

Understanding The Intricacies of Hostel Management Platform (HMP) Through Modern Technologies

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ABSTRACT- In the rapidly evolving landscape of education, managing student accommodations is a crucial aspect for both schools and colleges. This paper delves into the fundamental necessity for effective Hostel Management Systems and advocates for the adoption of contemporary, technology-driven solutions over traditional methods. Hostel life plays a significant role in the overall student experience, and the outdated manual approaches for managing hostels are no longer sufficient for the diverse needs of educational institutions. These conventional methods are time-consuming, prone to errors, and lack the agility required to keep pace with the dynamic nature of schools and colleges. This review paper explores the world of Hostel Management Systems, emphasizing the urgency for a shift from outdated practices to modern, technology-enabled solutions. By doing so, educational institutions can benefit from real-time monitoring, efficient resource allocation, enhanced security measures, and improved communication channels among hostel authorities, students, and parents. The paper consolidates insights from various research studies, providing a holistic understanding of the Hostel Management System landscape. By examining the combination of research findings, this review aims to offer valuable insights into the evolution of these systems, their impact on institutional efficiency, and the challenges faced during implementation in both school and college settings.

KEYWORDS- Hostel Management System, Student Accommodations, Educational Institutions, Schools, Colleges, Technology Solutions, Modern Approach, System Efficiency, Resource Allocation, Communication Channels, Security, Review Paper.

I. INTRODUCTION

Hostels are like second homes for students, and ensuring they run smoothly is crucial for a positive academic experience. This paper dives into the world of Hostel Management Systems, exploring innovative approaches to simplify and automate hostel operations for the benefit of both students and administrators. Firstly, we'll explore

the technical side of creating Hostel Management Systems. Picture it as building a user-friendly website that takes care of all the essential hostel tasks. We'll leverage advanced tools to ensure the system is not only easy to use but also responsive and efficient. Moving on, we'll discuss the challenges associated with traditional hostel management methods, where everything was manually recorded and filed. The paper introduces the concept of online Hostel Management Systems, highlighting their simplicity and the added advantage of smart automation. Next, we'll delve into the impact of hostel life on students' well-being. We'll examine the factors that contribute to student satisfaction, such as quality of living, cleanliness, and other services that enhance the hostel experience. A happy student body leads to a smoother operation of hostel facilities. Following that, we'll focus on a specialized Hostel Management System designed to address the unique needs of management teams. This computerized solution aims to streamline manual record-keeping challenges, providing an easy-to-use graphical interface for efficient hostel administration. In summary, this paper explores the diverse aspects of Hostel Management Systems, from technical solutions to fostering student happiness. It's a journey into creating smarter, more user-friendly, and automated approaches to enhance the hostel experience for everyone involved.

II. LITERATURE REVIEW

In [1], a web-based hostel management system with RFID integration for gate pass purposes was introduced. The web interface was developed using PHP-MySQL technology, aiming to streamline hostel management processes and alleviate the workload of hostel administrators and proprietors. This digital solution replaces the traditional pen-and-paper approach that has been in use for a considerable period. The system encompasses three main modules: Administrator, Warden, and Student, each equipped with distinct dashboards and roles. The framework efficiently addresses manual hostel administration challenges and

provides essential data such as hostel information, student details, and room allocations. Notably, administrators can send notifications or notices to students through an integrated email system. Ensuring security and accessibility, the system operates as a secure online website accessible from any location worldwide. A key feature involves the utilization of RFID tags assigned to students during hostel registration. These RFID tags enable administrators to monitor student activities seamlessly through a centralized dashboard, enhancing overall hostel management efficiency. In [2], a proposal for a web portal dedicated to a hostel management system is outlined. This particular web portal is constructed using ASP.NET and SQL server technology. The system is designed to accommodate three primary roles: Administrator, Hostel Clerk, and Student. Its features include student-driven hostel registration, invoice generation, and printing, automated due calculation and notification, as well as student hostel clearance management, among other functionalities. In [3], a Hostel Management System incorporating Biometric Authentication is presented. Addressing the significant concern of security within hostels, the paper emphasizes the challenges posed by manual attendance verification for hostel management. In the current system, wardens manually handle attendance records for hostel students, resulting in a complex and time-consuming process. The proposed system aims to alleviate these challenges by introducing a monitoring system. This system, designed for a single user, typically the college principal or warden, utilizes biometric authentication to efficiently manage a large number of students in the hostel. The key functionality of the system is the automatic monitoring of student entry and exit from the hostel. Additionally, the system is equipped to send alert SMS notifications to parents, ensuring the safety and well-being of the students. This innovative approach seeks to streamline hostel management processes and enhance security through the integration of biometric authentication technology. In [4], the authors present a mobile application named E.H.R.A (Enhanced Hostel Registration Application), designed for the Android platform. The primary objective of this project is to create an Android application with a data storage system for streamlining the hostel registration process in higher learning institutions. Additionally, the project aims to foster a green computing environment by minimizing paper usage in hostel registration systems. The chosen methodology for developing EHRA is Rapid Application Development (RAD), involving four main phases: requirement analysis and system design, project prototyping, system testing, and execution. The resulting EHRA application boasts features such as room tracking, student information tracking, the ability to add roommates, and efficient data storage. The application caters to two user roles: Management (Administrator) and Students. The Administrator holds control over the system, allowing them to check room availability, register students for the hostel, and allocate rooms to individual students. Students, on the other hand, are required to provide their details to the Administrator for

