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PG Location & Hostel Management Security

Prof. Satish C. Cholke[1], Gadakh Maheshwari Madhukar[2], Chine Aarti Mohan[3], Bhagat Sakshi Vijay[4], Dhanraj Aarti Sunil[5]

[1]*Assistant Prof, Department of Information Technology, Sir Visvesvaraya Institute of Technology, Nashik, Maharashtra, India*
[2, 3, 4, 5]*Department of Information Technology, Sir Visvesvaraya Institute of Technology, Nashik, Maharashtra, India*

Abstract: ***Hostel management has traditionally relied on manual processes for student check-ins, se- curity, and administrative functions. However, technological advancements offer improved efficiency, security, and transparency. This system presents an in-depth analysis of a QR code-based hostel safety system designed to enhance security and streamline management processes. The study explores the system's technical, financial, and resource feasibility, alongside its testing, cost estimation, applications, and future scope. Our findings suggest that automation significantly improves security measures and administrative efficiency. The Hostel Management System (HMS) is designed to streamline hostel operations by automat- ing critical functions such as student registration, room allocation, fee management, and record-keeping. This research paper presents an overview of the system, its implementation, and the impact on hostel administration efficiency. The Hostel Management System and PG Location project aims to develop a comprehensive web-based application for managing hostels and PGs (Paying Guest). Parents will receive a message that the girl has entered and exited the hostel safely, which will show security.***

Keywords: ***Hostel Management System, Automation, Student Registration, Room Allocation, Fee Management.***

I. INTRODUCTION

Safety and security in hostels, particularly those accommodating female students, remain a paramount concern. Traditional management systems predominantly depend on CCTV monitoring and manual check-ins, which are prone to errors and inefficiencies. The proposed QR code-based Hostel Management System introduces a streamlined, automated approach that ensures real-time tracking of resident movements while providing instant updates to hostel administrators and guardians.

The Girls' Hostel Safety System is designed to address some of the common safety chal- lenges faced by hostels today. Safety is a primary concern, and this system ensures that residents are monitored at all times. The system works by using QR codes that are scanned when residents check in and check out of the hostel. This simple but effective technology helps to keep track of their movements in real time. When a resident enters or exits the hostel, the system automatically sends notifications to the hostel management and, in some cases, to the parents or guardians. This feature ensures that both the management and family members are always aware of the resident's status, increasing overall safety. The use of QR codes makes the process quick, easy, and contactless, reducing human error and improving the efficiency of the check-in/check-out process. Additionally, the system includes security features such as alerts for unauthorized access or when a resident fails to check in or check out on time. This allows staff to act immediately in case of any irregularities, ensuring the safety of the residents. One of the key benefits of this system is that it simplifies hostel management. Staff no longer need to manually track entries and exits, which saves time and effort. The system's automation reduces the risk of errors and streamlines daily operations.

II. LITERATURE SURVEY

Sr. No.	Title	Author(s)	Year	Technology Used	Key Features	Findings / Conclusion
1	Smart Hostel Management System	R. Sharma et al.	2021	PHP, MySQL, HTML/CSS	Student registration, Room allocation, Fee management	Improves administrative efficiency and reduces paperwork

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2	Online PG Finder System	A. Kumar, N. Singh	2020	Android, Firebase	Location-based PG search, Owner-tenant chat, Ratings	Enhances user convenience with real-time data
3	Hostel Management System Using IoT	S. Patil et al.	2022	IoT, Python, Sensors	Automated attendance, Smart locks, Monitoring	Secure and automated hostel environment
4	Location-Based PG Accommodation App	P. Mehta, A. Shah	2023	React Native, Google Maps API	GPS-based PG search, Filters by price/facilities	Helps users quickly find PGs as per preferences
5	College Hostel Management Application	D. S. Raut et al.	2019	Java, SQLite	Student info, Complaint registration, Visitor log	Makes hostel record keeping digital and accessible
6	Smart PG Finder with Booking System	K. Rao, V. Jain	2021	Flutter, Firebase	Online booking, Reviews, Photo gallery	Reduces manual PG search effort
7	AI-based Hostel Allocation System	T. Desai, R. Chauhan	2022	Python, Machine Learning	Automated room allocation based on preferences	Fair and optimized allocation proces

III. PROPOSED SYSTEM

Our proposed system aims to solve the issues of the existing system by integrating digital access control with automated notifications. Instead of relying on manual check-ins, residents will use QR codes to check in and out, which instantly updates the system. Real-time notifications will be sent to both hostel staff and parents, ensuring everyone is informed about the resident's status. This system will help eliminate human error, speed up the check-in/check-out process, and enhance overall security. If a resident doesn't check in or check out on time, the system will alert the staff or parents. By combining automation with digital access, our system makes hostel management more efficient, secure, and transparent.

