

## Android Based Attendance Management System

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**Abstract:** So as to watch the student's performance within the classroom and their studies, the attendance tracking task may be a very major issue. It's a serious issue because there's a rule out the schools that a student can attend the examination as long as his/her attendance is above or adequate to several percentages i.e. (60%, 70%, 80%, etc) otherwise not. Within the manual attendance management system, each student must sign the attendance sheet whenever for the attendance of every lecture which is extremely time-consuming. Also there's an opportunity that some students may accidentally or intentionally mark the student's proxy or the text of attendance sheet may stray. Using the attendance based management system, the course teacher are going to be ready to take attendance easily also as can save the attendance within the phone, in server and may check percentage and can also print as text. This technique is additionally ready to mark attendance, attendance percentage calculations, can also send updates to the oldsters or guardian to stay them updated about their child's attendance. The system also features a function that it is often accessed from anywhere and any moment no matter the web connection.

**Background:** The Legacy attendance system was about the register during which the whole student's names were written and therefore the dates are written. The lecture has got to mark the scholar present or absent respectively. This was a tedious task to handle because the teacher has got to maintain a separate register for separate subjects therefore the lecturer had to the manual work of checking out what percentage times a particular student was absent. Then he has got to calculate the share of presence of a student whose figure is employed to seek out is that the student comes under the defaulter list.

**Key Word:** Attendance system, android application, web-app.

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### I. Introduction

In most educational institutions, participation of scholars in learning process be considered an important exercise for allowing knowledge transfer. This signifies the importance of getting students to attend the scheduled lectures and classes. Conventional methods for recording student's attendance are still adopted by most colleges. One common method is by having students to manually sign the attendance sheet, which is usually passed round the classroom while a teacher is giving the lecture. This approach could undoubtedly allow the scholars to cheat about their attendance, where a student may sign for an absent student. Besides, such attendance sheet could easily be misplaced or lost. A stricter approach, especially to stop students cheating about their attendance is additionally tedious, where a teacher calls out the individual names from the scholars list and validate the presence of each single student. Such manual methods of taking students' attendance are proven to be difficult and time-consuming. Thus, there's a requirement for a semi-automated system that might eliminate all of those troubles. Therefore, it's our objectives to develop a transportable attendance system equipped with a web database, especially to stop data loss also on promote paperless and a greener environment. Besides that, the appliance will help to scale back nonce wasted, resulting in a better learning productivity in school. There are a couple of paperless attendance systems that are developed but such systems got to be equipped with either a computer leading to additional cost for hardware and its maintenance. There upon in mind, we've aimed to deal with this issue by having a system with minimal hardware requirement and at an equivalent time, enhancing the mobility aspect of the prevailing attendance systems.

## II. Literature Review

In this section, we review a couple of related systems and their different methods in recording students' attendance. An RFID based system [1] is developed to record student's attendance during class hour because of the students enter the category. This technique requires each classroom to be installed with an RFID reader that's connected to a computer. The RFID reader are going to be wont to capture the scholar information through the student's card. To look at the general student attendance, the lecturer may later connect to their phone via Bluetooth to the PC. Another project [2] is additionally using RFID technology. However, this technique requires an RFID reader to be mounted at the central of every classroom. The mounted RFID reader will track all RFID tags within the classroom directly, and an object counter will update the amount of scholars within the classroom supported the successfully traced tags. Both systems described earlier have an equivalent limitation, which is the additional hardware cost to put in the RFID devices. Albeit RFID devices became cheaper over the time, one whole RFID system doesn't just include readers and tags. Computer, cables, network or may be a server could be needed so as to set up the entire infrastructure. The value to set up the system from scratch can easily outweigh the value of the RFID devices utilized in the system. An alternate approach was introduced in [3], where the system promotes fingerprint based students' attendance audio system with GSM utilization. By using this technique, each student attendance is validated once the student's fingerprint is verified by the reader. Additionally, to the strict attendance verification and recording, the system will send weekly attendance report back to the students' guardians via GSM. In another biometric-based system, [4] presents a foreign iris acknowledgment attendance administration system, which is planned and actualized using the Daugman's calculation [5]. This technique utilizes the iris acknowledgment for confirmation 2015 IEEE Conference on Systems, Process, and Control (ICSPC 2015), 18 – 20 December 2015, Bandar Sunway, Malaysia 978-1-4673-7655-6/15/\$31.00 ©2015 IEEE 118 and RF wireless techniques, especially for employee identification. Both of those systems are utilizing biometrics qualities which make them great approach against fake data. The apparent limitation of such biometrics based attendance system is that they cost tons costlier than a pure RFIDbased system. The attendance recording process in these systems would even be time-consuming thanks to the very fact that biometric scan would normally take a short time for recognition and validation process. In spite of this, we don't deny the importance of such systems in highly secured environment.

