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Android based Hostel Management

Debdatta Basu, Keshav Kumar, Nimit Mehta, Sanskar Sain, Sreejith Maloor, Dr Sonal Sharma

UG Student [CSE- CTIS], Dept. of CSE, Faculty of Engineering and Technology, Jain (Deemed-to-be University),
Global Campus, Bangalore, Karnataka, India

Program Head CTIS and CTMA, Department of Computer Science & Engineering, Faculty of Engineering &
Technology, Jain (Deemed-to-be University), Bangalore, India

ABSTRACT: Hostel management plays a vital role in the smooth operation of hostels within educational institutions and other accommodation facilities. These projects are comprehensive in scope, covering everything from room allocation and student or staff management to inventory control and a range of administrative duties. A robust hostel management system can significantly enhance the efficiency and organization of these operations, ensuring a better experience for residents and administrators alike. However, the management of such facilities involves complex challenges, particularly in handling large numbers of residents and ensuring effective resource allocation. This innovative application is designed to streamline these processes, offering a wide array of features that promote efficiency and convenience. Hostel administrators can efficiently manage key tasks, including room assignments, check-ins and check-outs, and billing procedures. The app's intuitive dashboard provides real-time insights into critical metrics such as occupancy rates, pending payments, and maintenance requests. These features enable administrators to make informed, data-driven decisions swiftly, enhancing both operational accuracy and response time. The paper further explores the development stages of hostel management systems, detailing the technologies employed and their relevance to real-world conditions. It introduces general evaluation standards for hostel management and highlights the common databases used for managing hostel data. Additionally, it presents a forward-looking perspective on hostel management, suggesting advancements and improvements for the future. Through this project, we aim to address the complexities of hostel management and provide a comprehensive solution that meets the evolving needs of modern accommodation facilities.

I. INTRODUCTION

In the fast-paced and digitally connected world of today, technological advancements have permeated various aspects of our lives, significantly transforming the way we operate and manage various tasks. The hospitality industry, too, has embraced these changes and witnessed a remarkable shift in the way hostels are managed. With the advent of hostel management apps, the cumbersome and time-consuming manual processes have given way to streamlined and efficient operations, making the lives of hostel administrators, staff, and residents much easier. In this article, we delve into the world of hostel management apps and explore how they have revolutionized the management of hostels, contributing to enhanced efficiency, improved communication, and a superior living experience for the hostel residents. The traditional hostel management system often relied on a myriad of manual tasks, including record-keeping, attendance tracking, billing, and managing room allocations. These laborious processes often led to errors, miscommunication, and inefficiencies. However, with the rise of technology, hostel management apps have emerged to address these challenges, replacing antiquated methods with streamlined digital solutions. Modern hostel management apps come equipped with a wide array of features and functionalities that cater to the specific needs of hostel administrators and residents alike. From seamless room allocation and automated attendance tracking to electronic billing and online communication platforms, these apps have it all. Moreover, they are often designed to be user-friendly, ensuring ease of use for both tech-savvy individuals and those less familiar with technology.

1.1 Overview

One of the most significant advantages of hostel management apps is the improved communication they offer. Traditional methods of communication, such as notice boards or physical announcements, can be easily overlooked, leading to missed deadlines or important updates. Hostel management apps provide instant notifications and alerts to keep residents informed about events, deadlines, and any other relevant information, fostering a more engaged and connected community. Hostel administrators bear the responsibility of overseeing a multitude of



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tasks. Whether it's managing student records, handling complaints, or maintaining hostel facilities, these duties can be overwhelming without proper support. Hostel management apps automate many administrative tasks, allowing administrators to focus on more strategic aspects of hostel management and improving overall efficiency. Safety and security are paramount in any hostel environment. Hostel management apps often incorporate security features like access control, visitor management, and emergency protocols to ensure a safe living environment for residents. Additionally, real-time monitoring and reporting mechanisms empower administrators to address potential security issues proactively.

Hostel management apps generate a wealth of data regarding hostel operations, resident behavior, and trends. This data can be analyzed to gain valuable insights, enabling administrators to make data-driven decisions, optimize resource allocation, and improve overall hostel performance.

1.2 Problem Definition

In the era of digitalization, the need for a streamlined hostel management system is evident. This article aims to outline the essential features and functionalities required for a hostel management app. The key challenges include automating room allocation, attendance tracking, fee management, and visitor registration, while ensuring data security and easy accessibility for administrators and residents. By addressing these aspects, the hostel management app intends to enhance operational efficiency and improve the overall experience for both hostel authorities and residents.

