

Room Rental and Home Solutions

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Abstract- The proposed application is a comprehensive Room Rental and Home Solutions platform designed to simplify and enhance the process of finding, buying, selling, and maintaining homes. Unlike traditional real estate or rental applications, our solution integrates multiple services under one unified platform, making it a one-stop destination for all housing-related needs. The application enables users to rent rooms, buy homes, or sell properties with ease, supported by advanced search filters, location-based recommendations, and verified listings to ensure transparency and trust. Beyond property transactions, the platform stands out through its unique maintenance and lifestyle support services. Users can request tiffin/meal services, shifting and relocation support, and quick assistance for home-related issues such as plumbing, electrical, or cleaning needs.

Keywords: End-to-end property management, 24/7 customer support, Subscription-based service packages, All-driven recommendation, Secure in-app payment system, Community and review system.

I. INTRODUCTION

In today's lifestyle managing housing needs has become a complex task that goes beyond simply finding a place to live. While there are numerous applications that allow users to rent, buy, or sell properties, most of them are limited to real estate transactions and do not address the daily challenges of maintaining a home. This often forces individuals to depend on multiple platforms for different needs such as food services, shifting support, and household repairs, which can be both time-consuming and inconvenient. To overcome these challenges, the proposed Room Rental and Home Solutions application has been developed as a comprehensive platform that brings together all aspects of housing into a single ecosystem.

The application enables users to rent rooms, purchase new homes, or sell their properties in a seamless and transparent manner, while also offering a wide range of maintenance and lifestyle services. From meal and tiffin delivery to shifting assistance and quick solutions for household issues like plumbing, electrical repairs, or cleaning, the platform is designed to provide complete convenience to its users. What makes it unique is the integration of real estate services with everyday home solutions, creating a one-stop platform that simplifies both living and housing management.

Beyond basic transactions, the application focuses on building trust and reliability through verified listings, secure payment systems, and service quality checks. It also incorporates modern features such as AI-driven recommendations, digital agreements, automated reminders, and community-based reviews, ensuring that users enjoy a smooth and trustworthy experience. By combining property management with lifestyle and household services, the Room Rental and Home Solutions application emerges as a holistic solution that not only helps people find a home but also supports them in making their living experience easier, more comfortable, and more reliable.

Objective

The main objective of the Room Rental and Home Solutions application is to create a comprehensive, user-friendly, and reliable platform that not only simplifies the process of renting, buying, and selling homes but also addresses the everyday maintenance and lifestyle needs of residents. The application aims to provide a one-stop solution where users can manage property transactions alongside accessing essential services such as meal delivery, shifting support, and household repair assistance. By integrating real estate with lifestyle services, the objective is to enhance convenience, trust, and comfort, ensuring that users save time, reduce stress, and enjoy a seamless living experience within a single platform.

II. LITERATURE SURVEY

Perez, Tah & Mosavi (2019) Deep Learning for Detecting Building Defects Using Convolutional Neural Networks. Using CNNs to detect structural building defects automatically.

Serradilla, Zugasti & Zurutuza (2020) Deep learning models for predictive maintenance: a survey, comparison, challenges and prospect. Review of deep learning architectures in predictive maintenance contexts.

Saputra, Prabowo, Ramadhan & Madyatmadja (2023) Trends of Digital Transformation in the Property Management Industry: A Systematic Literature Review. Post-COVID digital transformation and tech adoption trends in property management. Goel, Krupa (2023) Applications of GenAI to the Rentals Industry. Use of generative AI for predictive maintenance in property rentals, cited examples like Buildium, UpKeep.

Financial Express (2023) Real estate's next digital frontier: AI-driven predictive maintenance. Adoption of AI and IoT in predictive maintenance and asset management in real estate. Rent Magazine Contributor (2024) AI-Powered Predictive Maintenance Revolutionizes Property Management.

III. METHODOLOGY

The development of the Room Rental and Home Solutions application follows a structured methodology that combines software engineering principles with user-centered design. The aim is to create a robust, scalable, and easy-to-use platform that integrates property solutions with household and lifestyle services.

1. Requirement Analysis

The first phase involves identifying the needs of the target users such as tenants, buyers, sellers, students, working professionals, and families. Surveys, interviews, and market studies are conducted to understand pain points in existing applications, such as lack of integrated services, trust issues with listings, and inconvenience of switching between

multiple apps. Based on these findings, functional and non-functional requirements are documented.

