure 3.21, visually illustrate the sequence and interaction of activities within the system, providing a clear representation of its operational processes.

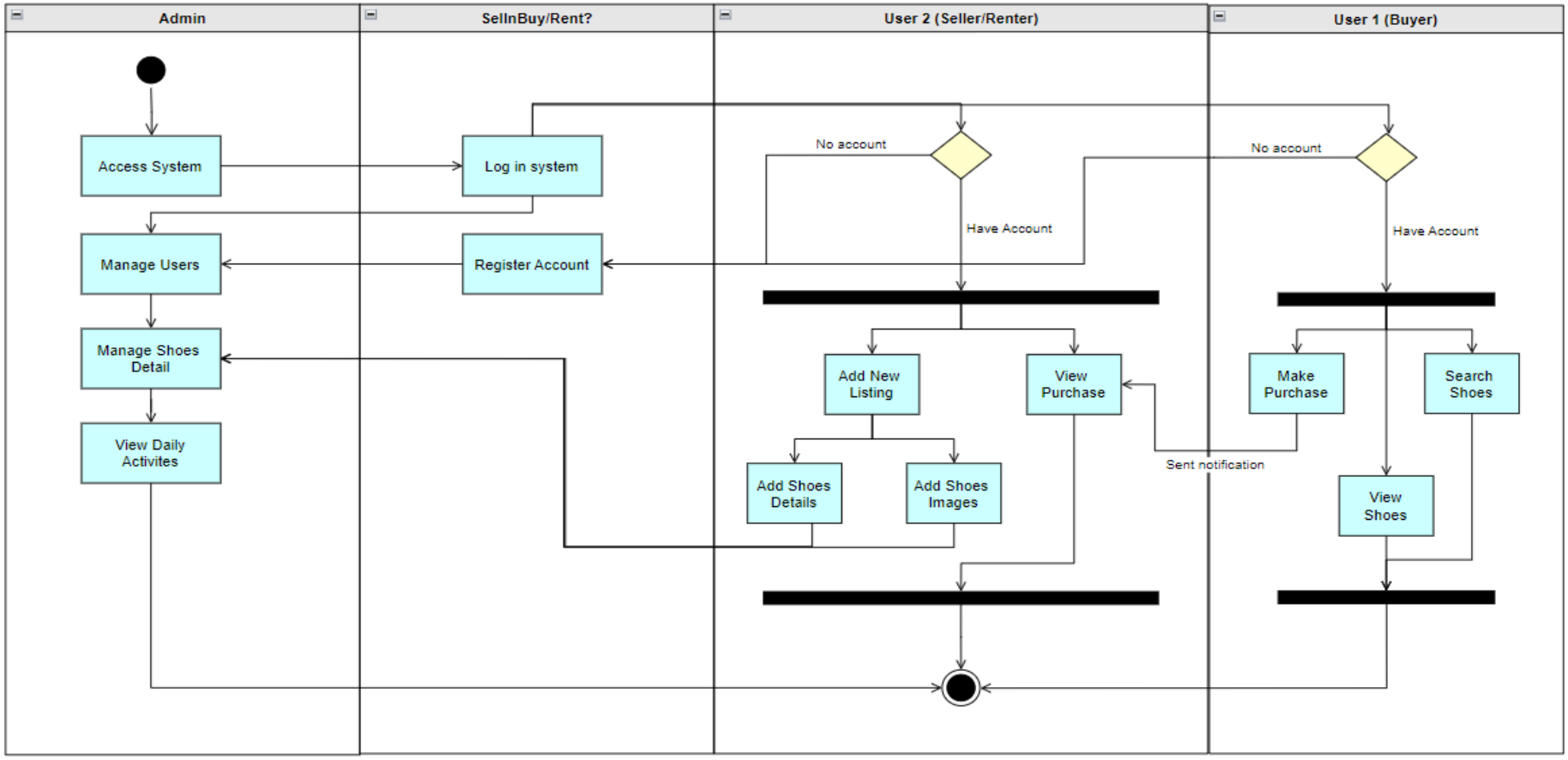


Figure 3.21 Activity Diagram for SellnBuy/Rent?

The **Activity Diagram for SellnBuy/Rent?** visually represents the flow of different processes within the system. It begins with user actions such as registering an account, logging in, and navigating the platform. Users can browse products, search for specific items, add listings, or proceed with a purchase. At each step, decision points are included, such as verifying login credentials or confirming a purchase. If a condition is not met (e.g., incorrect password or invalid product details), the system loops back to prompt the user for corrections. The diagram also illustrates how administrators interact with the system to oversee operations, ensuring platform security and efficiency. This activity diagram provides a clear overview of how users and administrators interact with the system to complete various tasks, ensuring a structured and user-friendly experience.

3.9 SellnBuy/Rent? Wireframe

This section presents the wireframes for the **SellnBuy/Rent?** platform, which provide a visual representation of the user interface design. Wireframes serve as a blueprint for the application's layout and navigation flow, ensuring a user-friendly and intuitive experience.

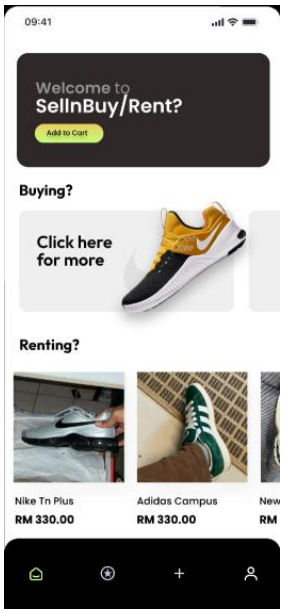


Figure 3.22 Homepage for SellnBuy/Rent?

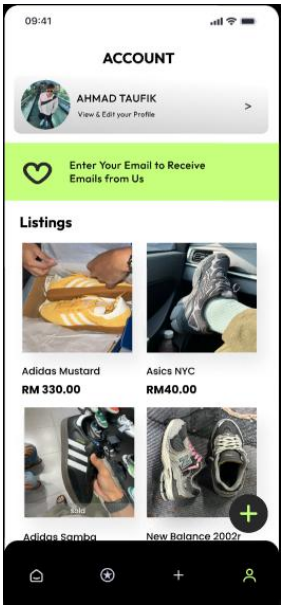


Figure 3.23 Account Dashboard for SellnBuy/Rent?

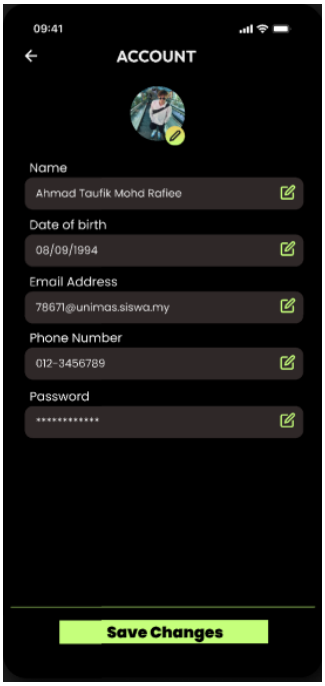


Figure 3.24 Edit Account in SellnBuy/Rent?

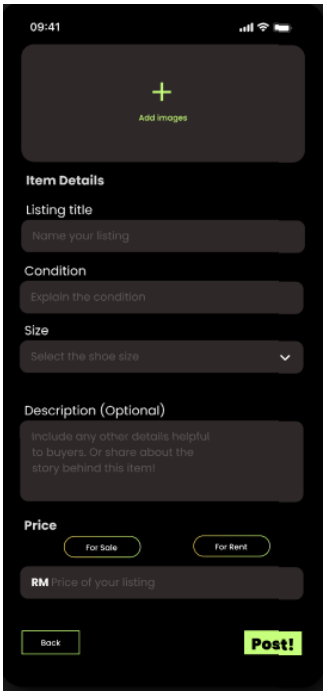


Figure 3.25 Add Listing in SellnBuy/Rent?

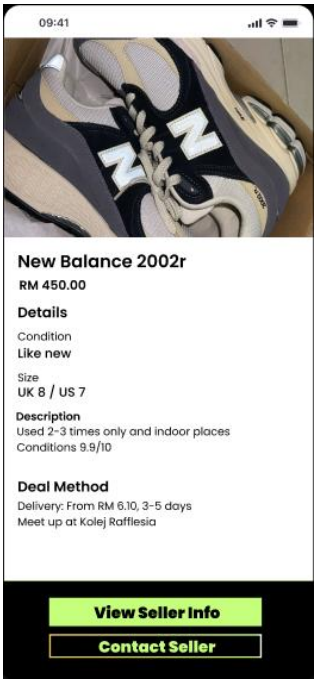


Figure 3.26 Shoe Listing for SellnBuy/Rent?

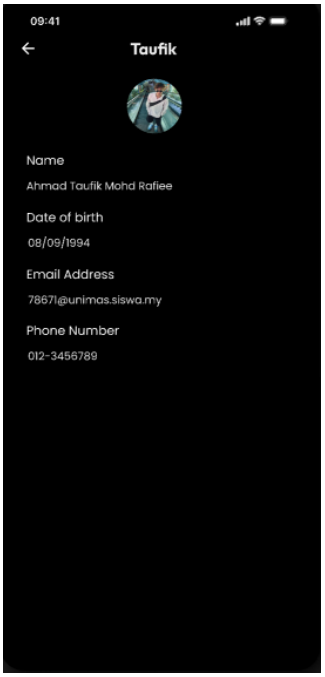


Figure 3.27 Seller Profile in SellnBuy/Rent?

Figure 3.28 Buying Shoes in SellnBuy/Rent?

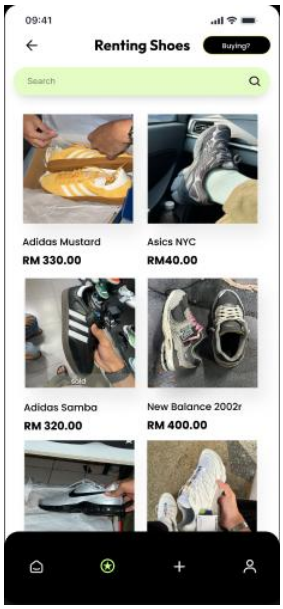


Figure 3.29 Renting Shoes in SellnBuy/Rent?

These wireframes collectively define the structure and usability of the **SellnBuy/Rent?** platform, helping developers and designers align the system with user needs and expectations.

3.10 Conclusion

In conclusion, the system requirements for the proposed buying and renting shoe platform have been thoroughly examined and clearly defined to ensure the development of a user-centered and functional application. A comprehensive analysis was conducted using multiple tools, including use case diagrams, sequence diagrams, and activity diagrams, to provide a structured visualization of the system's components, interactions, and flow of operations. These diagrams effectively represent key processes such as user registration, shoe listing, secure payment processing, and order management, ensuring clarity for both developers and stakeholders. Additionally, a user requirements survey was conducted through a questionnaire to gather insights directly from potential users, focusing on their preferences, expectations, and security concerns regarding online platforms. Additionally, a user requirements survey was conducted through a questionnaire to gather insights directly from potential users, focusing on their preferences, expectations, and security concerns regarding online platforms. By combining these design tools and user feedback, a solid foundation has been established for the development phase, ensuring that the platform not only meets functional requirements but also provides a seamless and secure user experience. This structured requirement analysis and design approach will serve as a crucial reference throughout the software development lifecycle, minimizing errors and improving system efficiency.

Chapter 4: Implementation

4.1 Introduction

Chapter 4 provides a detailed explanation of the development phase of the proposed system. This chapter focuses on how the system was built based on the system requirements and design specifications that were thoroughly analyzed in Chapter 3. The goal during development was to ensure that the system meets the intended functionality and performance expectations.

To support the development process, several essential software tools were used. In particular, Firebase was utilized as the local server environment to manage the backend and database operations. It provided an easy and efficient way to database services, which are critical for testing and running the system locally. Additionally, Visual Studio Code served as the primary code editor throughout the development process. Its wide range of extensions, user-friendly interface, and debugging tools made it easier to write, manage, and troubleshoot the code effectively.

This chapter also includes a collection of screenshots and thorough descriptions of the system's structure and components. Each section aims to give a clearer understanding of how different parts of the system were developed and how they work together to achieve the system's overall objectives. By the end of this chapter, readers will have a complete picture of the development journey—from setting up the environment to implementing the various features of the system.

4.2 Installation and Configuration

To develop the SellnBuy/Rent? system, there are several software need to be installed and configured. Firebase and Visual Studio Code are the software while firebase and Hostinger required to configurate to build the application.

4.2.1 Firebase

Firebase is a comprehensive backend solution developed by Google, designed to support web and mobile applications. In the SellnBuy/Rent? project, Firebase manages backend operations, providing essential tools and services that streamline development.

Firebase Console serves as a centralized dashboard for managing projects, offering sections like Authentication, Realtime Database, Storage, and Hosting. This user-friendly

interface simplifies backend management and provides insights into project performance and resource usage.

- The **Firebase SDK** includes libraries and tools for building applications, supporting languages like Flutter and Dart. It enhances development with features such as code suggestions and error checking.
- **Firebase Hosting** allows for easy web hosting and management of domains, making it ideal for developers and students. It provides a centralized platform for hosting websites and maintaining performance.
- The **Firebase Realtime Database** is a NoSQL database that stores and syncs data in real-time, managing user profiles, listings, transactions, and activities. It offers offline access and automatic data backup.
- **Firebase Storage** enables secure cloud storage for files, such as images related to product listings, while **Firebase Authentication** provides a secure method for user registration and login, supporting various authentication methods.

Overall, Firebase is a powerful and flexible backend solution that simplifies the development process, enhances security, and provides scalability, making it an excellent choice for the SellnBuy/Rent? application.

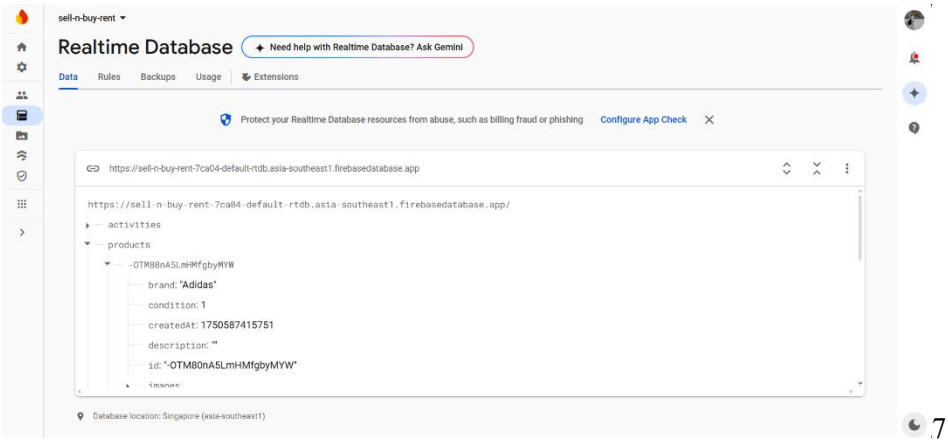


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Figure 4.1 Firebase Control Panel

4.2.2 Visual Studio Code (VS Code)

Visual Studio Code (VS Code) is a free and lightweight code editor developed by Microsoft. It is used in this project to write, edit, and test the code for the SellnBuy/Rent? mobile application. VS Code supports many programming languages, including Flutter and Dart, which are used to build the app. VS Code is popular because it is easy to use and has many helpful features. These include code suggestions (IntelliSense), error checking, and an integrated terminal. Developers can also install extensions to add more tools, such as Flutter and Git support. Overall, VS Code helps speed up the development process by making it easier to write and manage code, making it a useful tool for this project.

