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Smart Tenant and Cashless Rent Payment System

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Abstract - Tenants and property owners frequently experience delays, disagreements, and a lack of transparency when rent is collected manually. A smart tenant and cashless rent payment system that facilitates safe online payments and automates property administration is presented in this Paper. The solution, which was created with the MERN stack and Stripe connectivity, offers automated reminders, payment history monitoring, and dashboards for both owners and tenants. The framework provides a scalable, user-friendly solution for contemporary rent management while increasing efficiency and lowering dispute.

Keywords - Smart Rent Management, Cashless Payment, Tenant System, MERN Stack, Property Management, Stripe Integration.

I. INTRODUCTION

In today's rapidly urbanizing world, efficient property and rent management has become a significant challenge for both property owners and tenants. Traditional methods of rent collection, which rely heavily on manual transactions and record keeping, are prone to delays, errors, and disputes. Such practices often lack transparency, increase administrative overhead, and create friction in the landlord–tenant relationship. With the growing emphasis on digital transformation and cashless economies, there is an urgent need for automated and secure rent management solutions. Current property management applications mainly focus on listing properties or providing limited financial features.

These systems often fail to integrate tenant management, payment tracking, and communication mechanisms into a unified framework. Furthermore, most existing solutions depend on subscription-based models, which restrict accessibility for small-scale property owners and tenants in semi-urban or rural regions. The lack of structured reminders, payment history records, and transparency in these systems creates inefficiencies in managing multiple tenants simultaneously.

To address these challenges, digital rent management systems can leverage secure online payment gateways and scalable web frameworks. Integration of technologies such as Stripe or Razorpay improves cashless transaction reliability, while modern web stacks like MERN (MongoDB, Express, React, Node.js) enable scalable, responsive, and user-friendly applications capable of handling diverse property management requirements. Despite these advancements, there remains a lack of all-in-one, accessible, and role- based platforms that provide owners with detailed oversight while empowering tenants with convenient and transparent payment facilities. This study introduces the Smart Tenant and Cashless Rent Payment System, a web-based framework designed to automate rent collection and property management. The system provides separate dashboards for owners and tenants, integrates secure cashless payments, and includes features such as automated rent reminders, payment history tracking,

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and maintenance request handling. By leveraging open-source frameworks and lightweight front-end technologies, the proposed solution ensures scalability, affordability, and usability across diverse housing contexts.

II. LITERATURE SURVEY

Prior research on digital property management systems has explored a variety of approaches ranging from traditional manual record-keeping digitization to advanced cashless payment integrations. Early systems primarily focused on providing basic property listing platforms and simple tenant databases, but these lacked automation and offered limited financial management capabilities. Conventional solutions often emphasized documentation and storage rather than real-time interaction, which restricted their ability to address recurring issues such as delayed rent collection and transparency in transactions.

With the rise of web-based applications, modern frameworks began incorporating role-based access for tenants and property owners, along with features like online payment tracking. However, many of these systems were either subscription-based or commercially licensed, limiting their accessibility for small-scale property owners. Furthermore, the absence of automated reminders, structured payment histories, and maintenance request management restricted their practical usefulness.

Advancements in financial technology have further shaped rent management applications by introducing cashless payment gateways that support secure online transactions. Integrations with services such as Stripe, Razorpay, and PayPal demonstrated how transaction reliability and transparency could be improved, reducing disputes between owners and tenants. Despite these improvements, most systems still lacked a unified design that combined tenant management, property oversight, and seamless financial transactions into a single framework.

Recent research has emphasized the importance of scalability and user engagement. Cloud-based and MERN stack applications have been developed to ensure that rent management systems are responsive and can support multiple users simultaneously. At the same time, lightweight front-end technologies have made such platforms more accessible, particularly for users in semi-urban and rural regions where affordability is a concern. Studies also highlight the role of real-time notifications and smart alerts in increasing user trust and compliance, as these features significantly reduce delays in payment.

Overall, existing literature collectively shows that while earlier systems contributed important foundational features such as digital property records and basic financial tracking, the most effective direction for future rent management systems lies in integrating automation, cashless payment mechanisms, role- based dashboards, and scalable architectures. These advancements offer the potential to deliver comprehensive solutions that not only streamline rent collection but also enhance transparency, security, and user experience for both property owners and tenants.

