



# Lecture and Meeting Attendance – Bluetooth

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**Abstract:** Usually, professor in institutes take students attendance by roll call or through attendance record sheet where students mark their signature. These approach of taking attendance is tedious and time consuming. These Bluetooth attendance Android App will help Professor to take students attendance through student mobile phone Media Access Control (MAC) addresses, since MAC is unique for each device proxies can be eliminated. Within the fraction of seconds student's attendance can be taken. Moreover, detailed record of a student's attendance can also be generated for printing and filing, in an Excel sheet format in the professor's mobile phone or mail the attendance record to the professor's email.

**General Terms:** Android, web services, automation.

**Keywords:** Android, attendance, meeting record, professor's personal digital assistant, attendance tracker, dynamic timetable.

## 1. INTRODUCTION

Bluetooth Attendance System is project based on Bluetooth Android Application and Bluetooth "mac-address". These projects are developing to take learner attendant during class hour as the students enter the class or lab or any purpose not only student attendance this could be used at any company meetings, staff meetings etc... The main advantage of this application is the student only needs to on his Bluetooth and at the first attendance the professor can register the Students mac-address into the database. After that the student only needs to put in his Bluetooth ON at the time of attendance. These applications are to avoid student cheating about their attendant. At the same time, this system will send a student attendant details to the lecturer e-mail & the copy will be saved in the lectures mobile phone after the class dismiss.

### 1.1 Problem Statement

The manual process is very tedious and hard to keep a track of. The task is very mundane. Also it doesn't allow freedom from proxies. Other systems like RFID and biometric systems can be applied to help the cause but these only increase the cost as they require regular maintenance and again proxies cannot be stopped or completely eliminated. The Bluetooth system is quite easy to implement but is useful solution when the no people in the classroom is down to single digits. Perfect attendance marking requires concentration and even the smallest of lapses can help proxies happen. Concentration lapses are natural and also the students sometimes forget to call out their names. This is again irritating for the professor to revisit the page after a long lecture to mark the attendance of the students who 'forget'. The new system introduced will solve the problem to a greater extent.

## 2. PREVIOUS WORK

To keep track of attendance many system have been design and developed in various organisations. These systems are not worth; sometime have performance and scalability problems. The following systems are implemented in chronological order.

### 2.1 Manual attendance system

It is the conventional method of taking attendance by calling names or signing on paper but it is inefficient due to more chances of malfunctioning and more paper work as well.

### 2.2 Biometric System

These systems usually take a unique element of the anatomy and use it for good effect for example iris, palm, fingerprints etc. These systems are perfect for high profile security agencies and are the need of the hour but these systems cannot be used in educational institutions and factories. The data keeps scaling up and the system needs to be maintained and refreshed for further use. The attendance system using android devices provides a cheaper solution compared to the biometric systems. A contingency plan could include storing data about both the eyes which would increase the amount of storage resources required in an organization. The same goes for face recognition which assures uniqueness but has the same drawbacks.



### 2.3 RFID

RFID based Attendance System uses RFID reader to get the student information through student matrix card. After getting the student information, it will send it to the computer in that class or lab [6]. Then in charge person have to verify the presence of that students. A research found limitation in attendance marking system using on Near Field Communication based systems. There are some shortcomings in this system. To eliminate proxy separate head count of each students is also needed which again make the process tedious. To eliminate above limitations, the idea of combining powerful features of android OS and biometrics would be very helpful.

### 3. PROPOSED METHOD

Professor will login into the app through process as shown in Figure 1. Here professor will enter into Dashboard. There he have to choose 'Register' option to register new students into his device app. For this students just have to put on their Bluetooth. Students does not require this app in their end. This registration will include students name and his/her phone MAC address as shown in figure 5. This MAC address will be stored in the MYSQL database or SQLite 3 [9]. The students will not be allowed to register again if they have already registered.

Whenever professor want to take attendance, initially he just need to login into this app. In Dashboard he have to select 'Attendance' option there he will be directed to 'Create Task' page as shown in Figure 3. Here he need to select Date and time, enter subject name and extra description if required. This option professor have to do once for each subject he take in that class. Later on he will only require to select that subject from pulldown menu in next page title 'Take Attendance'. After clicking on button create he will be directed to next page as shown in figure 4.