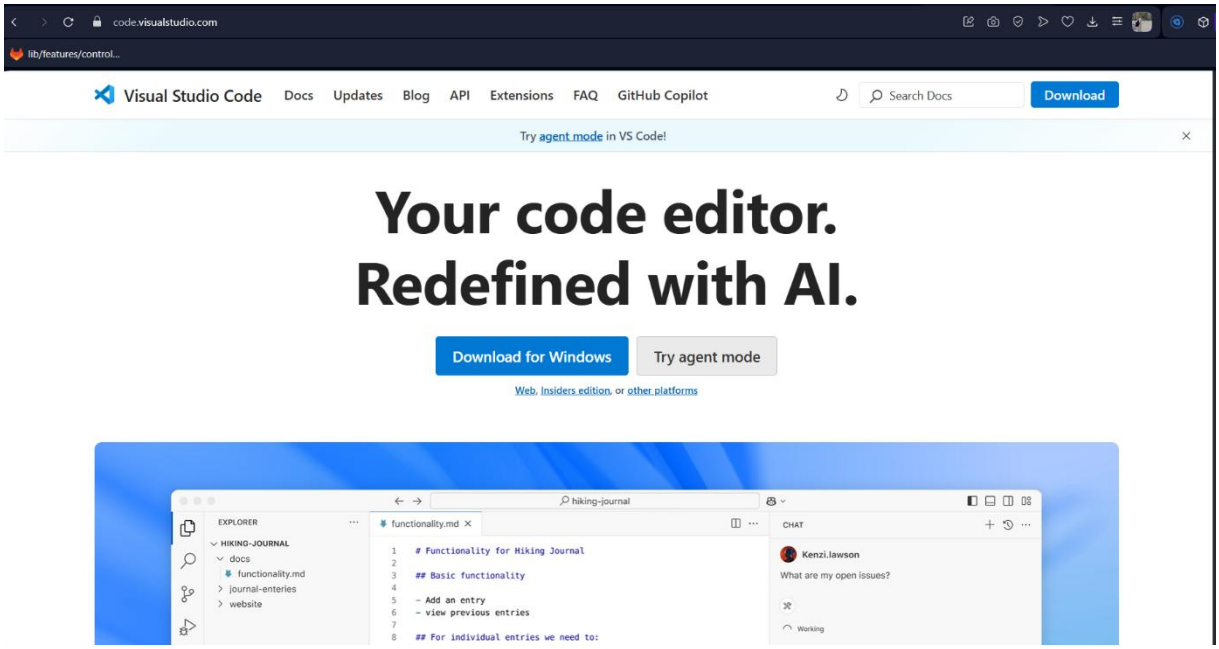


Figure 4.2 Visual Studio Code

The installer package is selected based on the platform, which is either Windows, Linux or macOS and then run the installer (.exe) file to install it on the laptop once complete downloaded.

4.2.3 Hostinger

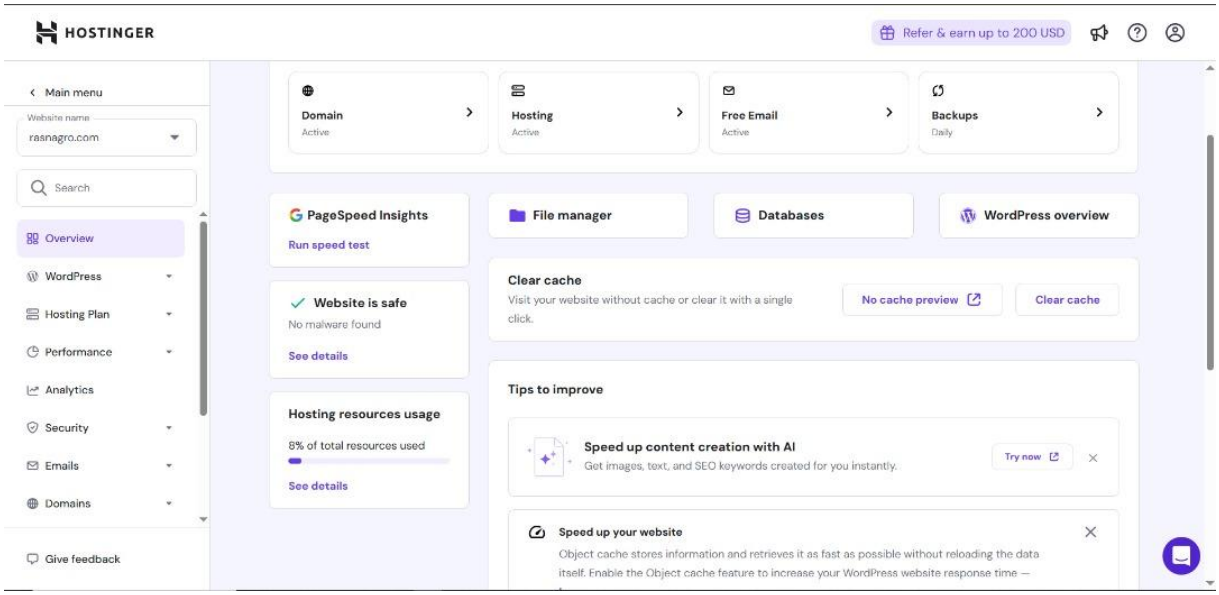


Figure 4.3 Hostinger Control Panel

Figure 4.3 shows the Hostinger dashboard, a user-friendly web hosting platform that provides essential tools and services for managing websites. Hostinger is widely used by developers, students, and businesses to host websites, manage domains, and maintain web performance.

Hostinger offers a centralized dashboard where users can manage their domain, hosting services, emails, databases, and WordPress settings all in one place. The sidebar menu includes sections like Performance, Analytics, Security, and Emails, making it easy to monitor and control various aspects of a website. The main dashboard provides quick insights into site safety, speed performance, resource usage, and helpful suggestions to improve the website.

Furthermore, Hostinger offers several key benefits that make it an excellent choice for web hosting, especially for students and beginners. Its user-friendly and intuitive interface simplifies website management, allowing users to easily navigate through tools like File Manager, Databases, and WordPress setup with just a few clicks. The platform ensures website safety through real-time malware detection and provides essential features such as free email accounts and daily backups to protect data. Additionally, Hostinger is known for its affordability and flexible plans, making it ideal for personal websites, academic projects, and small businesses. These features collectively make Hostinger a reliable and efficient platform for anyone looking to create and maintain a website with ease.

4.3 Implentation of Proposed System

4.3.1 Overview of the System

There are three types of users which are administrator, buyer and seller for this application. The module of each user is illustrated in the table 4.1.

Table 4.1 Types of Users

Types of Users	**Module**
Buyer	• Create account • Edit Account • Made Purchase • Sent messages
Seller	• Create account • Edit Account • Add listings • Receive messages
Administrator	• Edit profiles • Manage listings • Update availability • View daily activities

4.3.2 Buyer Module

4.3.2.1 Sign up and Login

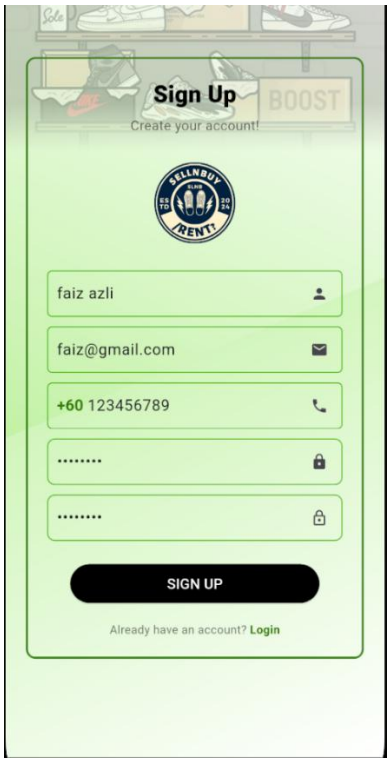


Figure 4.4 Sign Up Page

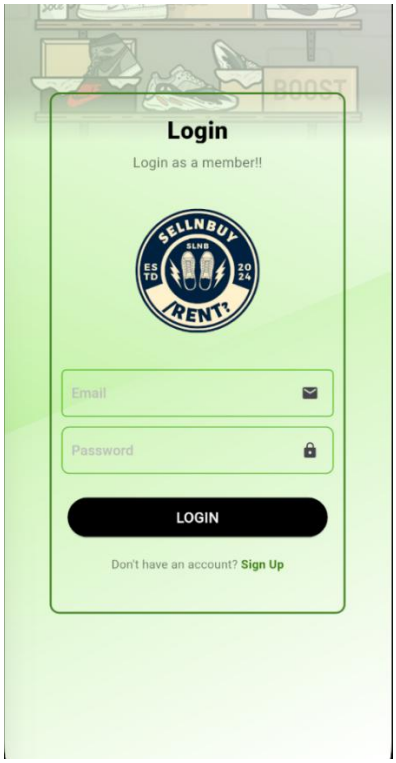


Figure 4.5 Login Page

The Sign Up and Login pages are the initial interfaces of the buyer module in the *SellnBuyRent?* application. These pages handle user authentication by allowing buyers to either create a new account or access an existing one.

Figure 4.4 shows the Sign Up page that works by collecting essential user details such as full name, email address, phone number, and password. When the user fills in the form and taps the "SIGN UP" button, the app validates the input like matching passwords) and creates a new user account using Firebase Authentication. Once successfully registered, the user can proceed to log in and access the app's features. The layout includes a green gradient background, a logo centered at the top for branding, and clearly labeled input fields with icons for better user experience.

Figure 4.5 shows Login page that allows registered users to log in by entering their email and password. When the "LOGIN" button is tapped, the app checks the credentials against Firebase Authentication. If the login is successful, the user is redirected to the main buyer dashboard. The page maintains a consistent design with the sign-up page, including the same logo, background theme, and input structure. A prompt at the bottom offers easy navigation to the sign-up page for new users.

Both pages are essential for managing access control in the app and ensuring that only authenticated users can interact with the platform. Their design focuses on clarity, simplicity, and ease of use to provide a smooth onboarding experience.

4.3.2.2 Homepage

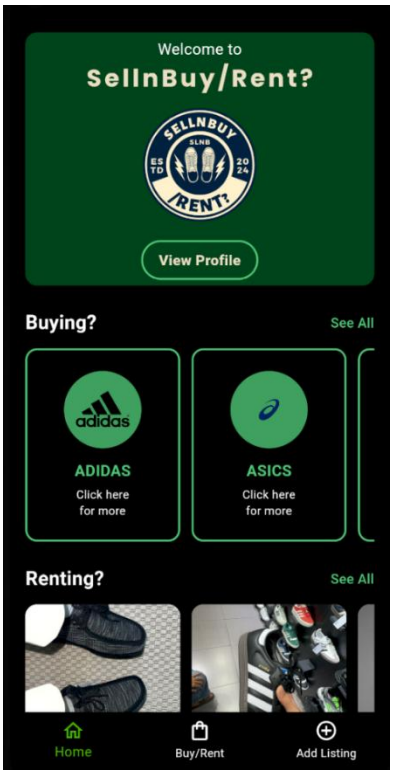


Figure 4.6 Homepage

Figure 4.6 shows the Home Dashboard page that serves as the main interface for buyers upon successful login to the *SellnBuy/Rent?* application. At the top of the screen, a greeting message "Welcome to SellnBuy/Rent?" is prominently displayed alongside the project logo, reinforcing brand identity and familiarity for the user. Just below the welcome section, there is a clearly styled green "View Profile" button, allowing users to quickly access and manage to their profile page.

The interface is divided into two main sections: Buying and Renting, which represent the core services of the application. In the Buying section, users are presented with product categories represented by branded tiles such as *ADIDAS* and *ASICS*. Each tile includes a short prompt, "Click here for more," inviting users to explore further options. The layout uses bordered containers and icons to make navigation intuitive and visually appealing. Just beside the section title "Buying?", a "See All" link allows users to browse the complete list of buying options.

Below, the Renting section displays listings of shoes available for rent. These are shown with actual product images, brand names, and a similar "See All" link for expanded viewing. This layout

gives users a quick preview of popular or recent items available for rent, making it easy for them to browse through listings without navigating away from the home page.

At the bottom of the screen, a navigation bar provides quick access to three main functions: Home, Buy/Rent, and Add Listing. The Home button highlights the current page, while the Buy/Rent and Add Listing icons guide users to explore or upload product listings. This ensures that users can perform core actions quickly and efficiently.

Overall, the Home Dashboard is designed to be a user-centric and visually engaging landing page that provides quick access to product categories, user profile, and key app functions. It plays an important role in guiding buyers through the main features of the application in a clear and organized manner.

