

Cloud Storage Based Automatic Student Attendance System using RFID in IOT

Soe Soe Mon

Abstract— In most recent years, there have been growth in the number of intelligent tools based on Radio Frequency Identification (RFID) systems. The Use of RFID systems have been successfully working to different areas such as transportation, health-care, agriculture, and hospitality industry to tag a few.RFID tagging uses small radio frequency identification devices which include the chip itself, a read/write device and a manager system application for data collection, processing, and transmission.The proposed system aims to collect University attendance system by using RFID.In universities s' roll call system is done through the roll call demands to drop time and power so it points to misuse time and power of professors to teach.Thus, it is crucial to use capable and effective modern systems, because RFID attendance system and replacing the tradition system, time and energy waste could be avoided.

Index Terms—RFID, attendance system, tag.

1) INTRODUCTION

Attendance system needs to implement at many places, university for students and in the other areas such as industries for login – logout times for employees.RFID based attendance system used in school, college, university and company. Main use of RFID project is to take automatically attendance of school students or employees.New technologies supported to have good technique and minimize human errors.This proposed system is aim to discover automatic universities student attendance system.Students roll call system is completed through the class lists and inspecting student attendance need to drop time and power so this proposed system points to expensive time and teacher power to teach. Therefore, it is specially to use efficient and modern systems, waste of time and energy could be averted. Thus, attendance system could be supported to an automated and unified one.The proposed system includes automatic student roll call system use of cloud storage and radio frequency identification devices.An automatic system can give better routine and efficiency than the traditional method of look at student.RFID devices are tagging objects use of wireless microchips automated identification system and it consists of RFID card reader[11]. The reader is a powerful device. RFID reader can read RFID tags and can identify objects wirelessly without line-of- sight. n this proposed system describe the RFID system for identifying and monitoring attendance. RFID readers are equipped in read range zone when RFID cards pass through it.RFID technology is equipped at every

classroom in the university to encourage that every student presence is collected by chip classroom roll call system.

2) RELATED WORKS

The first patent of RFID technology is Mario W. Cardullo claims to have received the first U.S. patent for an active RFID tag with rewritable memory on January 23, 1973. That same year, Charles Walton, received a patent for a passive transponder used to unlock a door without a key. The U.S. government was also working on RFID systems[14]. Typically, RFID system has three basic tasks: RFID tags, RFID readers and the application management system. RFID tags have two categories, such as Passive model and Active model. As well as the system is must specified by tag and reader with the same frequency. When RFID has HF reader it only can read the HF tags and cannot read other frequency tags. Many universities use HF or UHF RFID cards as student's ID card. RFID card integrate many functions into the card as security card, library entrance card, car and motorcycle parking card, payment car etc [14]. In this work is conceptual model of roll call system using RFID and IOT technology to verify all students' ID attendance on cloud storage. Proposed conceptual working model of roll call system by RFID and IOT technology to confirm all students' ID attendance and total attendance number in this classroom. In this proposed system, every student must have student card and use their student card to sign and leave it on the RFID board[13].

3) METHODS

The proposed system is modeled to automated student roll call system using RFID.This system included system overview design, system flow chat, architecture design, cloud storage, local area network server.

4) Overview of the System

The proposed system is to draft an automated system for catching attendance and post data to the cloud storage to save the attendance record and attendance status to the particular user. Figure 1 illustrate the overview of the proposed system.The proposed system flowchart is expressed with Figure 2. This proposed system contains mainly three different modules. The module of the framework is user node, management and cloud storage.

User module contain sensor andmanagementmodule (classroom) detects user sensor data, and another module is cloud storage. The management module checks the data whether it is confirmed or not and also sent data to cloud storage for authenticated person. Valid users data are stored

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to cloud storage through an interface of internet application and show the status of the user. The management module is from either a local area network. It detects data from user node and sent them to cloud storage via Wi-Fi module.

