

Smart Rental Management Website with Rent & Maintenance System

Mrs.Amisha, M.Anil Goud, K.Charan Teja and P.Shiva Krishna

Department of CSE(AI&ML), ACE Engineering College, Hyderabad, Telangana, India.

ABSTRACT

The **Smart Rental Management Website with Rent & Maintenance System** is a web-based application designed to simplify and automate rental management processes. Traditional rental systems rely on manual record-keeping and informal communication, which often lead to errors, delays, and lack of transparency. This system provides a centralized platform where landlords can manage properties, tenants, rent records, and maintenance requests efficiently, while tenants can view rent details, make payments, and raise maintenance complaints online. All data is stored securely in a database and updated in real time, ensuring accuracy and easy access. The system integrates key features such as automated rent tracking, digital payment management, and maintenance request handling, which improve communication between landlords and tenants. By reducing paperwork and manual effort, the application enhances operational efficiency and transparency. Overall, the proposed system offers a user-friendly, secure, and scalable solution suitable for small to medium-scale rental management.

Keywords: Smart Rental Management, Web-Based Application, Rent Tracking system, Landlord and Tenant Portal, Property Management System, User-Friendly Interface.

1. INTRODUCTION

Managing rental properties using traditional methods has become increasingly difficult due to the rise in the number of tenants, properties, and transactions. Manual systems such as notebooks and spreadsheets are not only time-consuming but also prone to errors and data inconsistencies. Communication between landlords and tenants is often unorganized, which leads to delays in rent collection and maintenance handling.

To address these challenges, there is a need for a digital platform that can automate rental operations and improve efficiency. The Smart Rental Management System provides a structured web-based solution that allows users to manage rental activities effectively.

The system enables landlords to store and manage property details, monitor rent payments, and handle maintenance requests, while tenants can easily access their rent information, track payments, and report issues. The use of modern web technologies ensures real-time updates, secure data storage, and improved system performance.

In addition, the system enhances transparency by allowing both landlords and tenants to access updated information at any time. This reduces misunderstandings and improves trust between users.

1.1 Background and Motivation

In many rental systems, landlords handle multiple properties and tenants manually, which leads to inefficiencies and errors. Tracking rent payments using traditional methods often results in missed entries, incorrect calculations, and delayed updates. Similarly, maintenance issues are not handled efficiently due to lack of proper communication channels.

The motivation behind this project is to develop a centralized and automated system that simplifies rental management. The system aims to reduce manual effort, improve data accuracy, and provide better communication between landlords and tenants.

By introducing automation and real-time updates, the system ensures better control over rental operations and improves overall efficiency.

1.2 Need for the Study

There is an increasing demand for systems that can manage rental operations efficiently and reduce dependency on manual processes. Existing methods lack proper integration, automation, and scalability, making them unsuitable for growing rental businesses.

A web-based rental management system provides a better alternative by offering centralized data storage, real-time updates, and easy accessibility. It also improves transparency and reduces operational complexity.

Such a system is essential for improving efficiency, reducing errors, and ensuring smooth rental management.

1.3 Objectives of the Study

The main objective of this project is to develop a system that automates rental management and improves efficiency.

Additional objectives include:

- Managing property and tenant information effectively
- Tracking rent payments and maintaining payment history
- Handling maintenance requests efficiently
- Providing real-time updates and notifications
- Ensuring secure data storage and access
- Improving communication between landlords and tenants

1.4 Problem Statement

Traditional rental management systems rely on manual methods such as notebooks, spreadsheets, and informal communication. These methods are time-consuming and prone to errors when managing multiple properties and tenants.

Rent tracking may lead to missed records and incorrect calculations, while tenants may not clearly know their payment status or due dates. Maintenance requests are also not properly tracked, causing delays and communication issues.

Due to the lack of a centralized system and real-time updates, managing rental activities becomes inefficient. Hence, an automated system is required to improve accuracy, efficiency, and communication.

1.5 Research gap paragraph

Most existing rental systems focus only on basic functionalities such as property listing or rent tracking. They do not provide a complete solution that integrates maintenance management and real-time updates.

Some systems are complex, expensive, or designed for large-scale use, making them unsuitable for small property owners. Additionally, many systems lack user-friendly interfaces and efficient communication features.

The proposed system addresses these limitations by providing a simple, integrated, and efficient platform that combines all essential rental management features in one place.

1.6 Proposed System

The proposed system is a Smart Rental Management Website that provides a centralized and automated platform for rental management. It allows landlords to manage properties, tenants, and rent records efficiently.

