

HomeBridge Network – Building a seamless path between renters and owners

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ABSTRACT

This project showcases the idea and creation of HomeBridge Network, an Android mobile application designed to make the home-rental process more efficient. Key features include a property listing, search and filter capabilities, user authentication, and real-time tenant-landlord communication. The application, which was developed in Android Studio with Java and Kotlin, has an intuitive UI with XML layouts. The application aims to bridge the gap between job seekers and real estate owners to make the leasing process more convenient and accessible. To guarantee efficient processing and data search, data is securely stored using MySQL or Firebase Firestore. Utilizing the built-in Android functionality and a flexible development technique, the software offers a safe, dependable, and extendable platform appropriate for the contemporary housing industry.

Keywords -Online house rental, property management, house owners, tenants, administrators, rental search, user-friendly interface, property listing.

I. INTRODUCTION

Historically, the process of finding rental homes has been time-consuming and inefficient, often involving multiple visits, unstable listings, and poor communication between tenants and landlords. As digital platforms become more commonly used, there is an increasing need for an online solution that makes rental administration and property searches easier. To solve these problems, the HomeBridge Network—an Android-based platform—was created, offering administrators, renters, and property owners a productive and intuitive user interface. Property owners can include their rental properties together with important information like location, rent, and images to ensure that prospective tenants have access to accurate and current information. Tenants can register on the platform, look through available apartments based on their interests, and get in touch with landlords without the need for middlemen. To preserve a secure and well-regulated platform, user

registrations, listing validation, and dispute resolution are handled, ensuring authenticity and dependability. When property listings, searches, and communications are automated, the rental market is more transparent and requires less manual effort.

Thankfully, the suggested technique can save time and effort when looking for rental units by assisting students in locating neighboring flats and boarding homes. By merely uploading images of their apartments, the software may also assist owners of boarding houses and apartments in marketing their properties. [1]

Research Objectives:

1. Offers real estate management apps for Android that speed up the leasing process
2. To encourage open dialogue between administrators, tenants, and owners.

3. Ensure that your list of properties is current.

An increase in the number of tenants and landlords complicates management, especially for landlords who have lost a lot of money to tenants who don't pay rent. The above explanation provides a clear explanation of why rental house management systems must be developed. [2]

A whole house has many weaknesses, as it takes a lot of effort and time to find the right home to meet the student's needs. It is difficult for students to find a home, as many rentals are not open on social media. Homeowners may not update their homes as they advertise on social media. There are also con artists who disguise themselves as homeowners, but don't do that. Scammers usually consider new students to be victims because they know that new students have no experience renting homes. However, some owners offer low-cost rental houses with complete home options. Very suitable for student budgets. The only problem is that students don't know how to find a cheap rental house in the middle of the city. Students will use the offer quickly or receive a rental house at an expensive price.

II. LITERATURE SURVEY

The functionality of mobile applications in the real estate and home rental industries has been the subject of much research. Previous research shows that digital solutions dramatically change traditional real estate leasing processes, making them more efficient, transparent, and accessible. A student-friendly living space that rents and rents in high demand. Most tenants in the apartment are students who are engaged in university programs working in the semester or semester system (Maughan, 2016). In this respect, Sta Ana (2017) found it difficult to find an apartment in the Philippines if you are not used to the location and environment. Additionally, apartment locations play a major role in choosing your neighborhood, as security and personal convenience must be considered (Hoppler -Editorial Board, 2017). The note also deserves the fact that students' study habits are influenced by apartments outside of school. Academic students are students who live in apartments compared to those who live in their homes due to travel struggles (Tsavo Media Canada Inc., 2010). Furthermore, Hanna (2006) realized that one of the advantages of living in an apartment was that when students were in their rooms, everything, such as books, notes, and other study materials, was already available. Since then, the system has served as a place to buy and sell second-hand goods. But there are some issues there. These reviewed systems do not have the correct location tracking with updated card location systems, and no secure checking systems are inserted into these existing systems. [2]

