Attendance Management System Using RFID Technology

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Abstract -This task is created by utilizing Radio Frequency Identification system and ID card to get student attendance. Now a day staff wants to use the paper to get the student attendance. There were many problems to get student attendance when using the paper such as impostor. This RFID project can help the lecturer to solve the problem by designing an automatic attendance management system using RFID and ID card. This project is run by getting the code of the ID card to compare with the datasheet in Access. Firstly, lecturer needs to fill the attendance sheet in an interface like staff name, student name, roll no, class, etc. This procedure is important to use this information to the next interface. In the next interface, staff needs to check the speed to make the connection with the RFID reader. When the RFID reader is ready to get the attendance, the procedure will get started. Understudies go to swap their card on the RFID peruser and get the code from the ID card to contrast and database. At that point the code is coordinated with the database, the understudy data like name and ID number will appear on the interface and that data will trigger into a rundown. In that rundown, all information like student name and ID number will connect including the instructor name, student name, roll no and subject. On the off chance, if the code isn't coordinated with the database, it implies the understudy is in the wrong class or not enlisted in the subject. At the point when those occur, the teacher can enroll the understudy by utilizing the enlisting structure and the data of the understudy will be refreshed into the database

> **_Index terms_: RFID, Lecture, Attendance, Passive tag, Reader.**

I.INTRODUCTION

RFID represents Radio Frequency Identification, is a programmed distinguishing proof innovation and is utilized for recovering and putting away information on RFID Tags without any physical contact. RFID handset speaks with inactive tag. Detached labels have no power source in their very own and the rather than get control from the occurrence electromagnetic field. In this impact is used the tag to impart the data by the peruser. The tag isused to control the measuring of intensity and the RFID reader thattends to be adjusting the voltage to detect the handset and as per the bit example to transmit.To handle a lot of understudy's time issue is particularly to get the participation. Presently, procedure to get the participation in dominant part colleges still utilized in the manual procedure. The manual procedure that implies whenstarts the class/address, speaker will get the bit of participation paper and understudies will check their name and afterward will sign on it. Toward the finish of class, speaker will take the participation paper and keep it as record.

II. Advancement OF RFID

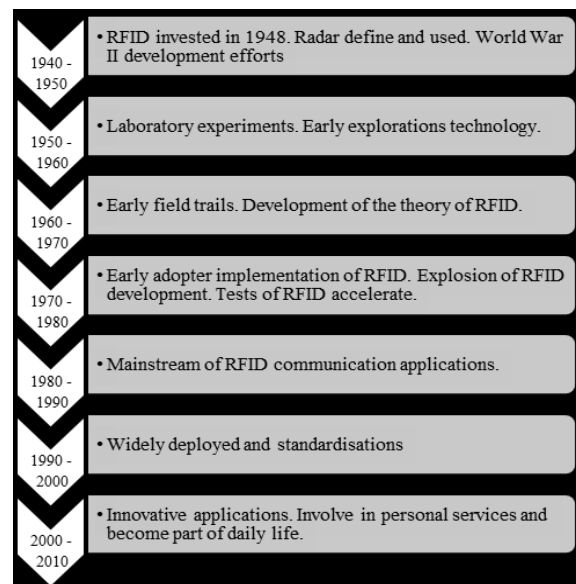The achievements of RFID innovation basically center the approach of radio innovation which is shown in Fig.1.

Fig.1.Adescription of the RFID innovation adjusted

The advancements of radio innovation are essential to tackle the substance of RFID innovation. There is noteworthy for development over the recent decades into this innovation.[1] RFID innovation is overflowing in current businesses that request information trustworthiness and high effectiveness of the framework. This innovation is accustomed to following vehicles and products for dispatch administrations and baggage taking care of so and forth. Different application incorporate creature including secure toll installments, stock administration frameworks, get to control systems delineate the advancement of RFID innovation.

III. Parts OF A RFID SYSTEM

The RFID framework comprises of different parts that can be associated with each other in a devoted correspondence way. These individual parts are incorporated in the framework to execute the advantages of RFID arrangement. The rundown of segments is as per the following:

- Tags – an item that is appended to any item and utilizations an exceptional succession of characters to characterize it. It includes the chip and the radio wire.
- Antenna – it is the in charge of transmission of data between the per user and label utilizing radio waves.
- Reader – an examining gadget that utilizes the receiving wire to understand the labels that are in its region. It transmits signals at specific frequencies..

A. Tags

A tag consists of a microchip that can store a unique sequence of identifier that is used for identifying the objects individually. The sequence of the serial port is stored in the RFID memory. The microchip includes the minute circuitry and silicon chip. The tag memory is permanent. Tags can be designed and specified based on the applications and environment. Different kinds of RFID tags are shown in Fig.2. For example, bar code application tags are used are used for the things that we are purchasing from the shopping mall.