## III. Proposed Methodology

### System Architecture:

The system we are introducing during this paper aims to deal with problems of capturing student's attendance in school through the utilization of an Android-based attendance management application. With the expectation that the majority lecturers already owned an Android device, the adoption of this proposed system would certainly hamper the value of hardware and its maintenance. Besides, Android devices are normally small, light, and portable, which allows them to be used anywhere and at any time with ease. With the vision of an outcome in mind, we started the primary step into the system development by listing the features to be provided by the appliance. To use the appliance, a teacher will first get to install the APK file on their Android device. Once the appliance is started, the lecturer will get to log in onto the appliance by supplying their user id and password. Upon a successful authentication, the user will then be redirected to a different page that prompts them to pick the course code and student group to be monitored. The list of scholars registered within the selected group is going to be displayed and stored into the Android device from a web database server. Supported the stored student list of scholars, the appliance can then be wont to mark the scholar attendance by clicking on the specified student to mark them present the unchecked student is marked absent by default. Once all students have recorded their attendance, the updated attendance list can then be uploaded when the web is out there. If no connection is out there then the attendance data is stored within the local storage, after a short time when internet is out there the stored data is uploaded.

### System Design:

The Android based Attendance Management System is meant supported the client-server framework. By pertaining to the system architectural diagram the system consists of a web server with database and therefore, the Android based application and its hardware part because the client.

#### 1. Software Architecture:

The Android based Attendance Management System is meant supported the client-server framework. By pertaining to the system architectural diagram the system consists of a web server with database and therefore, the Android based application and its hardware part because the client.

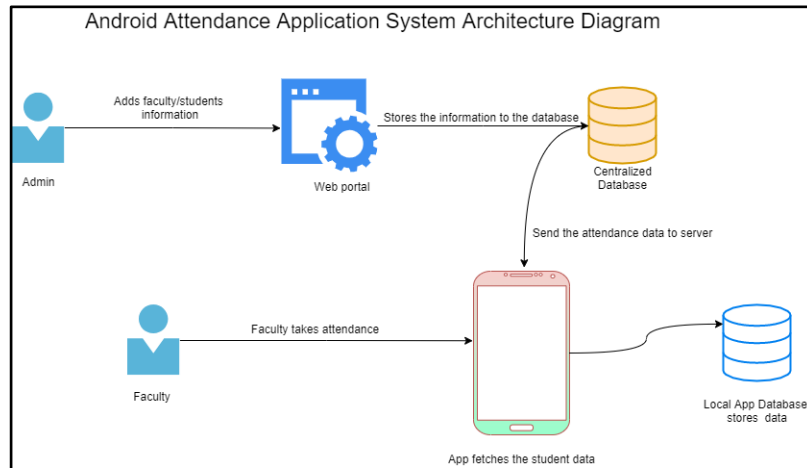


Figure 1. System architectural diagram

The online web server is often deployed on a computer, which is connected to the web. To permit public access, the server should be configured with a public IP address. This server is going to be receiving requests from the client Type equation here. Applications that are running on the Android devices, which also require Internet access, especially when downloading list of scholars from the server and when uploading updated attendance records.