Tenants can view rent details, track payments, and submit maintenance requests online. All data is stored securely in a database and updated in real time.

The system improves communication, reduces manual work, and ensures better transparency, making rental management more efficient and reliable.

2. Materials and Methods

The Smart Rental Management System is developed as a web-based application that integrates multiple functionalities into a single platform. It follows a structured approach where user inputs are processed, validated, and stored in a centralized database.

The system uses modern technologies such as HTML, CSS, and JavaScript for the frontend, Node.js for backend processing, and MongoDB for database management. These technologies ensure scalability, flexibility, and efficient data handling.

The design focuses on providing a user-friendly interface and smooth workflow for both landlords and tenants.

2.1 System Overview

The system operates based on two main user roles: landlord and tenant.

In the landlord flow, users can add properties, manage tenant details, monitor rent payments, and handle maintenance requests. In the tenant flow, users can view rent details, make payments, and submit maintenance complaints.

Both roles interact with the same system through a web interface, and all actions are processed through the backend and stored in the database.

2.2 Data Input

The system accepts various types of input data through user interaction.

Landlords provide property details, tenant information, and rent values, while tenants provide inputs such as payment details and maintenance requests. All inputs are collected through web forms and validated before processing.

This ensures that only correct and structured data is stored in the system.

2.3 Data Validation and Processing

Before storing or updating any data, the system performs validation and processing steps to ensure accuracy and consistency. User inputs such as rent payments, property details, and maintenance requests are checked for correctness and completeness. Invalid or incomplete data is rejected, while valid data is processed and stored in the database. This helps maintain reliable system performance and prevents errors.

2.4 Data Organization and Storage

After validation, the system organizes data into structured formats and stores it in the database. Information such as user details, property records, rent transactions, and maintenance requests are categorized properly. This structured storage helps in easy retrieval, efficient data management, and quick access to required information.

2.5 Data Handling and System Logic

The system applies backend logic to handle different operations such as rent calculation, payment updates, and maintenance request tracking. It ensures that all operations follow defined rules and workflows. This improves system efficiency and ensures correct functioning of all modules.

2.6 Status Tracking and Updates

The system continuously tracks the status of rent payments and maintenance requests. For example, rent status is updated as paid or pending, and maintenance requests are updated as pending, in progress, or completed. These updates are reflected in real time, allowing users to access the latest information.

2.7 Integrated Processing Approach

To improve system reliability, an integrated approach is used where multiple operations such as rent tracking, maintenance handling, and user management work together. This ensures that the system provides consistent and accurate results while maintaining smooth workflow across all modules.

2.8 User Interaction Module

The system provides an interface where users can interact easily by entering data such as rent payments or maintenance requests. The interface is designed to be simple and user-friendly, ensuring that users can perform operations without difficulty.

2.9 System Workflow

The workflow begins when the user logs into the system. Based on the user role, different actions are performed such as managing properties, paying rent, or submitting maintenance requests. The system processes the input, updates the database, and displays the results to the user.

2.10 System Modules

The proposed system is divided into the following modules:

User Authentication Module, Property Management Module, Rent Management Module, Maintenance Management Module, and Notification Module. Each module performs a specific function, and together they ensure efficient rental management.

Methodology Diagram:

