

Student Attendance system and Monitoring using RFID and Processing

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ABSTRACT

Traditional Attendance system is used to track the attendance of a particular person and it is applied in various industries, business organizations, schools, universities or working places. Mostly way for taking attendance has limitations like, the attendance list is once usable and such type includes tracing attendance in manual manner on papers or registers. Here we have proposed an approach call “SASMRP: Smart Attendance System and Monitoring using RFID Process” where we use the radio frequency (RF) as a means of communication between the attendance Management Server and the RFID Card Readers placed in the various classrooms or lecture rooms .This research approach tries to attempt a more efficient Information Communication Technology (ICT). The proposed work of SASMRP is collecting and managing students attendance records from RFID devices installed in the lecture halls. Based on the verification of student identification at the entrances by the RFID, the information is communicated to the server. The system can maintain the attendance records of students of an institute. An automated Email service is facillated in the system, which sends an SMS automatically to the parents in order to notify that their students attendance ratio on monthly basis. Parent as well as HOD and Teachers will be notify via Email.

Keyword: RFID Tag, Reader, Radio frequency, Student attendance system, database server.

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I. INTRODUCTION

Automatic object detection is enabled by RFID using RF signal. RFID uses Electro-magnetic and Electro-static coupling. The communication between RFID Reader and tags. The Range of RFID Reader is about 10 cm and frequency is 125 kHz and 12 V power supply. The designed system is used to identify and mark the attendance successfully. Traditional attendance system used to track the attendance of particular person and the technique is applied in various industries, business organization, schools, universities or working places. In such a case the manually taken attendance is lose , page wastage and sometimes wrong attendance calculated. Here we propose an approach call “SASMRP: Smart Attendance System and Monitoring using RFID Process. The communication between the attendance management server and the RFID card reader placed in various classrooms or lecture halls.

After entering students into classroom, teacher starts lecture and gives OTP number to students and after submitting OTP, students' attendance mark successfully. The attendance is stored into the server database. The system can maintain the attendance records of students of an institute. An automated Email service is facillated in the system, which sends an Email automatically to the parents in order to notify that their students attendance ratio on monthly basis. Parent as well as HOD and Teachers will be notified via Email

II. EXISTING SYSTEM

The traditional existing attendance system is manually and it is taken on paper and it consumes lot of time. As we aware that many traditional “Attendance System ” uses attendance

register to note down the attendance. It has the less accuracy. Also the administrative person needs to maintain the attendance sheets.

RFID based attendance system has the disadvantage that if student forget his ID card then his attendance will not be marked so it is very complicated and complex. Also there are many existing system like biometrics based attendance system using RFID based, Bluetooth based attendance using RFID, Web based attendance system using RFID etc. They all existing system have one common problem of proxy attendance can be marked and very time consuming system.

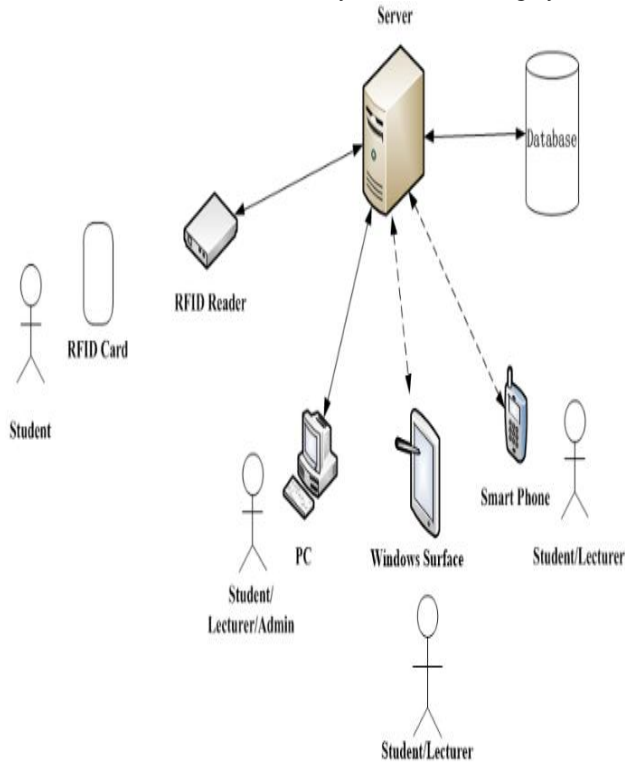


Fig.1. RFID based student attendance system.

