Design and Implementation of RFID Based Attendance System

K Jyothi, R Karthik, B. Anusha, B Annapurna, A Kiran, K Soumya, N Harini

Abstract: *Attendance is taken at various places like schools, colleges for students and login logout time for employees in industries and offices. The existing system is done on paper and it consumes lots of papers and it is of manual work. It has less accuracy. In order to reduce the usage of paper RFID based attendance system is used. It is an automated attendance system where Rfid tags are used. This is the easy way to take the attendance without any physical contact. In this project we use RFID Reader, RFID Tags, LCD display, which are interfaced withATMEGA8 Microcontroller. The Rfid tags are given to the students, with their roll numbers as their tags. When the tag is placed near the reader, the data is transferred to reader due to the radio frequencies. Reader then transfers data to the microcontroller. Microcontroller checks for the data continuously, if any data is received, microcontroller compares the data in data base. It eliminates the duplicate entry of data and reduces errors in time and entries.*

Keywords : *RFID, Attendance based system, LCD*

I. INTRODUCTION

The aim of the project is to design an intelligent security system for recording the attendance in educational institutions, industries and offices etc. Automation is the word mostly used in the field of electronics. It brought many new things into existence which is used in day to day life. The RFID cards which transmit a unique identification number i.e, each student will have their own card.

This number transmitted by the RFID tag can be read with the help of a RF

reader. The authentication to the classroom or industry can

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be provided in full or limited depending on the RFID cards. The information regarding to the students who have attended to the class can be verified in computer, it is interfaced with RF reader. The candidate only needs to place their card on the reader and they will be allowed to enter the command if any invalid card is shown it won't accept the card and that particular student don't get the attendance. In biometric attendance system, the student or employee has to wait in a queue until his/her chance comes for the attendance. But in Rfid system a candidate an immediately place the card on Rfid reader and can go to class. The Rfid reader has antenna in it which accepts the radio frequencies from Rfid tags. This Rfid

based attendance system has high accuracy and it saves the time and paper. The objectives of the proposed project are as follows,

• To overcome the flaws in previous and existing attendance system which is done manually.

• To design a system which also can be implemented in biometric system?

• To reduce the errors and make the system efficient.

II. DESIGN

Figure 1 shows the block diagram of the Rfid based attendance system. It consists of Atmega328p microcontroller, Rfid reader, RTC module, LCD display, buzzer and power supply. The micro controller is the main heart of the project takes all the inputs from different modules. The LCD display is of 20x4 which displays 20 characters in 4 rows. The Rfid reader, has internal antenna in it produces radio frequencies to the Rfid tags. The buzzer gives the indication whenever the student or employee places the card near to the reader.
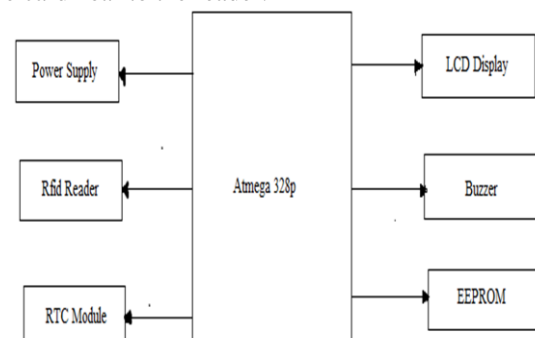
Fig. 1.Block diagram of the proposed system

The algorithm for the proposd work is as mentioned below,

• Start

• Power Up hardware.

• Initialize hardware Module.

• Display on LCD as "RFID BASED ATTENDANCE SYSTEM"
• Rfid card is placed on the Rfid reader.
• Reader produces the radio frequencies with the inbuilt antenna.
• Instantly, buzzer will give an indication with Led lights.
• Each student has unique id cards and the process repeats the same.
• LCD will display the four options.
• Select the option for required information with the help of push buttons in the circuit.
• To clear the whole information one admin card will be allocated.
• In order to come back to the main page GO Back is used.

