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Hostel Visitor Log with Face detection

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ABSTRACT: The Hostel Visitor Management System is designed to keep students safe by tracking and managing all visitor activity in hostels. It has three main modules – Admin, Parents, and Employees – each made to meet the needs of different users. The Admin module, built using ASP.NET, allows administrators to manage student and employee details, assign rooms, approve visitors, and generate visitor reports. Parents and employees use Android apps to access the system from their phones. Employees can record visitor check-in and check-out details and view reports. Parents can add or edit visitor information, upload visitor photos, and check reports related to their child's visitors. The system makes it easy to monitor who enters and leaves the hostel, helping staff and parents stay informed while ensuring the safety and security of all students. By simplifying visitor tracking, it creates a more organized and secure hostel environment.

KEYWORDS: Hostel Management, Visitor Tracking, Student Safety, Admin Dashboard, Android Application, ASP.NET, SQL Server 2014.

I. INTRODUCTION

Ensuring the safety and security of students in hostels is a top priority for educational institutions and parents alike. Hostels, being communal living spaces, frequently receive visitors such as parents, relatives, friends, and even authorized personnel. Without a proper system in place to monitor and manage these visits, the chances of unauthorized access, security breaches, and miscommunication

significantly increase. Traditional methods of visitor tracking, which often rely on manual registers and informal identification checks, are not only inefficient but also prone to human error and misuse. To address these challenges, a structured and technology-driven solution is essential — this is where the Hostel Visitor Management System comes into play.

The Hostel Visitor Management System is a digital platform developed to streamline and secure the process of managing visitors in student hostels. It aims to simplify how visitors are registered, approved, and tracked while ensuring that all parties involved — administrators, hostel employees, and parents — have access to accurate and up-to-date information. The system is carefully divided into three user-specific modules: Admin, Parents, and Employees. Each module is designed to offer a customized experience based on the specific responsibilities and roles of the user group, making the system more organized and efficient.

The Admin module is the backbone of the entire system. Built using ASP.NET web technology, it act as the central control point for hostel management. Admins are given access to a range of tools that allow them to manage courses, employee and student records, and room assignments. When new students or employees are added to the system, it automatically generates login credentials for them, minimizing manual effort. The Admin module also handles visitor approvals, allowing predefined visitors to be registered in the system in advance. This improves the check-in process, as visitor identities can be verified through uploaded photos, adding a crucial layer of security. Furthermore, the system supports the generation of visitor check-in and check-out reports, providing valuable insights into visitor patterns and enabling better planning for security and emergency situations.

The Parents module is designed for ease of access through a user-friendly Android mobile application. Parents can log in securely to manage visitor information related to their children. They can add or edit visitor details, upload photos for identification, view detailed reports of all visits made to their child, and update their profile and password as

needed. This module empowers parents to stay actively involved in monitoring and controlling who visits their child in the hostel, thereby fostering a greater sense of security and trust in the institution's management system.

The Employees module, also available via an Android mobile application, provides hostel staff with tools to manage daily visitor activities. Employees can log in using their credentials to enter visitor check-in and check-out details linked to specific students. They can also view day-wise visitor reports to keep track of all entries and exits. The module allows staff to change their passwords to maintain system security. By allowing hostel employees to record and review visitor data digitally, the system reduces the burden of manual record-keeping and improves accuracy.

What makes the Hostel Visitor Management System particularly effective is its modularity and the way it caters to the unique needs of each user group. The separation of functionalities across the three modules ensures that each user can interact with the system in a way that suits their responsibilities, without being overwhelmed by features they do not need. This structure enhances the user experience while improving the overall performance and reliability of the system.

The benefits of implementing such a system are numerous. For one, it improves operational efficiency by reducing the time and effort required to manage visitor records. Second, it enhances security by maintaining a digital log of all visitors, complete with photo identification and timestamps. Third, it improves transparency and accountability by ensuring that parents and administrators have access to real-time data about visitor interactions. Most importantly, it creates a safe and secure environment for students, allowing them to focus on their academic and personal growth without worrying about unauthorized or untracked visits.