Objective The objective of the hostel management app is to streamline and automate various administrative tasks related to hostel operations. It aims to simplify the process of managing hostel facilities, outpass generation, student records, and visitors management. The app's primary goals include enhancing communication between hostel staff and students, ensuring efficient utilization of resources, providing real-time updates, and ultimately improving the overall hostel management experience for both administrators and residents.

1. **Maintenance Requests:** Maintenance requests encompass the process of reporting and related to infrastructure, utilities, or facilities within the hostel premises. An effective maintenance request system enables residents to log complaints, track the progress of repairs, and ensure timely resolution of issues, leading to a safe and comfortable living environment.
2. **Outpass generator :** Students can easily request outpasses directly through the app, eliminating physical paperwork and making the process more efficient. With the app's outpass generator, students can quickly fill in their details, reason for leaving, and expected return time, saving valuable time and reducing the hassle of waiting for manual approvals. The outpass generator promotes transparency and accountability, as both hostel authorities and students have a digital record of the request and approval. By automating the outpass generation, the app helps maintain security within the hostel premises, ensuring that only authorized students are allowed to leave and return.
3. **Visitor Management :** Incorporating a visitor management system into your hostel app can benefit students. The visitor management system ensures that only authorized visitors are allowed to enter the hostel premises, promoting a safe and secure environment for the students. Students can pre-register their expected visitors through the app, streamlining the check-in process and reducing waiting times for both students and their guests. The system relieves hostel staff from the burden of manual visitor registration, enabling them to focus on other essential administrative tasks.
4. **Emergency access :** Emergency access in the hostel app can be a lifesaving feature for students, offering critical assistance during unforeseen situations.

The app provides students with quick access to emergency services, such as campus security, medical assistance, or local emergency services, ensuring timely response in critical situations.

Including a panic button in the app allows students to send distress signals to designated authorities with their location details, enabling rapid assistance during emergencies.

II. METHODOLOGY

To develop a hostel management app, you'll need a combination of technologies for both the frontend and backend.

Here's a list of essential technologies you should consider using:

Frontend Technologies:

1. **HTML, CSS, and JavaScript:** Fundamental technologies for building the structure, style, and interactivity of web pages.



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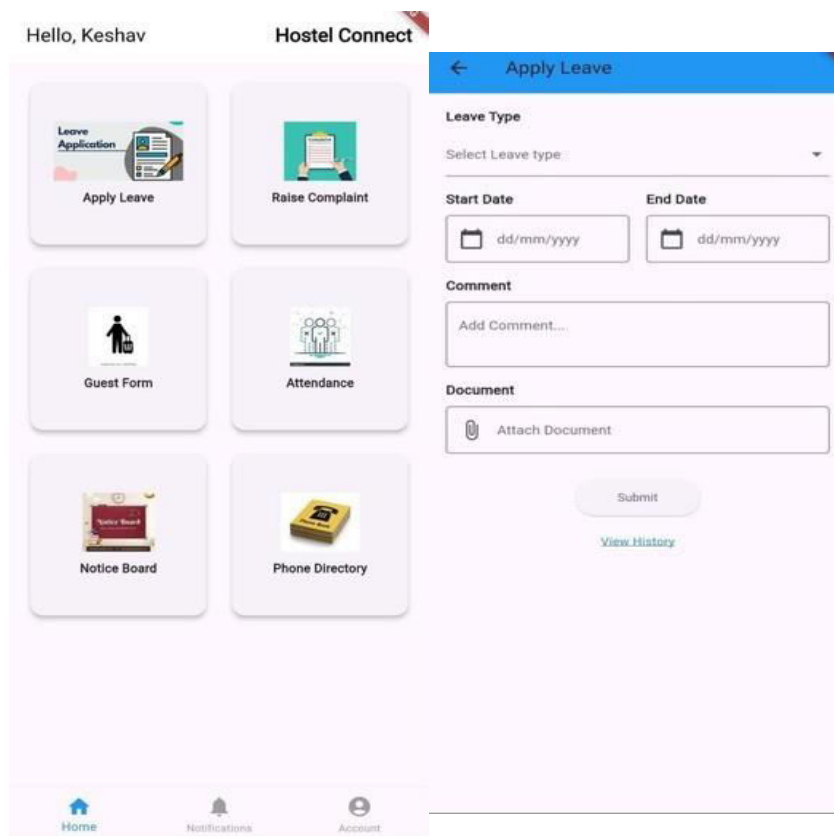
- 2 React, Angular, or Vue.js: Popular frontend JavaScript frameworks that facilitate the development of interactive and dynamic user interfaces.
- 3 Redux or Vuex: State management libraries to manage the app's global state and data flow.
- 4 Bootstrap or Material-UI: CSS frameworks that provide pre-designed UI components for responsive and consistent design.
- 5 Responsive Design: Techniques and media queries to ensure the app looks and works well on various devices (desktop, tablet, mobile).
- 6 Webpack or Parcel: Bundlers that package all the frontend assets, making it efficient for deployment.
- 7 AJAX or Fetch API: For making asynchronous HTTP requests to the backend and handling server responses.