III. RELATED WORK

The introduction of Radio Frequency Identification (RFID) has taken place as a stand-in to the previous authentication systems such as bar code and biometrics system as well as smart card technology. Now a day's RFID is highly demanding and has become the essential technology especially in various areas such as in construction (architecture), engineering, medical science, business management, farming management etc. Different technologies as well as methods have been used to develop monitoring systems like Biometric system, Barcode, Smart Card and Radio frequency identification (RFID), etc.

RFID is the mixture of radio technology and radar. Radio frequency is used for identification of a humans or objects using electromagnetic radiations. Frequencies currently used are typically 125 kHz-low frequency, 13.56 MHz-high frequency, or 800-960 MHz-ultra high frequency. It enables the automated collection of place, time, production and transaction of information. An Radio frequency identification system consists of two main components that are as 1) Transceiver to carry data, data which is located on the object to be identified by it. 2) Reader to read the transmitted data over network.

RFID system tracks the exact timing of student entry. Since distance of up to 10 meters or average is scanned by scanner and it can read tags, readers have to be stationed at alternative places. The use of idle tags in the student identification system and monitoring is most appropriated because it has cheap cost and lighter weight and also smaller sized.

Consider some specific guidelines while designing any RFID based system. Guidelines like safety, accuracy, cost, network, flexibility and scalability, ease of use, power efficiency, and ambient environment etc. RFID was utilized is for monitoring and controlling environmental impact of such construction activities. The system also made use of GSM and GPS technologies used to achieve GSM service for connect to a central database server(CDB). Cost of communication of data from site to server will be high and as a result of using the GSM network.

It shows traditional setup of the RFID process is currently designed, so similar system was designed using GSM as for communicating with computer. This solves issues of computers being placed in the classrooms, it fails to demonstration of how cost effective it will be to send attendance through GSM network so cost of sending and receiving wasn't recorded in the paper or any documentation as well as system can connects only one RFID reader to the database server.

IV. PROPOSED WORK

To avoid all such problems, we have implemented Smart Attendance System and Monitoring using RFID Process (SASMRP) that is fully automated attendance system which utilizes RFID cards. Thus it is a RFID based attendance system. In this system each student will have a RFID card. And RFID reader will be placed on the door of the classrooms. He/she has to show the RFID card to the reader. He/she has to take the RFID card near to the RFID reader.

Then the RFID reader will note down the RFID card number and the time at which the student has logged or checked in. When Teacher entered into the classroom then teacher starts the lecture with lecture id and OTP number is generated automatically, at that time student takes OTP number and submitted through their Android phone and teacher lecture id submitted. At the final attendance, these two things crosscheck at admin level and at that time student attendance is registered successfully.

All RFID readers are mounted in the central of each class room and connected with existing campus LAN

Infrastructure. RFID readers powered using Power over Ethernet (PoE). All students and faculty members 'identity card converted with RFID

notification to controller and it will displayed students name on LCD.

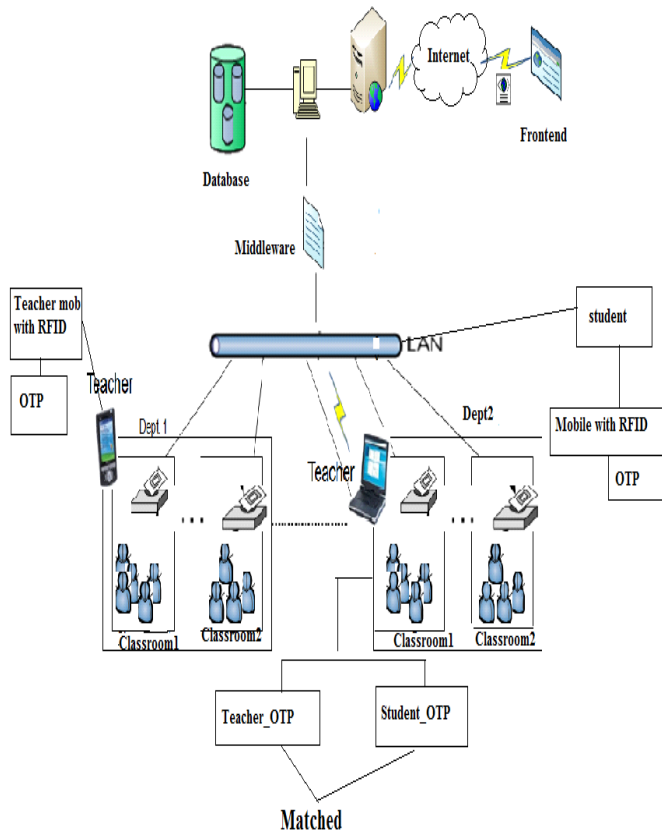


fig.2. Proposed System

Software running on application server receives events, which having tag id, date, time, and class room etc.