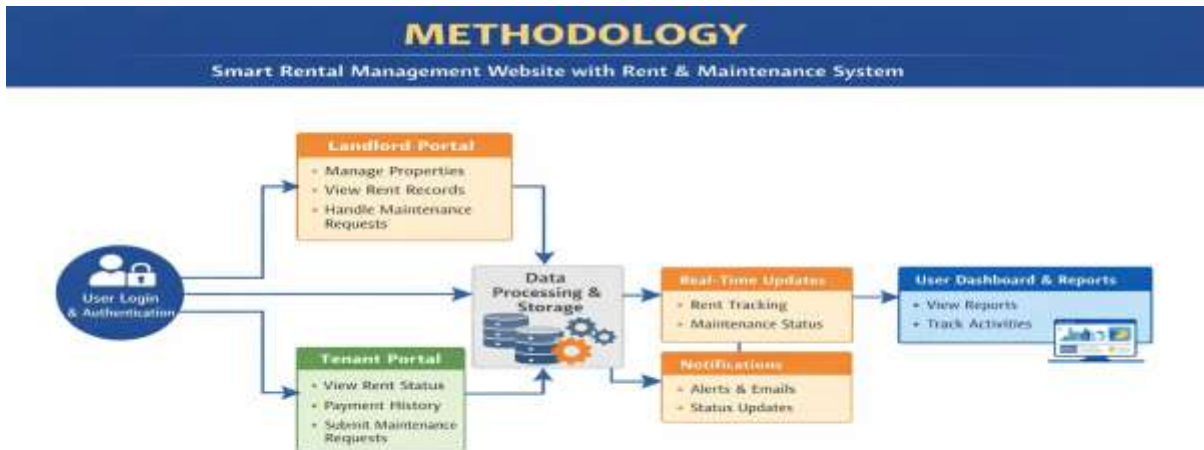


Figure 1: METHODOLOGY Diagram

Usecase Diagram

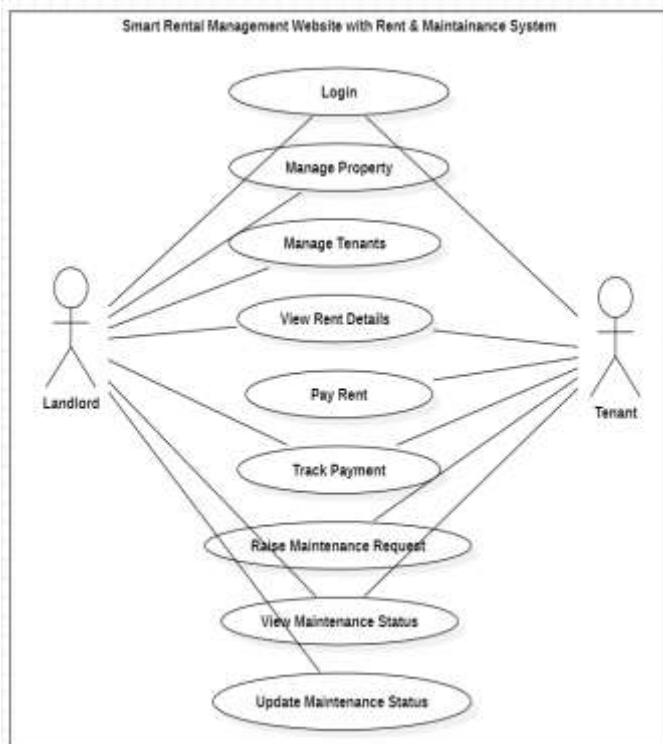


Figure 2: USECASE Diagram

3. Results and Discussion

The proposed Smart Rental Management System successfully performs key operations such as property management, tenant handling, rent tracking, and maintenance request management. After processing user inputs, the system updates the database in real time and displays results through a user-friendly dashboard. This makes it easier for landlords to manage properties and for tenants to track rent and raise maintenance requests.

The system was tested using different scenarios such as adding properties, making rent payments, and submitting maintenance requests. The outputs clearly show updated rent status, payment history, and maintenance request progress. In one representative case, the system successfully recorded rent payment and updated the status to “Paid,” while also notifying the landlord. Similarly, maintenance requests were tracked with statuses such as “Pending,” “In Progress,” and “Completed,” ensuring proper issue management.

To further evaluate the effectiveness of the system, a comparison with traditional manual methods is presented in Figure 3.