Backend Technologies:

1. Node.js or Django or Ruby on Rails or ASP.NET Core: Choose a backend framework based on your team's expertise and preferences. These frameworks support rapid development and have strong community support. Express.js (if using Node.js): A popular Node.js framework for building scalable and modular server-side applications. Database Management System (DBMS): Choose a suitable database system to store hostel and user-related data. Options include:
 - a. SQL databases like MySQL, PostgreSQL, or Microsoft SQL Server.
 - b. NoSQL databases like MongoDB or Firebase Firestore.
2. RESTful APIs: Design and implement RESTful APIs to handle data exchange between the frontend and backend.

Authentication and Authorization: Implement a secure authentication system, such as JWT (JSON Web Tokens), OAuth, or sessions, to protect user data and manage user access.
3. Cloud Services: Consider using cloud services like AWS, Google Cloud, or Azure for hosting the backend and managing databases.

App interface





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The image shows a mobile application interface titled "Guest Form". It contains several input fields: "Guest Name" with a placeholder "Enter guest name", "Contact Number" with a placeholder "Enter contact number", "Relationship" with a placeholder "Enter relationship", "Visit Date" with a placeholder "dd/mm/yyyy" and a calendar icon, and a "Comment" section with a placeholder "Add Comment...". At the bottom of the form is a "Submit" button.

III. LITERATURE SURVEY

Hostel management is an essential aspect of college administration, and with the advancement in technology, many institutions have shifted to digital solutions for efficient and streamlined operations. This literature review aims to explore the existing literature on hostel management apps designed for college projects. The study delves into various functionalities, advantages, and challenges associated with these apps to help colleges make informed decisions when implementing such systems.

1. HostelCare app : HostelCare app is developed and maintained by HostelCare Technologies and the app was released on July 11, 2017.

Features:-

Safety: HostelCare allows users to share their location with friends and family, and it also offers a panic button that can be used in an emergency.

Security: HostelCare allows users to report suspicious activity to the hostel management, and it also provides users with tips on how to stay safe in a hostel.

Community: HostelCare allows users to connect with other hostel residents, and it also provides users with information about events and activities happening in the hostel.

Convenience: HostelCare allows users to book hostel rooms, pay for amenities, and order food, all from within the app.

Drawbacks:

The app can be buggy: HostelCare can sometimes be buggy, and there have been reports of users having problems with the app.

2. HostelAdmin: HostelAdmin is developed and maintained by Hostelgeeks. Hostelgeeks is a software development company that specializes in hostel management software. The app was released in the market 28 June 2014.

Features:



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Room management: HostelAdmin allows hostels to track room availability, occupancy, and bookings.

Guest management: HostelAdmin allows hostels to track guest information, such as their contact details, arrival and departure dates, and payment information.

Billing and payments: HostelAdmin allows hostels to track billing and payments, and to generate invoices and receipts.

Inventory management: HostelAdmin allows hostels to track inventory levels, and to order supplies.

Reporting: HostelAdmin allows hostels to generate reports on their operations, such as occupancy rates, revenue, and expenses.

Multilingual: HostelAdmin is available in multiple languages, including English, Spanish, French, German, and Portuguese. Web-based: HostelAdmin is a web-based software, which means that it can be accessed from anywhere with an internet connection.

Customizable: HostelAdmin can be customized to meet the specific needs of each hostel.

Drawbacks:

Cost: HostelAdmin is a paid software, so hostels will need to budget for the cost of the subscription.

Complexity: HostelAdmin is a complex software, so hostels will need to have staff who are familiar with the software in order to use it effectively.

Data security: HostelAdmin stores sensitive data about guests, so hostels will need to take steps to protect this data.

3. MyCampusMate: MyCampusMate is developed and maintained by eCampus; it was released in the market in March 2013.

Features:

Group chat: MyCampusMate allows students to create and join group chats with their classmates. This can be a great way to stay in touch with friends and classmates, and to get help with assignments.