Here in Take attendance page professor will select the class and the subject from pulldown menu. He will ask all the students in the class to put ON the Bluetooth of their phone. He will click on 'Scan' button, to scan all the Bluetooth device available in the class. Within the fraction of seconds all registered students name roll no and mac id will be displayed in below window. After clicking on the 'Submit' button student's data for that particular lecture will be stored into the database. On clicking on 'View' button he will be able to see all the detail he received.

Now, on clicking 'Report' from Dashboard he will be able to view the student's attendance in MS Excel and .cv format file. That report can be exported to external storage, email id, WhatsApp of parents, class coordinator and himself.

On clicking on 'Report' he can also get monthly defaulter list of each students for every subjects. That can be exported to parent through 'Sent Notice' button to parent's email id and WhatsApp shown in figure 6.

To avoid complete fraudulent and proxies by student. They do not have any access to this app. Even students don't require this app during attendance process in their mobile. If student is present his registered MAC address mobile data will be taken as attendance, hence chance of proxy does not exist.

#### 3.1 Implementation Methodology

The first table will have all the information of the students. The information will include name, roll no etc. The other tables will have the some parts of the information which will be available in the first table. Basically they will be normalized tables.

#### 3.2 Software Requirements

The application is designed to have backward compatibility with the lower APIs. It will work on the following devices.

- Android 5.0,5.1      Android 4.0,4.1,4.2,4.3,4.4
- Android 3            Android 2.3,2.2,2.1

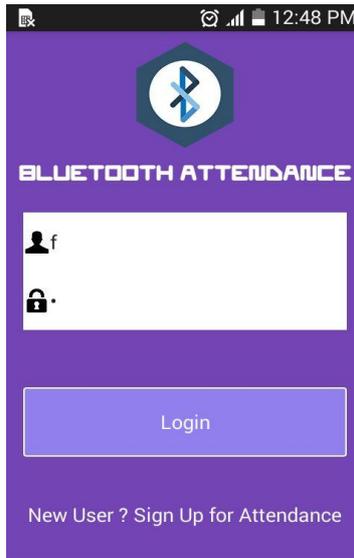
#### 3.3 Hardware Requirements

The absolute minimum requirements for Android were originally a 200 MHz processor, 32 MB of RAM, and 32 MB of storage. Out of the box, Android is incompatible with ARMv4 or lower ARMv5 or higher is needed to run native code without modifications. Android 4+ requires an ARMv7 processor. Custom versions of Android 4+ have also been made for ARMv6.

### 4. EXPERIMENTAL RESULTS

The screenshots of the system are as follows. It includes all the working modules and all the activities mentioned in theory.

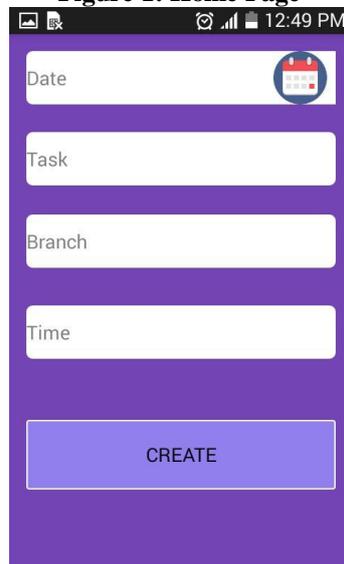
Offline results are as follows:



