

# Attendance System Using RFID and Fingerprint with Location Detection

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**Abstract:** Attendance is a must for students. Without the attendance process, the lecturer or teacher cannot assess the participation of a student. But in the process now, attendance is still done manually using paper. Where later the paper will be signed by students. But this will cause problems. The rest problem is the use of excess paper and the second problem is the difficult for the administration to recapitulate student attendance results. This is because so many attendance papers must be analyzed by the administration. Therefore, a student group action system is required which will collect knowledge quickly, efficiently and accurately. This student attendance system is done by conducting data assortment, system analysis, system style, and system implementation. This system is created using the Java programming languages. The System is also using RFID to mark the attendance and also to get the location of the student in the campus. It is expected that the attendance process will be more efficient and can be easily monitored by lecturers and by the central administration.

**Keywords:** Location, Fingerprint Scanner, Sensors, Electronic passive wave.

## 1. Introduction

In the current educational system attendance is very important. Students are not taking lectures seriously. So the question arises how can we prevent students from bunking lectures. This system will mark the attendance of the student also and will give the real-time location of the student if they are present in the college or school campus with the help of RFID.

### A. Radio frequency identification (RFID) technology

Wireless technology of communication of electromagnetic waves between the RFID reader and the RFID tag in order to automatically collect the stored information, uniquely identify and trace the RFID tag is known as Radio Frequency Identification Technology. There are 3 kinds of RFID tags-active, passive and semi-passive. The main difference between these tags is that active and semi-passive tags require an internal battery to work but the passive tags do not. Passive tags acquire the required power from the RFID reader. In the proposed system we have used passive RFID tags only. Each and every RFID tag has a unique ID stored in it. Different frequencies of RFID readers available are shown in the table 1.

Table 1  
Different types of available RFID reader based upon their frequencies

		Range	Frequency Used
LF	Low Frequency	3kHz - 300kHz	125kHz
HF	High Frequency	3MHz - 30MHz	13.56MHz
VHF	Very High Frequency	30MHz - 300MHz	Not used in RFID
UHF	Ultra High Frequency	300MHz - 1GHz	866MHz, 915MHz

### B. Biometrics

The process by which human identification is carried out based on their traits or characteristics is known as Biometrics.

Biometric identifiers are unique, determinable typical features applied to identify and depict an individual's identity.

## 2. Literature analysis

Literature analysis consist of the previous papers that have references to this paper, we have collected various paper regarding our paper and we can find the mention paper below in the table helpful. We have looked after several papers and we have fine them helpful. You can undergo the following listed table and help yourself.

S.No.	Author Name	Year	Remark
1	Muhammad Ayat Hidayat, Holong Marisi Simalango	2018	This paper consist of the attendance system using the ibeacon.
2	Murizah Kassim, Hasbullah Mazlan, Norliza Zaini, Muhammad Khidhir Salleh	2012	This paper describes the development of a student attendance system based on Radio Frequency Identification (RFID) technology.
3	Ram Prabu J, Pavithra R, Aswini N, Francis Brindha A	2018	In this project we take the student attendance system automatically by using the fingerprint sensor. The students present and absent list are generated on the computer system automatically by connecting the ZigBeetechnology.
4	Raghav Apoorv, Puja Mathur	2016	This paper consist of Smart Attendance Management using Bluetooth Low Energy and Android

Fig. 1. Comparison of different Literature papers available

## 3. Existing system

The architecture BAAK admin manages content related to academic activities through web administrators, the results of data management will be stored in the database, while students who have received notification from IBeacon will be directed to the frontend application to process attendance. All course schedule data that can be seen by students is the data that has been managed by the BAAK Admin, after the student attendance process, the front end application will send a request to the Line API to send notifications to lecturers and students.

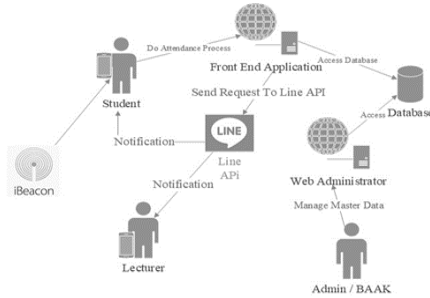


Fig. 2. Existing system architecture

- **iBeacon:** iBeacon works with Bluetooth Low Energy (BLE), also known as Bluetooth 4.0 or intelligent Bluetooth. Through iBeacon, we can identify our position in a shop and it could send us notifications about things that are going to be sold or we are interested in. Besides, we could pay without Absence of **Tracking:** -After the wrong pin image of the person is being captured and sent to the admin but, the unauthorized person is not being tracked.
- **Line Messaging AIP:** Messaging API allows data to be sent to your bot's app server and the LINE Platform. When a user sends a bot you have with a message, a Webhook will be triggered and the LINE Platform sends a request to your Webhook URL. Your server then sends a request to the LINE Platform to respond to user requests. Request sent via HTTPS in JSON format.