4.3.2.3 Made Purchase

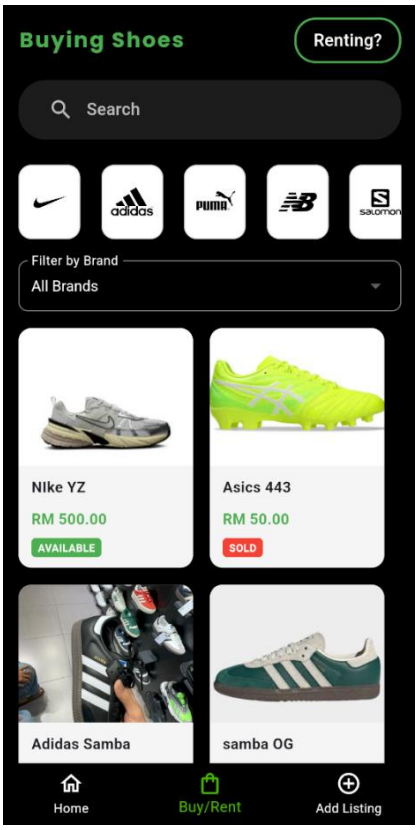


Figure 4.7 Buying Page

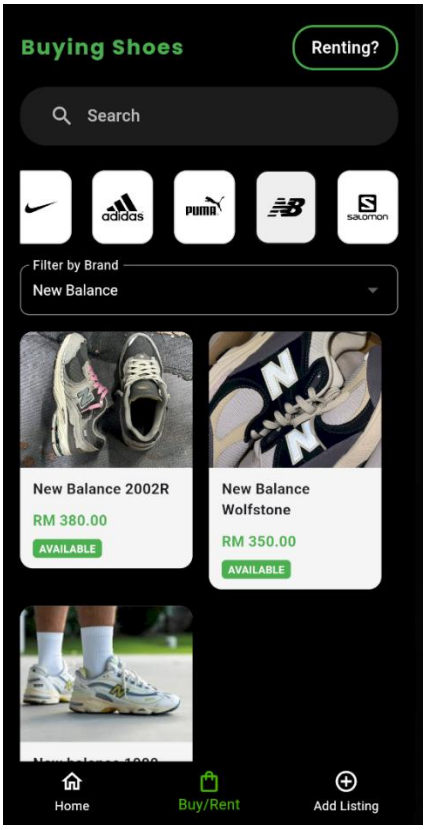


Figure 4.8 Sorting by Brand

The Buy/Rent page is a key feature in the buyer module of the *SellnBuy/Rent?* application, providing users with a convenient interface to browse, filter, and explore shoe listings available for purchase. When users tap the “Buy/Rent” icon in the bottom navigation bar, they are directed to this page, which is organized with a clean layout that promotes usability and visual clarity. At the top, the

page title “Buying Shoes” is displayed, accompanied by a “Renting?” toggle button on the right. This toggle allows users to switch between buying page to Renting Page which is Figure 4.9.

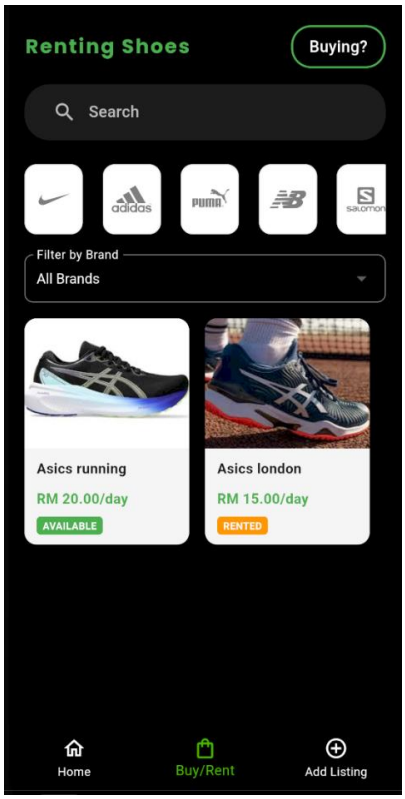


Figure 4.9 Renting Page

Based of Figure 4.9, just below the title, a search bar is provided to enable quick keyword searches for shoe listings. Directly beneath the search bar, a row of brand icons is displayed, including popular brands such as Nike, Adidas, Puma, New Balance, and Salomon. These icons function as filter buttons when tapped, the listing results are automatically updated to display only shoes from the selected brand. For example in Figure 4.8, when the user taps the New Balance icon, the product grid updates to show only New Balance shoes, such as the “New Balance 2002R” and “New Balance Wolfstone,” with corresponding images, prices, and availability tags.

Below the brand icons, a dropdown filter labeled “Filter by Brand” offers another way to refine the search results, giving users flexibility in how they browse products. Listings are displayed in a grid format, showing the shoe image, product name, price in Malaysian Ringgit (RM), and an availability status such as “AVAILABLE” (in green) or “SOLD” (in red). This format makes it easy for users to visually scan and compare options. The design also uses padding and contrast to maintain a clean appearance, ensuring that each listing is readable and visually distinct.

4.3.2.4 Product Details

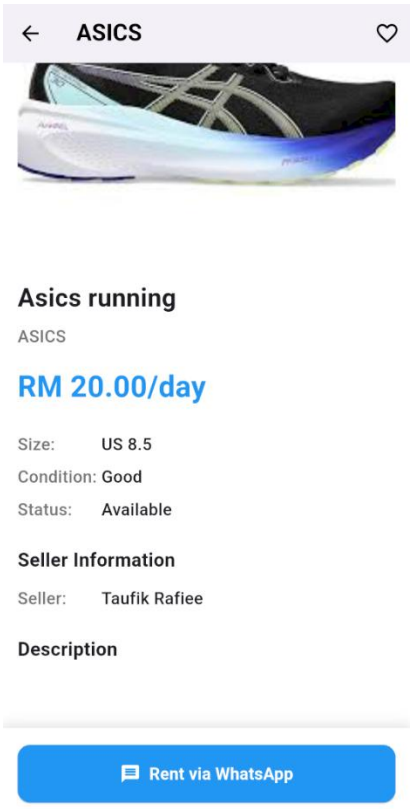


Figure 4.10 For Rent

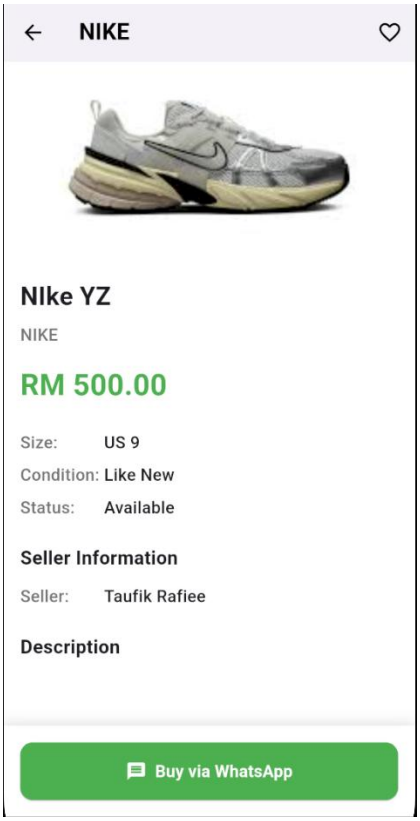


Figure 4.11 For Sale

The Product Details page shows full information about a selected shoe, helping users decide if they want to buy or rent it. This page appears when a user taps on a shoe from the Buying or Renting page.

On Figure 4.11, users can see the product name, brand, price, size, condition, and availability. It also shows the seller's name and includes a section for description. At the bottom, there is a green button labeled "Buy via WhatsApp" which lets users contact the seller directly. A back button is available at the top for navigation.

The Renting Details page which is figure 4.10 is similar but made for renting purposes. It shows a daily rental price, and all other details like size, condition, status, and seller are also included. The action button is blue and labeled "Rent via WhatsApp", making it easy for users to contact the seller about renting.

4.3.3 Seller Module

4.3.3.1 Add Listing

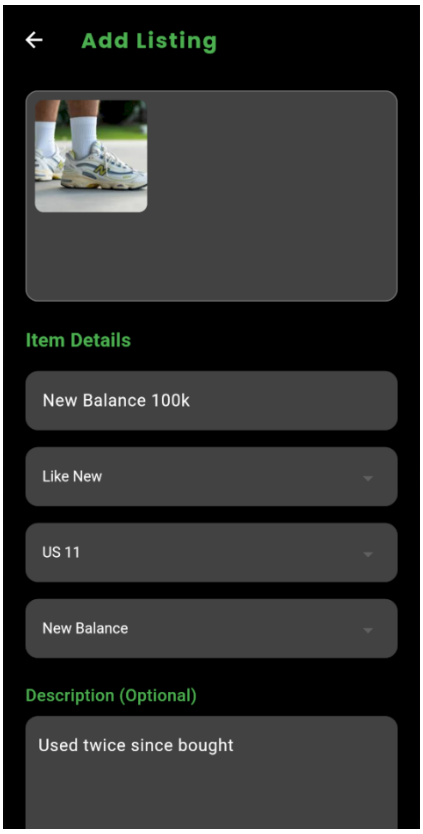


Figure 4.12 Add Listing

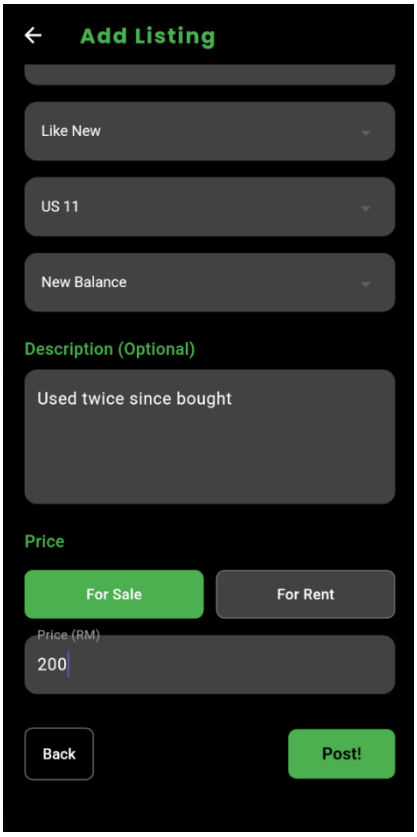


Figure 4.13 Add Listing

After logging in, users who want to sell or rent out their shoes can tap the "Add Listing" icon on the bottom navigation bar to access this listing page. This page allows sellers to upload a new shoe listing by filling out a form with the necessary details. At the top, users can add a photo of the shoe they want to list. Below the image section, sellers must enter key item information such as the shoe name, condition (Like New), size (US 11), and brand (New Balance) using dropdown menus for consistency and easy input.

An optional description box is provided for sellers to include any additional notes about the item, such as usage history or specific features. At the bottom of the form, sellers can select whether the item is For Sale or For Rent and then enter the price in Ringgit Malaysia (RM). Once all required fields are completed, the user can press the "Post!" button to publish the listing. A "Back" button is also available for users who decide to cancel or return to the previous screen.

This page plays a key role in enabling user-generated content in the app, making it easy for sellers to list their products quickly and effectively with minimal effort.

4.3.3.2 Profile

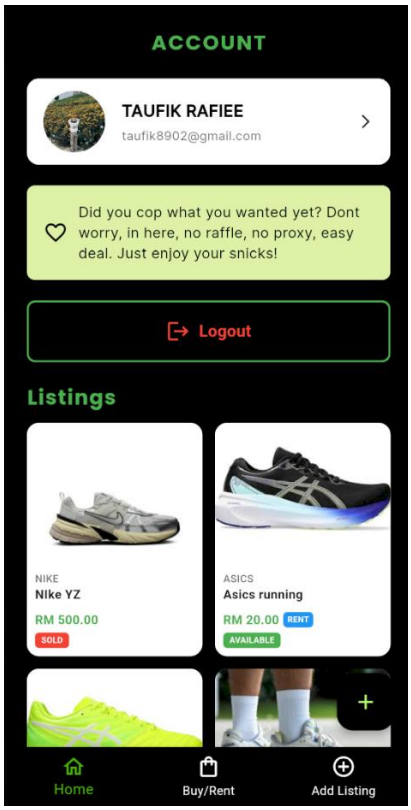


Figure 4.14 Profile Page

The Profile page displays the seller's account information and a list of their posted listings. After a user successfully adds a new product for sale or rent, it will appear here under the "Listings" section. At the top of the page, the seller's name, profile picture, and email address are shown in a clean, white card layout. This gives users a quick view of their own account details. Below that, a green-highlighted message adds a friendly touch with a short note encouraging users to enjoy easy, raffle-free deals on the platform.

A prominent Logout button in red allows the user to safely sign out of the application. Further down, all listings posted by the seller are displayed in a grid format. Each listing includes the product image, brand, name, price, and a status label such as "SOLD", "RENT", or "AVAILABLE". This helps sellers track and manage their items directly from their profile. The profile page serves as a central hub for sellers to monitor their activity and manage their listings easily.

4.3.3.3 Edit Profile

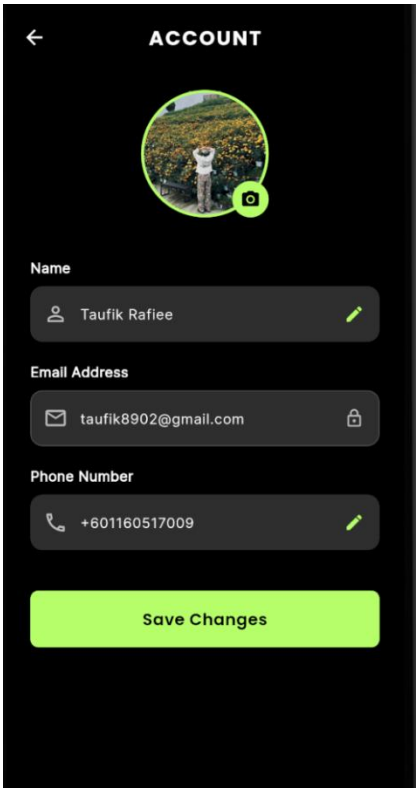


Figure 4.15 Edit Profile

The Edit Profile page allows users to update their personal information in the *SellnBuy/Rent?* application. This page appears when a user taps on their name, profile picture, or email address from the white card section on the profile page. On this screen, users can change their name, phone number, and profile picture. The email address is shown but is locked and cannot be edited to maintain account security. Each editable field includes a pencil icon, indicating that the user can make changes. Tapping the camera icon on the profile image lets users upload a new picture. Once the user finishes editing, they can tap the bright green “Save Changes” button to update their information. This page helps users keep their account details current and personalized.