IV. OBJECTIVES

The primary objective of the Hostel Management System is to develop a comprehensive platform that automates hostel-related tasks and minimizes manual effort. The system aims to enhance accuracy in record-keeping, facilitate smooth room allocation, and enable efficient fee management. Additionally, it seeks to provide a user-friendly interface that allows administrators to manage hostel operations effectively and securely.

A. Safety and Security

1) Implement Access Control: Install secure access control mechanisms, including biometric authentication and card-based systems.

2) Install Surveillance Systems: Install CCTV cameras and monitoring systems to ensure resident safety.

3) Develop Emergency Response Plan: Develop a comprehensive emergency response plan to handle incidents and emergencies.

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V. SYSTEM ANALYSIS AND FEASIBILITY

A. Techanical Feasibility

The system utilizes a robust technological stack, including:

- Frontend : React.js for an interactive interface.
- Backend: Node.js for efficient server-side operations.
- Database: MySQL for managing student records, room allocations, and financial transactions.
- QR Code Integration: Generates unique identifiers for each resident, enabling seamless check-ins and check-outs.

VI. METHODOLOGY

The system follows an agile development methodology with the following key modules:

1) Student Registration Collects essential details such as contactin formation and guardian details.
2) Room Management Manages room allocation and availability.
3) Fee Management Tracks student payments and generates receipts.
4) QR-Code Based Check-In / Check−Out–Ensures real−time tracking of student movements.
5) Notification System Sends automatic alerts to administrators and parentsupon student movements.