University Technique Mara Cawangan Kelantan (UITMCK) is the name of UITM Kota Bharu. The second campus was opened in Kota Bharu, Kelantan, in 2007. UITM Kota Bharu is located in the heart of Kota Bharu, the provincial capital and royal seat of Kelantan. There are numerous commercial buildings in the area, and Kota Bharu is a prosperous trading hub. The shopping center is where UITM Kota Bharu is situated. It takes about five minutes to walk from Aeon Mall to UITM Kota Bharu, which is home to Platinum Mall. [3]

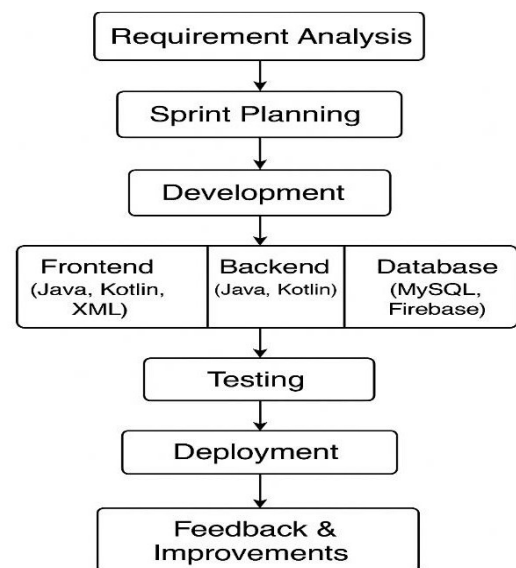
Due to space constraints, UITM Kota Bharu does not offer

student accommodations. As a result, students need to locate and rent a place to reside. However, it is very difficult to obtain a rental home in this region because it is a commercial center rather than a residential one. House rental companies in this area are also very expensive for students. The rental process can be a little challenging because it may turn out that the application has already expired or is no longer available, even though students typically utilize Facebook and other convenient apps to search for rental homes. Students also find it difficult to distinguish between different houses and home prices, as the information provided is not detailed, and students need to make a separate call to know the price of the house. [3]

III. METHODOLOGY

HomeBridge networks were developed with agile processes, particularly according to the Scrum structure. The iterability of agile development allowed constant improvement, adaptability, and effective collaboration between developers, testers, and stakeholders, leading to choice. The projects were divided into several sprints that last two to three weeks to ensure that new features were developed, tested and improved in an organized way.

Agile has enabled the development team to consider customer input at all levels and ensure that the requirements of the finished product and user expectations are met. In the Agile Development Lifecycle, all sprints are responsible for defined procedures. Prioritization of key features such as user



authentication, properties, and reservation capabilities, user stories, and development tasks was first set up during the sprint planning stage.

The design and prototyping phase is now here. There, the UI model and wireframe ensure a user-friendly experience. Visual elements for your application are created and consist of XML, such as buttons, text fields, lists, navigation strips, and custom views. By clearly separating UI elements from functionality, it ensures easier maintenance and scalability (managed in Java/Kotlin). The front-end, where users interact with Android apps, is known as the user interface (UI). The frontend of the HomeBridge network app was developed

using XML for UI layouts and Java/Kotlin for logic. This department adheres to the architecture proposed by Android for improved modularity and maintainability. The development of the backend using Java and Kotlin ensures high performance and compatibility with Android applications. The code in the application is modular, and transaction processing, real estate management, authentication, and API development are handled by Spring Boot. Firebase authentication is integrated to provide secure user authentication and enable registration via social networks, Google, and email accounts. Tenants, landlords, and managers have different legitimacy due to role-based access control or RBAC implementations. MySQL is the main database used and effectively handles structured data such as payment processes and lease agreements. For real-time data management, particularly for chat and alerts, Firebase Firestore is included. A seamless user experience is provided by this hybrid database strategy. This gives a balance between structured memory and real-time interaction.

Data loss is avoided by implementing automated backups and recovery procedures to ensure data safety and reliability. Secure authentication using Firebase and 2FA allows users to register for their email address, phone number, or Google account. Tenants can use search parameters such as location, price, and amenities, and landlords can provide property with photos, descriptions, and prices. Tenants and landlords can communicate directly via real-time chat. Transparency is guaranteed through digital rental agreements, and ratings and reviews increase trust. Email and push alerts about entries and rental requests will be used to keep users informed. RBAC, fraud detection, and SSL encryption are examples of security mechanisms. The application meets legal requirements to protect user information and ensure secure rental transactions.