4.3.3.4 Listing Details

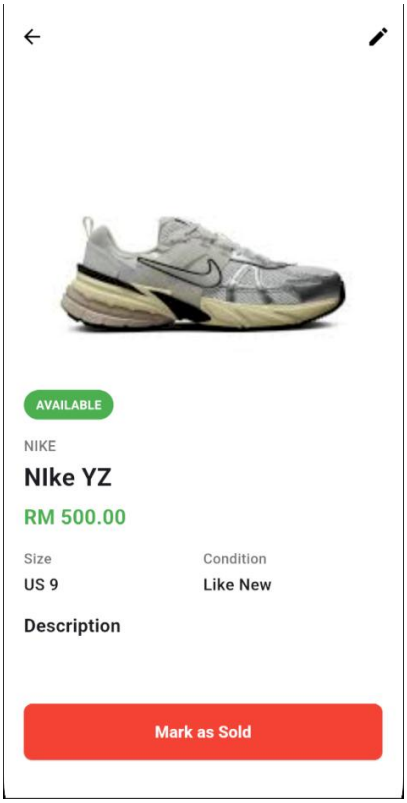


Figure 4.16 Available Marked

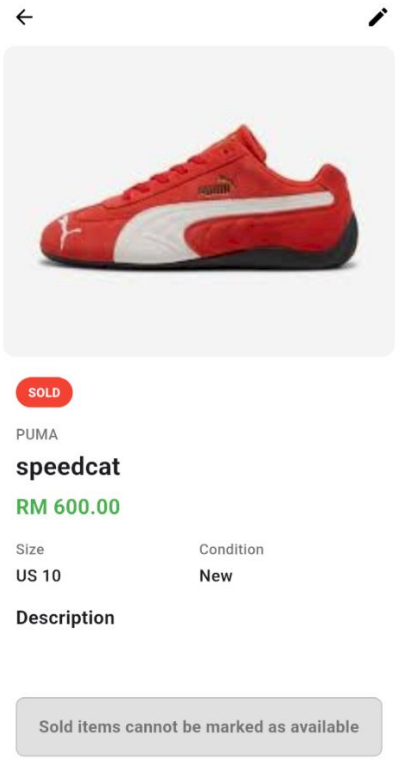


Figure 4.17 Sold Marked

These pages allow sellers to view and manage their individual listings in more detail. When a seller taps on one of their items from the profile page, they are taken to this listing details screen. Figure 4.16 shows an available item. It displays the product image, brand NIKE), product name (Nike YZ), price (*RM 500.00*), size, condition, and description. At the top-right corner, there is an edit icon that allows the seller to modify the listing details. At the bottom, a red "Mark as Sold" button is shown, giving the seller the ability to update the status once the item has been sold. This helps keep the listings accurate and up to date.

Figure 4.17 shows how the page appears after the item has been marked as sold. The status now changes to "SOLD", highlighted in red, and the action button is replaced with a disabled message: *"Sold items cannot be marked as available"*. This ensures that sold listings remain closed and cannot be accidentally edited back to available. The edit button is still present in case the seller wants to update any other information, such as the description or product image.

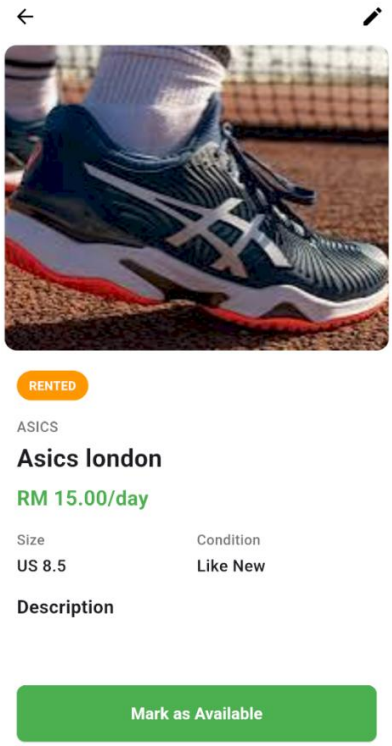


Figure 4.18 Available Marked

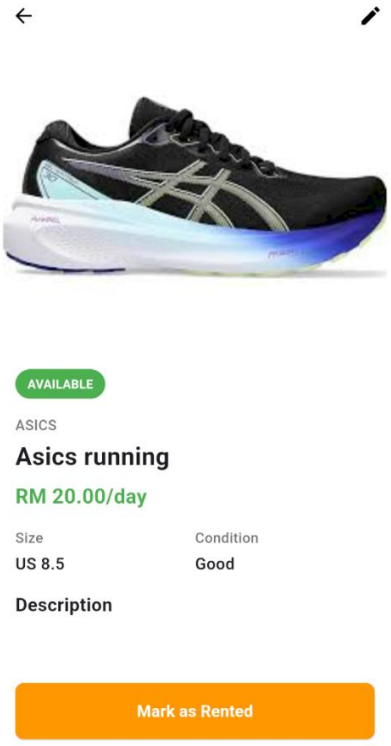


Figure 4.19 Rented Marked

These pages are part of the rental management feature for sellers in the *SellnBuy/Rent?* application. They allow sellers to update the availability status of items they have listed for rent. Sellers can access these pages by tapping on their rental listings from the profile page.

Figure 4.18 shows a shoe that is currently rented out. It displays the product name (*Asics London*), brand, rental rate (*RM 15.00/day*), size, condition, and a placeholder for the description. The listing status is shown with an orange "RENTED" label. At the bottom, there is a green button labelled "Mark as Available". This allows the seller to update the status once the item is returned and ready to be rented again.

Figure 4.19 shows an item that is currently available for rent. The layout is the same, but this time the item status shows as "AVAILABLE" in green. At the bottom, there is an orange "Mark as Rented" button that sellers can use to update the status when the item is rented out.

This feature helps sellers keep their rental inventory up to date, so buyers can easily see which items are currently available. The status update system ensures better communication between sellers and renters and avoids confusion about item availability.

4.3.4 Admin Module

4.3.4.1 Admin Login

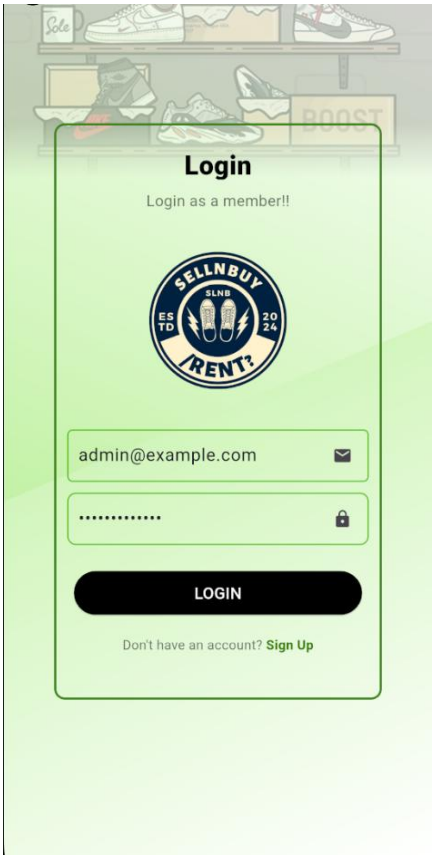


Figure 4.20 Admin Login

The Admin Login uses the same login page as regular users but is distinguished by a special set of email and password credentials assigned only to admins. When an admin enters the correct credentials (e.g., *admin@example.com*), the system recognizes the account as an administrator and redirects them to the Admin Panel instead of the buyer or seller dashboard. This approach helps maintain a consistent user interface while adding role-based access control. It simplifies the login flow by using a shared design but allows secure separation of admin privileges from regular user activities.

4.3.4.2 User Management

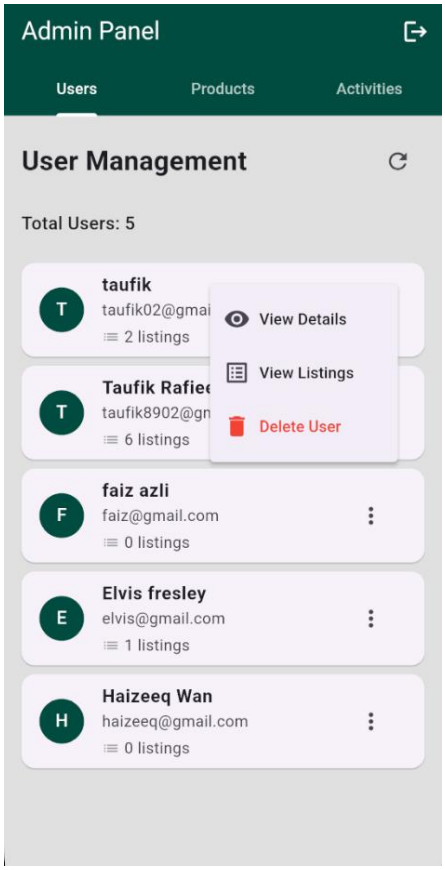


Figure 4.21 User Management

The User Management page is a section within the Admin Panel designed to give administrators an overview and control of all registered users in the *SellnBuy/Rent?* application. This page is accessible only to users with admin credentials and plays an important role in system monitoring and moderation.

At the top of the screen, the title "User Management" is displayed alongside a live count of the total number of users registered in the system. Below that, a list view displays all user accounts with key information such as the user's name, email address, and the number of listings associated with that user. Each user entry is represented in a card layout for better visual clarity, and the user's initials are shown inside a circular icon for quick identification.

A three-dot menu is present on each user card, which can be configured to include administrative actions like viewing user details (Figure 4.22), deactivating accounts (Figure 4.23), and view listings (Figure 4.24). There is also a refresh icon on the right of the header section to reload the latest data, ensuring the admin always has up-to-date information.

This page provides administrators with a quick overview of user activity and system usage. By displaying listing counts, it helps the admin identify active sellers, monitor engagement, and take

necessary action in case of any misuse or suspicious activity. It contributes to maintaining the integrity and smooth operation of the platform.

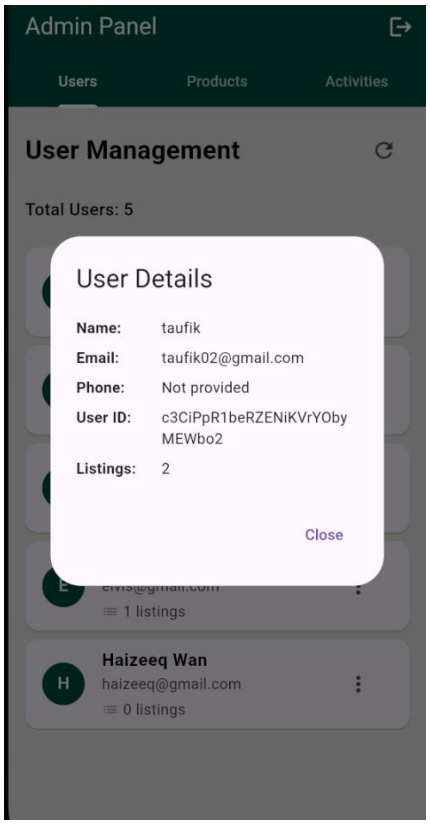


Figure 4.22 View User Details

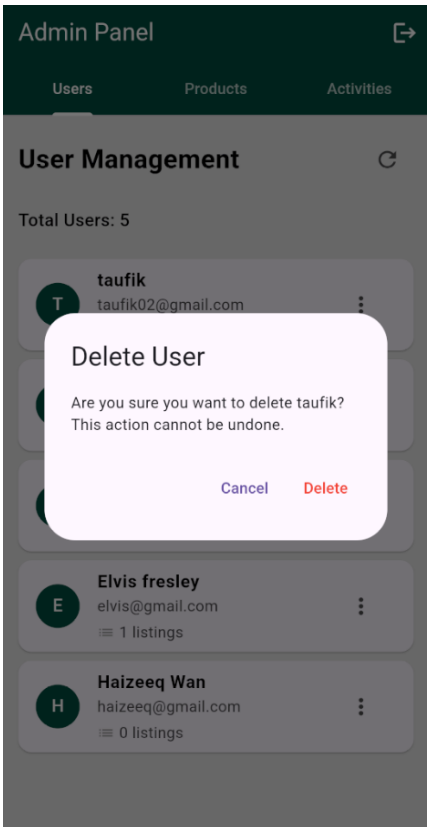


Figure 4.23 Delete User

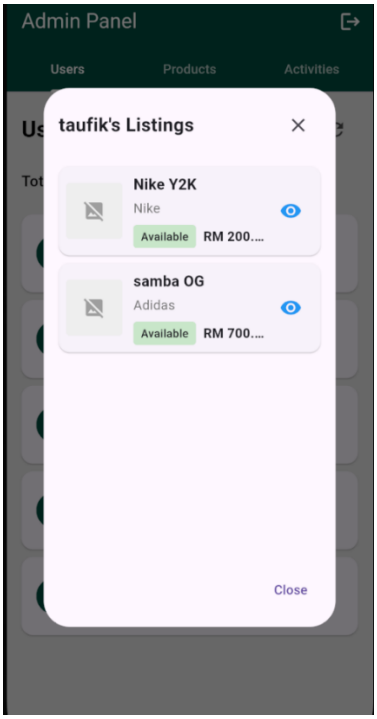


Figure 4.24 View User's Listings

4.3.4.3 Products Management

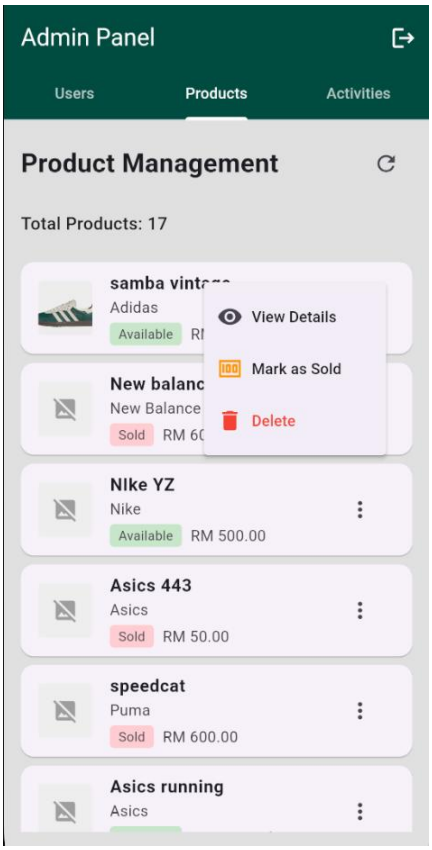
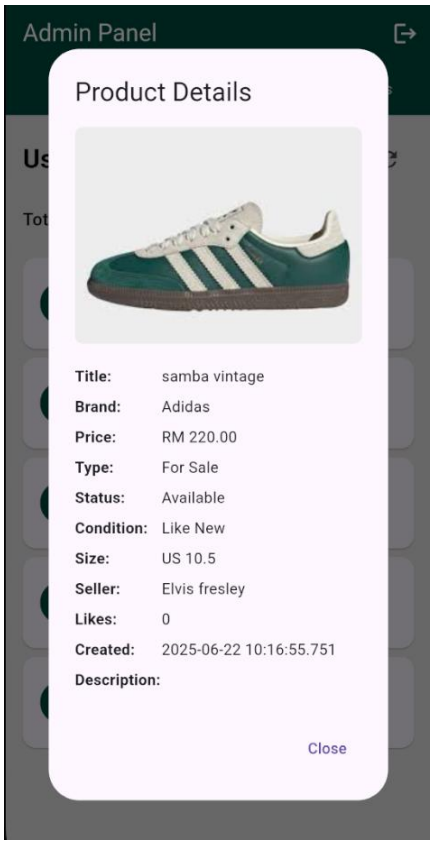


Figure 4.25 Products Management



4.26 Products details

The Product Management page is a section within the Admin Panel that allows administrators to monitor and oversee all product listings created by users in the *SellnBuy/Rent?* platform. This feature is essential for maintaining platform quality, ensuring that listings follow community standards, and enabling quick intervention when necessary.

