ATTENDANCE SYSTEM BASED ON RFID TECHNOLOGY

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Abstract: As developing of internet has become worldwide structure, students tend to stay at home and study and this problem has become concern to most of the educational institutions about student's irregular attendance. This can affect student's overall academic performance. Also, considering fact that manual attendance is a problem as it takes lot of time. Students are less motivated to attend the classes, due to which most of the students are unable to maintain minimum attendance. So, this project gives solution in regarding problem. RFID (Radio Frequency Identification) based attendance system is a solution to given problem, in this busy scheduled life, that can inform the student's records time to time. GSM is used to the location purpose. It is wireless identification technique which has become very popular these days. It is used for smart systems that can be used to identify, monitor, secure and do object inventory by the use of radio frequency.

Keywords: Radio Frequency Identification (RFID), Global System for Mobile Communication (GSM), RFID tag, attendance.

I. INTRODUCTION

The term RFID (radio frequency identification) is a one type of electronic device includes a small antenna and a chip. This device is used to transmit the information like persons, animals, books or any stuff between reader and RFID tag using radio frequency electromagnetic fields. It is capable of carrying 2k bytes of data [1]. There are different kinds of RFID systems in the market, which consist of an antenna, a transponder and a transceiver. To protect RFID systems against the relay attack, distance bounding protocols are commonly employed [2]. Within such protocols, the reader estimates an upper bound for the physical distance between the tag and it as well as authenticating the tag. Some types of tags can be located close to the RFID reader and some tags can be located far from the reader [3]. RFID is commonly used to transmit and receive information without wires. RFID readers and tags communicate through a distance using radio waves. There are a lot of advantages in RFID system, included their price, size, memory capacity and their capability. The operating frequency ranges of these devices mainly include low, mid and high ranges. There are several versions of RFID that operates at different radio frequencies. Choice of frequency is dependent on business requirements and environment.

- Low frequency (125/134KHz)　- Mostly for attendance &access control.
- High frequency(13.56MHz)
- Ultra high frequency (850MHz to 950MHz)
- Active RFID tags are battery powered. They broadcast signal to reader and transmit over greatest distance.
- Passive RFID tags are waves powered not battery. they draw their power from radio wave transmitted by the reader.

RFID (radio frequency identification) is designed to serve as the purpose of barcode scanner or a magnetic strip on the back of the ATM card. It creates unique identifier for that object and just as a bar code or magnetic strip it must be scanned to get the information RFID must be scanned to retrieve the information [8]. The PC can be used for restoring all the details of attendance made. We show that how we provide a advance attendance system with time management system. We used one hardware circuit with RF reader interface and RF passive card for attendance system. RF reader system is connected to PC via com port. Arduino boards have different SPI pins. Graphical User Interface (GUI) commands are used for students and parents to entry their UIDs (Unique Identification code) along Microsoft Visual Basic.

RFID MFRC522 Module:13.56 MHz is a highly integrated transmission module for contactless communication at 13.56MHz .The data is retrieved stored on RFID tag is by sending radio waves to tag and converting waves the tag sends back into data. A device used to communicate with RFID tags. The reader has one or more antennas, which emit radio waves and receive signals back from tag.

II.   LITERATURE SURVEY

In the process of system development, literature reviews conducted to understand the theory, methods and technologies associated with systems that have been developed. Background research on the organization and comparative studies of existing systems is also done to understand the system requirements before the system was developed. Student Attendance Using RFID System is an automatic record of student attendance developed especially for universities. Radio Frequency Identification (RFID) research and discovery began in earnest in the 1970s. Advances in radar and RF communications systems continued through the 1950s and 1960s.

Electronic article surveillance tags, which are still used in packaging today, have a 1-bit tag. The bit is either on or off. If someone pays for the item, the bit is turned off, and a person can leave the store. But if the person doesn't pay and tries to walk out of the store, readers at the door detect the tag and sound an alarm.

The First RFID Patents Mario W. Cardullo claims to have received the first U.S. patent for an active RFID tag with rewritable memory on January 23, 1973. Later, companies developed a low-frequency (125 KHz) system, featuring smaller transponder

Dr. L. Santhi .et.al [2] had proposed this paper written in order to provide an overview of the RFID technology in libraries. RFID technology components and how it works and also pros and cons of the RFID technology is also discussed. This study also gave an idea for the Libraries that are planning to implement automated Library Management System using RFID Technology in future.

Abu bakar Ibrahim .et.al [3] developed the project of The attendance system that can be read several centimeters away during "drive-thru" at security guard which is low cost project method and flexible. The ID will be stored and the tag will be detected by the reader and validation attendance will be display on the LCD display. Meanwhile, in software the system is created that analyzed uses passive RFID as hardware because it is cheap, small in size and can communicated with Hyper Terminal to display output on PC.

Tripti Jain.et.al[4] proposed the work of attendance system by IOT , which includes LCD display and biometrics method is used to show the finger prints added to data of the person and simulated in things board platform which is open source IOT platform .

