

# Dormify: A Comprehensive House Rental System for Enhanced Tenant and Landlord Experiences

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**Abstract**—Our project is dedicated to crafting a sophisticated house renting app that caters to the needs of both landlords and tenants with precision and efficiency. Our system is designed to offer a seamless experience, empowering users with tools for smooth communication, effortless property listing and convenient viewing scheduling. For landlords, our platform provides intuitive interface to manage and add properties. Tenants, on the other hand, benefit from a user-friendly interface that simplifies the search and rental process, and an interactive map feature allowing them to find accommodations tailored to their preferences swiftly and conveniently. At the core of our system lies a commitment to enhancing the rental experience for all parties involved. Our platform serves as a trusted mediator, fostering trust and reliability in the rental process while minimizing friction points and uncertainties.

**Index Terms**—Android application, Android Development, Firebase Firestore, Google Maps API, House rental system, Jetpack Compose, property listing, tenant management.

## I. INTRODUCTION

The rental housing market serves as a fundamental aspect of daily life for many individuals seeking accommodation. But even this necessity has a lot of issues associated with it. To name a few, they include, not finding the right property, no navigation option, difficulty in finding the listings as they are scattered everywhere, etc. Our housing rental platform, "Dormify," is a central hub for those pursuing their ideal living space.

Much like the bustling energy of a college campus canteen, our platform offers a comprehensive solution tailored to the diverse needs of tenants and landlords alike. However, just as any bustling establishment, challenges can arise, hindering the seamless experience both parties seek. Through extensive

surveys and feedback analysis, we've identified common pain points faced by renters and property owners alike: from prolonged search times and limited viewing availability to outdated application processes and communication barriers.

Although some platforms have tried to tackle these challenges, they often leave much to be desired. High brokerage fees, confusing interfaces, and a lack of features that truly work together mean both tenants and landlords are left feeling frustrated and underserved. Dormify changes this by offering a solution that's intuitive, affordable, and built with its users' needs in mind.

Dormify addresses the issues by offering a digital platform to simplify the renting process for the owners as well as the tenants. This system integrates modern technologies to ensure ease of use, efficient property management, and a user-centric experience.

## II. RELATED WORK

Currently, in the outskirts of cities, universities and remote areas, house rental systems rely heavily on manual processes and fragmented tools, which create inefficiencies. Usually, most of the information about the rental properties is available through WhatsApp messages. But this method of receiving information is very tedious as the tenant has to manually try to find the owners' phone numbers and check the properties individually to see if that meets their preferences.

Existing solutions often lacks the integration of features such as real-time location mapping, secure communication channels, filtered results based on preferences and centralized property management. Dormify builds on these gaps by offering a comprehensive, scalable, and interactive application.

### III. SYSTEM DESIGN AND METHODOLOGY

#### A. Technological Stack

The Dormify system uses the following technologies:

- **Kotlin:** Kotlin is a dedicated programming language created for Android development. We have used Kotlin for backend and frontend development, leveraging its concise syntax and built-in null safety features.
- **Jetpack Compose:** For building intuitive and responsive user interfaces.
- **Google Firebase:** For authentication, real-time database management, and backend services.
- **Google Firebase Firestore:** For storing property details and user information, easy and convenient to use.
- **Google Maps API:** For location-based services, property mapping, and navigation.

#### B. System Architecture

The architecture is divided into three core modules:

- **Owner Module:** Enables property owners to list properties with their appropriate descriptions, manage properties, and update property details.
- **Tenant Module:** Allows tenants to view rental properties around them on the map, search, filter, and contact the property owners for available properties.
- **Backend Integration:** Facilitates data storage, authentication, and communication using Firebase and Firestore. Utilizes Google Maps API to display the properties to the users on the map.