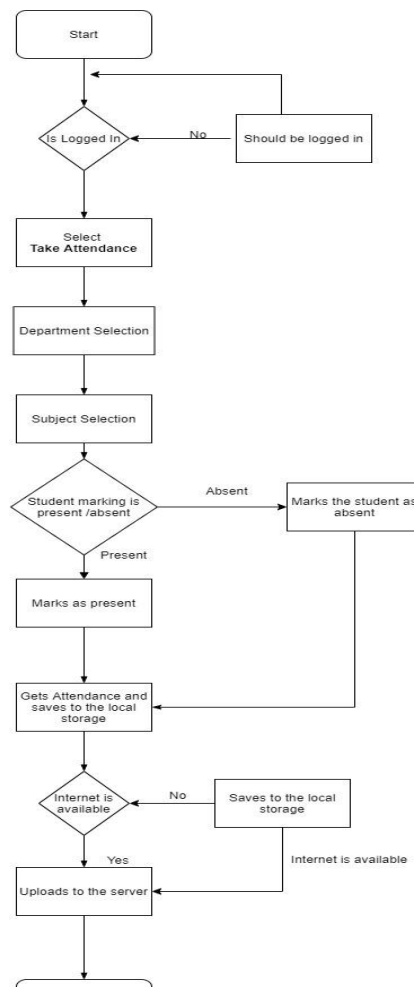


Figure 2. Flowchart: Student list activation for attendance recording

2. *User Navigation Design:*

According to the flow chart (refer to Figure 2), the application needs to be installed first on the user's Android based device. Once launched, the application will take the user to the login page. Upon a successful login authentication, the user is taken to a page to choose their registered teaching course and class (student group) from the drop down list. Once all required inputs are filled in, a list of students' names for the respective class will be downloaded into the device.

Every time a class is been taken the teacher is needed to click on the subsequent students name by which the student is marked as present or absent. The android app captures the attendance of the student and then the attendance data is stored in local storage .The app checks for a internet connection then after the connection is available the attendance is uploaded into the remote server.

If the internet connection is not available the data is stored and waited for the internet connection.

3. *Hardware Architecture:*

The basic requirement to deploy the system is a computer to run the online database server and a device that supports Android 4.1 or higher versions for running the client application. Another optional requirement is a personal computer to retrieve the attendance list file.

**System Implementation:**

The development work for this project consists of two parts, which are the development of the online web portal and the Android application itself. For development of the Android application, the design works involve designing the Graphical User Interface (GUI) required for displaying information

To create and manage the online database, basic SQL knowledge is needed. The online server application being employed is the Wamp server, which includes MySQL database as one of the components. As for the client-side, SQLite library is used to manage a local database running on the Android device; i.e. used to store the downloaded and updated student list.

**IV. Result and Discussion**

The Following design proposed in the last section, the server-client side application were successfully implemented. By, having the system to store the attendance data of student's .This promotes a paperless attendance record which in turn is helpful to environment. The capacity of the android platform has been fully utilized in the proposed system.

A. Activity Flow on Android: Output of the Graphical User Interface

The following outputs of actual android application shows the recording process based on the flowchart as in **Figure 3** shows the actual flow of activity by which the teacher/lecturer is required to record the attendance. Lecturer is required to login using the credentials given by the admin.The lecturer is required to sync from database ,by which all the required data of department, batch ,subject and student. Then he/she is required to select Batch/Department. An activity showing all the subjects/practical are been displayed .Lecturer selects the subject then an Attendance sheet is shown which is required to fill for attendance data.