IV. SYSTEM ARCHITECTURE

The HomeBridge Network Android app's system architecture is depicted in the diagram, which also shows

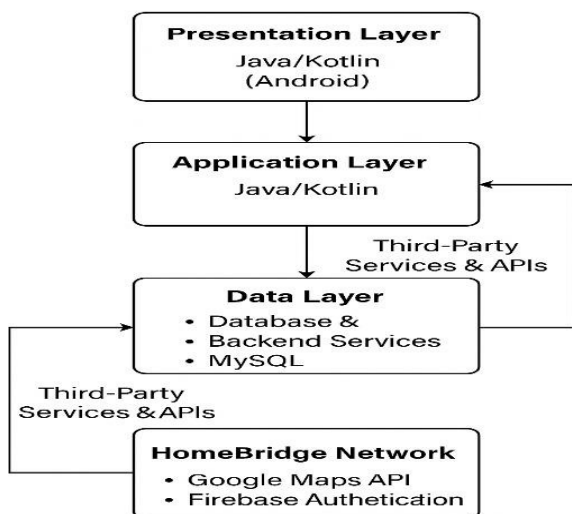


Fig 1. System Architecture

how the user interface, business logic, and data storage components interact. Users engage with the application through a Java/Kotlin interface that connects to backend logic that manages communications, property management, and authentication.

Firebase or MySQL are used to safely store and retrieve data, and third-party services like Firebase Authentication and the Google Maps API improve security and usability. A scalable, maintainable, and user-friendly rental platform is guaranteed by its modular design.

Fig 2. Home Page

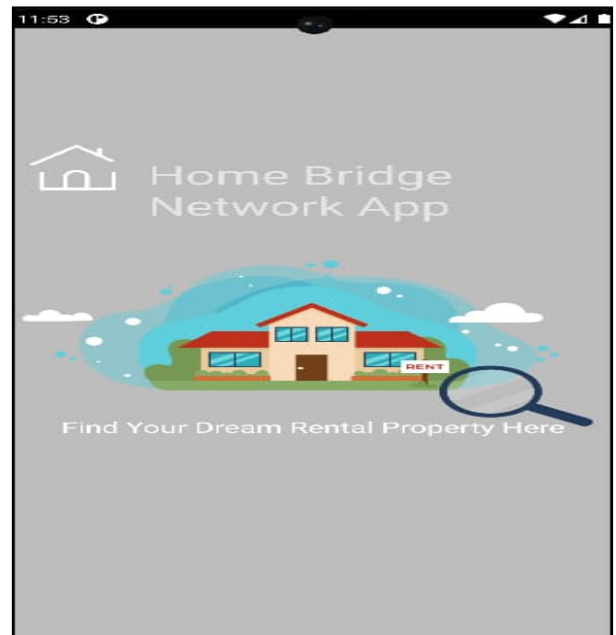
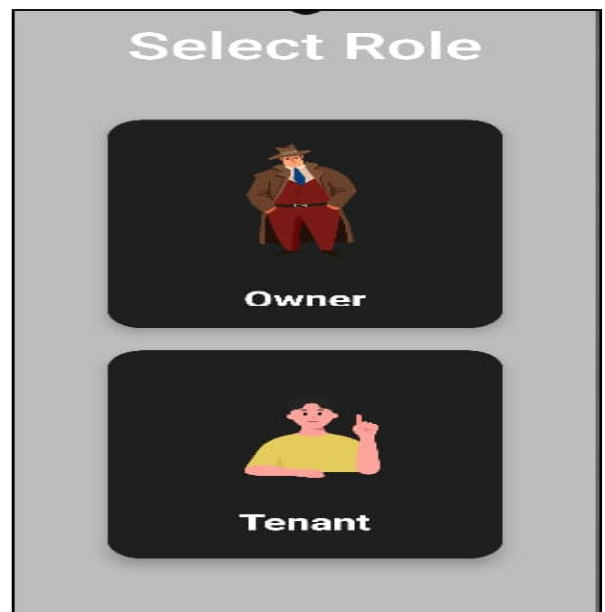