At the top of the screen, the title "Product Management" is displayed along with the total count of product listings currently in the system. Each product is listed in a card layout that includes key details such as the product name, brand, price, and status (either *Available* or *Sold*). The product status is shown using colored labels like green for Available and red for Sold. This making it easy for the admin to quickly identify the state of each item.

Each listing also includes a thumbnail image and a three-dot menu on the right side of each card allows for additional admin actions. These could include viewing more details (Figure 4.26), editing the listing status, or removing products.

The refresh icon on the right of the header allows the admin to update the page to reflect the most recent data. This is useful when changes have been made by users or when listing statuses are updated.

This page gives the admin full visibility over marketplace activity, helping ensure that all listings are valid, updated, and in line with the platform's purpose. It also helps detect inactive or flagged items quickly, supporting a clean and trustworthy environment for buyers and renters.

4.3.4.4 Activities Management

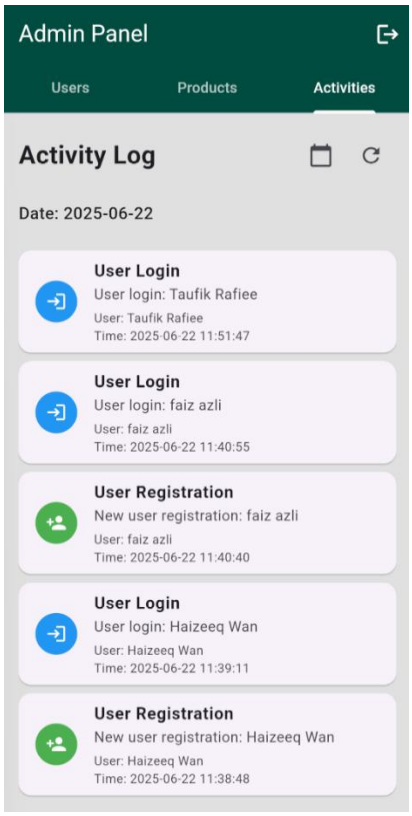


Figure 4.27 Activities Management

The Activities page shown in Figure 4.27 is a log of user actions in the *SellnBuy/Rent?* app. It helps admins track what users are doing, such as when they log in or register for an account. Each activity is listed with the user's name, type of activity (login or registration), and the exact time it happened.

The page includes a date filter at the top, so admins can view activity for a specific day. There's also a refresh button to reload the latest data. Each log entry is shown in a card with a coloured icon blue for logins and green for registrations. This features making it easy to understand at a glance.

This feature helps admins monitor the platform, check user activity, and ensure everything is running smoothly.

4.4 Conclusion

The implementation phase successfully transformed the SellnBuy/Rent? system from design to reality by establishing a robust technical infrastructure and user-friendly interface. Key components such as Buying & Selling shoes, database management, and add our own listings were carefully implemented to ensure seamless functionality. The development followed an iterative approach, incorporating continuous feedback to refine features and enhance usability. By leveraging modern application technologies placement across campus, the system achieved its goal of creating an accessible and efficient platform for business management, setting a strong foundation for testing and deployment.

Chapter 5: Testing

5.1 Introduction

This chapter presents a comprehensive evaluation of SellnBuy/Rent? through systematic testing methodologies designed to verify the system's functionality, reliability, and user experience. The testing phase employed a multi-tiered approach, beginning with functional testing to validate core features such as view listings using filtered section, item listings workflows, and so on. Performance testing followed to assess system stability under simulated peak usage conditions, measuring critical metrics including response times, database query efficiency, and concurrent user capacity. Finally, user acceptance testing engaged 10+ campus community members in real-world scenarios to evaluate practical usability and interface intuitiveness. These results not only confirm the system's technical robustness but also its effectiveness in addressing the practical challenges of lost-and-found management, providing a solid foundation for full-scale campus implementation.

5.2 Functional Testing

Functional testing was conducted to verify that each module of the SellnBuy/Rent? system operates as expected. The following tables outline the test cases executed by module.

Table 5.1 Module Registration

Module: Registration Test Case Description: Test Objectives: To verify that the user registration process is functioning correctly and includes messages form apps. Remarks:							
Test Case ID	Test Scenario	Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)	Severity Failure
F001	User registers and successfully created account.	1.Go to Register page 2. Fill in details 3. Submit form	Name, Phone Number, Email, Password	App displayed account registered successfully.	As expected.	Pass	

Table 5.2 Module Login

Module: Login Test Case Description: Test Objectives: To verify that the login module performs its expected tasks correctly. Remarks:							
Test Case ID	Test Scenario	Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)	Severity Failure
F002	User logs in with valid credentials	1.Enter valid email and password 2. Click Login	Email, password	User logged in to the apps	As expected.	Pass	

Table 5.3 Module Shoes Selling and Renting

Module: Shoes selling and renting Test Case Description: Test Objectives: To verify that the shoe selling and renting module performs its expected tasks correctly. Remarks:							
Test Case ID	Test Scenario	Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)	Severity Failure
F003	Submit listings	1.Fill out shoe details form 2. Click post	Valid shoes details	Shoes listed successfully	As expected.	Pass	

Table 5.4 Module Shoe Listing

Module: Shoes Listings Test Case Description: Test Objectives: To verify that the shoe listings module performs its expected tasks correctly. Remarks:							
Test Case ID	Test Scenario	Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)	Severity Failure
F004	View shoes listings	1.Navigate to profile page	-	Items are displayed correctly	As expected.	Pass	

		2. Scroll down to see user listings					

Table 5.5 Module Shoes Search

Module: Shoes Search Test Case Description: Test Objectives: To verify that the search module performs its expected tasks correctly. Remarks:							
Test Case ID	Test Scenario	Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)	Severity Failure
F005	Search shoes using keywords	1. Enter keyword 2. Click search	Valid keyword	Matching shoes displayed	As expected.	Pass	

Table 5.6 Module Admin Panel

Module: Admin Panel Test Case Description: Test Objectives: To verify that the admin panel module performs its expected tasks correctly. Remarks:							
Test Case ID	Test Scenario	Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)	Severity Failure
F007	Admin Manage User	1. Log in as admin 2. Open user management 3.View user details 4.View user listings 5.Admin can delete user	User information	User profile managed	As expected.	Pass	
F008	Admin manage products	1. Open products manage 2. View shoes details 3.Manage listings 4.Delete inappropriate listings	Item ID	Products managed	As expected	Pass	

F009	Admin view daily activities	1. Navigate to activity log	-	Report list displayed	As expected	Pass	

Table 5.7 Module Purchase Button

Module: Purchase button Test Case Description: Test Objectives: To verify that the contact buttons module performs its expected tasks correctly. Remarks:							
Test Case ID	Test Scenario	Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)	Severity Failure
F010	Contact seller to buy a shoes	1. Click 'Buy via Whatsapp' 2. Navigate to Whatsapp	User details.	Seller receives message.	As expected.	Pass	
F011	Contact seller to rent a shoes	1. Click 'Rent via Whatsapp' 2. Navigate to Whatsapp	User details	Seller receives message.	As expected	Pass	

5.3 Non-Functional Testing

Nonfunctional testing was conducted to evaluate the system's stability, error handling, and behavior under non-standard or stress conditions. The following tables outline the test cases executed by module.

5.3.1 Reliability Testing

Table 5.8 Module Register

Module: Registration Test Case Description: Test Objectives: To verify that the registration module operates reliably under varying conditions. Remarks:							
Test Case ID	Test Case	Test Procedure	Test Data	Expected Results	Actual Results	Status (Pass/Fail)	Severity Failure
R001	Empty registration form	1. Submit registration without filling form	Blank inputs	Validation error shown	As expected.	Pass	
R002	Register with already email	1. Register using an email already in user	Existing email	System rejects registration	As expected	Pass	

Table 5.9 Module Login

Module: Login Test Case Description: Test Objectives: To verify that the login module operates reliably under varying conditions. Remarks:							
Test Case ID	Test Case	Test Procedure	Test Data	Expected Results	Actual Results	Status (Pass/Fail)	Severity Failure
R003	Login with incorrect credentials	1. Enter wrong credentials 2. Submit	Wrong email/password	Validation error shown	As expected.	Pass	

Table 5.10 Module Shoes Selling and Renting

Module: Shoes selling and renting Test Case Description: Test Objectives: To verify that the shoe selling and renting module performs reliably under poor network. Remarks:							
Test Case ID	Test Case	Test Procedure	Test Data	Expected Results	Actual Results	Status (Pass/Fail)	Severity Failure

R004	Submit under poor network	1. Fill listing form 2. Submit with weak connection	Valid data	No data loss, retry on failure	As expected.	Pass	

Table 5.11 Module Shoes Search

Module: Shoes search Test Case Description: Test Objectives: To verify that the search module performs reliably even under varying conditions. Remarks:							
Test Case ID	Test Case	Test Procedure	Test Data	Expected Results	Actual Results	Status (Pass/Fail)	Severity Failure
R005	Search with wrong keywords	1. Enter search keywords with wrong credentials 2. Click enter	Keywords search	Results show result 'No products found'	As expected.	Pass	

Table 5.12 Module Shoes Listings

Module: Shoes Listings Test Case Description: Test Objectives: To verify that the filter button performs under slow network conditions Remarks:							
Test Case ID	Test Case	Test Procedure	Test Data	Expected Results	Actual Results	Status (Pass/Fail)	Severity Failure
R006	View shoes by brand under slow network condition	1. Click brand under slow network 2. Shoes listed regarding brand chosen	Keywords search	Results load but the shoes do not appear	As expected.	Pass	

Table 5.13 Module Admin Panel

Module: Admin Panel Test Case Description: Test Objectives: To verify that the admin panel module operates reliably under varying conditions. Remarks:							
Test Case ID	Test Case	Test Procedure	Test Data	Expected Results	Actual Results	Status (Pass/Fail)	Severity Failure

R007	Admin accidently delete listings.	1. Admin accidently delete users listings	Missing items	Warning appears to make sure admin is sure want to delete the shoes.	As expected.	Pass	

Table 5.14 Module Purchase Button

Module: Purchase buttons Test Case Description: Test Objectives: To verify that the purchase buttons module operates reliably under varying conditions. Remarks:							
Test Case ID	Test Case	Test Procedure	Test Data	Expected Results	Actual Results	Status (Pass/Fail)	Severity Failure
R008	Fail to sent message	1. Click purchase buttons 2. Fail to navigate to Whatsapp	Invalid phone number	App logs failure and shows message	As expected.	Pass	

5.3.2 Usability Testing

Table 5.15 Module Register

Module: Registration Test Case Description: Test Objectives: To verify that the registration module operates reliably under varying conditions of usability testing Remarks:							
Test Case ID	Test Case	Test Procedure	Test Data	Expected Results	Actual Results	Status (Pass/Fail)	Severity Failure
U001	Empty form submission	Submit form with no input	Blank fields	Validation errors shown	Validation errors shown	Pass	
U002	Field guidance	Check if tooltips/helps are visible	User hovers inputs	Helpful guidance shown	Displayed tooltips	Pass	

Table 5.16 Module Login

Module: Login Test Case Description: Test Objectives: To verify that the login module operates reliably under varying conditions of usability testing. Remarks:							
Test Case ID	Test Case	Test Procedure	Test Data	Expected Results	Actual Results	Status (Pass/Fail)	Severity Failure

U003	Incorrect credentials	Enter wrong password	Valid email, wrong password	Error message displayed	Displayed error	Pass	

Table 5.17 Module Shoes Selling and Renting

Module: Shoes selling and renting Test Case Description: Test Objectives: To evaluate the usability testing aspects of the shoes selling and renting module, ensuring it performs as intended for end-users. Remarks:							
Test Case ID	Test Case	Test Procedure	Test Data	Expected Results	Actual Results	Status (Pass/Fail)	Severity Failure
U004	Form completeness	Try submitting incomplete item report	Partial inputs	Validation error	Validation error shown	Pass	
U005	Attachment guidance	Check image upload help text	User hovers image field	Instruction visible	Tooltip shown	Pass	

Table 5.18 Module Shoes Search

Module: Shoes Search Test Case Description: Test Objectives: To evaluate the usability testing aspects of the item search module, ensuring it performs as intended for end-users. Remarks:

Test Case ID	Test Case	Test Procedure	Test Data	Expected Results	Actual Results	Status (Pass/Fail)	Severity Failure
U006	Keyword clarity	Search with partial match	Partial item name	Relevant results	Correct matches	Pass	
U007	Filter usability	Apply keywords filters	Dropdowns	Filtered results	Filtered correctly	Pass	

Table 5.19 Module Shoes Listings

Module: Shoes Listings Test Case Description: Test Objectives: To evaluate the usability testing aspects of the Item listings module to ensuring it performs as intended for end-users. Remarks:							
Test Case ID	Test Case	Test Procedure	Test Data	Expected Results	Actual Results	Status (Pass/Fail)	Severity Failure
U008	Item readability	Check if cards are clear	List view	Readable and distinct items	Clear layout	Pass	
U009	Navigation on ease	Move between pages	Multiple items	Pagination	Worked as expected	Pass	

Table 5.20 Module Admin Panel

Module: Admin Panel Test Case Description: Test Objectives: To evaluate the usability testing aspects of the admin panel module, ensuring it performs as intended for end-users Remarks:							
Test Case ID	Test Case	Test Procedure	Test Data	Expected Results	Actual Results	Status (Pass/Fail)	Severity Failure
U008	Task flow clarity	Try delete listings	Shoes ID	Smooth task completion	Admin completed task	Pass	
U009	Navigation on structure	Explore top bar functions	Admin Panel UI	Functions logically placed	Easy to find	Pass	

Table 5.21 Module Purchase Button

Module: Purchase button Test Case Description: Test Objectives: To evaluate the usability testing aspects of the contact button module, ensuring it performs as intended for end-users Remarks:							
Test Case ID	Test Case	Test Procedure	Test Data	Expected Results	Actual Results	Status (Pass/Fail)	Severity Failure

U010	Visibility	Find purchase button	User interaction	Button easily found	Visible	Pass	

5.3.3 Efficiency Testing

Table 5.22 Module Register

Module: Registration Test Case Description: Test Objectives: To evaluate the efficiency testing aspects of the registration module, ensuring it performs as intended for end-users. Remarks:							
Test Case ID	Test Case	Test Procedure	Test Data	Expected Results	Actual Results	Status (Pass/Fail)	Severity Failure
E001	Response time	Measure registration speed	Valid form data	Under 20 seconds	12	Pass	
E002	Concurrent registrations	5 users register simultaneously	5 forms	All succeed	All succeed	Pass	