2. System Design

The system architecture is designed to ensure modularity and scalability. The application is divided into three main modules:

- **Property Management Module** – for renting, buying, and selling homes with advanced filters and verified listings.
- **Home Services Module** – for tiffin services, shifting support, and household maintenance (plumbing, electrical, cleaning, carpentry).
- **User & Payment Module** – for secure login, profile management, digital agreements, reviews, and payment transactions.

A relational database is planned for managing property listings, service requests, and user profiles, while APIs are integrated for third-party services such as maps, payment gateways, and notifications.

3. Technology Stack Selection

- **Frontend:** React Native / Flutter for cross-platform mobile development.
- **Backend:** Node.js or Django with RESTful APIs for managing property and service data.
- **Database:** MySQL or MongoDB for secure and efficient data storage.
- **AI Integration:** Recommendation system for property and service suggestions using collaborative filtering and content-based models.
- **Cloud Hosting:** AWS / Google Cloud for scalability and uptime.

4. Implementation

Agile methodology is adopted, dividing development into iterative sprints. Each sprint delivers a working module—for example, property listing in Sprint 1, tiffin services in Sprint 2, and household repairs in Sprint 3. Continuous integration and version control (Git/GitHub) ensure smooth collaboration and code management.

5. Testing

Both functional and non-functional testing are performed to ensure reliability.

- Unit Testing for individual modules.
- Integration Testing to verify smooth communication between modules.
- User Acceptance Testing (UAT) with a pilot group to collect feedback.
- Security Testing for safe transactions and data privacy.

6. Deployment

Once tested, the application is deployed on Android and iOS platforms via respective app stores. A web-based version may also be provided for broader accessibility. Deployment pipelines are automated for faster updates and bug fixes.

7. Maintenance & Updates

Post-deployment, regular monitoring and updates are carried out. Feedback loops from users help refine services, add new features (such as subscription models or 24/7 emergency requests), and improve performance. Predictive analytics are gradually integrated for proactive maintenance and better recommendations.

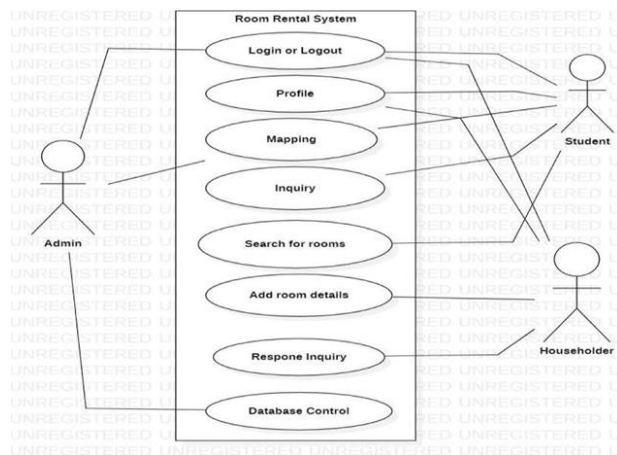


Figure 1: Workflow Diagram

IV. MODELING AND ANALYSIS

1. System Modeling

To understand the working of the application, different models are used to represent user interactions, data flow, and overall architecture.

These models help in visualizing how the system functions and ensure that every requirement is met.

• Use Case Model

The application has multiple stakeholders:

- **Users/Tenants/Buyers:** Search, rent, buy, sell properties, or request services.
- **Property Owners/Sellers:** Post properties for sale or rent, manage bookings.
- **Service Providers:** Handle tiffin services, shifting, and maintenance requests.
- **Admin:** Verifies property listings, manages services, ensures smooth transactions.

Example Use Cases:

- Register/Login to the system
- Search for rental properties
- Buy or sell a property
- Request a home service (tiffin, shifting, maintenance)
- Make secure payments
- Give feedback/review

Data Flow Diagram (DFD)

- **Level 0 (Context Diagram):** User interacts with the system to request properties or services, system processes the request, and sends results back.
- **Level 1:** Includes modules like User Authentication, Property Management, Service Management, Payment Gateway, Feedback System.

• Entity Relationship Diagram (ERD)

The main entities are:

- **User** (User_ID, Name, Contact, Role)
- **Property** (Property_ID, Owner_ID, Type, Price, Location)
- **Service** (Service_ID, Provider_ID, Category, Cost)
- **Transaction** (Transaction_ID, User_ID, Property/Service_ID, Status, Payment_Mode)
- **Feedback** (Feedback_ID, User_ID, Rating, Comments)

Relationships:

- One user can own multiple properties.
- One user can request multiple services.
- Each transaction is linked with either a property or a service.