III. WORKING PRINCIPLE

• When a person with RFID tag enters in the range of RFID reader, it raises the voltage of the coils. The range can be set by using the reader of certain frequency.
• It will save the Id card number and the name of the student.
• When we provide power supply to the circuit, the circuit switches on and "RFID BASED ATTENANCE SYSTEM".
• When the student places the id card near to the reader, LCD displays the name of student with message "got in".
• When the same person swipes his card for the second time, the system will save it as his leaving time displaying "See You".
• The interval between first card swap and second card swap is the total working hours that is stored as a data.
• To see all the student's attendance or any individual student attendance we have four options.
• According to the required information we have to select the option.
• It shows the in and out time of the student along with his/her name.

IV. RESULTS AND DISCUSSION

From Fig 2, we can see that when the passive card is placed near the EM-Module, the antennas inside the passive cards and the reader module interact when they are near the mentioned range. When both the frequencies are matched, the reader accepts the data and sends it to the data base with a buzzer indication. The RTC module here is used to set the current date and time. EEPROM is used to retrieve the data from the initial stage [4-11].

From Fig 3, we can see the LCD display of the circuit which has four options, to see the details of the student.

1. View attendance:

In this particular section, we can see the details of the individual student. For example, the entry and the exit time with a date.

2. view all:

In this section, we can see the total number of the students who are present and absent on the particular day.

3. Clear all:

In this section, we have the option to clear the information of the students with the help of the admin card.

4. Go back:

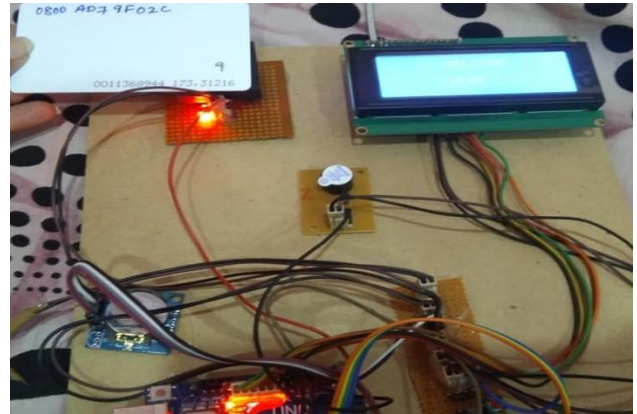In order to return to the main page go back option is used.
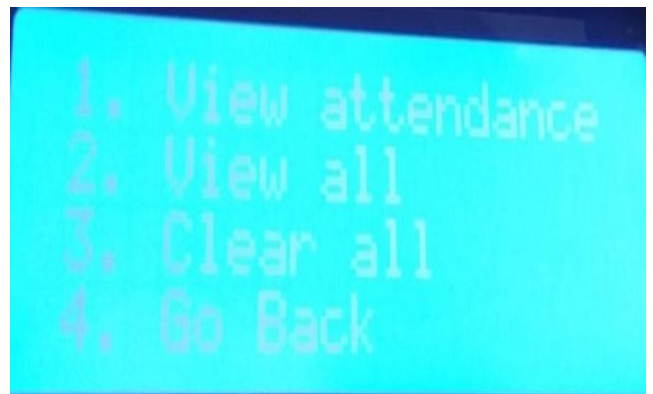

Fig. 2.Placing the card on reader

Fig. 3.Displaying of options

V. ADVANTAGES AND DISADVANTAGES

The advantages of the proposed system are as follows,

• Saves the time
• Reduces the usage of paper
• No need of waiting in a queue
• High accuracy
• Information will be secured.

The disadvantages of the proposed system are as follows,

• Misusing the same cards is a problem

VI. CONCLUSION

This paper presents the RFID based automatic student attendance recording system that allows students to fill their attendance just by swiping or moving their ID cards over the RFID reader which are located at the entrance of classrooms which makes easier to the lecturers too. This system can lecture attendance monitoring in face-face classroom and provide a new, accurate, way of taking student attendance. The project "RFID BASED ATTENDANCE SYSTEM" further can be implemented than the existing process to take the student attendance. The proposed system records the attendance of student monitored in the Android mobile through Wi-Fi module. The system can use the face detection with the help of lab view and raspberry pie.

ACKNOWLEDGMENT

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