#### 4. Proposed system

The System that we have proposed consist of the RFID tag and the fingerprint scanner. The RFID tags are installed in the campus area and also in the classroom. When the students will come in class then they have to mark their attendance with the help of fingerprint scanner and the RFID reader will confirm the presence of the student in the class with the help of RFID tag. If the student is present in the school/college campus area but still not attending the lectures the RFID readers that are installed in the campus area will notify the system about the student presence in the campus.

##### A. Working of the proposed system

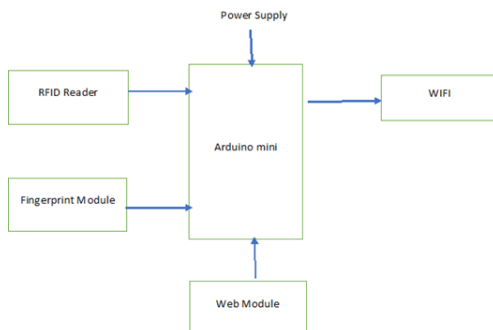


Fig. 3. Block diagram for the proposed system

The block of the Existing system consists of the following main parts:

- RFID
- Fingerprint
- Arduino

Let's go part by part.

##### B. RFID

A frequency identification reader (RFID reader) may be a device wont to gather data from an associate degree RFID tag, that is employed to trace individual objects. Radio waves square measure wont to transfer knowledge from the tag to a reader. RFID may be a technology similar in theory to bar codes. However, the RFID tag doesn't have to be compelled to be scanned directly, nor will it need line-of-sight to a reader. The RFID tag should be at intervals the vary of associate degree RFID reader, that ranges from three to three hundred feet, so as to be scan. RFID technology permits many things to be quickly scanned and allows quick identification of a specific product, even once it's encircled by many different things.

##### C. Fingerprint

Fingerprint Scanners could be a fingerprint recognition device for pc security equipped with the fingerprint recognition module that includes with its superior performance, accuracy, sturdiness supported distinctive fingerprint biometric technology. Fingerprint Reader/Scanner is extremely safe and convenient device for security rather than arcanum, that's susceptible to fraud and is tough to recollect. Use USB Fingerprint Scanner / Reader with our biometry code for authentication, identification and verification functions that permit your fingerprints act like digital passwords that can't be lost, forgotten or taken.

##### D. Arduino

Arduino is an associate degree open supply software system company, project and user community that styles and manufactures single board microcontrollers and microcontroller kits for building digital devices. Its product square measure authorized below the antelope Lesser General Public License (LGPL) or the antelope General Public License (GPL), [1] allowing the manufacture of Arduino boards and software system distribution by anyone. Arduino boards square measure accessible commercially in preassembled kind or as homemade (DIY) kits.

#### 5. Conclusion

This report consists of the review of attendance system using the fingerprint and the RFID with location detection.

#### 6. Future Work

##### A. School/Colleges

This system can be used in school/colleges for marking the attendance without any human interface and this system will

also give the location of the students if they are present in the college campus but not attending the lecture.

#### *B. Government Organization*

In Government organization/ offices, we see the government officers are not available at their desk/place at the working time, with the use of this system the location of the officer can be detected if he is present in the office area but not at their place.

#### **Acknowledgment**

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#### **References**

- [1] D. E. Mshelia, A. H. Alkali, S. Isuwa, D. E. Dibal, C. Onogwu, "An RFID and Fingerprint Automated Attendance System", August, 2017.
- [2] Dongare Priyanka, Gunjal Pratiksha, Gujar Prashant, "An implementation of fingerprint and aadhar based student attendance system", 2018.
- [3] Sung Bum Pan, Youn Hee Gil, Daesung Moon, Yongwha Chung, and Chee Hang Park. A Memory-Efficient Fingerprint Verification Algorithm Using a Multi Resolution Accumulator Array", June 2003.
- [4] Pallavi Verma Namit Gupta, "Fingerprint Based Student Attendance System Using GSM", November 2017.
- [5] Ram Prabu J, Pavithra R, Aswini N, Francis Brindha "A Wireless Smart Biometric Attendance System" International Journal of Innovative Technology and Exploring Engineering (IJITEE), December 2018.
- [6] Raghav Apoorv, Puja Mathur "Smart Attendance Management using Bluetooth Low Energy and Android," IEEE 2016.
- [7] Benfano Soewito, Ford Lumban Gaol, Echo Simanjuntak, Fergyanto E. Gunawan "Attendance System on Android Smartphone" International Conference on Control, Electronics, Renewable Energy and Communications (ICCEREC), 2015.
- [8] Muhammad Ayat Hidayat, Holong Marisi Simalango "Student's attendance system and notification of college subject based on classroom using IBEACON" 3rd International Conference on Information Technology, Information Systems and Electrical Engineering (ICITISEE), Yogyakarta, Indonesia, 2018.
- [9] Murizah Kassim, Hasbullah Mazlan, Norliza Zaini, Muhammad Khidhir Salleh, "Web-based Student Attendance System using RFID Technology," IEEE Control and System Graduate Research Colloquium (ICSGRC 2012).