Calendar: MyCampusMate includes a calendar that allows students to keep track of their classes, assignments, and other events. This can be a helpful way to stay organized and on top of their schoolwork.

Notes: MyCampusMate allows students to take notes and share them with their classmates. This can be a helpful way to study for exams and to collaborate on projects. Announcements: Directory: MyCampusMate includes a directory of students and faculty. This can be a helpful way to find people you know, or to get in touch with someone you don't know.

Profile: MyCampusMate allows students to create a profile that includes their contact information, academic interests, and other information. This can be a helpful way to connect with other students and to find resources on campus.

Notifications: MyCampusMate allows students to receive notifications about new messages, events, and other updates. This can help students stay up-to-date on what's happening on campus.

Drawbacks:

Not all schools use MyCampusMate: Not all schools use MyCampusMate, so students may not be able to use the app if their school does not use it.

Some features are limited: Some features of MyCampusMate are limited to premium users.

Can be distracting: MyCampusMate can be distracting if students use it too often. Security: MyCampusMate uses security features to protect student data, but there is always the risk that data could be compromised.

4. HostelPanda: HostelPanda is developed and maintained by HostelWorld Group. HostelPanda is a subsidiary of HostelWorld Group, which is a travel technology company that owns and operates a number of other hostel booking websites, including Hostelworld, Hostelbookers, and Hostelworld.com. It was founded in 2012 by two friends from Barcelona, Spain.

Features:

Wide selection of hostels: HostelPanda lists over 30,000 hostels in over 170 countries. This gives you a wide range of options to choose from, no matter where you are traveling. Variety of filters and search options: HostelPanda allows you to filter hostels by location, price, amenities, and other factors. This makes it easy to find the perfect hostel for your needs. Helpful features for booking hostels: HostelPanda offers a variety of features to help you book hostels, such as the ability to read reviews, compare prices, and book directly through the website or app.

Competitive prices: HostelPanda often offers competitive prices on hostels. This can help you save money on your next trip.

Drawbacks:

Some hostels may not be as clean or well-maintained as others: HostelPanda does not have a strict review



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process, so it is possible that some hostels listed on the website may not be as clean or well-maintained as others. Hostels may be located in less desirable areas: HostelPanda does not filter hostels by location, so it is possible that you may book a hostel that is located in a less desirable area. Some hostels may have a party atmosphere that is not suitable for everyone: Some hostels have a party atmosphere that is not suitable for everyone. If you are looking for a quiet place to stay, you may want to avoid hostels that are known for their party atmosphere

5. HostelCare: HostelCare app is developed and maintained by HostelCare Technologies. The Hostel Care app was released on July 11, 2017.

Features:-

Safety: HostelCare allows users to share their location with friends and family, and it also offers a panic button that can be used in an emergency.

Security:

HostelCare allows users to report suspicious activity to the hostel management, and it also provides users with tips on how to stay safe in a hostel.

Community: HostelCare allows users to connect with other hostel residents, and it also provides users with information about events and activities happening in the hostel.

Convenience: HostelCare allows users to book hostel rooms, pay for amenities, and order food, all from within the app

Drawbacks:

The app can be buggy: HostelCare can sometimes be buggy, and there have been reports of users having problems with the app.

IV. GAP ANALYSIS

Application Name	Application Developer	Year	Limitations	Solution
HostelCare	HostelCare Technologies.	2017	The app can be buggy and users have problems with the app.	This project will be introducing features like outpass generator, Complaint box for the students, Visitor Management , Emergency access to students in case of any emergency and it will also help the parents to stay in direct contact with their ward and the responsible faculties of the hostel
HostelERP	Hostelgeeks	2014	Enable to secure data	
Hostel Admin	Hostelgeeks	2014	Complex app for the users to use	