These information pass through middleware (middleware can placed in reader itself also, which decrease the LAN traffic) which provides the filtering operation. During class or lecture reader automatically invoked on the basis of predefined schedule and scan all the students tags as well as faculty tag during class time. Detected row of RFID data sends to middleware through LAN. Middleware perform filtering operation to remove unwanted and duplicated data, such as multiple same entry of student's tags id, some garbage data etc. In Application server runs special software which search student id stored in permanent database with scanned RFID tags, if tag id match then mark the appropriate presence.

V. HARDWARE

The Hardware contains a Microcontroller Unit, RFID Reader and Tag or RF Module. For the coordinating the functionalities of RFID Reader and RF Module some instructions are followed.

RFID Reader: EM 18 Reader Module is the device for reading and retrieving information which is stored inside the RFID tag.

RFID Tag: It is an IC chip that has unique hexadecimal or Electronic product code (EPC).

ATMEGA 128 Microcontroller: Read data through MAX 232 and it will be displayed on LCD. After that microcontroller sends this data to database in the PC for matching the students details data which is already stored in the database. After matching student information PC sends

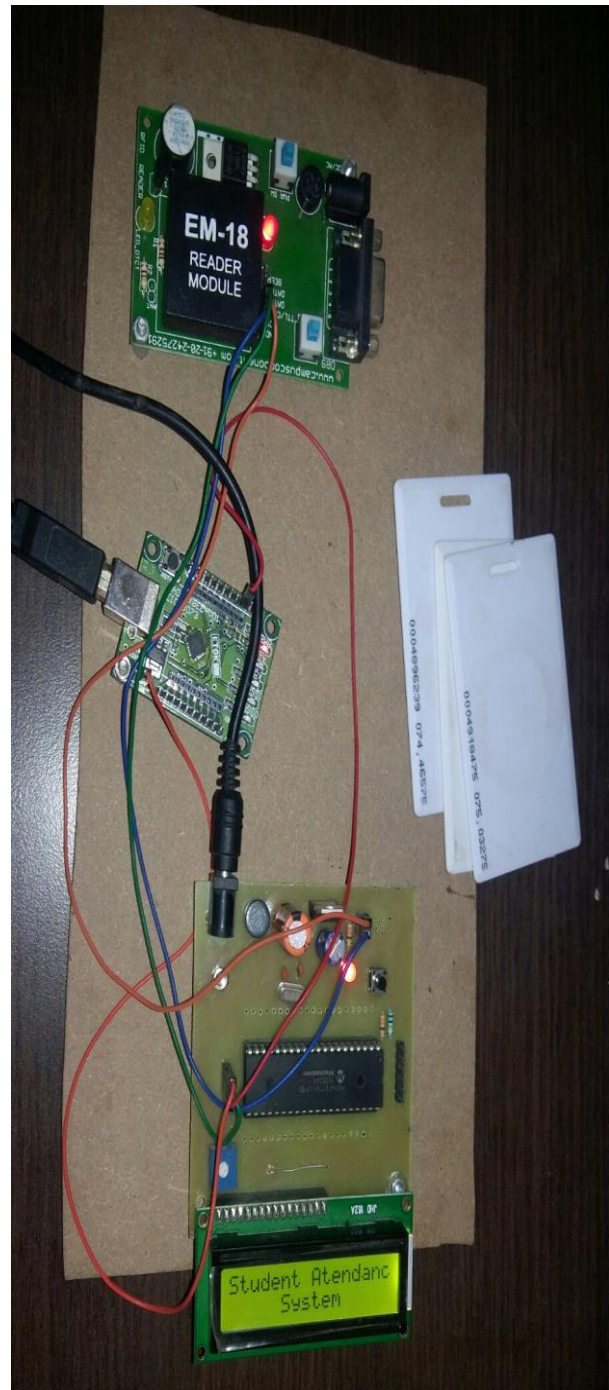


Fig.3. Hardware of System

VI. SOFTWARE

The MySQL database are used for store the student attendance information and java with Netbeans are used for perform all connectivity, storage and retrieval the information.