#### C. Implementation overflow

1. **Login and Authentication:** Firebase Authentication has been used which enables secure email/password-based login for both owners and tenants.
2. **Property Listing:** Owners upload property details, including rent, amenities, and location.
3. **Search and Navigation:** Tenants search for properties using filters and location and view properties within a 5km radius on Google Maps by default.
4. **Filtering:** Tenants can filter the properties based on various parameters such as price range, no. of bedrooms in the flat, etc.

5. **Communication:** Direct messaging between landlords and tenants is enabled via integrated chat functionality.

### IV. SURVEY RESULTS

To validate the concept and design of Dormify, a survey was conducted with a sample group of potential users, including tenants and landlords. Key findings include:

- **Pain Points:** Over 75% of respondents reported difficulty in locating suitable rental properties, citing challenges such as insufficient online tools and limited communication with landlords.
- **Feature Preferences:** 82% of tenants expressed a preference for map-based property search, while 68% highlighted the importance of bypassing brokers to communicate directly with landlords.
- **Adoption Likelihood:** A significant majority, 80%, showed interest in adopting a digital platform like Dormify for managing rental processes.

These insights guided the design and implementation of Dormify's features, ensuring they address real-world challenges and meet user expectations effectively.

### V. FLOWCHART

The Dormify platform's is crafted to make the rental process smoother and more accessible for both flat owners and tenants. When users enter the app, they log in and are guided to features designed specifically for their role. Owners can handle their property listings without much effort by adding on, updating, or deleting the details like property specifications, amenities, location, photos, and contact information, making it easier to connect with potential clients. Moreover, tenants can also explore the properties based on an interactive map which will narrow down their options using filters, check out detailed property descriptions, and directly contact owners to ask questions or express interest. If a listing doesn't match their needs, they can seamlessly return to the map and continue their search. Both flat owners and tenants can complete their tasks and log out, enjoying a user-friendly and efficient experience.

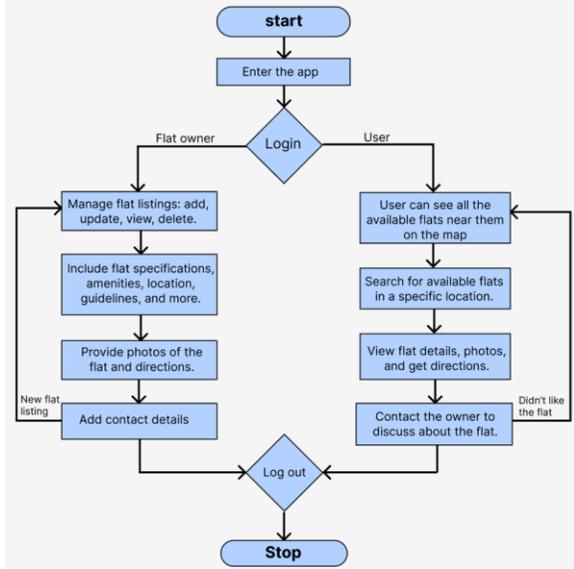


Figure 1. Flowchart of Dormify System

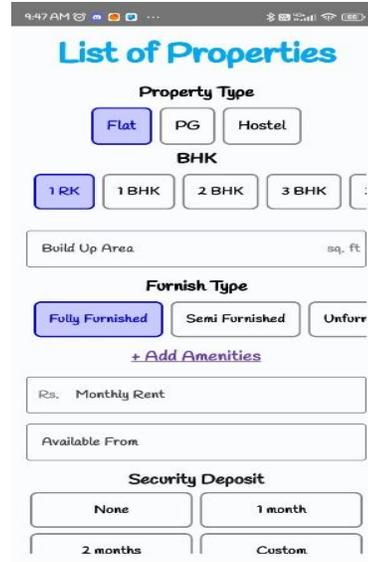


Figure 3. Add property Window

VI. APP RESULTS

The following screenshots of our Android App showcase the main features of the Dormify application. Each screenshot is accompanied by a brief description of the feature it represents.