Table 5.23 Module Login

Module: Login Test Case Description: Test Objectives: To evaluate the efficiency testing aspects of the login module, ensuring it performs as intended for end-users. Remarks:							
Test Case ID	Test Case	Test Procedure	Test Data	Expected Results	Actual Results	Status (Pass/Fail)	Severity Failure
E003	Login speed	Time taken after submitting	Valid credentials	Under 3 second	3s	Pass	
E004	Multiple login	5 users login at once	5 users	No crash	Stable	Pass	

Table 5.24 Module Shoes Selling and Renting

Module: Shoes selling and renting Test Case Description: Test Objectives: To evaluate the efficiency testing aspects of the shoes selling and renting module, ensuring it performs as intended for end-users Remarks:							
Test Case ID	Test Case	Test Procedure	Test Data	Expected Results	Actual Results	Status (Pass/Fail)	Severity Failure

E005	Form submit speed	Try submitting incomplete item report	Full report	Below 20 seconds	10 seconds	Pass	
E006	Multiple reports	Bulk reports added	5 items	All saved	All saved	Pass	

Table 5.25 Module Shoes Search

Module: Shoes Search Test Case Description: Test Objectives: To evaluate the usability testing aspects of the item search module, ensuring it performs as intended for end-users. Remarks:							
Test Case ID	Test Case	Test Procedure	Test Data	Expected Results	Actual Results	Status (Pass/Fail)	Severity Failure
E006	Search load time	Shoes listed	Buying/Renting Page	Below 4 seconds	2 seconds	Pass	
E007	Pagination load	Load page	Buying/Renting Page	Filtered results	Loaded fast	Pass	

Table 5.26 Module Shoes Listings

Module: Shoes Listings Test Case Description: Test Objectives: To evaluate the usability testing aspects of the Item listings module to ensuring it performs as intended for end-users. Remarks:							
Test Case ID	Test Case	Test Procedure	Test Data	Expected Results	Actual Results	Status (Pass/Fail)	Severity Failure
E008	List load time	Open Renting/Buying page	Buying/Renting Page	Under 3s	2.7s	Pass	
E009	Pagination load	Load page	Multiple items	Fast load	Fast load	Pass	

Table 5.27 Module Admin Panel

Module: Admin Panel Test Case Description: Test Objectives: To evaluate the efficiency testing aspects of the admin panel module, ensuring it performs as intended for end-users. Remarks:							
Test Case ID	Test Case	Test Procedure	Test Data	Expected Results	Actual Results	Status (Pass/Fail)	Severity Failure

E010	Action time	Approve/reject item	Admin task	Under 20s	11 seconds	Pass	
E011	Multi-admin load	3 admins act together	3 tasks	No slowdown	Performed well	Pass	

Table 5.28 Module Purchase Button

Module: Purchase button Test Case Description: Test Objectives: To evaluate the usability testing aspects of the contact button module, ensuring it performs as intended for end-usersRemarks:							
Test Case ID	Form load	Test Procedure	Test Data	Expected Results	Actual Results	Status (Pass/Fail)	Severity Failure
E012	Visibility	Navigate to Whatsapp	Click button	Immediate	Opened fast	Pass	

5.4 User Testing

User testing was conducted to evaluate the overall user experience, interface intuitiveness, and satisfaction level with the SellnBuy/Rent application. Feedback was collected through structured questionnaires and practical usage of the system.

5.4.1 User Acceptance Testing

The user acceptance testing for SellnBuy/Rent? was conducted using a structured Google Form consisting of a single section with a total of 17 questions. The form was designed to gather both quantitative and qualitative feedback from users after they had interacted with the system. All of the questions used a linear scale format, allowing participants to rate their experience on a scale of 1 to 5. These questions focused on evaluating the ease of use, clarity of the system's layout and instructions, overall system speed and responsiveness, and overall satisfaction with the system. In addition, two short answer questions were included to collect open-ended responses. These questions asked users to describe any issues or errors they encountered while using the system. This rating enabled a comprehensive understanding of user perceptions and areas for refinement.

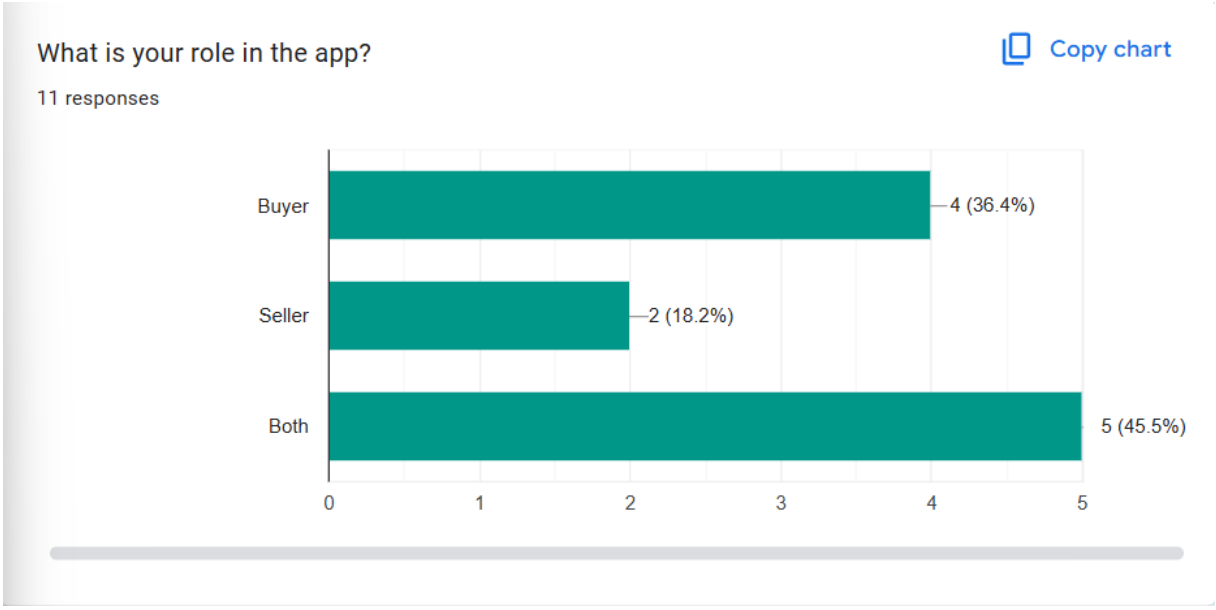


Figure 5.1 User Role in the Application

This chart illustrates the roles selected by users during testing. Out of 11 respondents, 45.5% indicated that they used the app as both buyer and seller, while 36.4% used it solely as a buyer, and 18.2% used it only as a seller. This distribution suggests that most participants explored the full range of functionality offered by the application, including viewing products and listing their own items. Having nearly half the users act as both buyer and seller provides valuable insights, as it ensures that feedback reflects interaction with multiple modules of the system. It also indicates that the dual-role design of the app that supporting seamless switching between buying and selling is effective and well-received. This balance between user roles adds credibility to the user testing results, as it confirms that both sides of the marketplace were tested adequately.

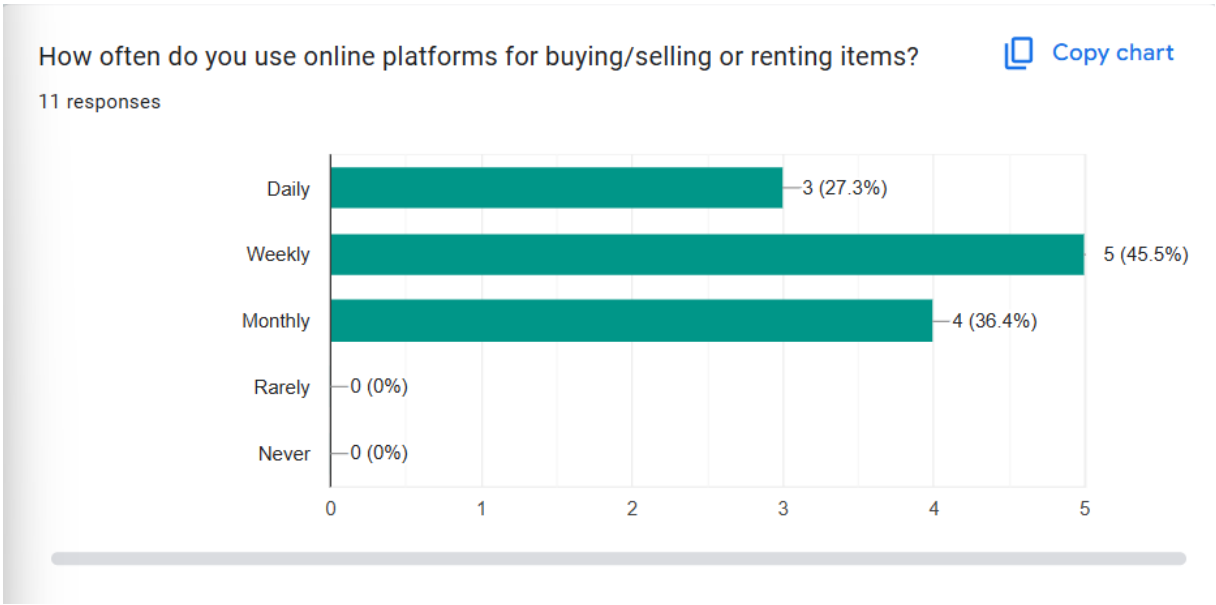


Figure 5.2 Platform Usage Frequency

This chart shows that 45.5% of users use online platforms for buying/selling weekly, 36.4% monthly, and 27.3% daily. None of the respondents selected "Rarely" or "Never," which confirms that your test group consists of frequent online marketplace users. This makes their feedback especially valuable, as it is based on real usage habits and comparisons to other platforms. It also means your application was tested by users who understand how sneaker marketplaces typically work, allowing for more accurate judgments about what features are working or missing. This data strengthens the credibility of the overall testing outcomes.

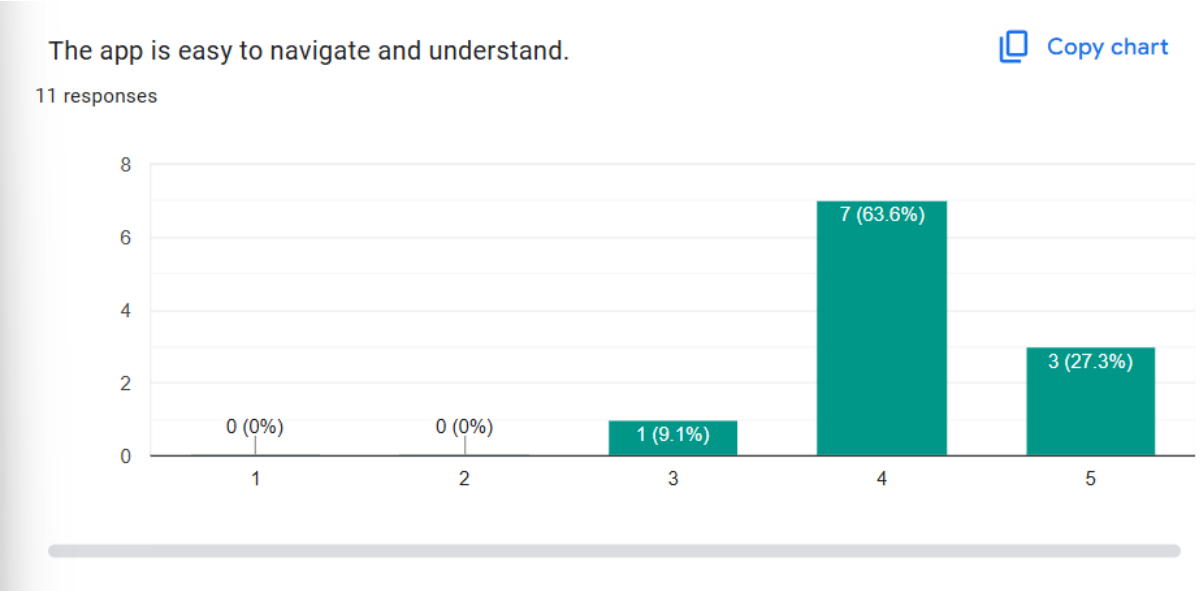


Figure 5.3 Easy Navigation

Figure 5.3 shows that 63.6% of users agreed and 27.3% strongly agreed that the app was easy to navigate. Only one user (9.1%) selected a neutral response, and no users found the app difficult to use. This indicates that users were able to find their way around the system with ease, thanks to **a clear bottom navigation bar**, clean screen transitions, and logical content flow. The interface supports quick access to Home, Buy/Rent, and Add Listing pages, reducing the number of taps required to perform actions. Navigation is crucial in mobile apps if users get lost or confused, they're more likely to quit. Therefore, this result suggests that your navigation structure is solid, though it may benefit from minor enhancements like labeled icons or onboarding tips for first-time users.

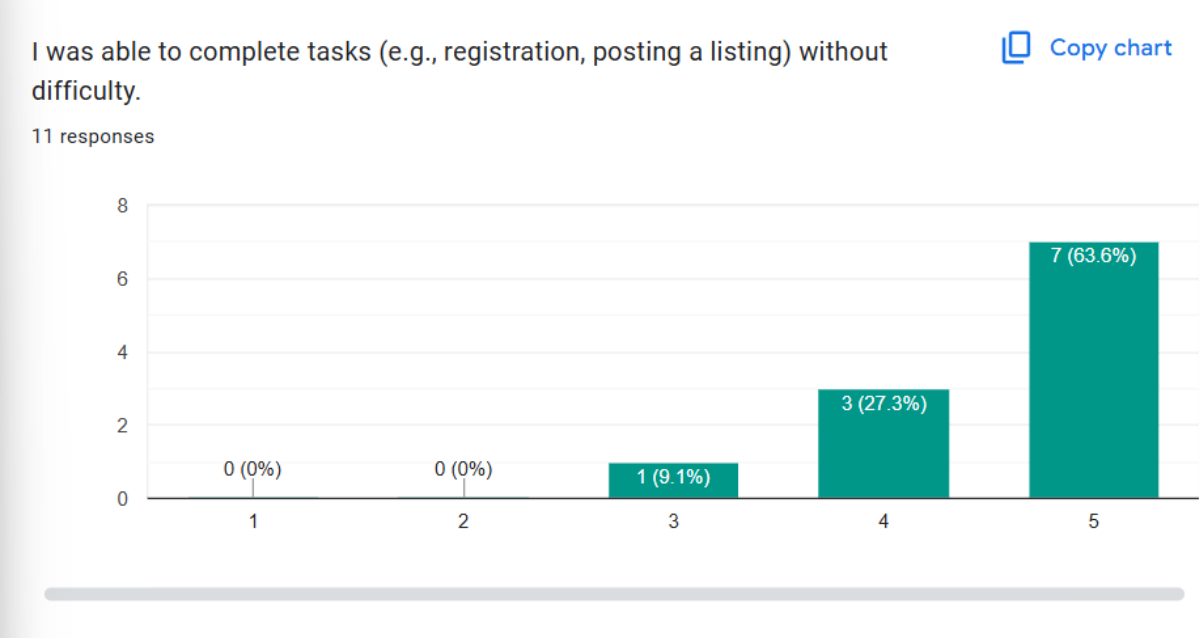


Figure 5.4 Task Completion

Here, 63.6% of users strongly agreed and 27.3% agreed that they were able to complete common tasks such as registering, logging in, or listing an item without any issues. One user (9.1%) gave a neutral score, but no one reported difficulty. This shows that the application supports a **smooth task flow** with minimal user frustration. In user experience testing, task completion is one of the most critical metrics it shows whether the design supports real-world use cases. Your app passed this test effectively, meaning that buttons, labels, and workflows are clear. The one neutral score might indicate slight improvements could be made in error messages or form validation to ensure even first-time users feel confident from the beginning.