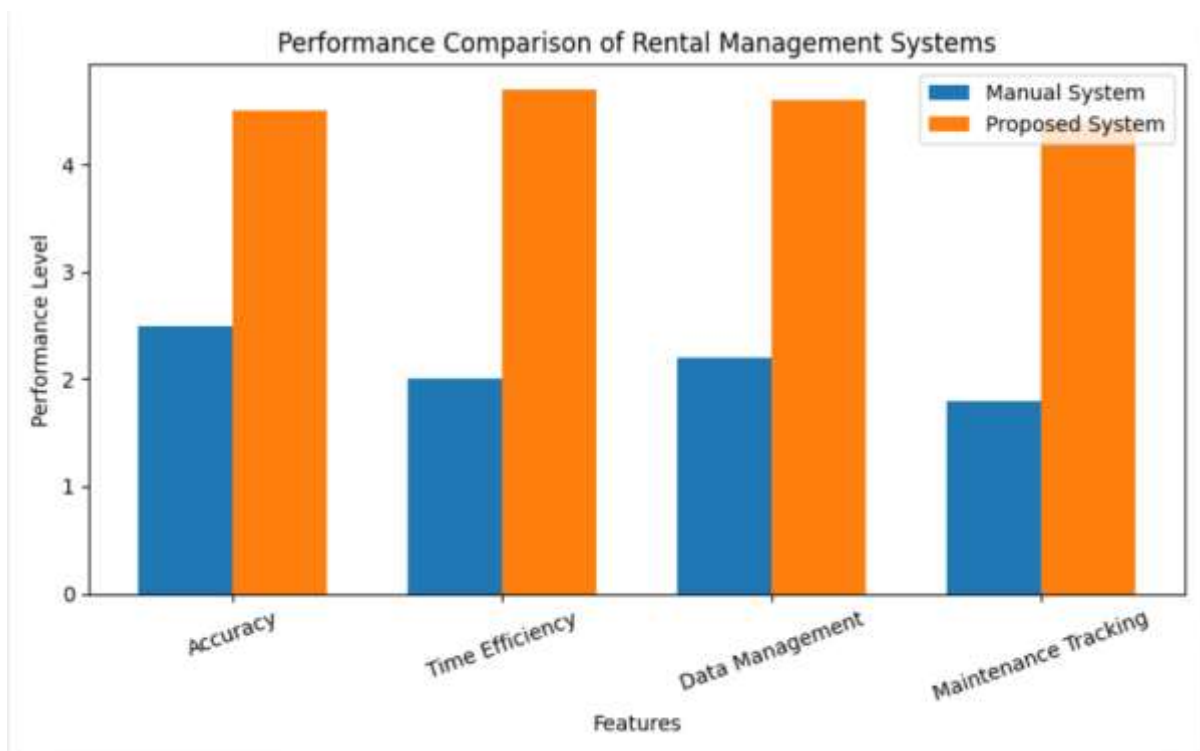


Figure 3: Performance Comparison of Rental Management System

The system provides clear outputs such as rent status updates, maintenance tracking, and user dashboards. This improves usability and allows users to easily understand the system.