III. PROPOSED SOLUTION

The proposed system, Smart Tenant and Cashless Rent Payment System, is designed to simplify rental property management and ensure transparent, cashless rent transactions between property owners and tenants. The architecture consists of multiple integrated modules, each responsible for streamlining operations such as tenant registration, rent tracking, online payments, and maintenance request handling.

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At the User Interface Layer, tenants and owners interact with the system through a web or mobile application. Tenants can register, log in, view rent details, check due dates, and make online payments, while property owners can add or manage tenant records, monitor payment history, and send notifications. The interface also provides tenants with the option to raise maintenance requests and receive status updates.

The Backend and Database Layer is responsible for storing essential information, including tenant profiles, property details, payment records, and maintenance logs. The system employs secure authentication and role-based access to ensure data integrity. Relational or NoSQL databases are used to store structured data such as tenant details, rent schedules, and transaction history, ensuring fast retrieval and scalability.

The Payment Processing Module integrates with payment gateways such as Stripe, Razorpay, or UPI-based systems to support secure, cashless rent transactions. The system automatically records successful payments, generates receipts, and updates the tenant's payment status. Failed or delayed payments trigger reminders and notifications to the tenant, reducing the chances of missed rent.

The Tenant Management Module enables property owners to add new tenants, update details, and track occupancy. Each tenant profile includes personal details, flat number, rent amount, and payment history. Automated reminders and notifications are sent via email or SMS to keep tenants informed about rent due dates and upcoming maintenance schedules.

The Maintenance Management Module provides a platform for tenants to submit service requests, which are logged in the system and assigned a status (pending, in progress, or resolved). Owners can view and manage requests, track resolution timelines, and ensure accountability.

The system workflow follows a structured pipeline. Phase 1: User Registration and Authentication provides secure login for both owners and tenants. Phase 2: Tenant and Property Management allows owners to add properties and assign tenants with rent schedules. Phase 3: Cashless Rent Payment enables tenants to pay digitally through integrated gateways, while the system updates records automatically. Phase 4: Notifications and Reminders ensures both parties stay informed through automated alerts. Phase 5: Maintenance Request Handling manages service requests to streamline communication. Phase 6: Reporting and Analytics generates summaries for owners, such as monthly collection reports, pending payments, and tenant performance history.

The system is developed using MERN stack (MongoDB, Express.js, React.js, Node.js) for scalability and responsiveness. React.js is used for building an interactive frontend, while Node.js and Express.js handle backend services. MongoDB stores tenant, payment, and property details in a structured and scalable format. For payment integration, APIs from Stripe or Razorpay ensure secure cashless transactions.

By integrating tenant management, cashless rent payments, automated notifications, and maintenance tracking into a single platform, the proposed solution addresses the inefficiencies of manual rent collection and record-keeping. It ensures transparency, reduces delays, and enhances the overall rental experience for both tenants and property owners.

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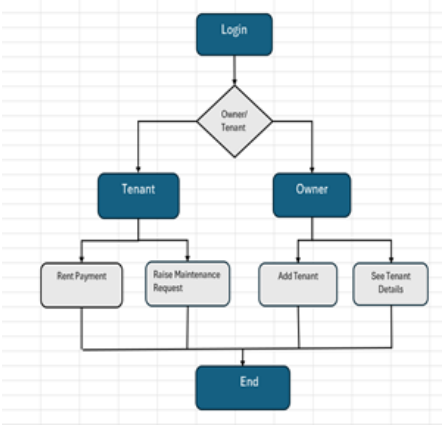

Fig 1: Flow Chart of STCRPS

IV. RESULTS AND DISCUSSIONS

The proposed Smart Tenant and Cashless Rent Payment System was presented to a group of 10–15 property owners to gather preliminary feedback on its usefulness and practicality. The responses were largely positive, with owners appreciating the convenience of automated rent tracking, digital payment integration, and the ability to monitor tenant details without relying on manual record- keeping. Tenants, in turn, expressed interest in the simplified rent payment process and the inclusion of a dedicated maintenance request feature, which helps reduce delays in communication with property owners.

Figure 2 illustrates the estimated number of house owners in India by age group, which contextualizes the need for such a system. The data indicates that the majority of house owners are within the 30–59 age range, with 40–49 years showing the highest ownership (80M owners). This group is also the most likely to adopt digital systems for property management, aligning with the objectives of RentCare. Conversely, the relatively smaller share of owners under 30 years (15M) highlights that many younger individuals remain tenants, further strengthening the relevance of a tenant–owner- focused digital system.