2. System Analysis

The analysis phase evaluates the system requirements and performance considerations:

• Functional Requirements

- Users must be able to search and filter properties/services easily.
- Secure login and payment gateway.
- Property and service listing with proper verification.
- Notification and reminder system.

• Non-Functional Requirements

- **Performance:** Fast response time for searches and bookings.
- **Security:** End-to-end encryption for payments and user data.
- **Scalability:** Should support increasing number of users and listings.
- **Reliability:** 24/7 availability with minimum downtime.
- **Usability:** Simple, intuitive, and user-friendly interface.

• SWOT Analysis

- **Strengths:** All-in-one solution (rent, buy, sell + services).
- **Weaknesses:** Initial dependency on service providers' availability.
- **Opportunities:** Growing demand for digital property and home service solutions.
- **Threats:** Strong competition from existing apps like 99acres, MagicBricks, UrbanClap.

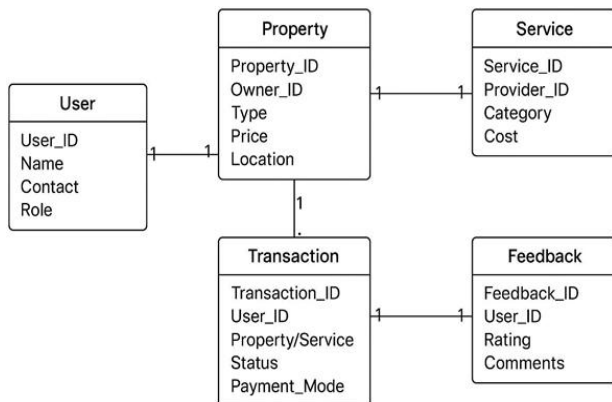


Figure 2: ER Diagram

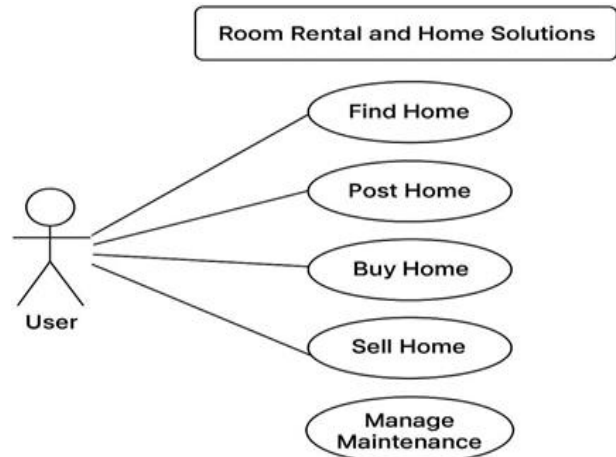


Figure 3: Case Diagram

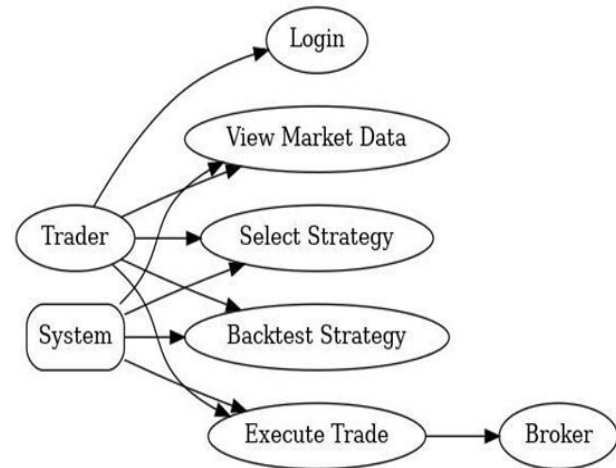


Figure 4: Sequence Diagram

V. RESULTS

The Room Rental and Home Solutions Application successfully provides a single platform for renting, buying, and selling properties along with home services like tiffin, shifting, and maintenance. The system ensures easy user interaction, secure transactions, and smooth database management. Its uniqueness lies in combining real estate solutions with daily home services, making it more practical and user-friendly compared to existing applications. Thus, the result of this project shows that the application is practical, user-friendly, and capable of offering end- to-end solutions for individuals searching for homes as well as managing their household needs efficiently.