Labels are available in different shape and sizes. Labels that can be started by the user are known as Passive labels, while those tags that can be required outside beginning are called Active labels. A Semi-Passive label is that exists in between Active and Passive labels. Each label type has particular qualities. Labels are operable in Microwave (2.4 – 2.5 GHz), Ultra High Frequency (860 – 1500 MHz), High Frequency (13.56 MHz) and Low Frequency (125 kHz).

Fig.2.Kinds of RFID Tags

B. Reader

Reader is the most important part of the RFID framework. It peruses the information of the tag and to transmit the Middleware of further processing. The reader can be endeavoring to investigate the labels and changing the frequencies. The peruser conveys by transmitting a light emission, which typifies directions to the tag and tunes in for the label's reaction. The peruser additionally contains to worked in hostile to crash forms, which enable the peruser to peruse and compose numerous labels all the while. The peruser is too associated in the PC for information handling and USB link or a remote association. The Peruser is a checking gadget that utilizes the radio wire to understand the labels that are in its region. It transmits motion at a specific frequency. The RFID peruser sends a beat of radio vitality to the tag and tunes in for the label's reaction. RFID peruser comes in many sizes.
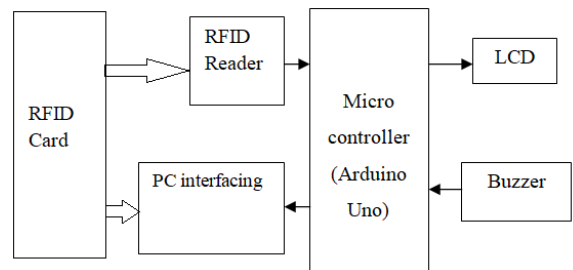

Fig.3. Block diagram of participation the board framework

IV.HARDWARE DESIGN CONSIDERATIONS

We have used lots of hardware and software components in our project. The block diagram of proposed system is shown in Fig.3. Now let's discuss about those components in below

1) RFID Reader and RFID Labels

2)ATmega328PMicrocontroller with arduino board

3) LCD 16x2

4) Buzzer& LED

5) Breadboard & connecting wires

6) Jumper wires

In this framework, the equipment part comprises the RFID peruser, labels, and the host PC. A thing is labeled with the minor silicon chip pluses a radio wire that can be all in all called a label. The label that can be used in mobile or stationary items and scanned by the stationary or RFID readers respectively by using the radio waves.RFID reader must scan the label for the data it contains. Then it reads and sends the information to a database, which interprets the data stored on the label. The label, reader, and database are the key components ofthe RFID system.The RFID system framework is numerous points of interest in this designof the application in light of the fact that the electronic labels that can be inserted into the student traditional methods for recognizable proof (student ID card).The electronic tag can be read during the motion. No batteries are needed. No line of sight required in the wireless communication between the label and the reader. The total framework is set at the passage entryway of the address room.

V. SOFTWARE COMPONENTS

In this project, we built an attendance management system. It started from the IDE for the installed dialects that are preparing and Wiring.[8] It incorporates into the code editorial manager with highlights, for example, content cutting, gluing, seeking, supplanting content, programmed indenting, brace matching, syntaxhighlighting, and gives the straightforward single tick components and arrange the transfer projects to an Arduino board. GSM modem is connected with Arduino Mega R3 microcontroller. The details information of software components are described below.

The minimal Software requirement is as follows,

- Arduino compiler- Version 1.6.8 for windows
- Language used: Embedded c

VI.RESULT AND DISCUSSION

The whole project is based on arduino and hence the coding and debugging was done on the arduino 1.6.8-1.6.9v of the software of the same name. Instead of going on a single program that is debugged all the time, the project is done by framing out various different codes that gave outputs based on their work

and interfacing of the arduino board with different components of the project.The Student Attendance System utilizing Radio Frequency Identification innovation with item counter will essentially improve the present manual procedure of understudy participation recording and following framework, particularly in a college domain.
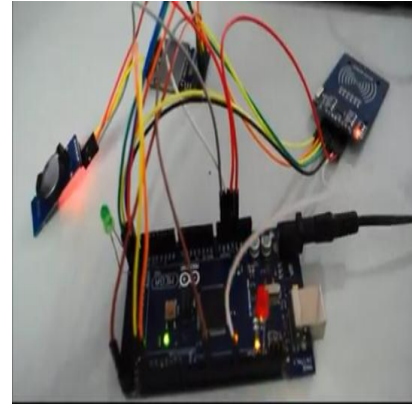

Fig.4. Arduino-RFID reader connection

Associating the Male head in the RS232 sequential link and the Femaleport in the RFID reader. Associating the USB end in the sequential cable to one of the USB ports of the pc framework is utilized. The connection of RFID reader with arduino is shown in Fig.4.Interfacing the 9V dc power to the reader and after thatit can be connected to the port peruser's power circuit. Assurance the fitting of COM port in the PC that can be utilized, and it guarantee the programming code has been written to control the framework.