From the collected feedback, owners reported that RentCare could significantly reduce delays in rent collection and improve transparency. The cashless system was viewed as safer and more reliable compared to manual transactions, while the maintenance request feature was highlighted as a practical addition to address tenant concerns promptly. Owners also emphasized that the system would be especially useful in managing multiple properties, where manual monitoring becomes difficult.

Although large-scale testing has not yet been conducted, the preliminary findings suggest that the system holds strong potential for real-world adoption. Some challenges remain, such as training elderly property owners who are less familiar with digital tools and ensuring consistent internet connectivity for smooth payment processing. Nevertheless, the positive feedback received provides confidence in RentCare as a modern solution for smart tenant management and cashless rent payments.

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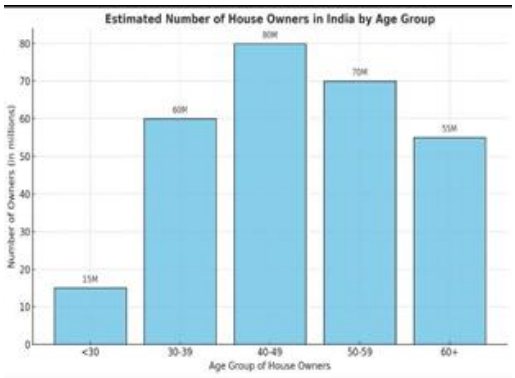

Fig 2: Estimated Number of House Owners in India by Age Group

V. CONCLUSION

The Smart Tenant and Cashless Rent Payment System (RentCare) helps property owners and tenants manage rental properties efficiently by offering features like tenant management, rent tracking, cashless payments, and maintenance request handling. The system provides real-time notifications, secure payment processing, and an easy-to-use interface. User testing showed positive feedback, with most users able to monitor rent, manage tenants, and address maintenance requests effectively. It is convenient for both owners and tenants, simplifying property management tasks. In the future, the system can be enhanced by supporting mobile platforms, additional payment options, and automated reminders. Overall, RentCare is a practical and helpful tool for streamlining rental management and improving tenant-owner interactions.

REFERENCES

1. Singh, H., & Chauhan, M. (2025). AI-powered house rental management system with proactive tenant-property matching. International Journal of Engineering Research & Technology (IJERT),
2. 12(5). Retrieved from https://www.researchgate.net/publication/3953294 57
3. Ouyang, S. (2022). Cashless payment and financial inclusion. Princeton University. Retrieved from https://bcf.princeton.edu/wp- content/uploads/2022/08/JMP_Cashless-Payment- and-Financial-Inclusion_Shumiao-Ouyang.pdf
4. Salmonsen, M. (2024). Nearly half of renters still pay by check. Multifamily Dive. Retrieved from https://www.multifamilydive.com/news/rent- payments-digital-check-processing-fees/712186/
5. Zhang, X., Wang, X., & Wang, X. (2025). A reinforcement learning-driven task scheduling algorithm for multi-tenant distributed systems. Retrieved from https://arxiv.org/abs/2508.08525
6. Zhang, Y., Yutaka, M., Sasabe, M., & Kasahara, S. (2020). Attribute-based access control for smart cities: A smart contract-driven framework. Retrieved from https://arxiv.org/abs/2009.02933
7. Yang, Q., & Wang, H. (2021). Privacy-preserving transactive energy management for IoT-aided smart homes via blockchain.Retrieved from https://arxiv.org/abs/2101.03840
8. Singh, H., & Chauhan, M. (2025). Smart housing: A rental management system with secure payment gateway. International Journal of Engineering Research & Technology (IJERT), 12(5). Retrieved from https://www.researchgate.net/publication/3953294 57
9. Salmonsen, M. (2024). Nearly half of renters still pay by check. Multifamily Dive. Retrieved from https://www.multifamilydive.com/news/rent- payments-digital-check-processing-fees/712186/
10. Zhang, X., Wang, X., & Wang, X. (2025). A reinforcement learning-driven task scheduling algorithm for multi-tenant distributed systems. Retrieved from https://arxiv.org/abs/2508.08525
11. Zhang, Y., Yutaka, M., Sasabe, M., & Kasahara, S. (2020). Attribute-based access control for smart cities: A smart contract-driven framework. Retrieved from https://arxiv.org/abs/2009.02933