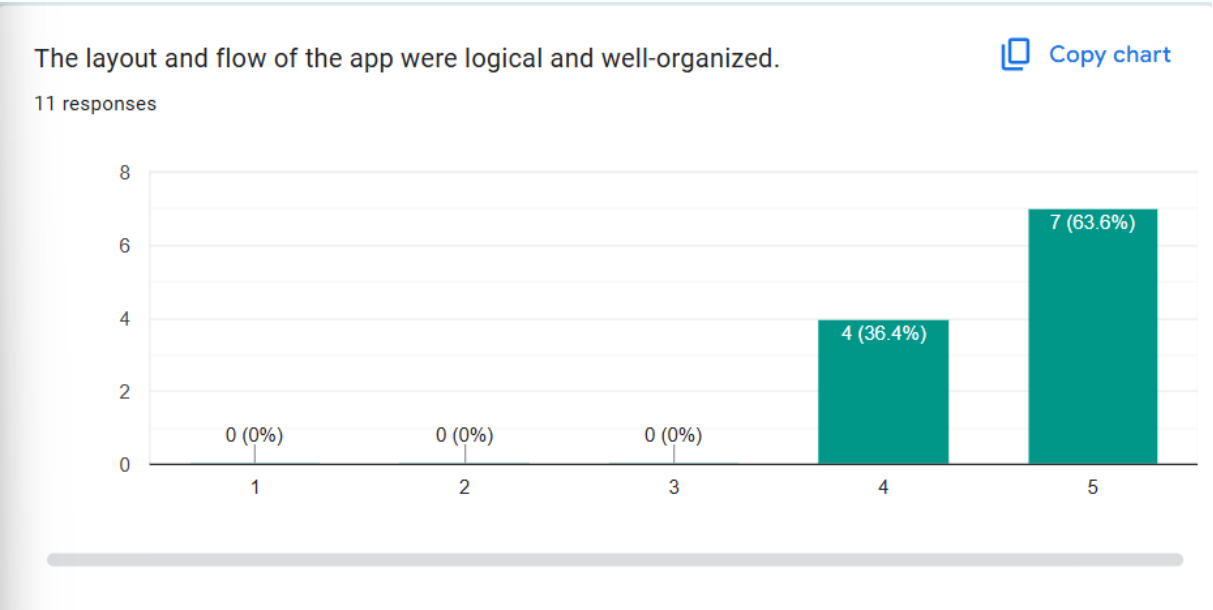


Figure 5.5 Layout Flow Logic

The responses for layout and flow were again very positive, with 63.6% strongly agreeing and 36.4% agreeing that the app's layout is logical and well-organized. No negative or neutral ratings were given. This means the sequence of actions such as signing in, viewing listings, filtering by brand, or posting products felt natural to users. A well-structured layout reduces cognitive load, helping users move from one action to the next without hesitation. This result suggests that the **wireframes and user flow decisions** made during the design phase were effective in guiding users through the system. Having a clear layout also contributes to lower support needs and faster onboarding, especially for non-tech-savvy users.

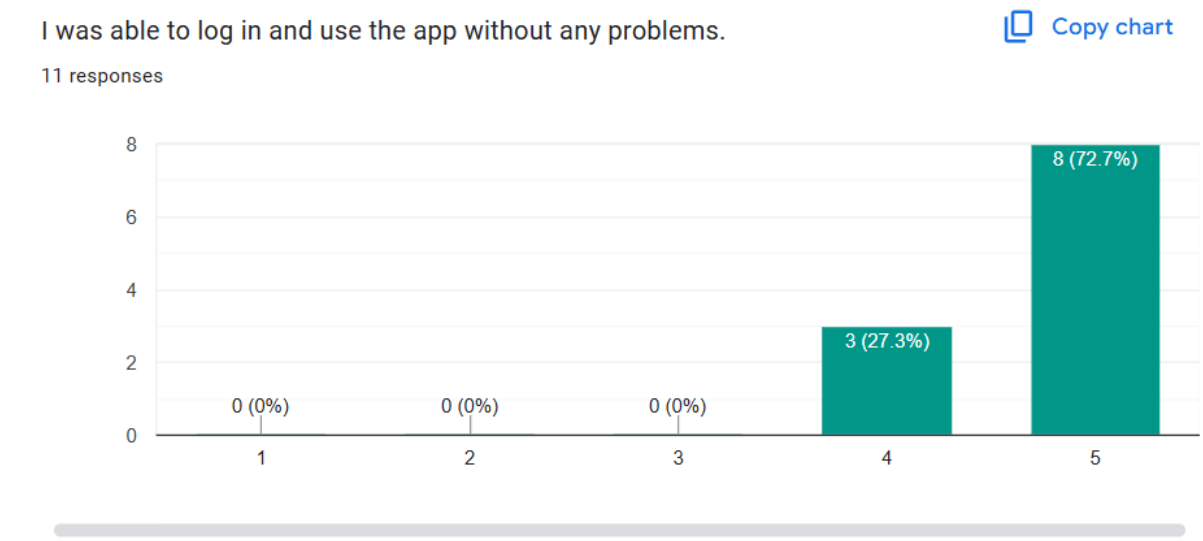


Figure 5.6 Login Process

Figure 5.6 shows 72.7% of users strongly agreed and 27.3% agreed that they were able to log in and use the app without issues. The login screen is the first point of contact for users, and if it's slow or buggy, it can discourage further use. This result shows that your **Firebase Authentication integration is stable and well-handled**, offering quick validation and navigation to the home screen. The absence of login errors or failures among testers also confirms that user account creation and verification were functioning correctly. A reliable login experience increases trust in the system and ensures a smoother overall interaction with the app.

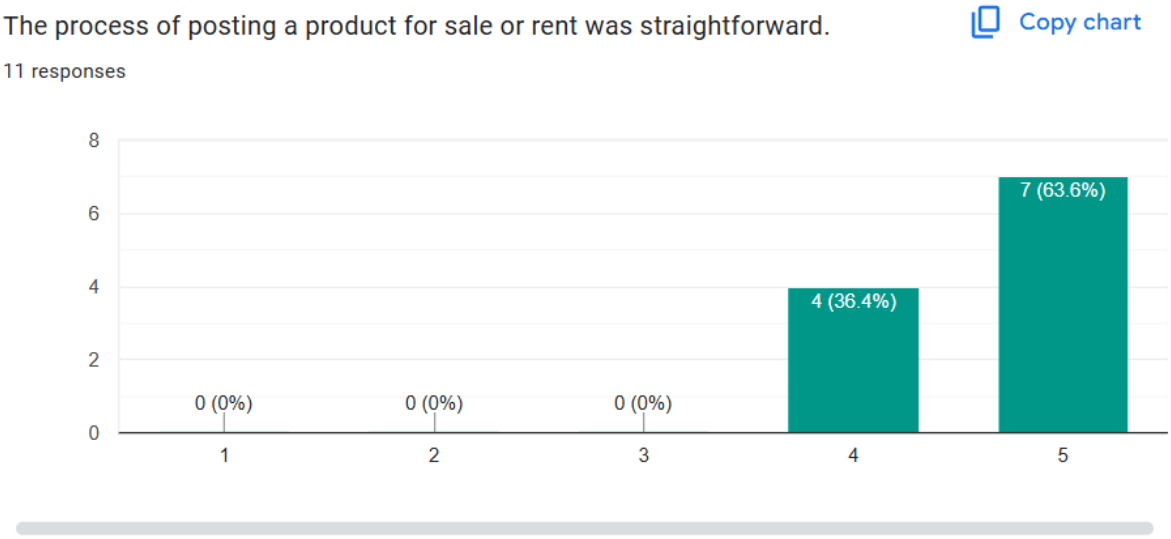


Figure 5.7 Posting a Product

Figure 5.7 shows that 63.6% of users strongly agreed, and 36.4% agreed that the process of posting a product for sale or rent was straightforward. This indicates that the **"Add Listing" feature is highly usable**, with users able to upload images, fill in product details such as brand, size, condition, and price, and choose between selling or renting without confusion. The form's clear structure, dropdown menus, and responsive buttons likely contributed to this positive response. Since this is one of the **core features for sellers**, the result is significant it shows that users can interact with the listing module confidently without needing assistance. A streamlined listing experience increases user retention and trust, as sellers are more likely to reuse the app if the posting process is simple and fast.

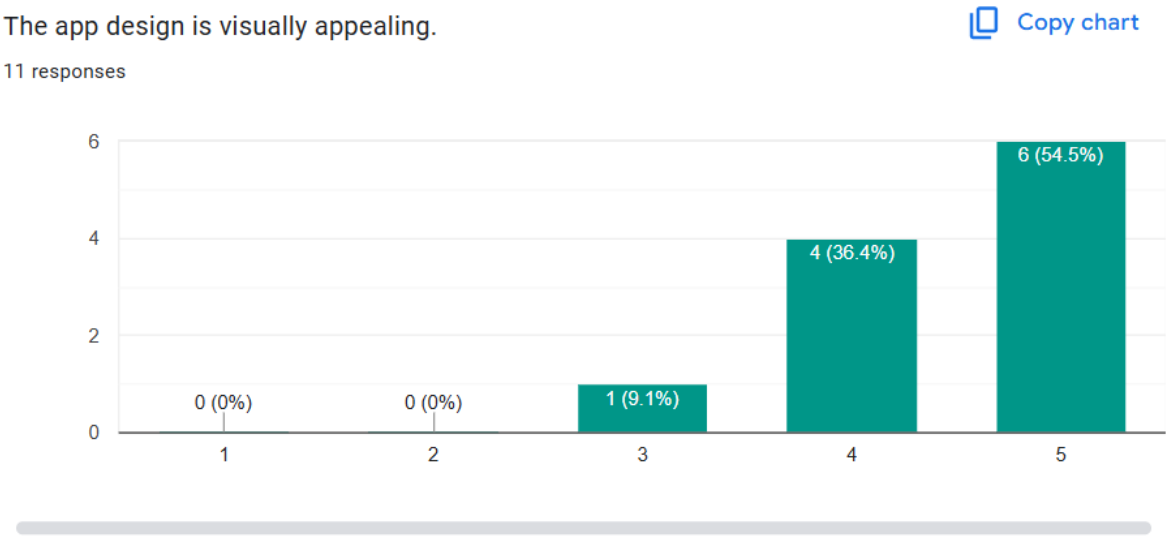


Figure 5.8 App Design

According to figure 5.8, 54.5% of users strongly agreed and 36.4% agreed that the overall design of the application is visually appealing. Only 9.1% of users gave a neutral rating, and none disagreed. This means that the majority of users appreciated the **UI/UX elements** such as the green gradient background, clean form layout, consistent branding, and readable font size. A visually attractive design is not only important for first impressions but also plays a critical role in keeping users engaged. For mobile applications like SellnBuy/Rent?, a modern and polished interface increases credibility and lowers friction during navigation. The positive feedback here reflects that the visual design successfully supports the app's goals of clarity, functionality, and user friendliness, though the one neutral rating could indicate potential enhancements in contrast or spacing.

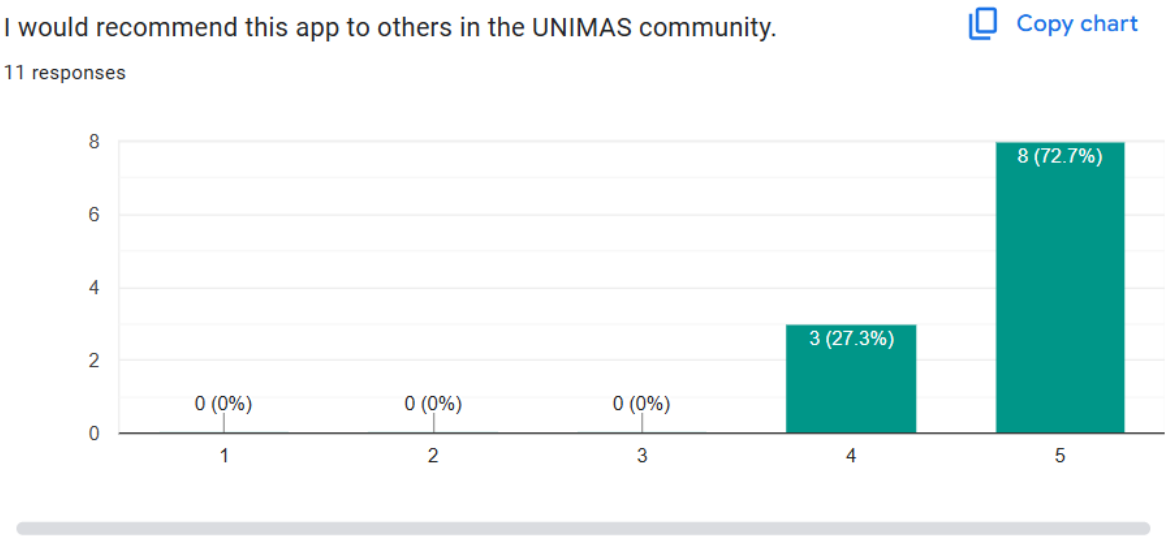


Figure 5.9 Recommendation

Figure 5.9 reveals that 100% of users (72.7% strongly agree, 27.3% agree) would recommend SellnBuy/Rent? to others in the UNIMAS community. This is a **strong indicator of user satisfaction**, as users are only likely to recommend a platform if they find it genuinely useful and enjoyable. It also suggests that the application fulfills its intended purpose: providing a trusted, campus-based platform for buying, selling, and renting sneakers. The recommendation rate is important for **organic growth**, especially in a university environment where word of mouth can significantly affect user adoption. Since all users gave positive ratings, this highlights the app's potential for further rollout among students, especially if promotional efforts are aligned with sports clubs or campus groups.