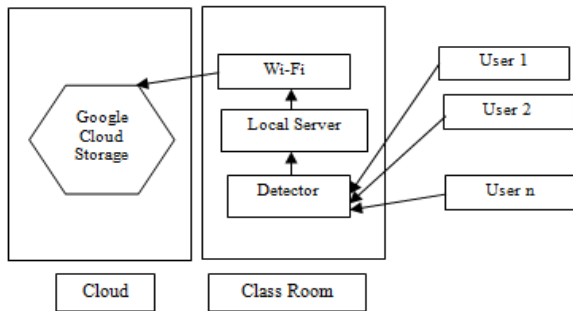


Figure 1. Overview of the proposed system

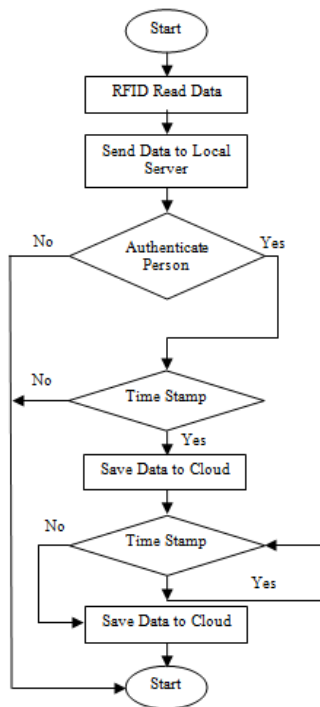


Figure 2. Flowchart of proposed system

The sensor node and the management system are used local network connection. This network is configured by client server topology. Moreover, the management system and the cloud system also broadcast their data by client server model network over the internet communication.

In sensormodule, user holds a RFID to their labeling card (ID) or every node conduct sensor module. This card contains all the information about that the particular student. RFID sensor IS used to make the chip. It is used of holding the student ID number for authenticating particular user.

Management system, in this unit, data is collected from sensor node and the management system authenticates the user of the system after collecting data. If user ID is verified then collected data will be sent to the central database via application. In this case the user is not authorized to this system the data will not send to the cloud storage system. Management system unit manage the authenticating part of the system. The management system process is main part of the proposed system.

Cloud storage, this proposed framework has a cloud

storage system which has the storage space and an application. Application use to collect data and save to cloud storage. Cloud storage helps to save all the presence data about individual attendance status.

5) PROPOSED SYSTEM ARCHITECTURE DESIGN

Figure 3 shows the proposed system architecture. The system contains of hardware parts such as a RFID which integrated to identity card used by each student, RFID reader device mounted on each classroom door, cloud storage system and internet to create an IoT infrastructure. All RFID sensors and devices are connected with arduino. Lists of the using system of this experiment are given to the followings.

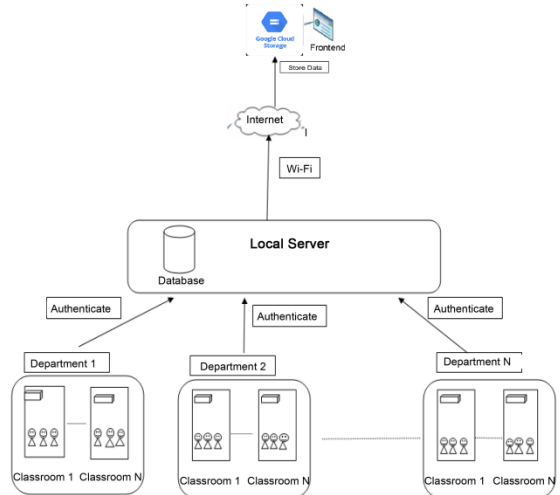


Figure 3. Architecture of the proposed system framework

6) EXPERIMENTS

The proposed system is IoT based student attendance system which is implemented with IoT such as arduino board, RFID module. The local server side system ran the apache, PHP language and MySQL database 5.1 and the sensors data read from the RFID module through arduino board using arduinocode. The implementation of the IoT based student attendance system is described in this paper. The environment of the experiment how the sensor and arduino board connected and how the system take attendance is shown in Figure 4 arduino picture.