The Hostel Visitor Management System is an innovative and essential solution for modern-day hostel management. It addresses long-standing issues associated with manual visitor tracking and offers a streamlined, secure, and easy-to-use platform for managing visitor access. By integrating web and mobile technologies, the system ensures seamless communication and coordination among administrators, staff, and parents. Ultimately, it contributes to creating a safe, transparent, and well-organized hostel environment that protects students and builds trust among all stakeholders.

II. LITERATURE REVIEW

Chaudhri, K., & Kevat, R. (2021). Study of digitalized hostel management System.

The aim of the Hostel Android application is to automate and digitize the traditional manual hostel management system for college-associated hostels, enhancing efficiency, security, and convenience for both students and administrators. The proposed methodology involves the development of a user-friendly mobile interface that integrates core modules such as room allocation, fee and receipt handling, student and complaint management, visitor and leave tracking, and notice board updates. Additionally, the application incorporates secure user authentication, digital hostel pass generation, real-time notifications, form update alerts, and user profile management. The system follows a modular development approach, starting with requirement gathering and system design, followed by implementation using Android Studio and integration with a secure backend database. Each module is tested for functionality and performance to ensure a seamless and responsive experience across various user roles[1].

H. P, K. K. K, S. S. R and M. S, "Hostel Management,

The Hostel Android application is to address the inefficiencies of outdated manual hostel management systems commonly used by newly established educational institutions, by providing a fully automated, digital solution tailored for college-associated hostels. The application seeks to streamline and optimize core administrative tasks such as room allocation, fee management, student and visitor record maintenance, complaint handling, leave tracking, and notice board updates. The proposed methodology involves developing a secure and user-friendly Android-based system using Android Studio, which incorporates intuitive Graphical User Interface (GUI) design, robust access control mechanisms, and real-time functionalities like digital hostel passes, live notifications, and important form updates. The development process follows a phased approach—starting from system analysis and requirement gathering, followed by database design, interface development, backend integration using SQL Server, module testing, and deployment—ensuring that the system is reliable, efficient, secure, and scalable to meet the modern needs of hostel administration[2].

S. Bhardwaj, V. K, M. F. Ansari, B. P. Dash, P. Sharma and D. P. Singh, "Hybrid Technology Based Smart Hostel Management System Using Artificial Intelligence and Internet of Things,

The Hostel application is to modernize and automate hostel management systems that are still reliant on outdated manual processes, especially in newly established educational institutions. Recognizing the rapid growth in digital technology and internet access, this project leverages modern tools to address common hostel-related issues such as room allocation, fee management, student records, complaint handling, visitor tracking, and leave management. The proposed method involves designing an Android-based solution with a user-friendly interface, secure access controls, and real-time features like digital hostel passes and notifications. Using technologies such as Android Studio, SQL Server, and IoT components, the application is built to be reliable, fast, and efficient, aiming to replace traditional systems with a smarter, automated, and student-friendly approach[3].

P. Patra, P. Nayak, T. S. Sharma and P. Swarnalatha, "A Student Efficient Interface Application for Hostel Management, Security and Maintenance,

This paper is to create a mobile-based digital platform that simplifies and improves hostel-related processes for students, addressing issues such as the tedious complaint registration process, lack of proper mess feedback recording, and disorganized faculty or departmental information. By focusing on a simple and intuitive user interface, the application is designed to be easily accessible without the need for complex hardware or constant internet connectivity. The methodology incorporates principles of Human-Computer Interaction (HCI) to ensure the app is user-friendly and efficient. Usability testing has been conducted to validate the effectiveness of the interface and overall user experience, making the platform practical and responsive to the real needs of students and hostel staff[4].

S. Agrawal, S. Rastogi and S. Trivedi, "Cloud Based Hostel Facility Automation System,

The Hostel Facility Management System is to develop a cloud-based solution that automates and streamlines hostel administration while enhancing transparency and safety for both students and parents. Recognizing the limitations of manual processes, the system digitizes essential functions such as room allocation, cleanliness monitoring, and data management. The proposed methodology involves using cloud computing and MongoDB to build a centralized, reliable, and efficient platform that allows easy access to hostel services and information. By eliminating manual paperwork and integrating all hostel activities into a single platform, the system ensures better data handling, improved user experience, and enhanced real-time monitoring capabilities, ultimately providing a more dependable and user-friendly hostel management solution[5].

