

Android Attendance Management System

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ABSTRACT

Most educational institutions still use the conventional method of marking attendance by calling out names of students from a list and marking both present/absent in a physical attendance record maintained using pen and paper. This process is time consuming and also makes it easier for students to fake their attendance by practicing proxy or other such unethical methods. The main objective of this paper is to implement an android based application for attendance management so as to digitalize the process. The lecturer will get a list of students enrolled to that class based on their time table along with the image of the students. This system is very useful to the lecturers because they can verify the student with the image and can completely prevent proxy. This application will help transfer to a paperless method of maintaining records, also this application can be deployed on existing android devices and no additional hardware is require.

Keyword : - conventional method, android application, digitalize, proxy.

1. INTRODUCTION

Participation of students in a learning process is vital for knowledge transfer. So it is very important for students to attend lectures and classes. In both classroom settings and workplaces, attendance may be mandatory. Poor attendance by a student in a class may affect their grades or other evaluations. Poor attendance may also reflect problems in a student's personal situation, and is an indicator that "students are not developing the knowledge and skills needed for later success". For students in elementary school and high school, laws may require compulsory attendance, while students at higher levels of education may be penalized by professors or by the institution for lack of attendance. This Application is built for automating the processing of attendance. Most institutions still use the traditional method of marking attendance. One common method is by having students write their names in the attendance sheet, which is typically passed around the classroom. This approach allows the students to manipulate their attendance; a student may sign for an absent student. Besides, the attendance sheet could easily be misplaced or lost.

Another approach involves the lecturer calling out name of each student, verifying their presence and then marking their attendance in a register. This approach is stricter than the previous method but is more time consuming and tedious.

Our application provides every teacher with a digital or electronic register which can be their very own android based smartphone. The application provides with simple and easy to use UI for the teachers so that they can easily and conveniently access the application.

The proposed application automates the attendance process and change to a paperless method. There exists other alternative methods that require additional hardware to achieve the same which results in additional cost, keeping that in mind we aim to develop an application that can be deployed in any existing android devices without much hassle

2. EXISTING SYSTEM

In this section we review existing systems that are used to manage student's attendance.

One of the approaches use RFID[1].RFID system primarily comprises of RFID Tags, RFID Reader, Middleware and a Backend database. FID system in this application detects the presence or absence of the student data to be transmitted wirelessly by mobile device, called a tag, which is read by an RFID reader and processed according to the programmed instructions on the personal computer (PC).

Another approach is to use Biometrics[2].The proposed system fingerprint authentication. It comprises of two modules: enrolment and authentication. Enrolment involves capturing student's biometrics and storing them in a flash memory along with the student's ID. During authentication process, fingerprint of each student is scanned and compared with those stored in the memory. If there's a match the student's attendance is marked present else absent. Both systems described earlier have the same limitation, which is the additional hardware cost and installation. Even though RFID devices have become cheaper over the time, one whole RFID system does not just include readers and tags. The cost to setup the system from scratch can easily outweigh the cost of the RFID devices used in the system. Biometric scanner are also very expensive. The attendance recording process would also be time consuming due to the fact that

biometric scan would normally take a while for recognition and validation process.

Alternative approach is a Bluetooth Based Attendance System. Lecturer marks the attendance in his phone using a software pre-installed that enables it to query student's mobile via Bluetooth. It relays student's mobile Media Access Control (MAC) addresses to the lecturer's mobile phone and presence of the student can be confirmed[3].This approach also has a flaw.Only the mobile is required to be in range to be marked present irrespective of whether the student is physically present or not.

3. PROPOSED SYSTEM

The goal of the job is to produce a mobile based attendance upkeep system where the professor can mark the attendance on his android mobile which is upgraded in the server by means of GPRS. The application lowers manual effort in going into the attendance information in numerous log books and developing reports is numerous formats.

We need a system which can mark attendance based on the presence of students. For this purpose, Student attendance tracking system is a attendance system for students used by the college and schools. This project contains two parts: one web application and an android application. Web application is used by the admin and the HOD. Android application is used by the lecturers and the students . It has an interactive GUI for adding efficiency and for automating organization procedures.

The web application will be run in the system which the admin can access. The admin can manage all the data required like the course details, subjects, student details. The admin will add all the staffs and their details which includes HOD and lecturers and also the student details. The HODs of different department can login to the application and assign different subjects to the lecturers. HOD can manage the timetable and also view the attendance of class. The lecturer and students will use an Android app for this project. The lecturers have first have to login to the application. If a lecturer is taking a class at a given time, according to the time table, first the app will fetch the student details of the class. This will authenticate that the class has started and then students name list will be displayed along with the student image. The lecturer can update attendance by looking at the student face and image for verification. By this procedure, we can exactly get the attendance of students by seeing their image. Proxy attendance is not possible. The entire attendance will be maintained well. Multiple copies can be maintained for administrative purpose. The students will also have an android application in their phones with the help of which they can login and view their profile and also their attendance status. This application will also have a bulletin board where the students will receive the updates about the latest workshops happening in the college campus and also the lecturers can inform the students about their absence for a particular day and allot that particular class to any other lecturer and also inform the students about the changes.

4. IMPLEMENTATION

The proposed system has 4 actors: The admin, HODs, lecturers and the students.The lecturers and the students will have android applications, while the admin and HODs use the web application.

The admin logs into the web application using predefined user name and password stored in the database. Admin's responsibilities include managing the courses, managing all the students registered to a particular course and managing the HODs. Once a HOD has been added for a particular course by the admin they receive an email stating their username and password, using which they can log into the HODs webpage.

HODs is responsible for managing timetable and assigning lecturers for each subject. Lecturer's once assigned also get a mail informing them of the same.

The android application is used by the lecturers and the students. The lecturer uses his/her android app to mark attendance. List of students is retrieved as per the timetable of the lecturer. An image of the student along with his name will appear on the screen. Lecturer can verify the presence of the student and mark their attendance by swiping left for absent and right if they're present. Additional information about the student can be found by swiping up.

The Lecturer also has an option to post notifications regarding cancellation of classes or co-curricular activities taking place on a notice board provided in the application, which will be available for all students to see.

Students can use the android app to view the notifications posted and also their attendance status.

Attendance status of students are calculated periodically and if/when a student has shortage of attendance they are notified using Firebase Cloud Messaging (FCM) [4].

FCM implementation includes two main components for sending and receiving:

1. A trusted environment such as Cloud Functions for Firebase or an app server on which to build, target and send messages.
2. An iOS, Android, or Web (JavaScript) client app that receives messages.

You can send messages via the Admin SDKs or the HTTP and XMPP APIs. You can also compose messages without an app server by using the Notifications console.

Firestore is built on Firebase Cloud Messaging and shares the same FCM SDK for client development. For testing or for sending marketing or engagement messages with powerful built-in targeting and analytics, you can use Notifications. For deployments with more complex messaging requirements, FCM is the right choice.



Figure 1. Firebase Cloud Messaging

5. CONCLUSION and FUTURE SCOPE

The project can be further enhanced by connecting it to a Cloud. This allows the application to be more scalable. The proposed system describes a method of attendance management with simple yet clean GUI, which makes it easy to use. No additional hardware is required as it can be deployed on existing android devices. Also it automatically notifies students in case of attendance shortage, thus alerting them to be regular to the classes. It helps curb malpractices such as proxy and reduce the time required by lecturers to everyday to update the attendance list and calculate student's attendance percentage. This system allows us to transition to a paperless, environmentally friendly way of maintaining attendance records.

6. REFERENCES

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