hostel registration. The EHRA mobile application is constructed using the Android platform, utilizing PHP to access data from a MySQL database and presenting the results in HTML form, seamlessly integrated back into the Android application. In [5], a proposal introduces a cloud-based, intelligent notice delivery system leveraging Optical Character Recognition (OCR). The project aims to modernize the notice delivery process efficiently by utilizing various cloud services offered by Firebase. The fundamental objective is to receive timely daily updates from the university while maintaining an organized approach to monitor multiple notice boards regularly. The motivation for this initiative arises from past challenges where notices were displayed in different locations, leading to confusion among students. The focus is on delivering public notices directly to users' devices, catering primarily to college students and faculties. The smart notice delivery system serves the dual purpose of aiding college administration and providing a user-friendly mobile application for students, eliminating the need to physically check notice boards for daily updates. This system relies on a NoSQL database, primarily the Firestore database, for storing notices and facilitating notification delivery. The overarching goal is not only to efficiently deliver notices but also to create an intuitive and user-friendly mobile application that takes advantage of enhanced device capabilities, ultimately providing an impressive user experience. In [6], a proposed web portal for Hostel Management System encompasses essential modules such as student information, automatic bill calculation, and room allocation. The system features distinct dashboards for both students and administrators. To secure a hostel seat, students are required to register their details on the portal. Subsequently, the administrator will assign a room number and provide essential assets such as a chair, table, and bed. In [7], an Online Gate Pass Application Form for Hostel Students is introduced. This system serves as a software application designed to oversee the entry and exit of students during short-term and long-term leaves. The approval for gate passes is obtained from the Head of the Department (HOD), Hostel Warden, or Hostel Manager, with the actual pass being issued by the Hostel Warden. Within this system, students initiate a request for entry or leave by providing various details. The higher authorities then validate these details against the database, and if found valid, permission is either granted or denied. Confirmation or denial notifications are promptly sent to the respective students via email in advance. The system's purpose is to meticulously record the details and activities of the students, aiming at the implementation of a "Paper Saving Idea" through the utilization of technology. In [8], a proposal outlines the development of a mobile-based Android application designed to handle student complaints. The primary goal of this project is to create an Android application for efficient management of complaints and inquiries. Students have the capability to submit complaints directly from the mobile application, triggering notifications to the management. This system contributes to the reduction of manual workload for the

management and incorporates a feedback feature. The methodology employed in the development of the mobile app follows the Mobile Application Development Life Cycle (MADLC). Additionally, the System Usability Scale (SUS) is utilized as a metric to assess the effectiveness and user-friendliness of the mobile application. In [9], a survey introduces an Android-based Hostel Security System utilizing QR codes. In this proposed system, administrators allocate a unique QR code to each student. Students utilize their Android phones to scan the Hostel QR Code for attendance during entry and exit. Additionally, students can submit night-out requests and report cleaning issues to the warden through the system. The warden, in turn, has the capability to monitor student records and the daily roll call list. The warden's primary responsibilities include reviewing student issues and taking appropriate actions. Room assignments for students are also managed by the warden through the system. The warden employs an Android app to monitor student activities and communicate responses to them. On the other hand, the System Administrator utilizes a web application for student registration and the provision of QR codes. This integrated system comprises an Android application, a web server, and a MySQL server to facilitate its various functionalities. In [10], a Barcode-Based Student In-Out System (B.B.S.I.O.S) is presented, showcasing the significance of a student in-out system in colleges. The absence of automated entry-exit record-keeping applications in colleges has prompted the need for a tool to systematically manage student entry and exit records, especially with the growing number of college students. This system aims to assist gatekeepers in colleges by eliminating the need for manual registry book maintenance. The project utilizes a barcode scanner to streamline the entry-exit record process. Each student's ID card is equipped with a barcode on the back, containing unique data such as the student ID. Students scan their barcodes at the entrance gate, ensuring a reliable entry-exit record. The display screen promptly shows the entry-exit record for the specific student following the barcode scan. Access to the system is restricted to gatekeepers and administrators, each having their respective login IDs and passwords. This Barcode-Based Student In-Out System enhances the efficiency of managing student movement within the college campus.

III. CONCLUSIONS

In conclusion, this paper has explored the multifaceted realm of Hostel Management Systems, emphasizing the need for a transition from traditional manual methods to contemporary, technology-driven solutions. The significance of efficient hostel management in enhancing the overall student experience, coupled with the inadequacies of outdated approaches, was thoroughly examined. The literature review showcased various innovative solutions, ranging from web-based systems with RFID integration, biometric authentication, and mobile applications, to cloud-based smart notice delivery systems using OCR. These solutions aim to address

challenges such as time-consuming manual processes, security concerns, and communication gaps within hostels.

CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest.

IV. FUTURE WORK

Looking ahead, the realm of Hostel Management Systems remains open for potential research and development. One important area to explore is integrating Artificial Intelligence (AI) algorithms. This step could significantly improve predictive analytics for tasks like assigning rooms, managing resources, and strengthening security in hostels. Simultaneously, there's a need to enhance the User Experience in hostel management applications. Future efforts should focus on making interfaces user-friendly for both administrators and students. Additionally, there's a valuable opportunity to use advanced Data Analytics. By employing sophisticated analytics, institutions can gain useful insights into current hostel trends. This helps in making informed decisions about resource allocation and improving hostel facilities. Another critical aspect is pursuing Interoperability and Standardization. This emphasizes the importance of having standard protocols for smooth communication between different hostel management systems. This would lead to efficient data exchange within educational institutions, improving overall functionality. Moreover, there's a significant area for future research in Sustainability Measures within hostel management systems. Exploring eco-friendly and sustainable practices aligns with the growing emphasis on green computing and adopting paperless solutions. In summary, as technology continues to evolve, there are promising opportunities for ongoing innovation in Hostel Management Systems. This has the potential to reshape how educational institutions handle student accommodations, ultimately enhancing the entire campus experience.

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