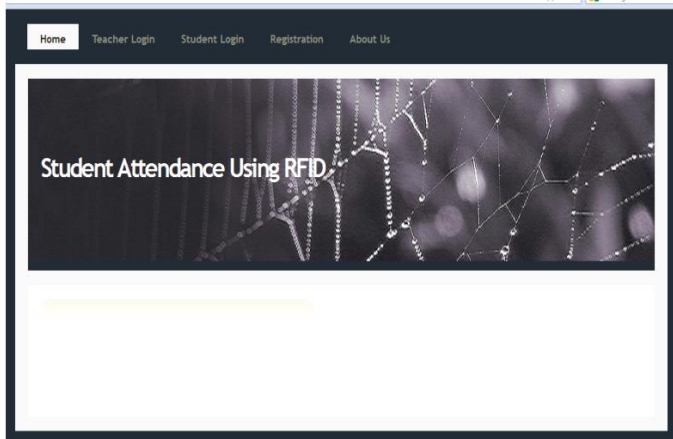


Fig.4.Home page

Home page: This is the home page GUI. The Home page is given with all the pages linked with like Teacher login, Student login, Registration, etc.

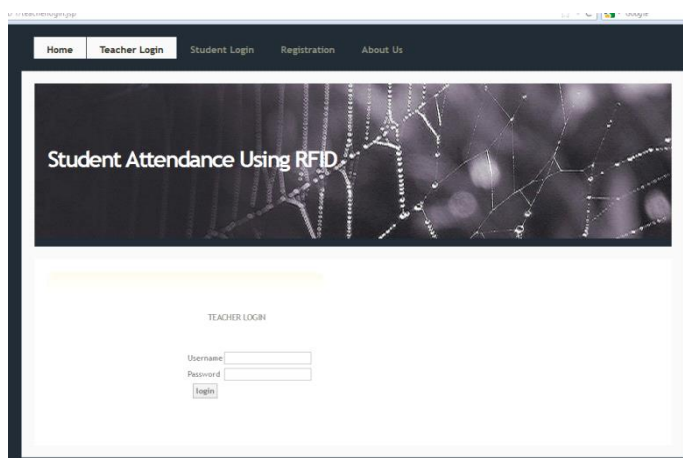


Fig.5. Teacher Login

Teacher Login: For starting the lecture and generating the attendance the teacher login page is designed. In this page teacher make registration and then start the lecture.

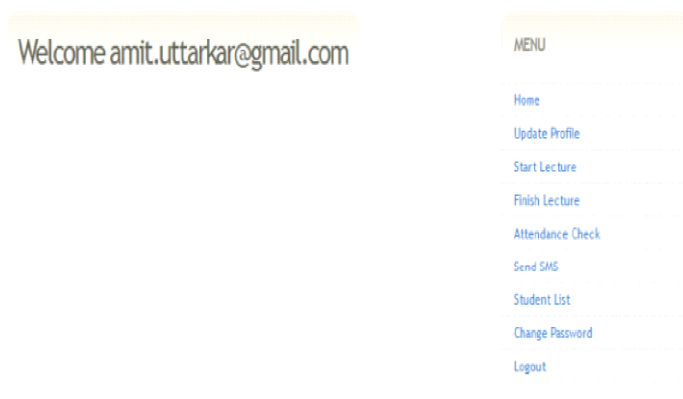


fig.6. Teacher login: welcome page

Teacher login with Welcome page: After Teacher registration teacher start the lecture and then OTP is generated.

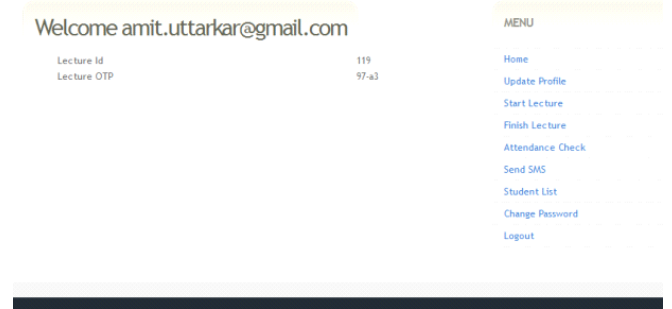


Fig.7. OTP generation

OTP generation: OTP is generated through teacher start lecture. Teacher tells OTP to all students, then student enters those OTP into their Android app and submit with lecture id. After submitting lecture ID and OTP students' attendance will mark successfully.

VII. CONCLUSION

This paper is used to design and build a RF based RFID students' attendance management system to solve the inaccuracy and in the manual processes of collecting, storing and processing of students' attendant information. The built up system was tested with five RFID cards and a Reader embedded with RF Module for communicating the information to and from the lecture hall and the remote server. The initially student swap the I-card on RFID reader at that time students partial attendance is marked. After than teacher login for lecture with lecture ID, and his get OTP, they given to students by orally or written ,after that entering this OTP into their android mobile and the student attendance is marked successfully and completely.The advantages of this system improves the operations of student attendance processes. Replacing the current system with the proposed system will help the administration to monitor student attendance easily, help the department solve attendance problem and get details of students at the schools through the database and generate various student's attendance reports from the system. A

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