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# A Novel Approach of Mobile Based Student Attendance System Using Android Application

**Prof. Harish B G\*, Thushara R B\*\***

Assistant Professor, Department of Master Applications ,University B. D. T College of Engineering, Davanagere, Karnataka, India.\*

P.G. Student, Department of Master Applications ,University B. D. T College of Engineering, Davanagere, Karnataka, India.\*\*

**ABSTRACT:** Since education technology in India has been modernising in recent years due to the development and penetration of information technology, the goal of this paper is to implement some of the emerging technologies such as mobile computing, information and communication technology, and advances in behavioural science studies to enhance and enrich the current educational system. For this research, mobile technology was chosen. The methodology for this project is to create an android-based mobile attendance management system that uses ASP.NET and SQL Server to record attendance via mobile devices. The findings of this developed software store, retrieve, and deliver information about students, such as whether they are present or absent, via a mobile device. The results are extremely beneficial to the organisation in terms of keeping, tracking, and maintaining information about students, as well as making it simple to deliver student reports to concerned parents. This work can also be expanded to keep track of the student's internal grades, semester grades, and other activities in the organisation.

**KEYWORDS:** Attendance, android, smart phone.

## I. INTRODUCTION

In today's world, managing and maintaining student information is a difficult task for any institution. The academic information of students consists of periodically monitoring their performance and progress, which appears to be a significant workload for lecturers to handle and keep up with the progress of subjects for their respective classes. Manually recording attendance in a log book and then converting to a desktop application is the traditional method. Such a system can be a time-consuming process that frequently results in errors when generating reports. Aside from that, due to a variety of factors, attendance sheets are sometimes lost, misplaced, or information is entered incorrectly. A smart phone based mobile application using Android can be used to make this process more easy and beneficial in every way, reducing manual work and increasing efficiency in managing student information. The proposed system will store, retrieve, and send student data to the appropriate individual. For the attendance system, we created an android-based mobile application. This project allows teachers to easily record and report on student attendance. Attendance Management System is software that is used in schools, colleges, and institutes to track daily student attendance. It makes it easier to find out about a specific student's attendance in a specific class. The data is sorted by the operators, who are provided by the teacher for a specific class. This system will also assist in determining a student's attendance eligibility criteria. Using Android and Java technology, an attendance management system is created. It consists of four modules, including user authentication, web service calling, attendance marking, and student information display. In, a framework for maintaining student attendance was proposed, as well as a system for tracking the illegal use of cellphones during class hours. Whether it is a college, school, or other institution, attendance is taken every day on each working day, and every institution wastes a lot of paper in the process just to keep the record. Our natural resources are depleting at an alarming rate for such trivial reasons, and it is possible that our descendants will be unable to obtain those resources.

## II. RELATED WORK

This section examines the research projects undertaken by various researchers that are relevant to the proposed project. In general, a mobile application is created in one of several languages, such as Java, with the help of a software development kit (SDK). The data bases store the data used by the application or processed by the application. The following mobile application developers were successful in creating a student attendance management system using SQL data bases.



V. Somasundaram et al. presented a visual basic.Net (VB.NET) and SQL server-based mobile attendance system. This system is used to store, organise, find, and manage student information, as well as to assist in the generation of student information reports [1].

K. Akhila and colleagues proposed an android-based mobile application for tracking student attendance. It provides reliability, saves time, and is simple to control and track attendance using Android phones. It has the potential to reduce staff members' efforts in maintaining attendance. It's an effective and user-friendly Android mobile application for tracking attendance [3].

Rakhi Joshi and her colleagues created an android-based attendance management system that includes a smart learning system. A SQL server is used to develop the web-based mobile application. This system uses a smart phone to track attendance and sends SMS notifications to students when their attendance falls below a certain threshold [2].

Amita Dhale and colleagues also presented a survey on "smart connect," an android and web-based application for college management. SQL server is used to create it. It's primarily used to keep track of the information needed by the institutions [8].

Because applications for one MOS are incompatible with those for other MOS, the mobile operating system (MOS) plays an important role in the development of mobile applications. As a result, the MOS must be considered before developing a mobile application for a specific application, and the application must be developed accordingly. As a result, the Android MOS is used to develop student attendance management and monitoring systems.

Akshay A. Kumbhar et al presented an automated attendance monitoring system using android platform. It is then used to maintain the attendance of the student regularly [9].

An android-based student activity register system was presented by Jessenth Ebenezer et al. It is used to record attendance and store student information so that professors or higher officials can monitor students' attendance and discipline them if they are not attending classes regularly [7]. In addition, organisations use a mobile application-based attendance management system to track employee attendance.

