International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 07 Issue: 05 | May 2020 www.irjet.net p-ISSN: 2395-0072

Smart Classroom Door Access System using Attendance Supervision Method through RFID based Mechanism

Assistant Prof.Anjali Sanjivanrao More[1], Neelofar Pathan[2], Prasad Kadu[3]

[1] Assistant Professor of Computer Engineering & Savitribai Phule Pune University
[2]Pursuing Bachelor of Electronics and Tele-communication Engineering
[3]Pursuing Bachelor of Computer Engineering
[1-3]Suman Ramesh Tulsiani Technical Campus Faculty of Engineering Kamshet, Pune, India.

ABSTRACT:

In recent years, there has been an increase in the number of applications based on Radio Frequency Identification (RFID) methods and has been widely used in various fields such as travel, healthcare, agriculture, and the hospitality business to name a few. RFID technology enables automatic wireless identification using electronic markers and relevant student marks. In this paper, an attempt has been made to address the problem of constant tuition in developing countries using RFID technology. The purpose of RFID in monitoring student attendance as captured and posted in this study is to reduce the time spent during student collection and the opportunity for education administrators to take face-to-face class statistics to provide appropriate scores and attendance management decisions.

Keywords: Data visualization; RFID (Radio-frequency identification); Arduino controller; IR sensor and student attendance system.

INTRODUCTION:

The attendance management system deals with keeping track of student or employee travel. Nowadays RFID, which stands for Radio Frequency Idication, is an automated separation technology used to receive or store data in RFID tags without physical contact. The RFID system mainly includes RFID tags, RFID Reader, Middleware and Backend databases. RFID cards are uniquely identified and internationally identifiable, guided by the EPC global Tag Data Standard rubrics. The tag may be operated negligently by an RFID reader or may forcefully send RF flags to a student. Global System for Mobile (GSM) modem is a category of radio modem devices designed to communicate with the computer through the GSM and GPRS network. It requires a SIM card (Sub scripter Identity Module) just with the same telecommunications interface. Also, they have an International Mobile Equipment Identity (IMEI) number similar to their cell phones for personal identification. An RFID reader, through its antenna, reads information stored on these sensors at close range. The reader, which is an active range based on its frequency of operation, is programmed to evaluate a specific frequency. Student performance frequency reaches 125 kHz - 2.4 GHz. Some students do not come to the classroom for one reason or another and for this reason do not do well in their research, so there is a need to monitor the attendance of the class to increase their academic performance. Trains are expected to survey 60 percent of the class before they are allowed to sit for the exam. The old way of participating in schools and colleges has been discarded.

2. RELATED WORK

The use of Radio-frequency identification (RFID) technology in the automated computing and tracking areas has been extensively researched by researchers and distributed by various organizations as part of their practical applications. References provide examples of throwing real-time RFID communication data that are not connected to RFID object tracking technology and data collection solution. [4] RFID technology that uses radio waves to transmit data from an electronic tag, called an RFID tag or label, is connected to an object, by a student to track and track an object In 1945, Leon Theremin discovered a surveillance tool (experimental works) of the Soviet Union that restored incident radio waves. Audio frequency information.

[11] Krenare R. Pireva et al. suggests that the use of Radio-frequency identification (RFID) technology in the electronic and tracking environment has been extensively researched by researchers and submitted by various organizations as part of their practical applications. Hang Yuru, Chen Delong and Tan Liping, in April 2013, proposed, the College's Research and Practice Program for College Student Admission based on RFID technology. [15] Combined with the actual state of the classroom attendance system, it described the formation of student travel destinations based on RFID. In this paper, the hardware node of the system and the developing processes of related applications was a detailed presentation. A strategic plan not only improves efficiency but also saves human resources and resources

[7] Pushpa S. Gagare et al. suggested the — RFID Technology based Attendance Management System. The proposed framework may provide a more direct, and less direct, way of contributing to school participation and changing the perception of the world of classroom addressing. The simple and cheap RFID model Based on System Authentication has been successfully created.[3] The formation of a framework can provide many benefits over traditional engagement policy. This framework will assist in

the planned notification of participation and carers will be informed of the status of their absence. In this framework we use the AVR controller, which ensures faster control, cost efficiency and lower power consumption.