Fig 3. Select Role



V. RESULTS

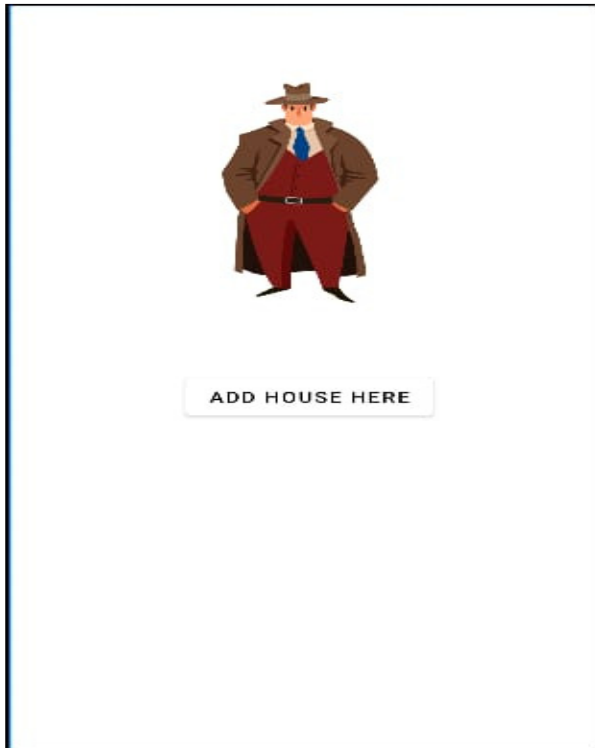


Fig 4. Click on Add house here to add a house



Fig 6. Add details of the house

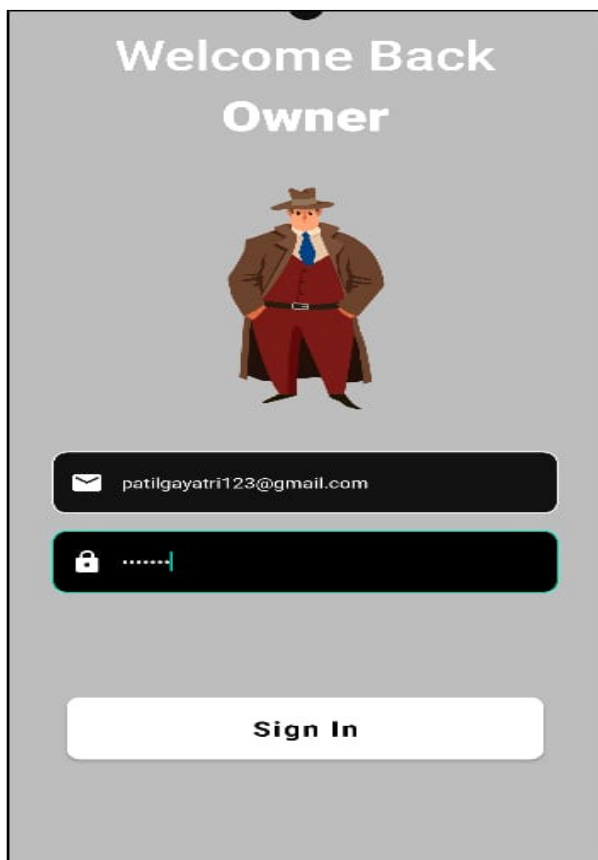


Fig 5. Log in as an owner

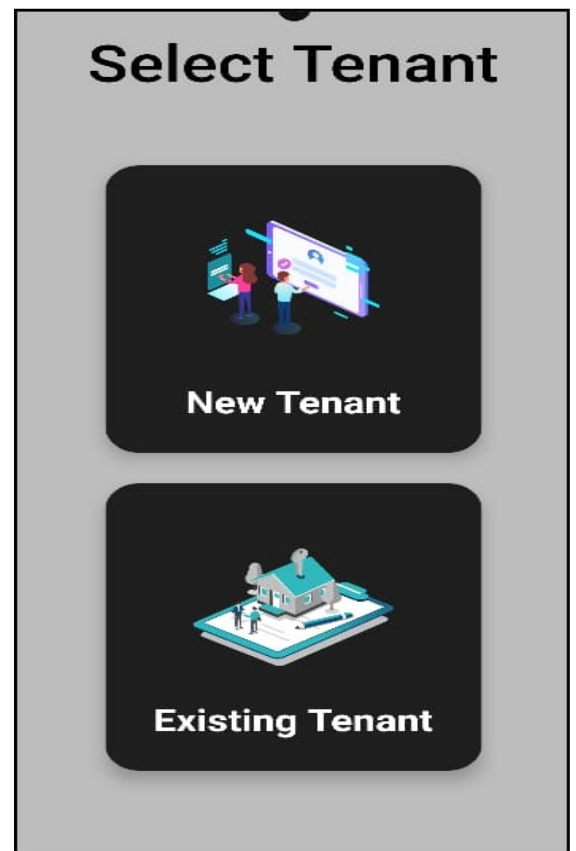


Fig 7. Select the type of tenant

presently not included. HomeBridge Network's modular design and scalable architecture provide a solid basis for upcoming advancements in digital real estate solutions.

VII. REFERENCES

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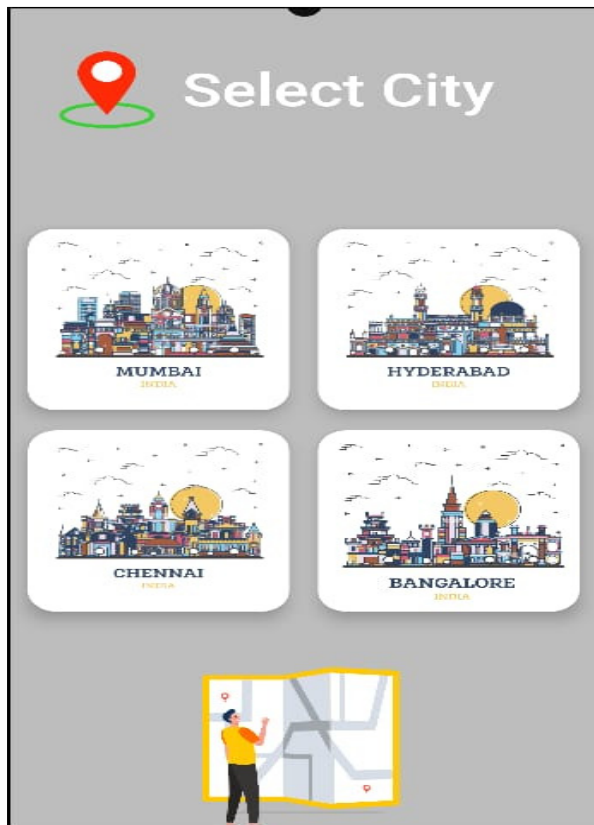


Fig 8. Select city

VI. Conclusion

A complete and easy-to-use solution for expediting the house renting process is the HomeBridge Network app. Through real-time communication, user-friendly property listings, and powerful search features, the app connects landlords and tenants by utilizing Android technology in conjunction with Firebase and MySQL for safe and scalable data management. Throughout the development process, the Agile technique was implemented to guarantee flexibility, effectiveness, and ongoing progress. The software creates a strong basis for upcoming improvements like AI-based suggestions and intelligent verification systems, even though it presently stays away from sophisticated features like online payments for simplicity. All things considered, this study shows how mobile applications may greatly increase accessibility and productivity in the rental real estate sector.

The creation of the HomeBridge Network Android app demonstrates how mobile technology is increasingly changing the conventional home rental experience. The program effectively serves both landlords and tenants by emphasizing accessibility, usability, and simplicity, which lessens the hassles associated with renting. Performance, security, and real-time data processing are guaranteed by the use of contemporary programming technologies like Firebase and Java/Kotlin. The software successfully covers necessary features, including property listing, search filters, and user communication, even though integrated payment methods are