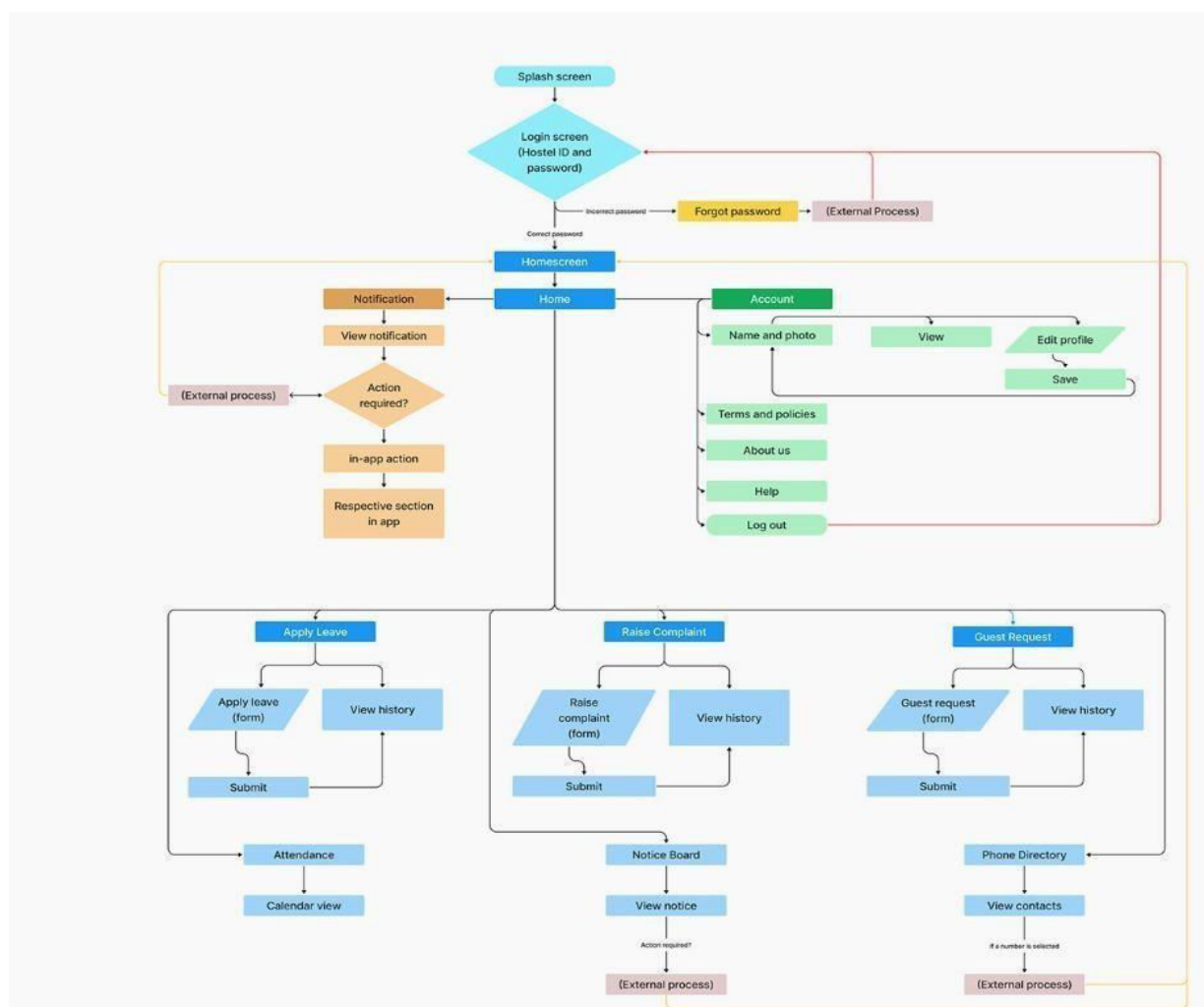


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MyCampus Mate	eCampus.	2013	Some features of MyCampusMate are limited to premium users.	
Hostel Panda	HostelWorld Group.	2012	Hostels may be located in less desirable areas.	

V. PROPOSED WORK



VI. CONCLUSION

Hostel management projects face several challenges, including data security, scalability, integration with existing systems, and user adoption. However, solutions exist to address these challenges effectively. Cloud computing, data encryption, scalable software solutions, API integration, user training, and user-friendly interfaces are among the proposed solutions to overcome the obstacles faced in hostel management. By implementing these solutions, hostels can enhance efficiency, data security, and user satisfaction, ultimately leading to better management and improved hostel experiences. The advent of hostel management apps marks a turning point in the hostel industry.



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Embracing this technology can lead to enhanced guest experiences, streamlined operations, and efficient data-driven decision-making. With seamless communication, secure transactions, and sustainability initiatives, hostels can stay ahead in a competitive market and foster lasting guest loyalty. As technology continues to evolve, hostel management apps will likely play an even more significant role in reshaping the hospitality landscape. Hostel owners and administrators who embrace this digital transformation will undoubtedly witness a new era of success and prosperity in their hostel endeavors. The time to revolutionize hostel management is now, and the hostel management app is the key to unlock its full potential.

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