[6] Ankita Agrawal and Ashish Bansal, — Online Attendance Management System using RFID with Object Counter states that the Student Representative program that uses the Radio Frequency Identification technology with a factor counter will greatly enhance the modern process of student attendance and tracking university site. [13] The program highlights ways that are fully effective in capturing student movement and student monitoring on campus. The attendance is safe and accurate.

3. EFFECTIVE PROGRAM

Barcode Attendance Barcode system is a standard time-and-step system where the ability to measure and track employees' time can be established as well as computerized use of barcode technology, mistakes made previously in manual registration or assembly.[17] As a result, the system provides high levels of accuracy and reliability in tracking the number of employee's present. Alternatively, the costs associated with the installation of the program are not significantly related to the cost of payment or errors. Every operator is given a badge / card where there is a barcode. To look inside or down the company, the badge / card is replaced by a time clock, and the information is captured by the clock. This data from the clock can be downloaded by the manager or manager and used to review and record time and attendance records.

[19] Barcode is used on a student ID card for attendance purposes. It is a graphical image of data that has been scanned and translated for information. At the same time, the usual way of taking all of the lecturers / labs by calling names / roll numbers or signing them on paper is very time-consuming, insecure, ineffective, difficult and artistic. Their valuable time is spent on the go.

So many times, to come right we are not taken by skill. And the presence of a proxy remains a problem on many campuses. The government and statutory bodies also emphasize Institutions for a comprehensive witnessing program.

4. SYSTEM ARCHITECTURE

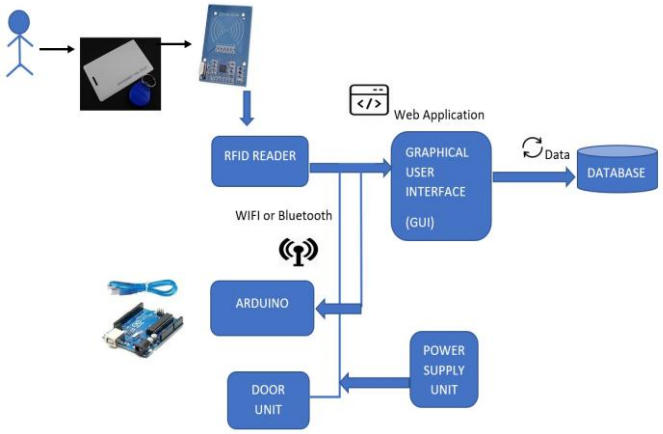

Fig 1: Architecture of Attendance management system

A. STEPWISE WORKING OF SYSTEM: -

1. The user has to prove his identity with the RFID tag on the RFID reader, Now the RFID reader takes the user information and compares it with the existing data in the database.

2. If it is an active user then the door is opened and allows the user to enter.

3. When a user logs in, the IR sensor holds / receives a specific user login.

4. If two users enter during an IR sensor, they hear it and give a warning about the buzzer that causes the alarm and indicates that an incorrect entry is made. Provides a reminder to an invalid user to enable their login.

5. After a certain time when the user completes their work and exits, when the user exits the IR sensor, the user exits after a certain period of time his or her destination will be marked but if the user exits within a predetermined time the IR sensor does not perform its log count and the presence is not marked.

6. All marked presence is now stored in the database and a record has been created.

B. FLOW CHART OF DESIGN SYSTEM

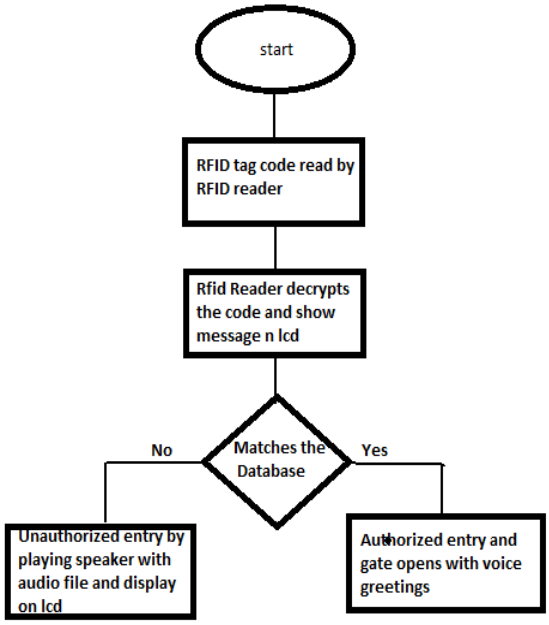

Fig 2: Flow Chart of Attendance management system

Figure 2 shows the flow chart of the management system Attendance where the first RFID tag code has been read by the student and defined and sent its details to the administrator. When the code is compared to the information stored there can only be opened by a sound greeting and show the employee details on the LCD that the controller received from the Micro SD card. If the code does not match, the door remains closed and notifies the Speaker of security by playing a separate audio file saying the entry is unauthorized.

