GATEPASS MANAGEMENT SYSTEM

Rutuja Dhande*1, Vaidehi Shirbhate*2, Yashashree Pingale*3, Vibhanshu Kathiwale*4, Dr. Kapil Gupta*5
DEPARTMENT OF COMPUTER ENGINEERING, SVPCET, NAGPUR

Abstract - The primary aim of this paper is to introduce an automated Gate Pass management system for hostellites, which will significantly reduce the need for manual intervention. The current paper-based process will be replaced by an efficient and reliable digital system that enhances record-keeping, auditing, and monitoring. Automating the gate pass generation and record-keeping will eliminate the use of paper, leading to improved efficiency and accountability of the security process. The system will also enhance data management by linking the hostel and security desk, streamlining the gate pass approval and monitoring process, and reducing the workload of the hostel staff.

Key Words: Gate *Pass management system, hostel, android studio*

I. Introduction

The Gate-Pass Management System is a software-based mobile application that provides an easy method for a warden to approve gate-pass to the ongoing students for the day. The student will request for gate-pass to the warden with the data including details like name, the purpose of visit, and the duration of stay. The warden will be timely notified of the current students visiting city/home. College hostel wardens often allow students to go out during holidays or week-offs, with IN-OUT registers typically used to monitor their movements. The warden will allow or decline the request and the verification mail would be send to the student. Security authorities will only allow the students who are approved for the gate-pass by warden. While many colleges already utilize similar systems for tracking incoming and outgoing student records, such a system has not yet been implemented at the hostel level. With student safety being a top concern for many residential schools, parents expect their children to be secure while on campus. Unfortunately, the current paper-based system is vulnerable to manipulation, compromising its overall security. Additionally, the system is susceptible to unauthorized entry by outsiders or strangers who may pose a threat to the student's well-being. The gate-pass management system reduces the amount of paperwork required by warden and security guards at the hostel level and store the daily entry and exit records of all students. Automation can significantly reduce the cost of security operations. The system can substantially reduce the stationary for maintaining the records. It can also reduce the costs for infrastructure and staff for maintaining the same.

II. Literature Survey

The following is a summary of various research papers related to the topic of gate pass management system and student entry-exit record keeping in colleges and hostels.

In [1] system was developed using Raspberry Pi, which aimed to save paper by using internet connectivity to send SMS and email for user verification.

Another system mentioned in [2] used biometric technology to monitor the entry and exit of students from hostels and send alert SMS to parents for their safety.

In [3] a gate pass management system was proposed using the UTAUT model to determine user acceptance of visitor application systems and reduce paperwork.

In [4] the system used barcode scanners to record the entry and exit of students by scanning the barcode on their ID cards. The display screen showed the entry and exit record of the student, and only the gatekeeper and administrator had access to the system with their respective login IDs and passwords.

A survey paper mentioned in [5] proposed an Android-based hostel security system using QR codes. The admin assigned a QR code to the student, which they scanned for attendance at entry and exit. The student could also raise night out requests and cleaning issues to the warden, who monitored student records and daily roll call lists. The warden assigned rooms to students using an Android app and provided responses to students through the

same app. The system administrator used a web application for registration of students and providing them with QR codes. The system used an Android application, web server, and MySQL server.

The document [6] presents the concept of e-Hostel, an Android application designed for managing hostel facilities in higher learning institutions. The application serves as a new platform that leverages various technologies to streamline the hostel management system. The research summarizes the various technologies used to develop the platform and the different features offered by both hardware and software. The primary objective of the application is to overcome the challenges posed by existing systems by leveraging the latest technologies and providing convenience to all stakeholders involved in the hostel management process.

In [7] the VIMS Application and Design is a system that makes it easier to capture new visitor records through automatic clock in/out and visitor pass assignment. By securely hosting visitor data on a database server, this approach makes it simple to manage and manipulate data through searching and report generation. A standout feature of E-VIMS is its capability to obtain visitor information during registration by making use of the MyKad system from the Malaysia Government.

On the other hand, the decision to develop a gate pass management system may depend on the needs of an organization so in this review paper we have discussed a Gate Pass Management System for students to enhance level of security and to solve problem such as waiting for a long-time queue will be no more a problem and will give an impression of well-organized system.