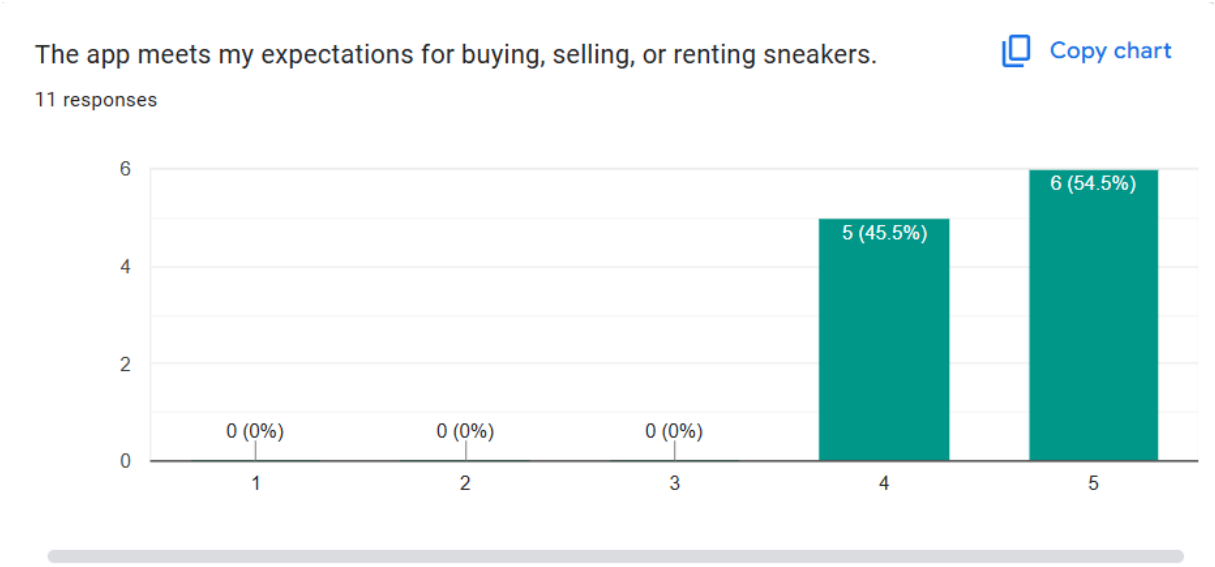


Figure 5.10 Meets Expectations

Figure 5.10 shows that 54.5% of users strongly agreed and 45.5% agreed that the app met their expectations. This confirms that users felt the application **delivered all key features they anticipated**, such as browsing products, posting listings, renting items, and communicating directly with sellers via WhatsApp. These results validate the design choices made during the planning and development phases. Expectations were set based on the project's aim to create a functional sneaker marketplace within UNIMAS, and the positive feedback means that the app aligned well with what users needed. It also reflects good usability planning and effective execution of both buyer and seller workflows.

5.5 Chapter Summary

Comprehensive testing validated the SellnBuy/Rent? applications's performance, reliability, and user satisfaction. Functional testing confirmed all core features operated as intended. Non-functional testing demonstrated the system's stability under stress and its efficient response times. User acceptance testing with campus community members yielded positive feedback, particularly praising the intuitive interface and notification system, while also identifying minor areas for improvement. The successful testing outcomes confirmed the system's readiness for full campus deployment and provided valuable insights for future enhancements

Chapter 6: Conclusion and Future Works

6.1 Introduction

This chapter serves as the concluding section of the Final Year Project (FYP) report, encapsulating the journey of the SellnBuy/Rent? application from conception to implementation. The primary aim of this project was to create a mobile platform tailored for the UNIMAS community, facilitating the buying, selling, and renting of sneakers. The sneaker culture has gained significant traction among students, driven by trends in fashion, functionality, and the entrepreneurial spirit. However, navigating the sneaker market can be challenging due to fluctuating prices, counterfeit products, and a lack of transparency in transactions.

Recognizing these challenges, the SellnBuy/Rent? application was developed to provide a localized solution that addresses the unique needs of UNIMAS students. The application not only simplifies the process of sneaker transactions but also promotes sustainable practices by encouraging the rental and resale of footwear. This approach aligns with the growing emphasis on environmental consciousness and responsible consumer behavior among younger generations.

Throughout the development of SellnBuy/Rent?, a structured methodology was employed, specifically the System Development Life Cycle (SDLC). This methodology ensured that each phase of the project was meticulously planned and executed, from requirement analysis to design, implementation, testing, and deployment. By following this systematic approach, the project team was able to create a robust and user-friendly application that meets the expectations of its target audience.

In this chapter, we will delve into the project's achievements, highlighting the key functionalities and features that have been successfully implemented. We will also discuss the contributions of the project to the field of mobile application development and e-commerce, particularly in the context of localized solutions for university students. Furthermore, we will address the limitations encountered during the development process, providing insights into areas that require further attention and improvement.

Finally, we will outline potential future works that could enhance the SellnBuy/Rent? application, ensuring its continued relevance and effectiveness in meeting the needs of its users. By reflecting on these aspects, we can better understand the impact of the project and the potential for future developments, ultimately contributing to the advancement of community-driven marketplaces in the digital age. This comprehensive overview will serve as a foundation for the conclusions drawn in this chapter, emphasizing the significance of the SellnBuy/Rent? project within the broader landscape of mobile commerce and student engagement.

6.2 Project Achievement

The *SellnBuy/Rent?* project has achieved significant milestones aligned with its proposed objectives, resulting in a mobile application that caters specifically to the needs of UNIMAS students. Each project outcome is evaluated below against its corresponding objective:

Objective 1: "Develop a separated user-friendly platform for reselling & buying and rental sneakers ensuring smooth navigation and an intuitive interface for both buyers and sellers."

The project successfully developed a dedicated mobile application tailored for reselling and renting sneakers. The platform's interface was designed with a strong emphasis on user experience, ensuring it is visually clean, intuitive, and simple to navigate. Wireframes and mockups were tested by potential users to validate usability and layout, leading to improvements based on actual feedback. The interface separates the roles of buyers and sellers, making it easy for users to perform their respective actions without confusion.

Objective 2: "Enable seamless listing and purchasing of sneakers, with features like product filtering, price tracking, and search capabilities to enhance the user experience."

The application includes essential e-commerce features such as:

Core Functionalities	**Descriptions**
User Registration & Authentication	Secure account creation and login process ensures verified access for all users.
Product Listings	Users (sellers) can create, edit, and manage listings with full product details, including photos, sizes, and prices.
Search & Filter Options	Users (buyers) can filter sneakers based on brand, size, and price range to quickly find what they need
Direct Communication	WhatsApp integration allows users to negotiate and inquire directly with sellers or renters, promoting clarity and speed in transactions.

The application includes essential e-commerce features such as:

Objective 3: "Introduce a rental system that provides students with short-term sneaker access at reduced costs."

This objective has been **partially achieved**. The system currently allows users to list sneakers for rental manually and facilitates communication between buyer and seller for negotiating rental terms. However, advanced rental management features such as rental duration tracking, automated rental expiration, or payment schedules are planned for future updates. Additionally, future enhancements

include integrating a native chat system and notification alerts to better support the short-term rental process without relying on external messaging apps.

6.4 Project Limitations

The SellnBuy/Rent? project contributes significantly to the field of mobile application development and e-commerce in several ways:

- **Limited to UNIMAS Community**

  The SellnBuy/Rent? Shoes platform is specifically designed for UNIMAS students. While this focus helps build trust and security among a known group, it also limits the platform's potential user base. Users from other universities or the public cannot access it unless the system is scaled in future versions, which constrains growth opportunities at the early stage.

- **Internet Dependency**

  All features of the platform, including product browsing require a stable internet connection. In areas with poor connectivity, users may experience difficulties using the system, limiting accessibility and potentially affecting user satisfaction.

- **Platform-Specific Constraints**

  Currently, the platform is designed as a mobile application, which may not fully cater to users who prefer a desktop or web experience. Developing and maintaining multiple platform versions like Android, iOS, web would require additional resources and effort, which is not addressed in this initial version.

- **Manual Verification Efforts**

  To ensure authenticity, the platform verifies user accounts and product listings. However, at the early stage, this process may be handled manually by the admin, which could become time-consuming and challenging to scale if the number of users and transactions grows rapidly. Automating verification processes would be a necessary enhancement in the future.

6.5 Future Works

The SellnBuy/Rent? application has laid a solid foundation for facilitating sneaker transactions within the UNIMAS community. However, to ensure its continued growth and relevance, several future works are proposed. These enhancements aim to address current limitations, expand the user base, and improve overall functionality. The following sections outline specific areas for future development:

1. Expansion of User Base

- **Partnerships with Other Universities**:

  To broaden the reach of the application, future iterations could explore collaborations with other universities in Malaysia. By adapting the platform to meet the specific needs of different student communities, SellnBuy/Rent? can create a larger marketplace for sneaker transactions. This could involve localized marketing strategies and tailored features that resonate with the unique cultures and preferences of students at various institutions.

- **Inclusion of Alumni and Local Residents**

  Expanding the user base to include alumni and local residents can enhance the marketplace's vibrancy. Alumni may have sneakers they wish to sell or rent, while local residents could provide additional listings, enriching the variety of products available on the platform. This expansion would require careful consideration of user verification processes to maintain the platform's integrity.

2. Feature Enhancements

- **Rating and Review System**

  Implementing a robust rating and review system for buyers and sellers can significantly enhance trust and transparency within the marketplace. Users would be able to leave feedback based on their experiences, helping others make informed decisions. This feature could also incentivize sellers to maintain high standards in product quality and customer service.

- **Advanced Analytics and Insights**

  Integrating data analytics capabilities can provide users with valuable insights into market trends, pricing strategies, and user behavior. For instance, the application could analyze past transactions to suggest optimal pricing for listings or highlight popular sneaker styles based on user searches. This data-driven approach can empower users to make informed decisions and improve their selling strategies.

- **Built-in Chatbox**

  A dedicated in-app chatbox feature would replace the current reliance on external messaging apps such as WhatsApp. This addition would centralize all communication within the application, allowing buyers and sellers to negotiate, ask questions, and confirm transactions more conveniently and securely. It would also enable the development team to monitor messages for inappropriate content or scams, adding another layer of safety to the platform.

3. User Engagement Strategies

- **Promotional Events and Campaigns**

  Developing marketing strategies to increase user engagement and retention is crucial for the platform's growth. This could include promotional events, such as sneaker fairs or contests, where users can showcase their listings and engage with the community. Collaborations with campus organizations, sports clubs, or fashion societies can also help promote the application and attract new users.

- **Referral Programs**

  Implementing a referral program can incentivize existing users to invite friends and peers to join the platform. Offering rewards, such as discounts on future transactions or exclusive access to limited-edition sneakers, can motivate users to spread the word about SellnBuy/Rent?.

4. Continuous Improvement and User Feedback

- **Establishing a Feedback Loop**

  Creating a structured feedback mechanism will allow users to share their experiences and suggestions for improvement. This could involve in-app surveys, suggestion boxes, or regular user focus groups. By actively engaging with users, the development team can identify pain points and prioritize enhancements that align with user needs.

- **Regular Updates and Maintenance**

  To ensure the application remains relevant and functional, regular updates should be scheduled to address bugs, introduce new features, and enhance security measures. This ongoing maintenance will help build user trust and satisfaction, encouraging continued use of the platform.

By focusing on these future works, the SellnBuy/Rent? application can evolve into a comprehensive and dynamic platform that not only meets the current needs of its users but also adapts to the changing landscape of mobile commerce and community engagement. These enhancements will ensure that the application remains a valuable resource for students and fosters a thriving marketplace for sneaker transactions.

6.6 Conclusion

In conclusion, the SellnBuy/Rent? project has successfully established a mobile application that meets the specific needs of the UNIMAS community for buying, selling, and renting sneakers. The project has demonstrated the potential of mobile technology to facilitate peer-to-peer transactions while promoting sustainable practices among students. Despite its limitations, the application provides a solid foundation for future enhancements and expansions. The contributions made by this project not only address immediate user needs but also pave the way for further research and development in the field of localized e-commerce solutions. The insights gained from this project will serve as a valuable reference for future endeavors in mobile application development and community-driven marketplaces.

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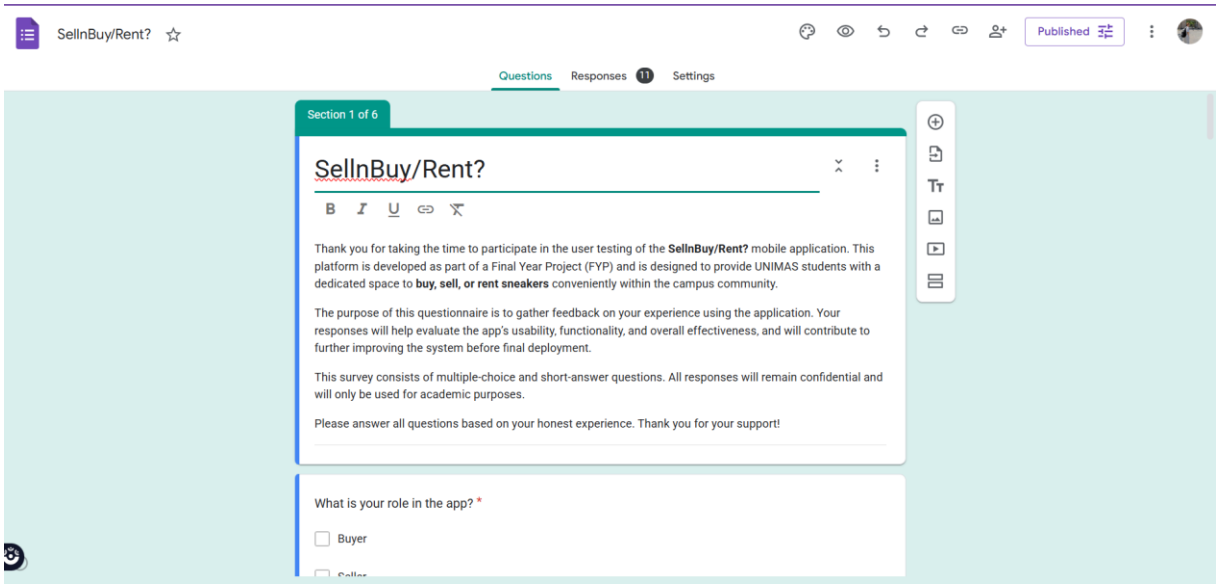
APPENDIXXES



Google form questionnaire