5. SYSTEM METHODOLOGY

A. HARDWARE COMPONTS:

I. Arduino Kit:

Atmel Pico's high performance 8-bit AVR RISC power is supported by a microcontroller. It boasts up to 32KB ISP with read-write memory, 1KB EEPROM, 2KB RAM and 23 standard input purposes - line output, 32 standard performance registers, three variable countdown times with comparison modes,

USART programmable serial, serial port serial and 6-channel 10-bit A / D converter. This controller operates between 1.8V-5.5 volts. This controller interferes with LCD and buzzer, Micro SD card using various ports.

FEATURES OF ARDUINO

- Low-priced
- Cross-platform
- A simple, clear programming atmosphere
- Free and extensible software
- Free and extensible hardware

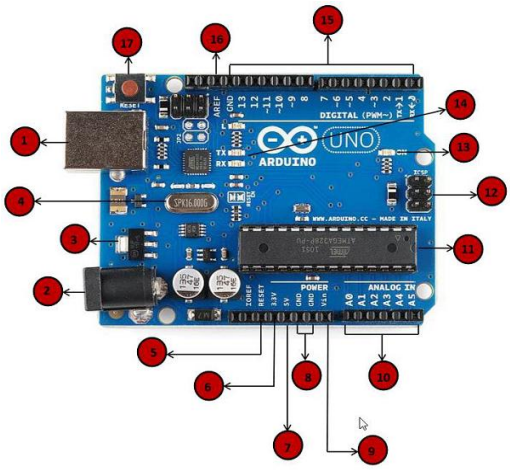

Fig 3: Arduino kit

II. RFID Reader:

Depending on the frequency and its operation, the RFID reader transmits radio frequencies of between one and three centimeters or more. When a transponder enters this electromagnetic circuit, it receives an active signal from the reader. The RFID reader determines the data stored in the integrated transponder circuit (silicon chip), and transmits it, depending on the program, to the host system.

Fig 4: RFID Reader

III. RFID tags:

The heart of the RFID system is an information manager, called a transponder, or just a chip. The design and operation of transponders also vary depending on the frequency of the frequency, as is the case with antennas.

Fig 5: RFID Tag

B. SOFTWARE COMPONTS

I. MYSQL DATABASE:

MySQL Server is designed for the most basic production systems, for bulk load and embedded in multi-functional software. Oracle is a registered trademark of Oracle Corporation and / or its affiliates.[16] MySQL is a trademark of Oracle Corporation and / or its affiliates, and may not be used by Customer without the express written consent of Oracle. Other names may be trademarks of their respective owners.

II. APACHE TOMCAT WEB SERVER

Tomcat was developed and maintained by an open source community of developers under the apus Software Foundation, released under the Apache License 2.0 license, and is an open source software. Apache Tomcat is used to install your Java servlets and JSPs. So, in your Java project you can create your own WAR file (short for Web Archived), and drop it into the deploy directory in Tomcat. So basically, Apache is an HTTP Server, which serves HTTP. Tomcat is a server with JSP Server that serves Java technology. In this application Apache Tomcat 7 is used.

III. Embeded C

The embedded C program often requires non-C language extensions to support advanced microprocessor features such as point-point arithmetic, various memory banks, and basic I / O operations. In 2008, the Standards Committee C extends the C language to address those skills by providing a common standard for all the accomplishments that must be accompanied. Includes features not found in standard C, such as hesithic point-fixed, named address spaces and basic I / O address.

6. RESULTS AND DISCUSSION

As shown in figure 6, when an RFID tag is placed on an RFID reader and reads and reads its code it sends the controller and manages this code retrieved if the code match is stored in a code where attendees mark the authorized entry to that code id and store it in SQL Database table recording table and subsequently all of the details in the MYSQL Administration panel such as the student name and code number that link to the authorization for entry and the message received by the audio beep through the authorized and unauthorized studentpeakers.