III.   Objective

The aim of this project is to implement an automated Gate Pass management system for hostellites. The objective is to minimize the need for human intervention by replacing the current manual process with a dependable and effective digital system that allows for easy record-keeping, auditing, and monitoring. The new system will automate the gate pass generation and record-keeping process, thereby eliminating the paper-based system. This will improve the overall efficiency and accountability of the security process. Furthermore, the system will enhance data management by linking the hostel and security desk, and simplify the gate pass approval and monitoring process, thereby reducing the workload of the hostel staff.

IV.   Implementation

The Gate Pass management system comprises four modules which form a comprehensive system that enhances campus security. These four modules are: The Login Module, Student Module, Warden Module, and Security Guard Module.

Login Module: The Gate Pass management system has a login module that only allows registered students to access the system. The warden registers the students on the app, and only those registered students can log in. Once logged in, the student can request a gate pass from the warden through the app. This feature ensures that only authorized students can use the system and request for gate passes.

Student Module: The Gate Pass management system is a mobile application that allows students to request for a gate pass from their hostel warden. The student provides details such as their name, purpose of visit, and duration of stay. The system notifies the warden of the student's request, and the warden can either approve or decline it. Once approved, the system sends a verification email to the student, which they need to show to security authorities to gain entry.

Warden Module: The Gate Pass management system enables hostel wardens to easily manage gate pass requests from students. The warden receives requests from students, and after reviewing them, they can either approve or reject the request. The system notifies the student of the warden's decision via email. The system stores the daily

entry and exit records of all students, reducing the amount of paperwork required for the warden. This automation can significantly reduce the cost of security operations.

Security Guard Module: Once the warden approves a student's gate pass request on the Gate Pass management system, the student's name is added to the list of approved students. The system then sends the list of approved students to the security guard through the app. When a student arrives at the gate, the security guard can verify their identity by checking the list of approved students on the app. This verification process ensures that only approved students are allowed to enter or exit the hostel, enhancing the security of the campus.
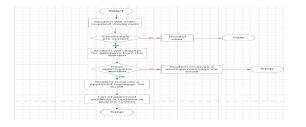

Fig 1.1 Flowchart of Gate pass management system

V.   Technologies Used

A.   Android Studio

An advanced Integrated Development Environment (IDE) to develop Android applications is called Android Studio. It offers developers all the necessary tools to build user interfaces that are optimized for the Android platform. With features such as auto-completion tools, debugging, testing, and the ability to run code on a physical or virtual device, developers can write Java and XML code and set programming-related or visual preferences with ease.

B.   Firebase

Firebase is a cloud-based storage service that allows developers to store user-generated content such as photos, videos, and documents in a secure and scalable manner. It is a part of Firebase, a platform that simplifies mobile and web application development. In addition to storage, Firebase provides user authentication, push notifications, and a database. One unique feature of Firebase is its test lab, which enables developers to test a Firebase-connected application with different configurations and devices. Another distinct feature of Firebase is its real-time database, which instantly makes newly added data accessible to all users of the application

C.   Java

Java is an object-oriented programming language that is widely used in modern software development. Its platform-independent design allows developers to create programs that can run on any platform with a Java Virtual Machine (JVM) installed. Java is a popular language for building various applications, ranging from mobile apps and web applications to enterprise-level software systems. Its rich set of libraries, tools, and frameworks, along with its ability to run on diverse platforms, make it a top choice among developers

D.   XML

XML, or eXtensible Markup Language, is a widely-used language for representing and exchanging structured data. It plays a crucial role in modern software development by providing a standard format for exchanging data between different systems and applications. XML's simplicity and flexibility make it a preferred choice for developers to describe data in a format that is both human-readable and machine-readable. This makes it easy for developers to create and manipulate data in XML format, and for systems to interpret and process XML data.

Conclusion

The implementation of a Gate Pass management system can greatly improve the security and efficiency of hostel management systems. By automating the gate-pass generation and record-keeping process, these systems eliminate the shortcomings of traditional paper-based systems and provide a reliable way to track the entry and exit of students from the hostel. Various studies have highlighted the potential benefits of such systems, including enhanced security, reduced errors, and increased efficiency. However, successful implementation of a Gate Pass management system requires careful consideration of technical, financial, and operational challenges that may arise. Overall, a Gate Pass management system is a valuable asset in ensuring the safety and security of hostel students and improving the effectiveness of hostel management. With proper implementation, these systems offer a dependable approach to record-keeping that is easily accessible, enabling the monitoring of any unusual activities and ensuring the well-being of the students. The primary objective is to develop an application that addresses the problems caused by the current system by utilizing the latest technologies.

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