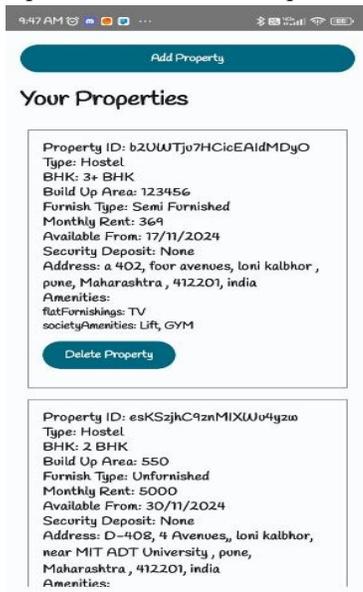


Figure 2. Owner Dashboard

This is the first page visible to the owner after they enter their login credentials. The owner has an option to add new properties. The owner also gets to see all the properties that they have listed before. The owner can also delete properties from the listings which have already been rented out.

The owner can add a new property. The owner has to enter the property details like the property type, BHK, buildup area, monthly rent, location, etc.



Figure 4. User Dashboard

Once the user logs into their account, they are able to see a map, which shows all the properties around the user within a 5km radius. They can click on each property which will show more details about that particular property. Also, the user can click on the navigation icon to open Google Maps to go to that particular location.

## VII. RESULTS DESCRIPTION

The screenshots above demonstrate the core functionality of the Dormify system. The login screen allows users to choose between tenant and owner roles. Once logged in, tenants can search for properties using various filters and view all available properties around them. By default the properties that are within 5kms radius of the user are shown to the tenants while the tenants can also search for properties within a specific area. The owners can manage their property listings via the owner dashboard.

## VIII. FEATURES AND RESULTS

### A. Core Features

- Interactive maps for locating properties.
- Secure login for tenants and landlords using role-based login.
- Comprehensive property management dashboard for landlords.
- Filter-based property search for tenants.

### B. System Testing

Dormify was tested across multiple Android devices to ensure compatibility and responsiveness. Users reported a reduction in the time required to locate and finalize rental properties.

## IX. CONCLUSION AND FUTURE WORK

Dormify has successfully streamlined the rental process by reducing inefficiencies and enhancing user satisfaction. However, our vision goes beyond our current functionality. Future development will focus on both short-term and long-term goals to further elevate the platform's usability and impact:

### Short-Term Goals:

- Secure Payment Gateway: Integration of a reliable and secure payment system to enable cashless transactions, ensuring a smooth and transparent financial process for users.
- Digital Rental Contracts: Implementation of digital rental agreements and booking numbers to offer tenants and landlords a seamless and paperless process, enhancing convenience and security.
- Community Features for Tenants: Development of interactive community functionalities where

tenants can share reviews, seek recommendations, or discuss their rental experiences.

- Property Interest Indication: Introducing an option for tenants to show interest in specific properties directly through the app, enabling landlords to identify and respond to potential leads more efficiently.

### Long-Term Goals:

- Document Maintenance System: Introducing features for securely storing and managing rental documents, including agreements and receipts, ensuring tenants and landlords have easy access to their records.
- Enhanced User Login System: Developing a sophisticated login mechanism that allows users to access and track their rental history, providing insights into previous transactions and bookings.
- Dynamic Android Features: Leveraging advancements in Android development to integrate dynamic and interactive features, such as push notifications for property updates, virtual property tours, and real-time chat functionality for seamless communication.
- Advanced Tenant-Landlord Communication: Building tools to facilitate better communication, including scheduling property visits and resolving queries in-app.
- Future Expansion: Exploring the possibility of expanding the platform to include services like tenant insurance options, utility payment management, and rental market analytics for both landlords and tenants.

Through these enhancements, Dormify is committed to redefining the rental property management landscape. By addressing existing challenges and innovating for the future, our platform will continue to set benchmarks for convenience, efficacious, and user contentment in the rental housing.

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