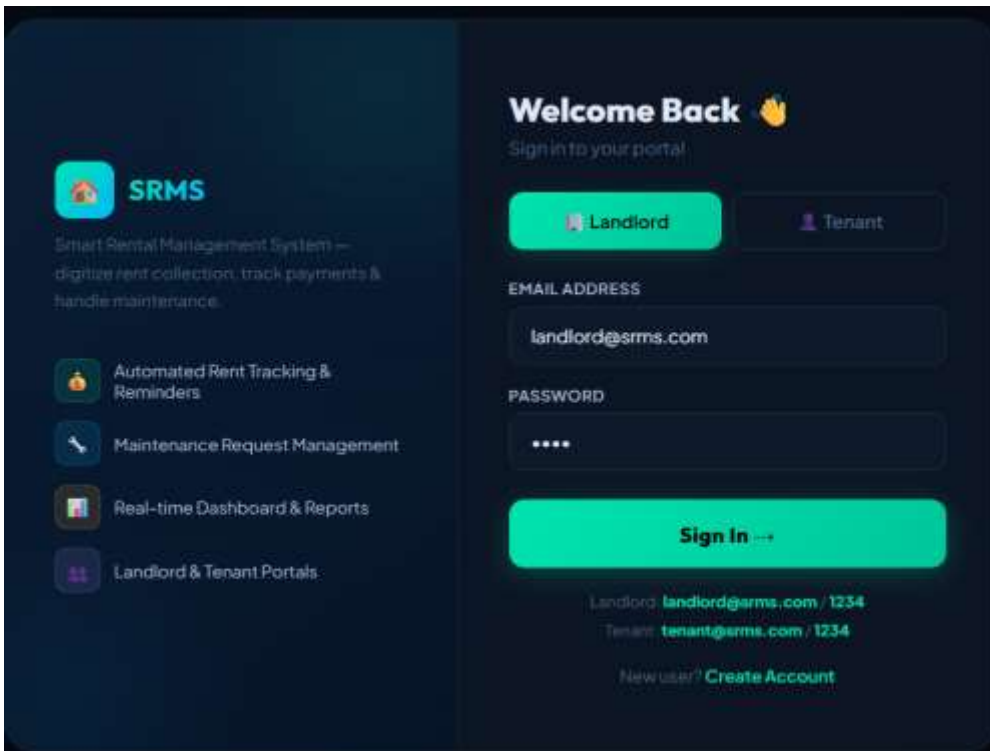


Figure 4: Login Page

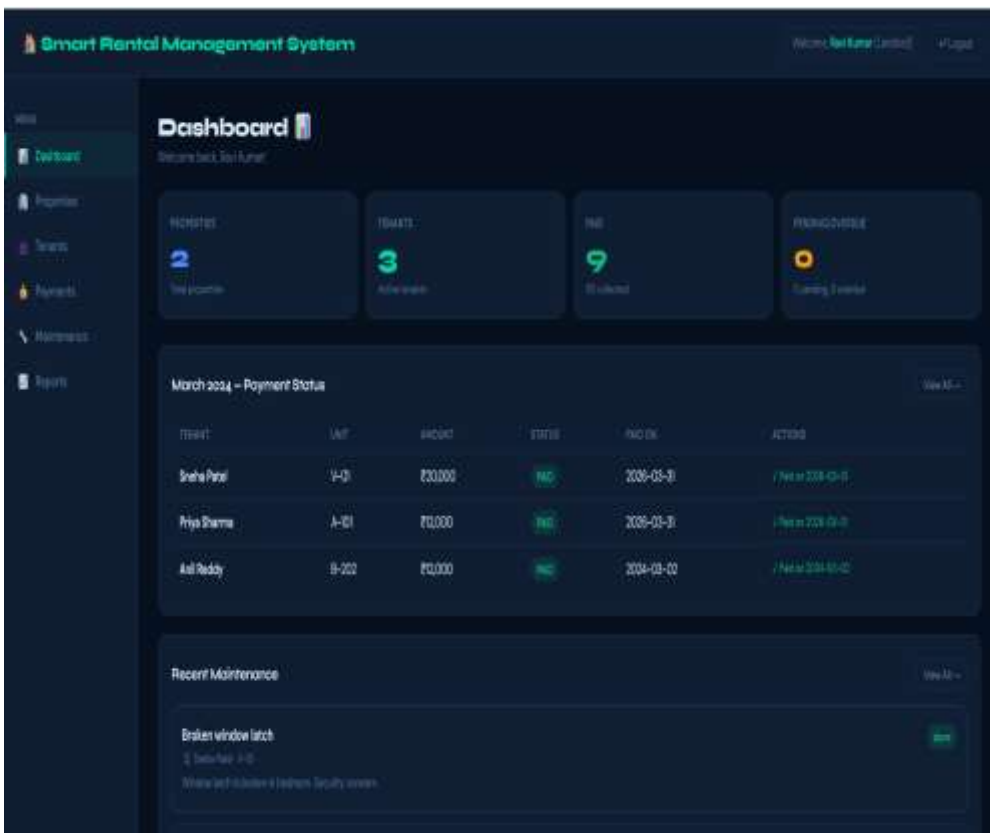


Figure 4: Dashboard Page

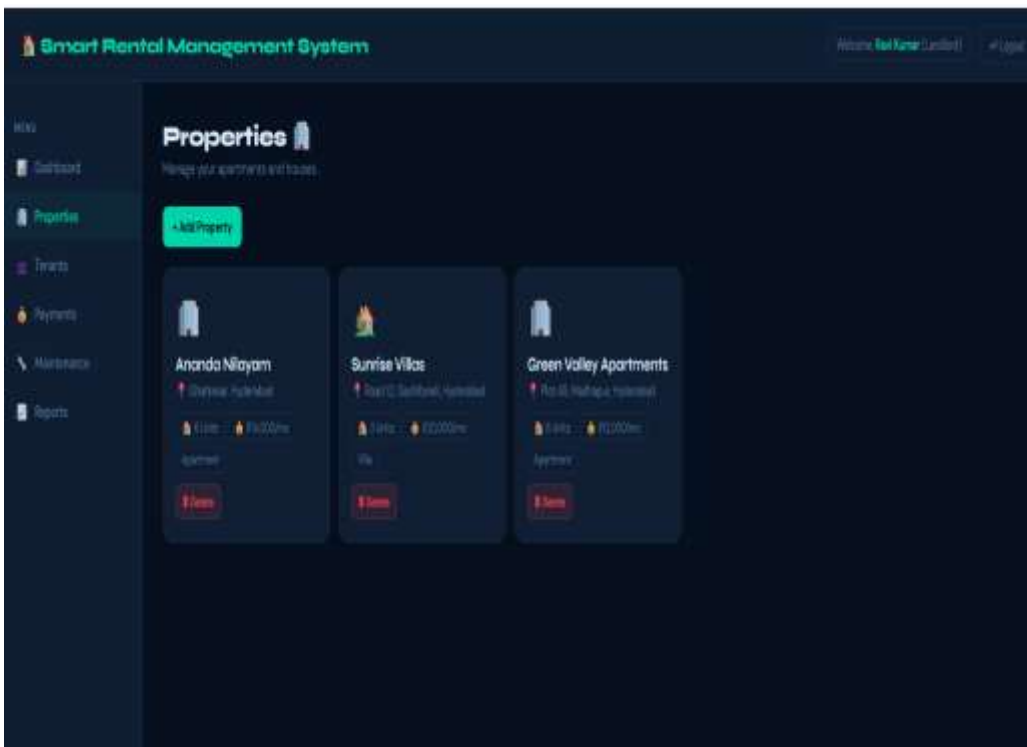


Figure 5: Property Management Page

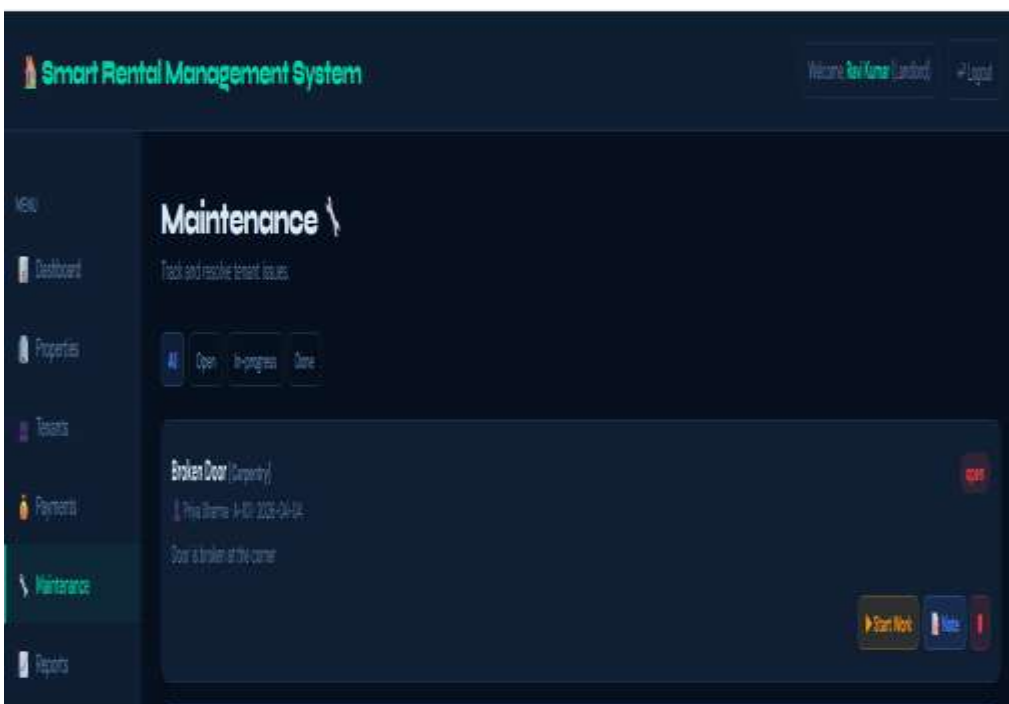


Figure 6: Maintenance Page

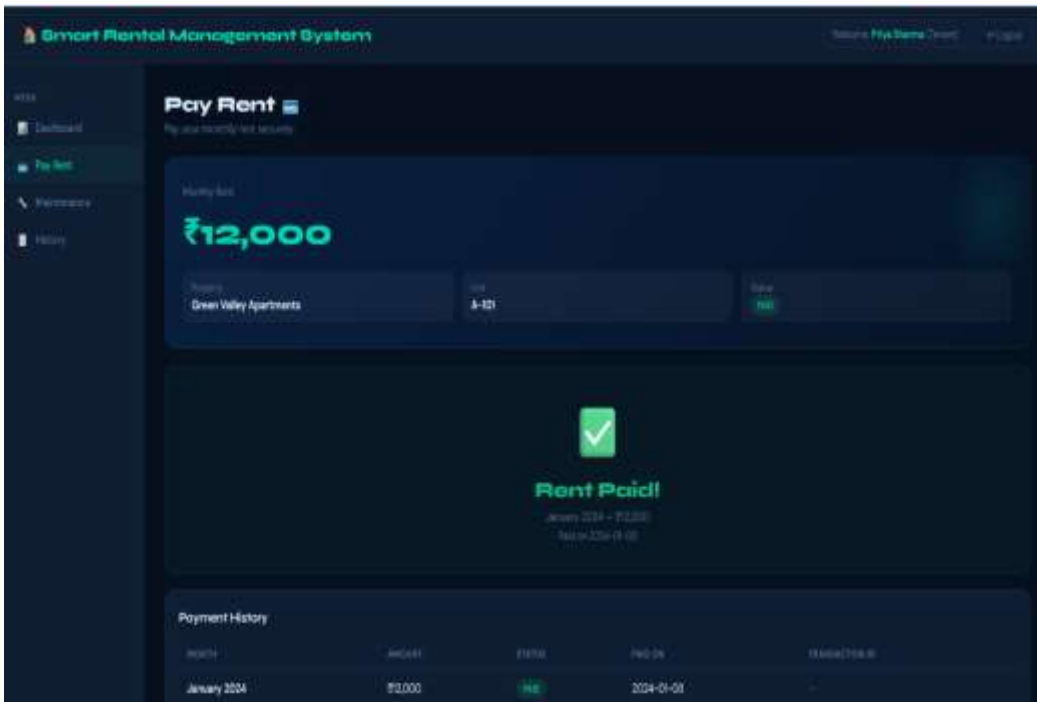


Figure 7: Rent Payment Page

++To better understand existing approaches, a comparative analysis of recent research works is presented in Table 1.

Table 1: Comparative Analysis of Related Work

| Year | Authors | Technique Used | Key Contribution | Limitations |
|------|-----------------|---------------------------------------|---|--|
| 2025 | Sanap et al. | Web Technologies, User-Centric Design | Developed a rental management system focusing on user-friendly design and improved usability. | Limited scalability for large datasets. |
| 2025 | Yadhav et al. | Web-Based System, Database Management | Designed a system to manage house rentals with tenant and property tracking features. | Lacks advanced maintenance handling features. |
| 2025 | Mutua & Wanjiku | Web Application, Case Study Approach | Introduced an intelligent platform for ranking resumes and optimizing job applications. | Limited transparency in how ranking decisions are generated. |

| | | | | |
|------|------------------|-------------------------------------|--|---|
| 2024 | Ali & Deshmukh | Graphical Models, Web-Based System | Introduced a property management system using graphical models for better data representation. | High complexity and requires advanced implementation. |
