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Student Attendance Management Application

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ABSTRACT

This study introduces a mobile-based Student Attendance Management System (SAMS) developed to simplify the attendance process in educational institutions. Traditional attendance methods often involve manual paperwork, which is time-consuming and prone to errors or data loss. Our proposed system enables faculty to manage daily student attendance efficiently through a faculty-centric and user-friendly mobile application. Teachers can create and manage classes, mark attendance, and generate reports quickly and accurately. This system also helps evaluate students' attendance eligibility based on predefined criteria, ultimately supporting academic monitoring and institutional compliance.

Keywords: Android SDK, Java, XML, Firebase, ROOM, SQLite, Mobile Application, Attendance Management.

1. Introduction

In the modern digital era, technology plays a significant role in transforming various sectors, including education. The increasing use of mobile applications and digital platforms in classrooms has made processes faster, more reliable, and easier to manage. One such application is a smart attendance system, which replaces conventional paper-based methods of recording attendance.

Manually recording attendance using registers is not only inefficient but also vulnerable to errors, data manipulation, and difficulty in tracking historical records. These issues can lead to administrative delays and a lack of accuracy in student performance monitoring.

This paper explores the development of a mobile-based attendance system tailored specifically for faculty members. The system allows them to log in securely, manage classes, add or update student details, and mark attendance quickly. Special emphasis is placed on usability, scalability, and real-world application in educational institutions. Our aim is to support digital transformation efforts by providing faculty with a reliable and practical tool for managing attendance.

2. Literature Survey

Accurate attendance tracking is crucial for educational institutions to monitor student performance and maintain discipline. Traditionally, teachers used handwritten registers to record attendance. However, these methods are often time-consuming and difficult to maintain for large groups.

Studies show that manual attendance is prone to human error and inefficiencies. For example, Kumar et al. (2019) highlighted the challenges faculty face when maintaining attendance records manually, especially for large classes. In contrast, automated systems significantly reduce these issues and offer real-time access to data.

Patel and Sharma (2020) emphasized the growing popularity of mobile-based attendance applications, particularly Android-based apps, due to their ease of use and wide availability. These systems allow faculty to manage attendance from anywhere, adding flexibility to their daily tasks.

Furthermore, Joshi and Verma (2022) pointed out the importance of a clean and intuitive user interface. A well-designed app should allow faculty to perform essential tasks such as creating classes, marking attendance, editing student details, and generating reports with minimal effort.

3. Problem Statement

In many institutions, student attendance is still managed through traditional methods such as paper registers or spreadsheets. Although these systems are easy to implement, they are time-consuming and error-prone. Faculty often find it difficult to maintain and retrieve accurate records for multiple subjects or classes.

The need for a reliable, user-friendly digital solution is clear. Faculty members require a system that simplifies attendance tracking, eliminates manual errors, and provides quick access to attendance data. A mobile-based application designed specifically for faculty use would fulfill this need by enabling class creation, student management, attendance marking, and automated report generation. There is a lack of real-time data access, and generating reports for administrative purposes is tedious.

4. Proposed System

The proposed Student Attendance Management System is designed to address the challenges faced in manual attendance tracking. This faculty-centric mobile application reduces administrative tasks, improves data accuracy, and enhances the overall management process. Faculty members can log in securely and access their dashboard, where they can view, create, or edit class and student details. The system allows for easy attendance marking and generates detailed reports that can be used by the faculty or submitted to administrative staff and coordinators.

In addition to assisting faculty, the system also benefits administrative personnel. Office staff can generate reports and blacklists of students falling below specific attendance thresholds (such as 50% or 80%). These features ensure timely interventions and help improve overall student discipline and compliance.

5. Result

The implemented system offers the following key features:

1. **Login** – Faculty can securely log in using their email and name for personalized access.
2. **Home Screen** – Displays all created classes with their corresponding subjects.
3. **Take Attendance** – Allows faculty to mark attendance quickly and save records in real-time.
4. **Add Class** – Enables the creation of new classes based on year or department.
5. **Edit Student Details** – Faculty can update student information as needed.
6. **Delete Class** – Faculty can delete classes if created incorrectly or no longer required.
7. **Reports** – Generates detailed reports that provide a clear overview of attendance patterns. These features are designed to support the day-to-day needs of faculty without requiring any special hardware or additional infrastructure.

6. Conclusion

The Student Attendance Management System offers a practical and efficient solution to the problems associated with manual attendance tracking. By digitizing the process, it significantly reduces the time and effort required from faculty, ensures accurate record-keeping, and improves access to historical data.

The system is designed with usability and mobility in mind, making it suitable for real classroom environments. Its core features—including fast attendance marking, student editing, and report generation—streamline faculty workflows and support academic planning. Overall, this mobile-based solution contributes to the broader goal of digital transformation in education, ensuring better academic management and institutional efficiency.

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