Bhardwaj, Shashank, et al. "Hybrid Technology Based Smart Hostel Management System Using Artificial Intelligence and Internet of Things,

This paper is to modernize hostel management by addressing the inefficiencies and outdated methods still used in many academic institutions, especially in managing dormitory facilities. Despite the rise of digital education and increasing internet access worldwide, hostel systems often rely on manual processes that are time-consuming and error-prone. Based on our experiences and survey findings during our hostel stay, we identified key challenges faced by students and staff. To solve these, we developed an intelligent and user-friendly digital model using emerging technologies like Artificial Intelligence (AI) and the Internet of Things (IoT). Our methodology involves designing a centralized hostel management platform with secure access controls, a responsive interface, visual layouts, and seamless functionality. This system ensures faster operations, better transparency, and improved user satisfaction by replacing traditional paper-based methods with an efficient, cloud-enabled solution[6].

Choudhury, Bikash, et al. "Online Hostel Management System."

The Online Hostel Management System is to simplify and automate various administrative tasks involved in managing student hostels, which have become increasingly challenging due to the rapid growth of educational institutions and their accommodations. This project focuses on replacing the traditional manual processes with a computerized system that is more efficient, accurate, and user-friendly. The methodology involves analyzing the limitations of the existing system and designing a web-based solution that integrates seamlessly with current operations. The system includes features for student registration, room allocation, fee tracking, complaint management, and visitor logging. Developed using modern technologies, the platform is designed to be intuitive and accessible, reducing the workload on hostel staff and improving the overall efficiency of hostel administration[7].

Magar, Shyamsundar, et al. "Hostel Management System and Aggregation."

The Hostel Management Web Application is to simplify and automate the hostel booking and allocation process, reducing the need for manual work by both students and hostel administrators. This system is designed to manage

hostel-related data efficiently in a database and retrieve it as needed, making the entire process more organized and accessible. Developed in response to the needs of hostel management, the application focuses on providing a user-friendly interface with improved reliability, security, and efficiency through access control mechanisms. The methodology involves using modern web technologies like Bootstrap to create a responsive design that works seamlessly across both iOS and Android platforms. By replacing outdated manual systems with a centralized digital solution, the application enhances the overall experience and functionality of hostel administration[8].

Ayanlowo, Kola, et al. "Development of an automated hostel facility management system."

The aim of this paper is to develop an automated hostel accommodation management system to replace the outdated manual methods still used by many newly established educational institutions. These traditional techniques have proven inefficient and have negatively impacted overall administrative performance. The proposed system is designed to streamline hostel operations such as room allocation, student record management, and access control, making the process more reliable, secure, and user-friendly. The methodology involves developing the application using Visual Basic for the user interface and Microsoft Access for the backend database. An in-built authentication algorithm ensures that only authorized users can access the system. By providing a graphical interface and automating key hostel functions, the system improves operational efficiency and addresses the limitations of manual hostel management[9].

Diyaolu, Akorede M., et al. "Development of an E-Based Hostel Management System."

The aim of this paper is to design and implement an E-based Hostel Management System for Olayinka Hostel at the Federal School of Surveying, Oyo, to replace the existing manual file-based system. The goal is to create a more efficient, reliable, and user-friendly platform that simplifies hostel tasks such as student record management, room allocation, and access to hostel data. The proposed methodology involves using HTML and CSS for the front-end interface, PHP for the backend logic, and MySQL for managing the database. By leveraging internet connectivity and mobile device compatibility, the system allows administrators to access and manage records easily and securely. The system improves the overall performance of hostel management by reducing manual paperwork, saving administrative time, and ensuring secure access through access control mechanisms[10].

III. EXISTING SYSTEM

The hostel has spreadsheets, paper records and manual procedures to accurately track visitor data in the current system to track visitors. Administrators or reception staff manually enter information of visitors, distribute badges and monitor the activity. Parents can inform the team verbally or fill in paper forms, causing errors, disabilities, and security risk. Administrators do not have equipment to analyze data, create reports or apply policies. As a result, there may not be automation, integration or scalability with other systems to adjust the increase in the number of visitors in the system.