A mobile application for employee registration and mobile attendance was presented by S.P. Avinaash Ram and J. Albert Mayan. It is used to track and update employee attendance on a regular basis. Taking attendance is also beneficial to the staff and the authorities. This system is also used to easily determine the number of employees and to keep track of whether they are regular employees. Every employee's information is also available through this system [4].

In addition to providing authentication, a location-based attendance management system is used in organisations. Mohammad Salah and colleagues presented a mobile application for a location-based time and attendance system. This application is used to track employee attendance based on whether or not they are in the same location as the company. Android [5] was used to create this application.

For the attendance management system, wireless technologies such as Bluetooth and Wi-Fi are used in conjunction with a mobile application. Riya Lodha and her colleagues created a Bluetooth-enabled device-based attendance management system. This application uses Bluetooth technology to track attendance using wireless technology. As a result, it cuts down on the time it takes to mark attendance [6].

Freya. J. Vora proposed a framework of android-based mobile attendance system. It uses Wi-Fi technology to mark the attendance in android based phones. It allows to store and edit the attendance [10].

According to the literature review, mobile application-based attendance management systems play an important role in regulating student and employee attendance in educational institutions and commercial sectors. Furthermore, the mobile application-based mark management system improves educational quality by allowing easy access to and analysis of grades. This mobile application, on the other hand, is based on the MOS. This paper presents an android-based mobile application for educational institutions' attendance and mark management systems.

### III. METHODOLOGY

This project was created with the help of VB.NET and SQL Server. It is split into two sections. In the first phase, a feasibility study is conducted, followed by a requirement analysis to determine the system's need, and the necessary modules, such as admin, registration, student, SMS, and Android modules, are identified and explored in section. In the design phase, requirements are converted into system design, as shown in Figure 1. In the second phase, the design is translated into code, and testing is carried out to ensure that the project is bug-free and meets the requirements. The completed project has been installed and is ready to use.

We attempted to develop a system that would overcome the limitations of the current approach. Using mobile phones to track attendance instead of the traditional method is a step toward long-term development. The same work can be done on mobile phones, which not only saves resources but also allows users to have easy and interactive access to student attendance records. We attempted to create an application that would assist teachers in taking student attendance using their own mobile device. What could possibly be more intriguing for that!! The goal of creating an





attendance management system is to automate the traditional method of taking attendance. Another reason for developing this software is to automatically generate the report at the end of the session or in the middle of it. The purpose of this application is to automate the processing of attendance. It also improves the efficiency of performing attendance tasks. It also generates periodic reports to keep track of who is attending class and who is not. A faculty member must first log in to the system, then select the appropriate class, semester, and subject from the attendance menu. As a result, a list of students who are eligible to participate in this session will be displayed. Now the faculty must simply choose the students' names from the manual attendance sheet based on their roll number and submit the sheet.

The selected students will be added as present students in that session. The selected students will be added as present students in that session. This system is also beneficial to office staff because it allows them to generate. Various types of reports should be submitted to the appropriate faculties or to the College Coordinator. Office staff can also create a black list of students who have less than 50% or 80% attendance. As a result, various reports of this nature can be generated. When compared to a human, a computer can work more efficiently. Employees find it easier to do their jobs, and as a result, some human resources are saved.

The accuracy of the data is maintained. In a short period of time, accurate data can be obtained. Data can be accessed quickly and at any time. This also saves a significant amount of time. The data is safeguarded by the use of a login system. Unauthorized individuals cannot access the data because of this login system. The system can reduce the complexity of the work, which was not possible with a manual or semi-automated system. As a result, it saves the most time possible. The goal of the Attendance Management System is to automate the traditional method of taking attendance. Another reason for developing this software is to automatically generate the required reports at the end of the session or in the middle of the session, as needed. This project is a desktop application, which means that it is self-contained software that runs on the system on which it was installed under the user's control and is limited to a single institute or college.

Android and SQL Server were used to create this project. It is split into two sections. In the first phase, a feasibility study is conducted, followed by a requirement analysis to determine the system's need, and the necessary modules, such as admin, registration, student, SMS, and Android modules, are identified and explored in section. In the design phase, requirements are converted into system design, as shown in Figure 1. In the second phase, the design is translated into code, and testing is carried out to ensure that the project is bug-free and meets the requirements. The completed project has been installed and is ready to use.