Fig.5. Swipe the Card on the LCD Display

The participation the executives framework fills in as proposed; when make a framework with one server to which all PC's are associated, so all information will be spared in one information base on making the observing of the data easy. At the point when the circuit is controlled on, at first the microcontroller will show the message as swipe the card on the LCD show as in fig.5. All classes more likely than not been a PC with associated with RFID-

Peruser that can peruse understudy RFID-cards. The RFID peruser uses the understudy ID card. After some time, the educator presents all information to capacity in a database.

Fig.6. Output of Attendance Management System

The program gives the accompanying yield: Person name, Roll number, label card number, office, the standard being referred by the participation systemthat depend on the predefined measurements. At that point the peruser was prepared, the procedure to get the participation will begin. Understudies need to swap their card on the RFID peruser and the code from the ID card would be read by the reader and information is accessed from database. At the point when the code coordinate with database, the understudy data like name and ID number will appear on the interface and that data will trigger into a rundown. This rundown will use as an understudy participation. The output of attendance management system is shown in fig.6.

VII. CONCLUSION

As the RFID innovation developed has more advanced advantages this will be utilized in the ability of reader to get and passthe information in a remote reader source. Radio frequency has the applications that can be envisioned. In this project, the main advantage is time consuming and also malpractices in marking attendance can be avoided[10].We trust that this framework can move the worldview of understudies. This will give less bulky method for taking attendance compared to older method.

VIII.FUTURE SCOPE

Each great building structure development has limitations. This look of RFID dependent on a lecture attendance checking framework is without limitation of an information gathering innovation with accurate and the auspicious information passage. Thus, the application of the structure is improved upon the future on thinking about accompanying remarkable prospects. In consolidating the facial recognition limitation that can solve the scope of expanding the face recognition of the system against the eroding students. Using the Higher Frequency (HF) active reader labels that detached of Lower frequency (LF) RFID labels has higher performance and adaptability of user performance assessment in blend the thumbprint, facial recognition acknowledgment and RFID technology of student attendance monitoring issue.

REFERENCES

[1] Chitresh, S and Amit K (2010), "An approach of Automatic Attendance Using Fingerprint Verification Technique", *International Journal on Computer Science and Engineering* (IJCSE),Vol. 2 No. 2,pp 264-269.

[2] Henry. S, S. Arivazhagan and L. Ganesan (2003), "Unique finger impression Verification Using Wavelet Transform",*International Conference on Computational Intelligence and Multimedia Applications*, 2003.

[3] Maltoni D, D. Maio, A. K. Jain, S. Prabhaker (2003), "Handbooks of Fingerprint Recognition", *Springer, New York*,Pp 13-20.

[4] Victor S, Jonathan M, Reece J, and Lemire J (2003), "Understudy Wolfpack Club Tracking System",*North Carolina State University. USA*.

[5] Nambiar A.N. (2009), "An inventory network point of view of RFID Systems", *World Academy of Science, Engineering and Technology Journal*, Volume 6,pp1-5.

[6] Mohamed A.B, Abdel-Hamid A and Mohammed K.Y.,(2009), "Execution of an Improved secure framework recognition for E visa by utilizing EPC RFID labels", *World Academy of Science, Engineering and Technology Journal*, Volume 6,pp1-5.

[7] Dawes A.T. (2004), "Is RFID secure for Your Library", *Journal of Access Services*, Volume 2(4), pp 7-13.

[8] Longe O.O.(2009), "Execution of Student Attendance System utilizing RFID Technology", B. Tech Project Report, *Ladoke Akintola University of Technology, Ogbomoso, Nigeria.*

[9] Liu C.M and Chen L.S (2009), "Uses of RFID innovation for improving generation proficiency in an Integrated-circuit bundling house", *International Journal of Production Research*, vol 47, no. 8, pp. 2203- 2216,

[10] RFIDSensNet Lab (2005), "A white paper on Automatic Attendance management System*", Texas A & M University, Texas, USA*.

[11] Bardaki,C., Kourouthanassis, P. and Pramatari, K., (2012) "Sending RFID-Enabled Services in the Retail Supply Chain: Lessons Learned toward the Internet of Things", *Information Systems Management*, Vol. 29: no.3, pp. 233-245.