IV. PROPOSED SYSTEM

Our proposed hostel management system provides a holistic solution that improves productivity, safety and user experience. By automating paper-based manual records on a digital system, this data reduces human error and anomalies in input. Automatic check-in and check-out procedures improve productivity and reduce delay in entry. Parents and parents can pre-charge visitors through the registration application of an Android visitors. Admins manage data and synchronize the information through the same panel, improve interaction with the existing hostel system and allow real-time difference tracking. Automatic information warns the parents when guests come and leave. Support and training are important for effective adoption and continuous maintenance of the system. For high-volume visitors, we guarantee scalability and adaptation of speed. Current System The hostel has spreadsheets, paper records and manual procedures to accurately track visitor data in the current system to track visitors. Administrators or reception staff manually enter information of visitors, distribute badges and monitor the activity. Parents can inform you

V. METHODOLOGY

The fig 1. Shows that the development of the Hostel Visitor Management System, it follows a structured methodology designed to ensure a secure, efficient, and user-friendly application that caters to admin, hostel staff, and parents.

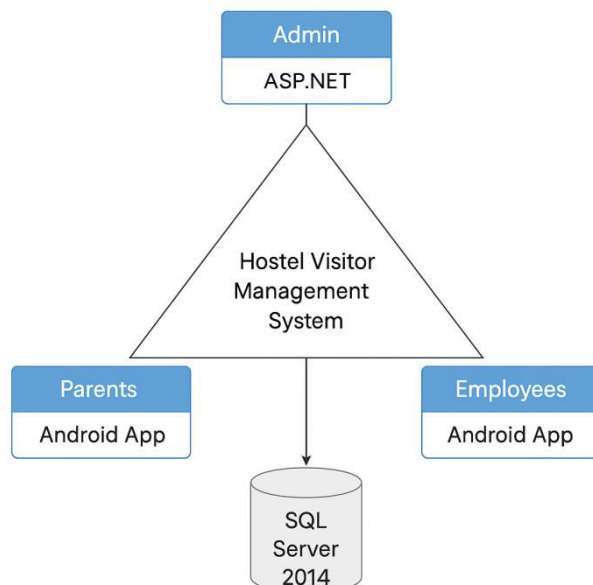


Fig 1. General architecture diagram for Hostel Visitor Management System

The methodology is divided into several phases, including requirement analysis, system design, module development, implementation, and testing. Each phase plays a key role in creating a system that improves visitor tracking while maintaining a safe environment for hostel residents.

1.Requirement Analysis Phase

The first step in the development of the Hostel Visitor Management System was the requirement analysis phase. This phase involved close interaction with hostel administrators, employees, and parents to gather detailed insights into their needs and challenges. The primary objective was to understand how visitors are currently managed and identify the limitations of traditional manual systems. It was found that there was a need for a secure, automated system that could track visitor entry and exit, provide role-specific access, allow remote management via mobile apps, and maintain detailed logs for future reference. Based on these findings, the idea to develop a modular system with three separate modules—Admin, Parents, and Employees—was finalized, ensuring that each user type would have access to only the functionalities they needed.

2.System Design Phase

In the system design phase, the overall structure and architecture of the application were planned. The focus was on creating a modular and scalable system that ensures smooth communication between the web-based admin module and the mobile apps used by parents and employees. Design elements such as data flow diagrams, user interface wireframes, and database schema were created to visualize how data would move across different modules. Role-based access was integrated into the design to enhance security and user experience. Each module was designed to interact with a centralized SQL Server database, allowing all data to be updated in real-time while maintaining integrity and preventing duplication. The design ensured that the application would be both user-friendly and technically robust.

3. Module Development Phase

Following the design phase, the actual development of each module was carried out using appropriate tools and technologies. The Admin module was developed using ASP.NET for web-based access, giving hostel administrators the ability to manage courses, student and employee records, room assignments, and visitor approvals through a secure dashboard. Meanwhile, the Parents and Employees modules were built as Android applications using Android Studio. The Parents app allows users to add or edit visitor information, upload visitor photos for identification, view detailed visit history for their child, and update personal profiles and passwords. The Employees app enables hostel staff to log visitor check-ins and check-outs, generate daily visitor reports, and manage their login credentials. All modules are

connected to a centralized SQL Server 2014 database, ensuring synchronized data sharing and efficient visitor management.