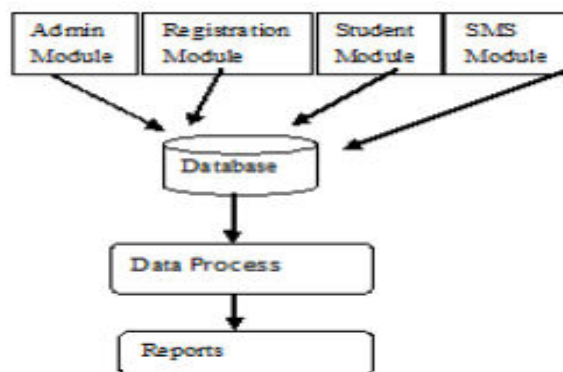


Figure 1. Overall system design.

### System Design

This application's user security is critical; Figure 3 depicts the authentication model in use. Each user's application entry model is prompted to enter the given user name and password. If the username and password match the data provided by the user, the server will allow the user to run the system, and the application will begin to run.

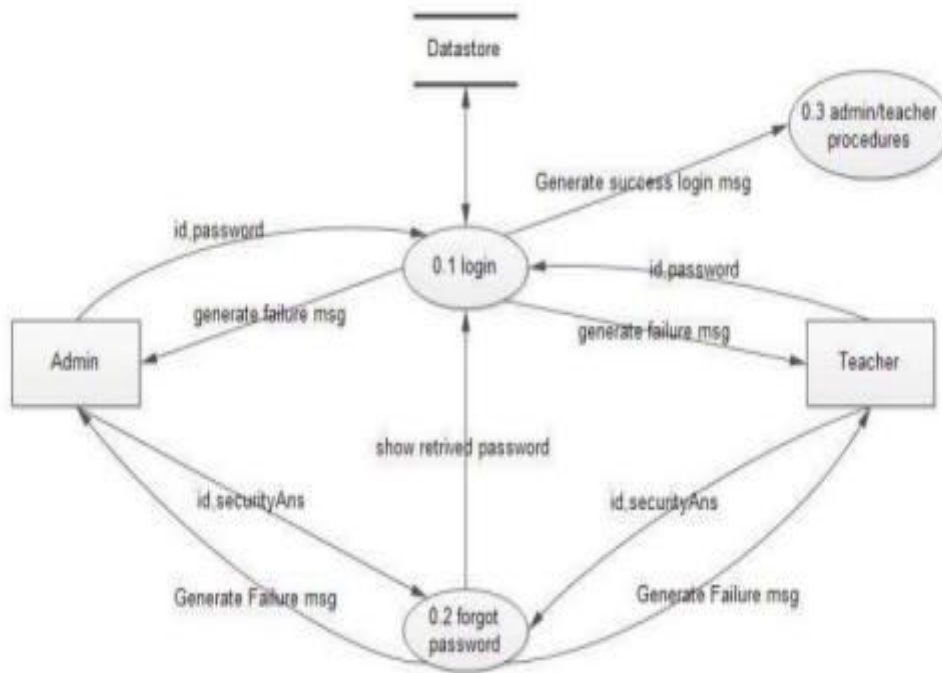


Figure 2. Authentication Module flow diagram

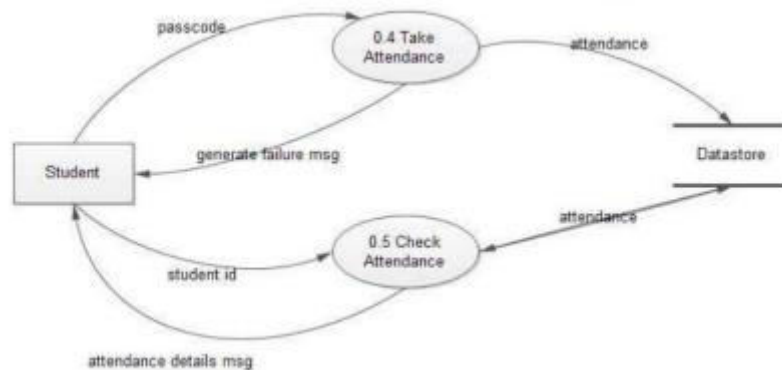


Figure 3: Students attendance module flow diagram

#### IV. CONCLUSION

This job entails retrieving information about students and generating reports. The "Mobile Based Attendance Management System" project is made up of both static and dynamic pages. The user can enter data into this project using simple and interactive forms. This is very useful for students and staff members to easily keep and maintain student information. This work can also be expanded to include the storage of internal grades, semester grades, and placement activities.

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