| 2023 | Patel & Sharma | Web Application, Service Management | Focused on improving property management and tenant services through structured systems. | Limited integration of real-time updates. |
| 2022 | Joseph & Rao | Basic Rental System, Database | Developed a basic property rental management system for handling tenant and rent records. | Limited features and no automation support. |
| 2021 | Misyam & Selamat | Basic Web System | Developed a simple house rental system focusing on basic property and tenant management. | Limited modern features and scalability. |

The above comparison shows that earlier rental management systems mainly relied on basic methods such as manual record-keeping and simple web-based solutions. These systems provided limited functionality and lacked real-time updates, making them inefficient for handling multiple properties and tenants. Recent approaches have introduced web-based platforms with database integration and improved user interfaces to enhance system performance and usability.

However, many of these systems still lack important features such as proper maintenance tracking, automated notifications, and real-time data updates. Some systems are also limited in scalability and do not provide complete integration of all rental management functionalities in a single platform.

The proposed system addresses these limitations by providing a centralized web-based solution that integrates property management, rent tracking, and maintenance handling. It offers real-time updates, improved data accuracy, and better communication between landlords and tenants, making it a more efficient and practical solution for modern rental management.

4. Conclusion

The Smart Rental Management System provides an effective solution to the challenges faced in traditional rental management. It simplifies rental operations by automating processes such as rent tracking and maintenance handling.

The system improves transparency, reduces manual workload, and enhances communication between landlords and tenants. It also ensures secure data storage and real-time updates.

Overall, the system is efficient, user-friendly, and scalable, making it suitable for modern rental management needs.

5. Future Scope

The system can be further improved by adding advanced features such as online payment integration, mobile application support, and automated notifications.

Future enhancements may include:

- Integration with payment gateways
- Advanced reporting and analytics
- Role-based access control
- Cloud-based deployment for scalability
- AI-based predictions for rent trends

These improvements will make the system more powerful, flexible, and suitable for large-scale applications.

6. Acknowledgements

The authors would like to express their sincere gratitude to the faculty members and the institution for their continuous guidance, support, and encouragement throughout the development of this project. Their valuable suggestions and insights helped in successfully completing the Smart Rental Management System.