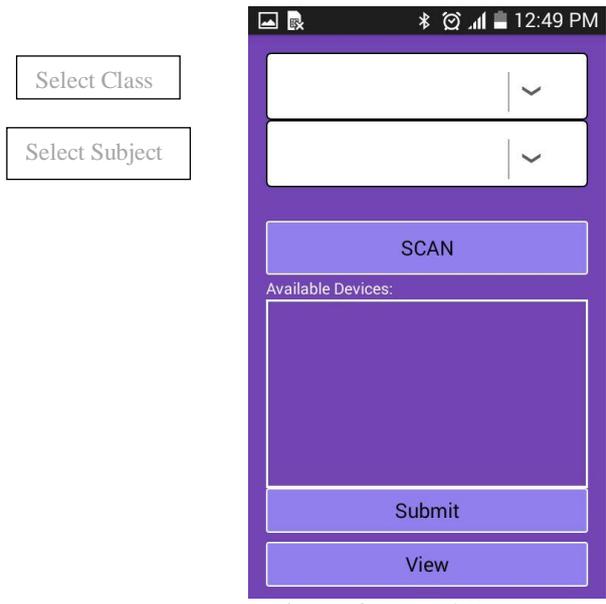
**Figure 1: Login Page**



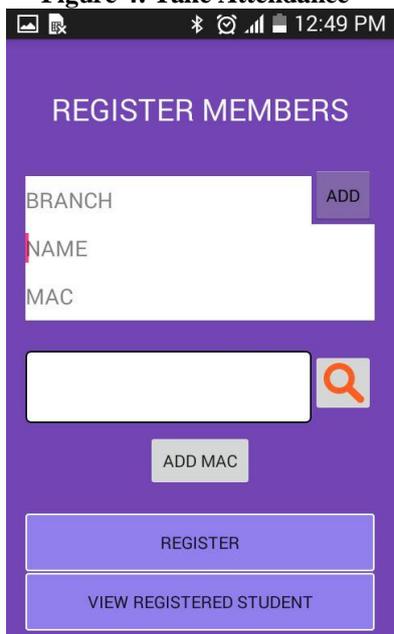
**Figure 1: Home Page**



**Figure 3: Create Task**



**Figure 4: Take Attendance**



**Figure 5: Register Members**



**Figure 6: Take Report**

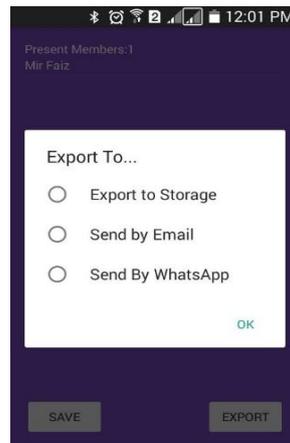


Figure 7: Saving Attendance in Storage/E-mailing

rollno	username	fname	fmail	fno	imei
01	Suresh	Raina	sr@rs.com	8977965412	0000000000000000
02	Dinesh	Kartik	dm@md.com	789453214	0000000000000000
03	Ishant	Sharma	is@si.com	8759644569	0000000000000000
21	Vivian	Richards	viv@rich.com	9874587469	0000000000000000
22	Virat	Kohli	vir@kol.com	9856985477	0000000000000000
36	Alex Dsouza	Jonathan Dsouza	john569@gmail.com	9856321785	0000000000000000

Figure 9: Registration result in the database

## 5. CONCLUSION AND FUTURE WORK

In future our system plans on including a SMS notification feature whereby every student will be periodically notified regarding his/her attendance record for a specific duration. Moreover, the mobile application can also be ported to popular Symbian OS based phones using the Qt framework. The scope of the system can be expanded & it can be used as a base for creating similar applications for tracking attendance in offices or any workplace. It can be also integrated in healthcare sector to keep track of nurse to patient visits by streamlining the time entry, time approval and management processes. We can also implement the following project in Wi-Fi. Implementing this project in Wi-Fi will help in increasing the range of the scan and security of the attendance that is been taken.

### 5.1 Conclusion

By this system students can learn anywhere anytime as per their own convenience. Timely updates of student can be sent to students as well as their parents. Attendance marking and report generation becomes easy. Less chances of malfunctioning. In future this system can be implemented to automate most of the educational systems and it can be designed for cross platform.

### 5.2 Future Work

The system can be further enhanced and several other functionalities can be added by implementing online method. In offline method teachers will still have to call out roll numbers for marking the presence of a student, this drawback will be solved in the online implementation.

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- [10] <http://www.bluetooth.com/Pages/FAQ.aspx>