Student Attendance using RFID Smart Card Module

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Abstract*: An RFID card-based student attendance system is a modern solution for efficiently tracking and managing attendance in educational institutions. Each student is issued an RFID card embedded with a unique identification number. When students tap their RFID cards on an RFID reader installed at the classroom or school entrance, their attendance is automatically recorded in a central database. The system uses a microcontroller or processor to process the data from the reader and store it in a database for easy retrieval.*

This system eliminates the need for manual attendance-taking, saving time and reducing errors. Teachers and administrators can access real-time attendance reports through a software interface, ensuring transparency and accuracy. Advanced systems may also send notifications to parents about their child's attendance. The RFID-based attendance system enhances efficiency, prevents proxy attendance, and provides a secure and reliable way to manage student records..

Keywords: Attendance System, Radio Frequency Identification Technology, Liquid Crystal Display, IR Sensors, etc

I. INTRODUCTION

Main concept behind radio frequency-based attendance system is to take the attendance. RFID card has to be show in front of RFID reader, and then the attendance of the person is noted down in the microcontroller memory. RFID based attendance system is one of the solutions to address the problem of student security by increasing the system efficiency instead of photo ID card, it also helps to take the attendance of the workers at their working place. Its ability to uniquely identify each person based on their RFID tag type of ID card make the attendance process easier, faster and secure as compare to traditional method. The card holder only needs to place their card on the reader and while entering in the classroom the IR sensors make a count of student.

II. LITERATURE REVIEW

"RFID based attendance system ",University of multimedia Malacca, Malaysia,2009. In this paper, the system is takes automatic attendance of students by using RFID.

"Student Attendance Management System", University of Zakho, Iraq, 2018. In this paper, the system is designed in a way that can differentiate the hours of theoretical and practical lessons since the rate of them is different for calculating the percentages of the student's absence.

Ekta Chhatar, Heeral Chauhan, Shubham Gokhale, Sompurna Mukherjee, Prof. Nikhil Jha, "Survey on Student Attendance Management System", S.B. Jain Institute of Technology, Management and Research, Nagpur, 2016. In this paper, the system deals with the maintenance of the student attendance. It generates the attendance of the student on the basis of presence and absence in class. The staffs will be provided with the separate username & password.

"Web Based Student Information Management", S. R. Bharamagoudar et al., this paper assist in automating the existing manual system. It can be monitored and controlled remotely. This paper provides accurate information always. All years together gathered information can be saved and can be accessed at any time. The purpose is to design a Automatic Attendance which contains up to date information of the student. That should improve efficiency of college record management.

"Online Student Attendance System", P. N. Garad et al, in this project, we gave access to three users i.e., Admin, Student. In this project teachers or the admin will be filling attendance. They will have privilege to fill attendance form, update attendance form, send message to the guardian's account whose child is absent, also those attendance is less than 75%, and they also have privilege to send message to the students whose fees are pending. He staff can also view the message whenever they want and also can modify the details of students.

Zahraa Salah Dhaief, Department of Computer Science, College of Education, AL-Mustansiriyah University, Baghdad-Iraq "People counting technology"
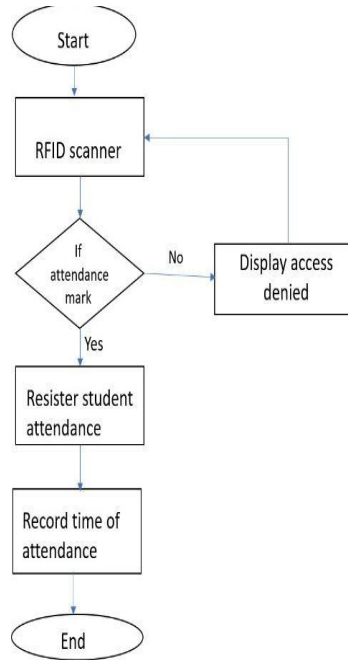
III. WORKING

BLOCK DIAGRAM

In LF – Low Frequency Attendance System, low cost LF card readers are mounted either in each classroom or shared between two or more classrooms or at a common entrance. Students are required to show the RFID card to the reader to mark their arrival & departure. The read range is around 5 centimeters. In one minute, a single reader can read the data of around 15 students. The following steps depict how RFID Card **Attendance System** works in an educational institution.