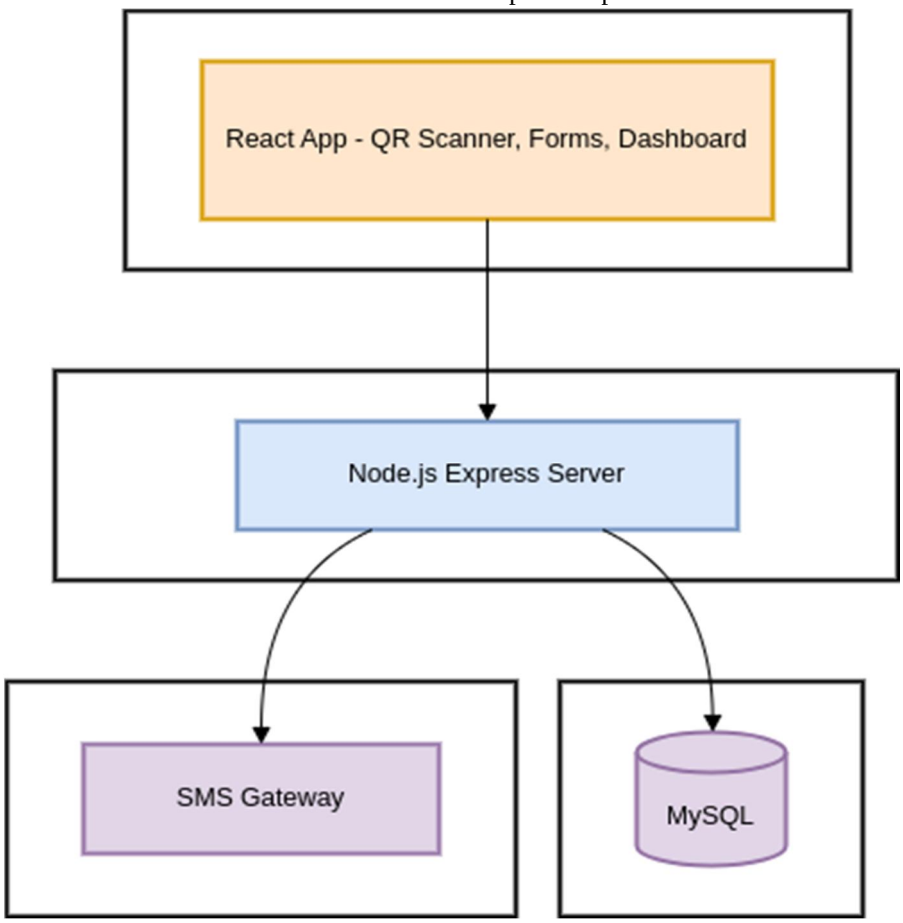


Fig :- System Architecture

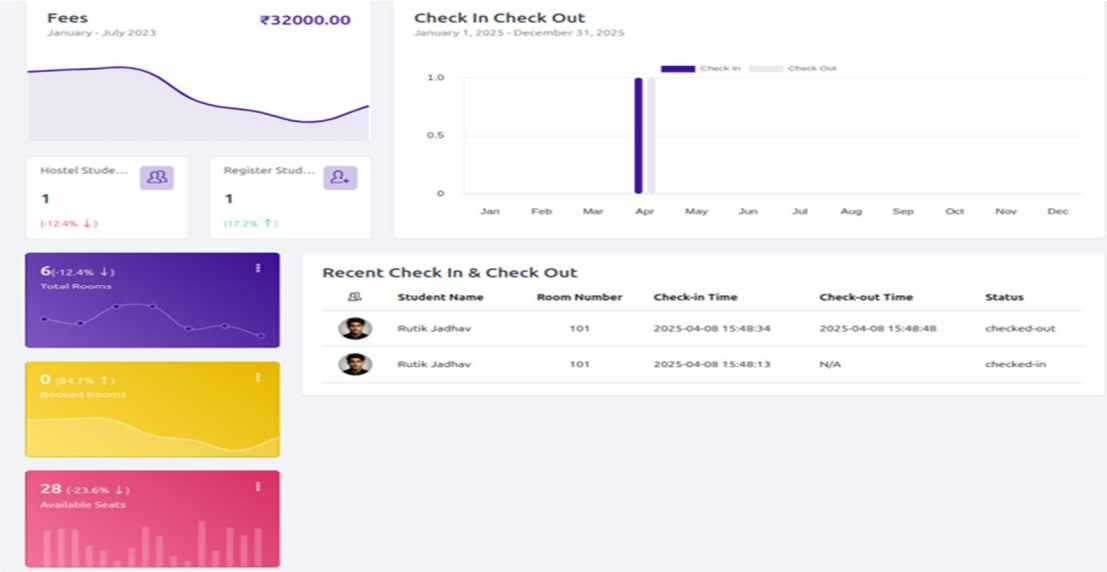
VII. RESULT AND DISCUSSION

Testing results confirmed that:

1) QR code scanning effectively recorded check-ins and check-outs.
2) System notifications were sent without delays
3) Data integrity was maintained across all modules.
4) The system handled multiple users without performance degradation.

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VIII. IMPLEMENTATION

The system's implementation involves setting up a web-based platform accessible to hostel administrators and students. The system is integrated with a secure database to maintain records and facilitate real-time data updates. User authentication is achieved using login credentials to ensure data security.

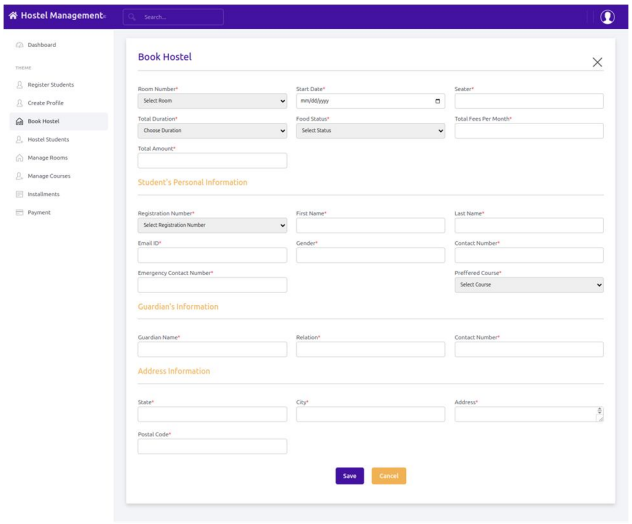


Figure 1: Dashboard

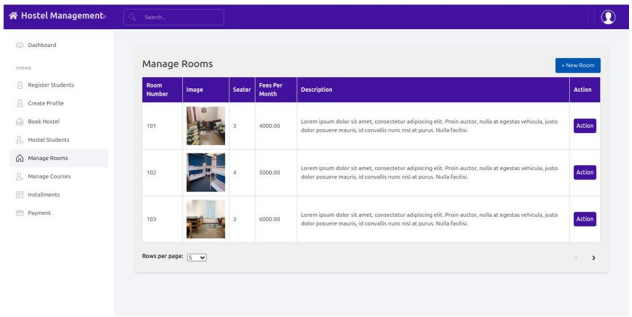


Figure 2: Details of Student

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IX. SYSTEM TESTING AND VALIDATION

A. Testing Approach

The system underwent rigorous testing, including:

1) Integration Testing :-Checking seamless data flow between modules.
2) System Testing :- Evaluating overall performance under real-world conditions.
3) Validation Testing :- Confirming that key features, such as SMS notifications, operate as intended.