4. Implementation Phase

Once development was complete, the system was rolled out in a controlled environment for implementation. This phase included the installation and deployment of the admin panel on web servers and the distribution of Android apps to the respective users—parents and employees. Orientation sessions and user training were conducted to ensure that all users understood how to operate their respective modules. Admins were guided through how to manage data through the dashboard, while parents and employees were shown how to log in, navigate the app, and perform necessary tasks. Feedback collected during this phase was documented to address any early issues or suggestions for improvement before full-scale deployment.

5. Testing Phase

Before the system was fully launched, rigorous testing was conducted to ensure that it functioned reliably under different conditions. Unit testing was performed on individual features and functions within each module to ensure that they performed as expected. Integration testing followed, where the interactions between modules and the centralized database were tested for consistency and accuracy. Usability testing involved real users interacting with the system to assess its ease of use, and adjustments were made based on their feedback. In addition, security testing was performed to verify the safety of user credentials and the protection of sensitive information. These tests helped in identifying and resolving bugs, optimizing performance, and ensuring the overall reliability of the system.

VI. TOOLS AND TECHNOLOGIES USED

A. Frontend Technologies

1. Android Studio

Android Studio is the official integrated development environment (IDE) for Android application development, provided by Google. It is built on JetBrains' IntelliJ IDEA and offers powerful tools for building, testing, and debugging Android applications. In the Hostel Visitor Management System, Android Studio plays a vital role in developing the mobile applications for both parents and employees. These apps are designed to provide users with on-the-go access to the system's features such as visitor management, check-in/check-out logging, photo uploads, and viewing reports. Android Studio supports XML for designing user interfaces and Java or Kotlin for backend logic, allowing developers to create responsive and user-friendly mobile apps. Features like real-time debugging, Android Virtual Devices (AVDs) for simulation, and layout editors help ensure the apps work smoothly across various screen sizes and devices. The use of Android Studio ensures that the mobile modules of the system are efficient, modern, and compatible with most Android smartphones, providing a seamless and convenient experience for both parents and hostel employees.

2. HTML, CSS, and JavaScript

- HTML (HyperText Markup Language), CSS (Cascading Style Sheets), and JavaScript are the core front-end technologies used to develop the Admin web module of the Hostel Visitor Management System.
- HTML is responsible for creating the structure of web pages, such as forms for entering student, employee, and visitor information, as well as tables to display check-in and check-out reports.
- CSS is used to style these pages by controlling layout, colors, fonts, and spacing, making the interface visually appealing and easy to navigate. Together, HTML and CSS ensure that the admin panel is user-friendly and neatly organized.
- JavaScript adds interactivity to the system, enabling features such as real-time form validation, dynamic data updates, and smooth navigation without refreshing the entire page. These technologies work in combination to deliver a responsive and efficient web-based interface for hostel administrators, helping them manage records and monitor visitor activities effectively and with ease.

ASP.NET

The backend technologies used in the Hostel Visitor Management System play a critical role in handling data processing, user authentication, server-side logic, and secure communication between the web and mobile modules. The core backend framework used for the Admin module is ASP.NET, a powerful and secure web development platform by Microsoft. ASP.NET enables the creation of dynamic web pages and APIs, allowing hostel administrators