- Educators need to install RFID device at various locations
- The RFID devices are required to be connected to the RFID attendance server placed in the campus
- Every student is given a personal RFID ID CARD with unique identification number
- Student are required to show the RFID ID Cards to reader in every lecture to mark their attendance
- The RFID device transfers the data to attendance server every 10 minutes
- Faculty gets complete list of absent roll numbers before the end of lecture & they can verify the same
- The student attendance record is updated daily on the attendance web server
- Parents & students can login their ERP portal and view attendance
- They can even apply for leave online so that campus is aware of leave in advance
- Parents also get the provision to check the homework given to their ward
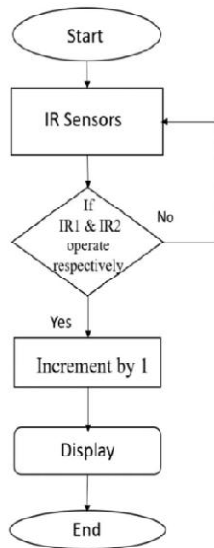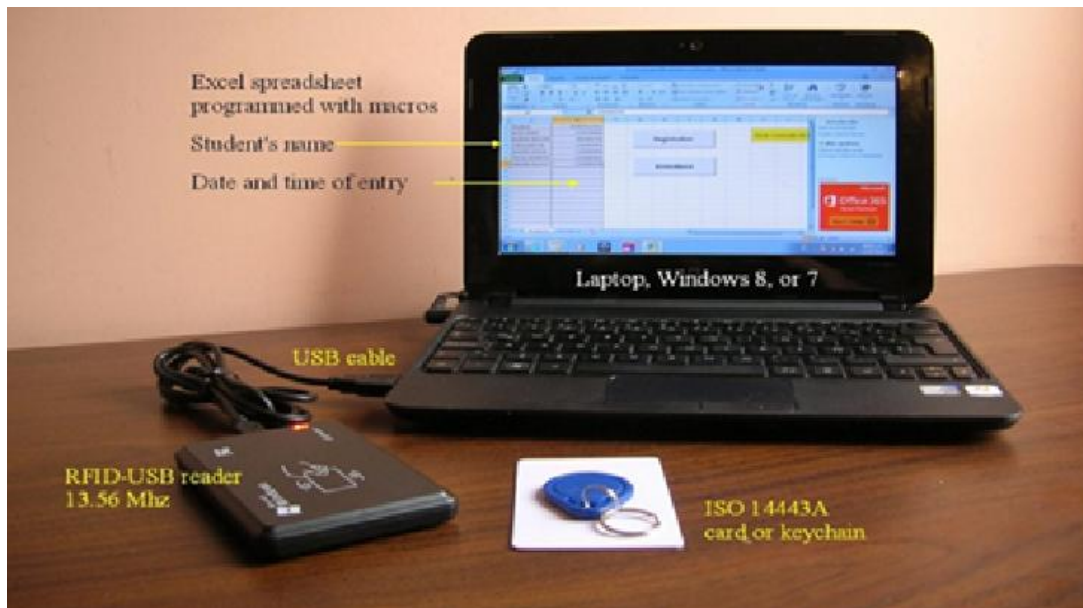
Flowchart for RFID Sensor

Flowchart for IR Sensor

IV. RESULTS

V. CONCLUSION

In this paper, we successfully implemented RFID based student attendance tracking system. Not only the system can simplify and reduce the cost of attendance tracking (both time and money), but it also capable to create a more accurate and efficient data. Concluding from the observation we've made during the test session, we found that this solution is both effective and efficient compared to a conventional attendance tracking method. While our current test is limited to a local classroom, we would like to explore the possibility to implement our solution as a standard in many, if not all, education institution. In the future, we would like to expand this project as part of our Smart Class Research. The tracking system will be integrated to other system, such as academic database. By using collecting the data from student's attendance, relating those data with the class subject and curriculum, we intent to find a thorough control over the education system in our campus

VI. ACKNOWLEDGEMENT

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[6] "Online Student Attendance System", P. N. Garad.

[7] Zahraa Salah Dhaief, Department of Computer Science, College of Education, AL-Mustansiriyah University, Baghdad-Iraq "People counting technology".