The authors also thank their peers and well-wishers for their support and cooperation during the project development process.

7. References

[1] Sanap, Ganesh, Dhruv Pandey, Ayush Khopatkar, Sagar Gaud, and Rohini Patil. 2025. "Enhancing House Rental Management System through User Centric Design and Technological Advancement." International Research Journal of Engineering and Technology (IRJET)2025–

URL- <https://www.irjet.net/archives/V12/i4/IRJET-V12I4239.pdf>

[2]Yadhav, Uttara, Sneha Savant, Mallappa Yaragatti, Prajeet Kumbar, and Nandeesh Ganiger. 2025."House Rental Management System." International Journal of Research Publication and Reviews IJRPR (2025) –

URL- <https://ijrpr.com/uploads/V6ISSUE12/IJRPR57524.pdf>

[3] Mutua, John, and Mary Wanjiku. 2025. Web-Based Rental Property Management System: Case Study. Nairobi: Strathmore University –

URL-<https://su-plus.strathmore.edu/bitstreams/fd113d40-d956-434b-9f06-1dcfd55ee6ac/download>

[4] Sharma, Priya, and Rahul Mehta. 2025. Online House Rental System App. International Journal of Novel Research and Development (IJNRD)–

URL-<https://ijnrd.org/papers/IJNRD2504120.pdf>

[5] Kumar, Ramesh, and Anjali Singh. 2025. "Property Renting System." International Journal for Research in Applied Science and Engineering Technology (IJRASET)–

URL-<https://www.ijraset.com/research-paper/property-renting-system>

[6] Saputra, Renata, Rudi Susanto, and Afu Pradana. 2025. "Implementation of Web-Based Room Management System for Boarding House Operations".–

URL-https://www.researchgate.net/publication/394609087_Implementation_of_Web-Based_Room_Management_System_for_Boarding_House_Operations

[7] Misyam, Mohd Rafiq, and Norhanim Selamat. "House Rental Management System." Applied Information Technology And Computer Science 2, no. 2 (2021)-

URL-<https://penerbit.uthm.edu.my/periodicals/index.php/aitcs/article/view/2488>

[8] Patel, Ankit, and Sneha Reddy. 2025. "Design & Implementation of Rental Management System." International Research Journal of Engineering (IRE Journals)–

URL- <https://www.irejournals.com/formatedpaper/1712726.pdf> [9] B KP, Chellamani GK. Retrieval-augmented generation for resume screening using sentence transformers. In: *Proceedings of the IEEE International Conference on Computing, Communication and Automation (ICCCA)*. IEEE; 2025.

[9] Khan, Ayesha, and Rohit Verma. 2024. "Web Platforms for Rental Property Management." International Journal of Management Research and Analysis (IJMRA)–

URL- <https://ijmra.in/v7i7/29.php>

[10] Sharma, Neha, and Vikram Patel. 2024. "Enhanced Rental Management Framework." International Journal of Management Research and Analysis (IJMRA)–

URL- <https://ijmra.in/v7i6/14.php>

[11] Ali, Sameer, and Priya Deshmukh. 2024. "Reception of Realities on Property Valuation Reasoning – Improvements in Graphical Model (RVRGM): Basis for a Web-Based Real Estate Property Management System." International Journal of Real Estate and Property Management Studies. –

URL-

https://www.researchgate.net/publication/381564160_Perceptions_of_Realtors_on_Property_Information_Processing_Basis_for_WebBased_Real_Estate_Property_Management_System

[12] Gupta, Rohan, and Sneha Kulkarni. 2024. "Online House Rental Management System." International Journal of Scientific Research in Engineering and Management (IJSREM)–

URL- <https://ijsrem.com/download/online-house-rental-management-system/>

[13] Patel, Meera, and Arjun Sharma. 2023. "Streamlining Property Management and Tenant Services." International Journal of Innovative Research in Engineering and Technology (IJIRSET)–

URL- https://www.ijirset.com/upload/2023/may/272_House_NC.pdf

[14] Singh, Arjun, and Priya Nair. 2023. "A Review on Web-Based Rental Management Systems." International Journal of Innovative Research in Technology (IJIRT).–

URL- https://ijirt.org/publishedpaper/IJIRT185673_PAPER.pdf

[15] Joseph, Mark, and Anita Rao. 2022. "Property Rental Management System." ResearchGate.

URL-https://www.researchgate.net/publication/365875447_Property_Rental_Management_System