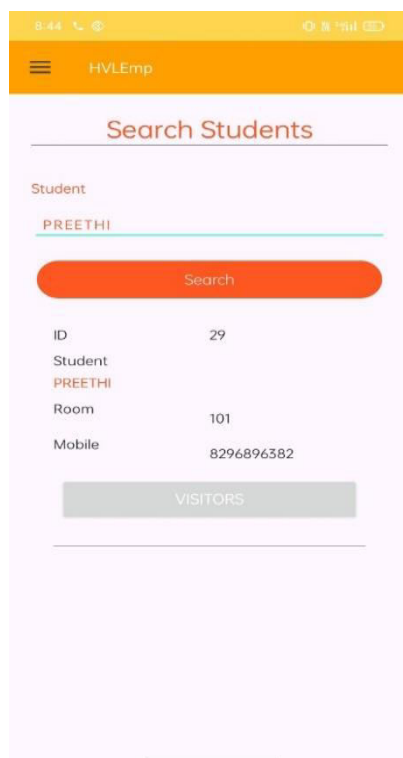
to perform actions like managing student and staff data, assigning rooms, approving visitors, and generating reports. The backend logic is written in C#, which helps implement core functionalities such as login authentication, data validation, and user role management. All user data, including credentials, visitor logs, and student information, is stored in a centralized SQL Server 2014 database, which offers high performance and supports structured query language (SQL) for efficient data storage and retrieval. For mobile applications (used by parents and employees), backend communication is handled through web APIs that connect the Android apps to the same centralized database, ensuring real-time updates and data consistency. Together, these backend technologies ensure the system is secure, scalable, and capable of managing multiple users and operations simultaneously.

C. Database Technology

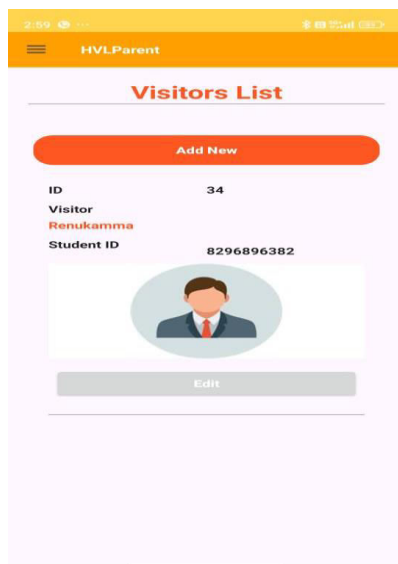
SQL Server 2014

SQL Server 2014 is a powerful relational database management system developed by Microsoft, and it serves as the backbone of the data layer in the Hostel Visitor Management System. It is used to securely store, manage, and retrieve all critical data related to the system, including student records, employee profiles, parent information, visitor logs, room assignments, and login credentials. SQL Server 2014 supports Structured Query Language (SQL), allowing developers to perform complex data operations like insert, update, delete, and search efficiently. It also ensures data integrity, consistency, and security through built-in features like user roles, permission controls, and backup management. The system's web-based admin module (built with ASP.NET) and mobile apps (built using Android Studio) both connect to this centralized database, enabling real-time data synchronization and seamless communication between different user modules. With its robust performance, scalability, and security features, SQL Server 2014 ensures the system runs smoothly even as the amount of data and number of users grow over time.

VII. RESULT



The Students List page provides hostel staff with a comprehensive view of all students in the hostel. Each entry includes details such as the student's name, room number, and contact information. This page helps staff quickly identify students, verify visitor entries, and manage daily interactions efficiently. It serves as a central reference point for monitoring student occupancy and facilitating smooth hostel operations.



The Visitor List page displays all recorded visitor entries in the hostel. Each record shows key details such as the visitor's name, the student id they are visiting, uploaded photo (if available). This page helps hostel staff quickly view and verify who has entered or exited the hostel on any given day. It supports efficient monitoring, improves accountability, and ensures that all visits are properly logged and authorized.



The Visitor Check-In page allows hostel staff to record new visitor entries when they arrive at the hostel. The check-in time is automatically recorded to maintain accurate logs. This page ensures that all visitor entries are securely documented and helps in maintaining a transparent and controlled entry process for student safety.

VIII. CONCLUSION

In conclusion, the Hostel Visitor Management System offers a smart, secure, and user-friendly solution to manage and monitor hostel visitor activities efficiently. By integrating a centralized admin web module with dedicated Android applications for parents and employees, the system ensures that all users have appropriate access and functionality tailored to their roles. It enhances security by keeping detailed records of every visitor, supports real-time check-in and

check-out tracking, and improves overall transparency between hostel administration and parents. The use of modern technologies such as ASP.NET, Android Studio, and SQL Server 2014 ensures a reliable and scalable platform. Ultimately, the system contributes significantly to maintaining a safe hostel environment, simplifying administrative tasks, and building trust among students, parents, and staff through improved communication and control.

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