7) RESULTS DISCUSSION

To operate and test the proposed system prototype whether it works or not a classroom is selected with 35 students of University of Computer Studies, Hinthada to take their automated attendance. This proposed prototype framework can make the attendance. It also can send the data to the cloud storage.

Activation the reader can read the RFID for the specific time stamp. So, no one can give the proxy for the specific ID.

Figure 4 shown lab test for student attendance system. Hardware includes UNO R3 MEGA328PCH340G which is implement in entrance of classrooms to read the students ID card. Each student ID card read process on RFID reader is about 10-15 second. Reader is connected with local server

database to verify authorize person or student when enter class room and moreover to communicate internet access.

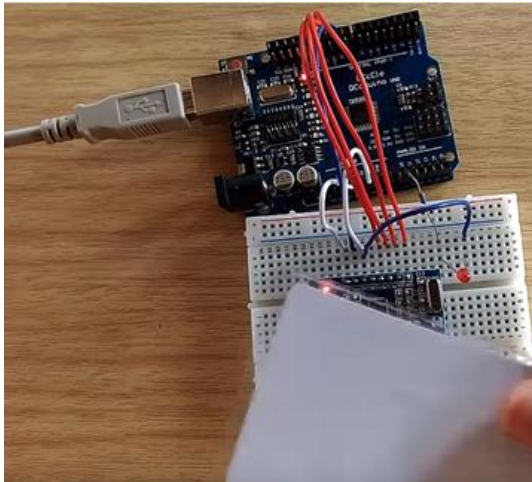


Figure 4. Lab Test with UNO R3 MEGA328P CH340G



Figure 5. MFRC522 RFID Reader

Figure 5. shown MFRC522 RFIDReader, RFID card and tag for student ID card. Each student already register in RFID and local database. Each student enter classroom roll call must register with their student card ID. Their present roll call data are stored through the local sever to cloud. Figure 6 shown cloud database for student.

	A	B	C
	NAME	RFIDNO	DATE
1	EI EI	34523122	2018-11-19 9:10:18
2	Tun Tun	23423534	2018-11-20 9:12:38
3	Hla Myat Swe	43523423	2018-11-21 9:13:06
4	Swe Swe Win	87765634	2018-11-22 9:13:16
5	Thein Aung	23345523	2018-11-23 9:13:29
6	Thein Yue	56645523	2018-11-24 9:13:39
7	Cho Mon Oo	24351223	2018-11-25 9:13:59
8	Myin Zaw	42335546	2018-11-26 9:14:10
9	Naing Linn	12332423	2018-11-27 9:14:30
10	Tun Linn	55534423	2018-11-28 9:14:50
11	EI EI	34523122	2018-11-19 10:10:11
12	Tun Tun	23423534	2018-11-20 10:12:38
13	Hla Myat Swe	43523423	2018-11-21 10:13:06
14	Swe Swe Win	87765634	2018-11-22 10:13:17
15	Thein Aung	23345523	2018-11-23 10:13:29
16	Thein Yue	56645523	2018-11-24 10:13:36
17	Cho Mon Oo	24351223	2018-11-25 10:13:59
18	Myin Zaw	42335546	2018-11-26 10:14:10
19	Naing Linn	12332423	2018-11-27 10:14:30
20	Tun Linn	55534423	2018-11-28 10:14:50
21			

Figure 6. Student Attendance Store Cloud Storage

8) CONCLUSION

The proposed system model of a good and automated student attendance system that has been constructed to reduce the difficulty of manual process. RFID based automated student attendance system has been designed to improve manual process from reduce the difficulty. Manual process attendance system has a big impact on the entire educational daily process. When educational teachers will be free from manual roll call registration every separate student's attendance information that will save their costly time and force. It has a great impact on the entire educational process. All teachers will be free from registration every separate student's attendance information that will save their costly time and force. Attendance information is accessible through the graphically user interface for admin when necessity. The system will show the student information to the respective teachers, student and parents after the completion of each class more over they can see every day, every week and every month from internet front end application.

At that times it will minimize the absent rate from 40% to 5% that will improve a student's work. Thus, this proposed system will help in improvement of quality education.

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