X. ACKNOWLEDGEMENT

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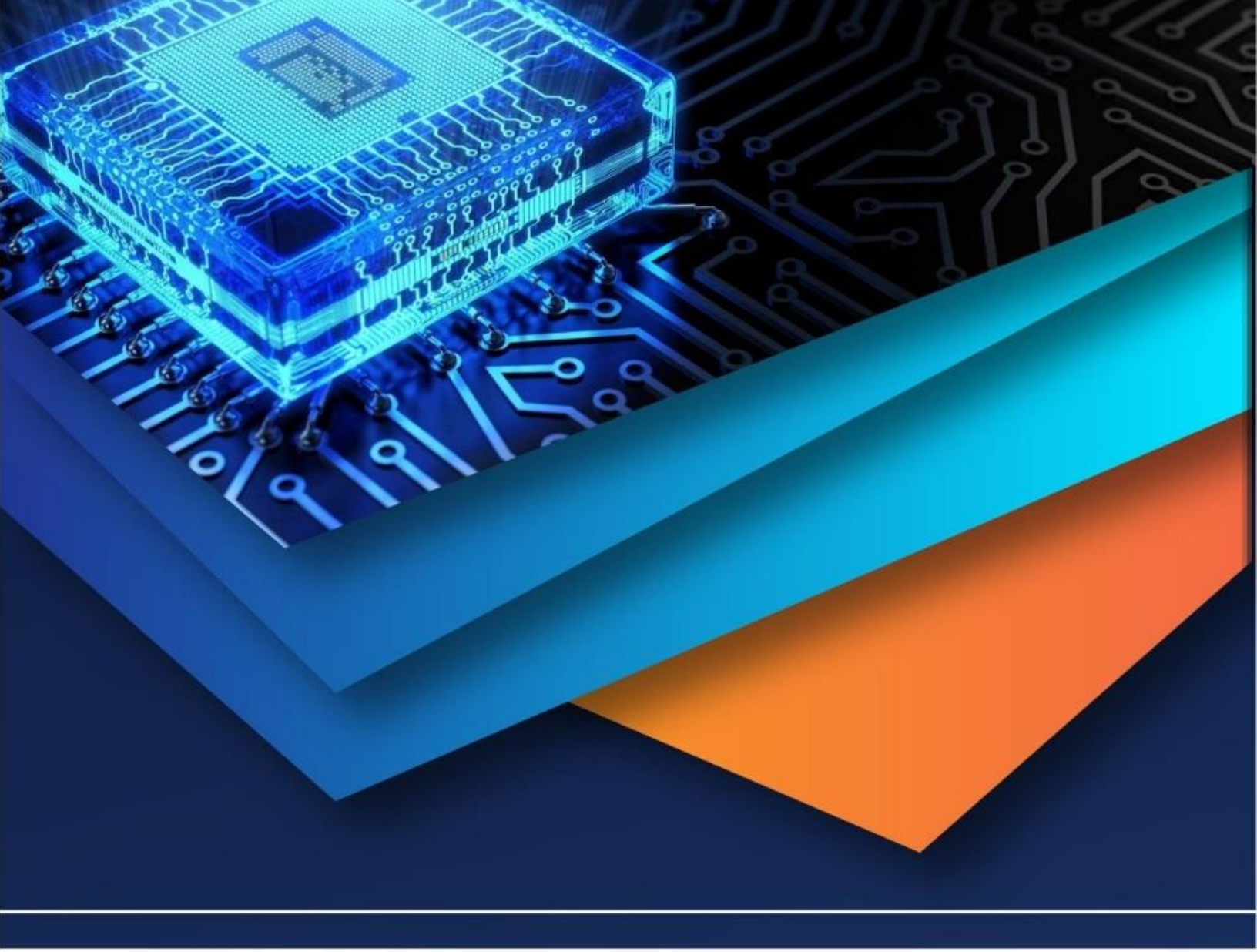
XI. CONCLUSION

The QR code-based hostel management system effectively addresses the challenges of tra- ditional hostel administration by improving security, efficiency, and transparency. By inte- grating automation with digital tracking, the system minimizes errors, enhances safety, and simplifies management. Future enhancements, including biometric authentication and mo- bile applications, can further optimize hostel security and convenience. Implementing such systems in hostels nationwide could set a new standard for modern, secure accommodations. The Hostel Management System effectively addresses the challenges of hostel administra- tion by introducing automation and digital record-keeping. The system's adaptability makes it suitable for various hostel environments, contributing to enhanced operational efficiency.

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