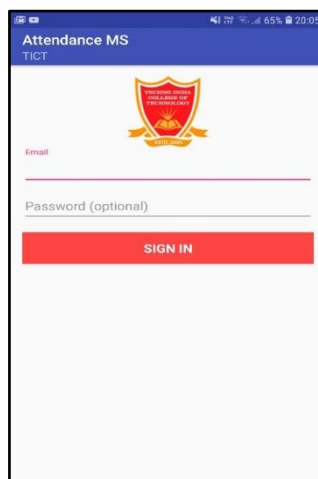


Fig. Login Activity

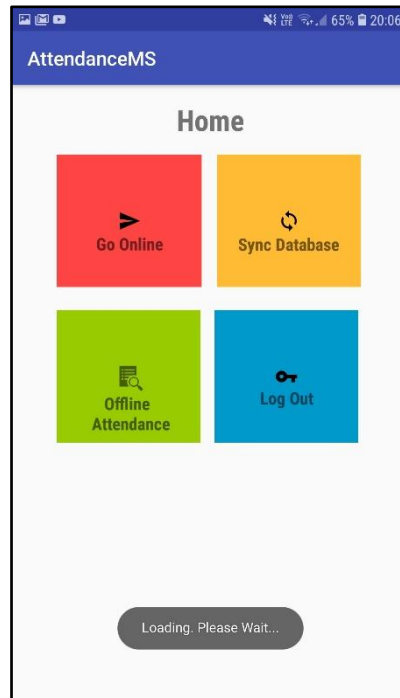


Fig. Main Menu Activity

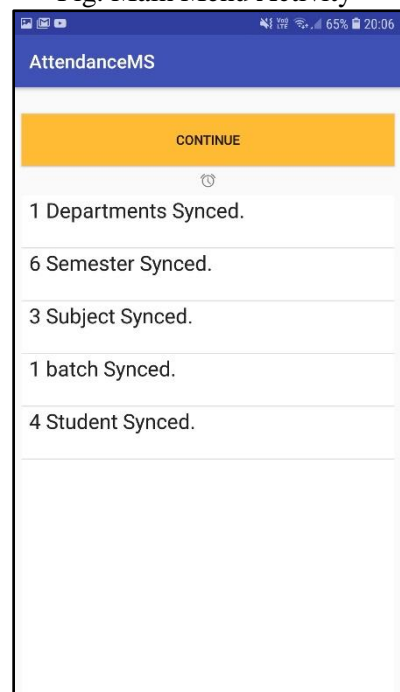


Fig. Sync Activity

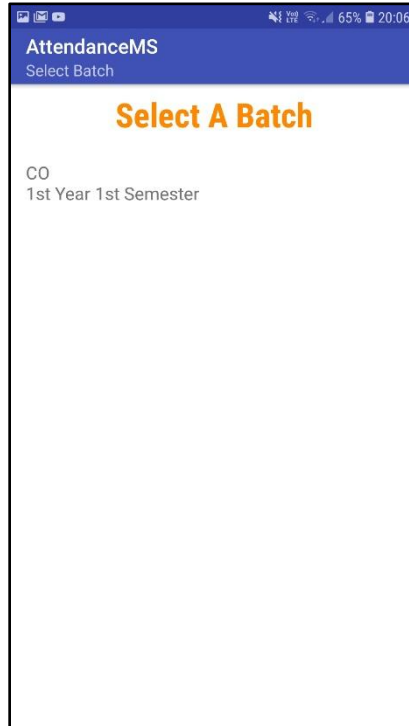


Fig. Batch Selection Activity

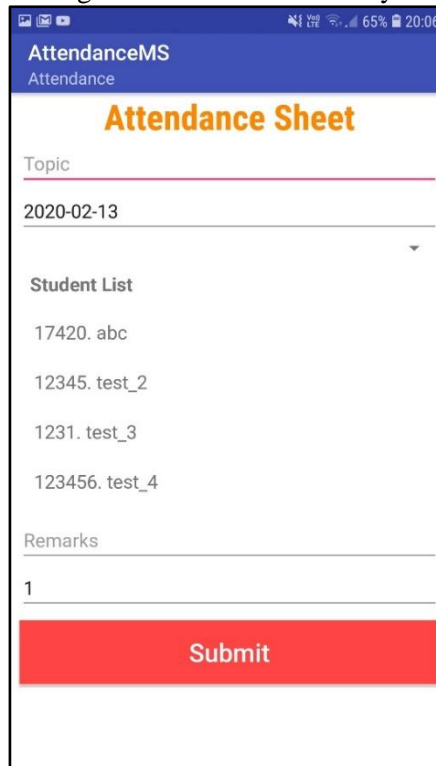


Fig. Attendance Sheet Activity

### V. Conclusion

In recording student attendance, conventional methods are still adopted in some institutions, where the instructors call out the scholar names one by one or by taking the signature from each student to work out their presence. Nowadays, better methods also are employed, i.e. by counting on a system to record the attendance of scholars in semi-auto manner, e.g. RFID or bio metrics based systems. Such systems are absolutely excellent as an answer to existing problems, but one obvious drawback is the additional cost of hardware and maintenance. Hence, it had been our target to develop an attendance system which will require minimal hardware cost, setup,

and maintenance. I.e. by having the appliance to run on the instructor's existing Android mobile device. Besides that, to stop data loss, a web database are going to be used, especially to store the recorded student's attendance. The system was successfully developed by following the client-server framework. An entire design of the system was created first, followed by the particular implementation of the system both on the server, and Android device. The event was finalized with the system testing on the general system.

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