VI. PROJECT SCREENSHORTS

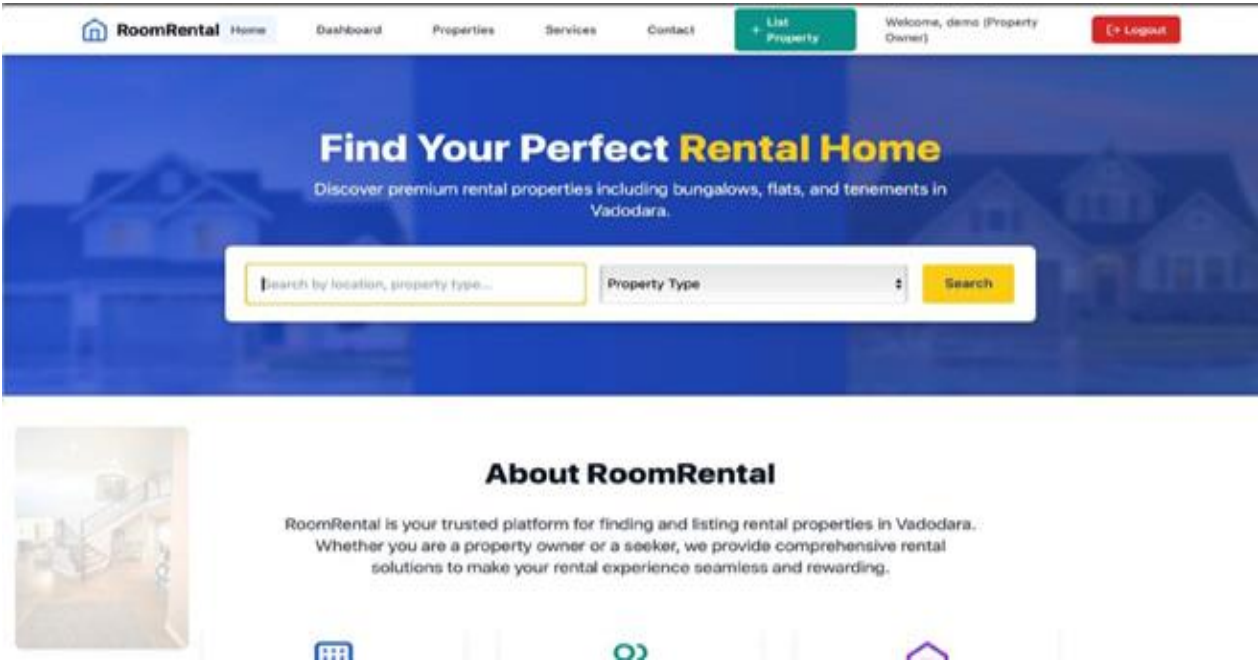


Image 1

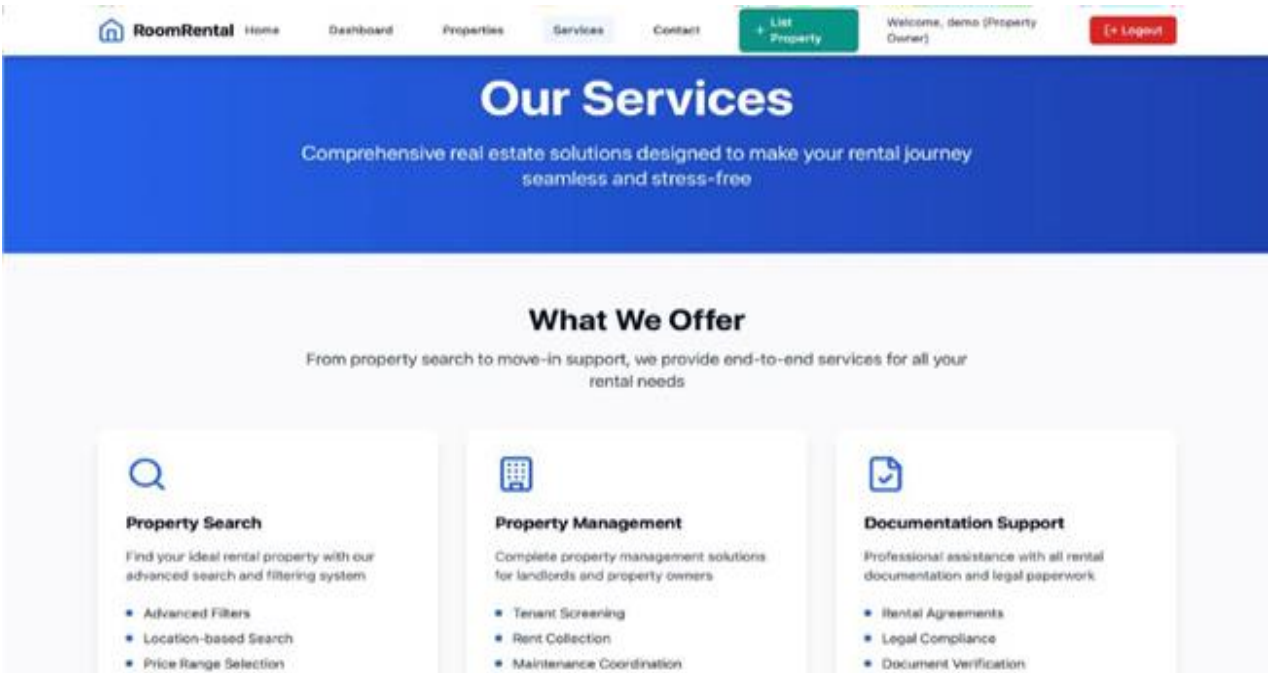


Image 2

The screenshot shows the 'Contact Us' page of the RoomRental website. The page has a blue header with the RoomRental logo and navigation links: Home, Dashboard, Properties, Services, Contact, List Property, and a Logout button. Below the header, a large blue banner reads 'Contact Us' and 'Have questions? We're here to help you find your perfect home or list your property'. The main content area is divided into two sections: 'Send us a Message' and 'Get in Touch'. The 'Send us a Message' section contains form fields for Full Name, Email Address, Phone Number, Subject, and a Message box. The 'Get in Touch' section displays contact information for Phone (+91 7667816204, +91 7654090218) and Email (info@renthome.com, support@renthome.com).

Image 3

The screenshot shows the 'Property Owner Dashboard' of the RoomRental website. The dashboard features a header with the RoomRental logo and navigation links: Home, Dashboard, Properties, Services, Contact, List Property, and a Logout button. Below the header, a blue button labeled 'Add New Property' is visible. The main content area displays a grid of property listings. Each listing includes a placeholder image, the title 'Test Property', and details such as 'Test Location', 'K 2 E 1 1000 sq ft', 'Rent: ₹10000', 'No rating', and 'Booking Status: Not Booked'. A small image of a modern house is shown at the bottom left of the dashboard.

Image 4

The screenshot shows the 'QR Code Payment' page of the RoomRental website. The page has a header with the RoomRental logo and navigation links: Home, Dashboard, Properties, Services, Contact, List Property, and a Logout button. Below the header, the page title is 'QR Code Payment'. The main content area includes a section titled 'Scan QR Code to Pay Security Deposit' with a QR code and the amount '₹210000'. Below the QR code, there is a section titled 'Upload Payment Screenshot' with a 'Choose File' button and the text 'no file selected'. At the bottom, there is a section titled 'Owner Information' with form fields for 'Owner Name', 'Owner Phone', and 'Owner Email'.