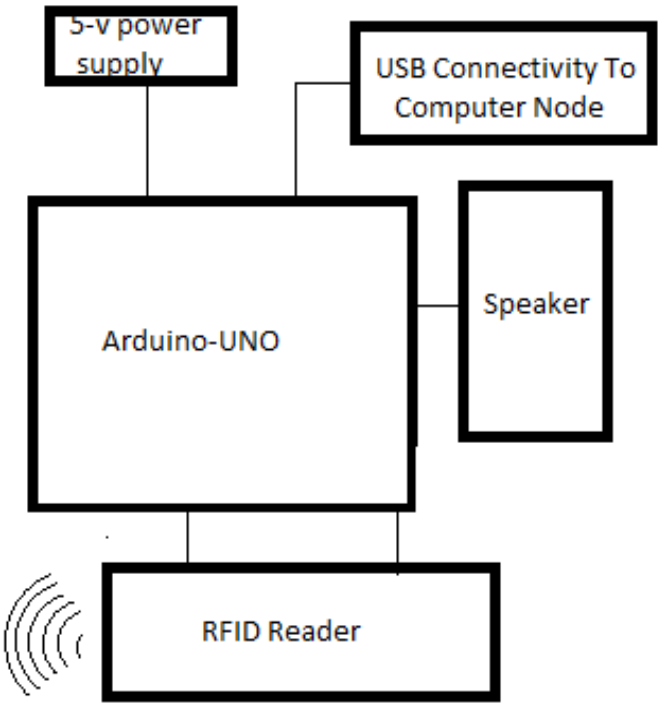

Fig 6: System Working

Fig 7: System Home Page

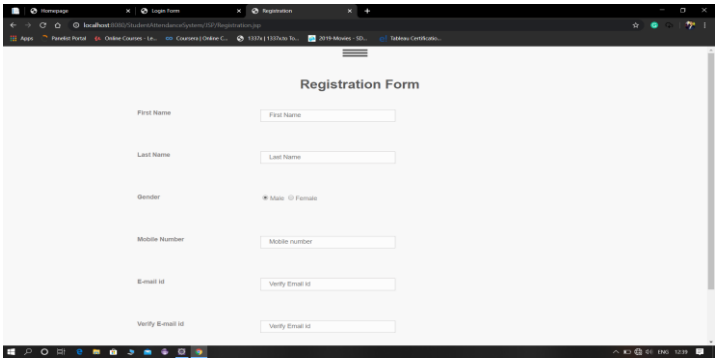

Fig 8: Student Registration form

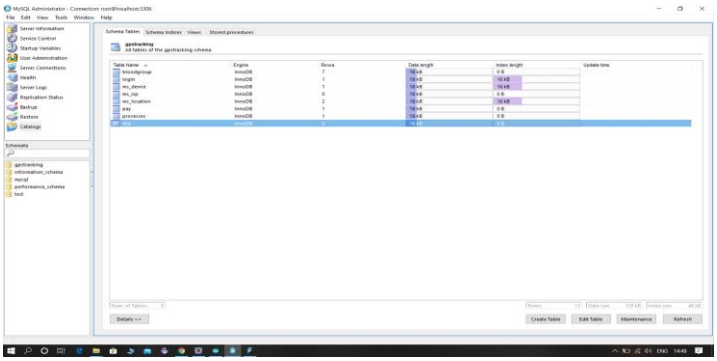

Fig 9: Database Administration Panel

7. FUTURE SCOPE AND CONCLUSION:

The security system and destination of RFID inventors is much safer and responds faster than other biometric systems. The main advantage of the RFID system is its relatively small interfaciality and it is virtually invisible. Tag applies to any environment. Using the Arduino platform system, it becomes much faster in response and while it burns the code much like a plug and gaming device. The user can modify the program correctly using arduino. It's easy to use and very accurate as well. This project can therefore be of great help in implementing real-time tracking system tracking and tracking as well as providing security benefits. This project can be improved by expanding the scope of the reader where the tag reads. This system is also an easy-to-use system as data management and retrieval can be done with a display, making it a universal system. Therefore, it can be obtained from a higher education institution or organization. We can also plan to announce the project in the future. So, whenever a user signs in, we can announce messages such as, "Your attendees are logged in" or "Your card is inactive". We can send this data online to the user. So that users can access it remotely online

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