Image 5

VII. FUTURE WORKS

The Room Rental and Home Solutions application is designed to be a complete platform for all housing and home-related needs. In the future, it aims to offer a wider variety of property options, including shared accommodations, vacation homes, and commercial spaces. AI-based personalized recommendations will help users find properties and services suited to their preferences, while additional maintenance services like housekeeping, pest control, and interior decoration will enhance convenience. Features such as virtual property tours, smart scheduling, secure in-app payments, and community reviews will improve user experience and trust. Integration with smart home devices, eco-friendly options, and analytics for rental trends and property values will make the platform even more comprehensive. With these advancements, the app will stand out as a one-stop solution for renting, buying, selling, and managing homes, providing unmatched ease and efficiency for users.

VIII. CONCLUSION

The Room Rental and Home Solutions application provides a unique and comprehensive platform that goes beyond traditional property listing services. By combining renting, buying, and selling options with diverse maintenance services such as tiffin delivery, shifting assistance, and home issue resolution, the app addresses multiple needs of users in a single place. Its future enhancements, including AI-based recommendations, virtual tours, smart scheduling, in-app payments, and eco-friendly options, are aimed at making the platform even more user-friendly, efficient, and reliable. With its focus on convenience, personalization, and community-driven features, the application has the potential to revolutionize the way people manage their housing and home-related services, making it a truly one-stop solution for modern living.

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