Consequently, the attendance data then can be used to create many types of reports like daily attendance details, monthly, weekly and real time feedback to parents. The attendance score calculation can be automated using the collected data.

Chiagozie .O .G .et.al [6] proposed the work of RFID attendance system with automatic door unit to the system having access to door by this technique.

Mulajkar A. et.al [7] worked on power saving methods of the system to reduce the communication gap between multi -core (SoC).

III.   METHODOLOGY

When you swipe an RFID tag or tap to reader, it saves user UID and time in an SD card. It also shows if you are late or in time accordingly to preset hour and minute. Figure 1. shows block diagram of this paper ,where data is collected through waves by the readers and GSM is used for the messages to be done to parents of students and data is collected in cloud and can be restored from PC as per need [5]. For this, we are interfacing MFRC522 RFID SPI module with Arduino. The tag contains specific serial number for one specific object. To read information encoded on tag , two way radio transmitter -receiver called an interrogator or reader emits a signal to tag using an antenna . The tag responds with information written in its memory bank [6]. The interrogator will then transmit read results to RFID computer program. There are two types of RFID tags: passive and battery powered(active). A passive RFID tag will use the interrogator's radio wave energy to relay its stored information back to the interrogator. A battery powered RFID tag is embedded with a small battery that powers the relay of information. In retail setting, RFID tags may be attached to articles of clothing. When an inventory associate uses handheld RFID reader to scan a shelf of jeans, based upon information stored on RFID tag. Each pair will have its own serial number. Power is also saved to some extent in proposed work.
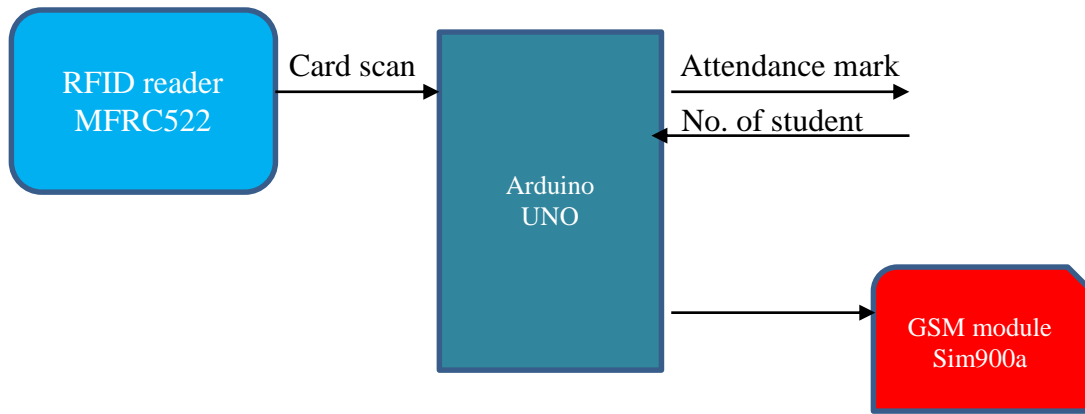
FIGURE1: Block Diagram of RFID System

Figure 2. shows working of actual waves transmitting and receiving through cards and readers and how data is transferred to computer systems.
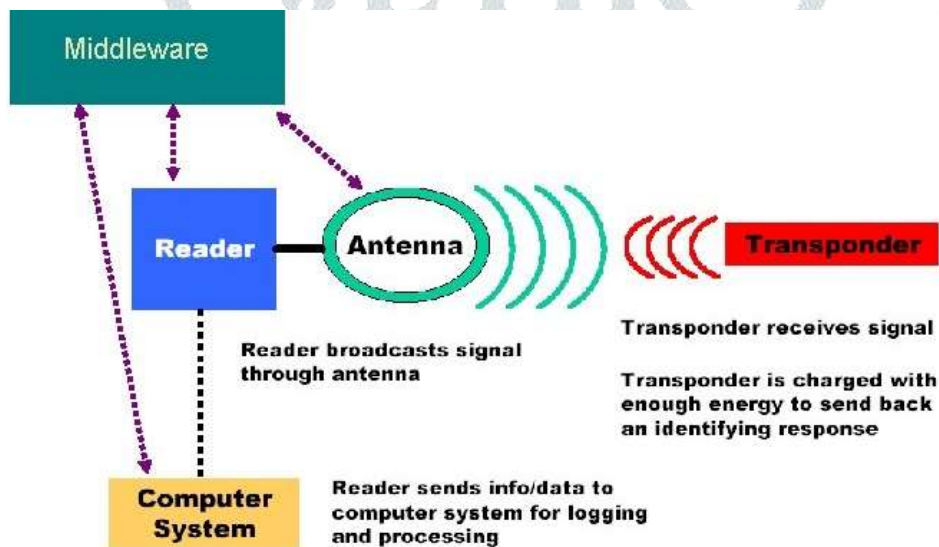

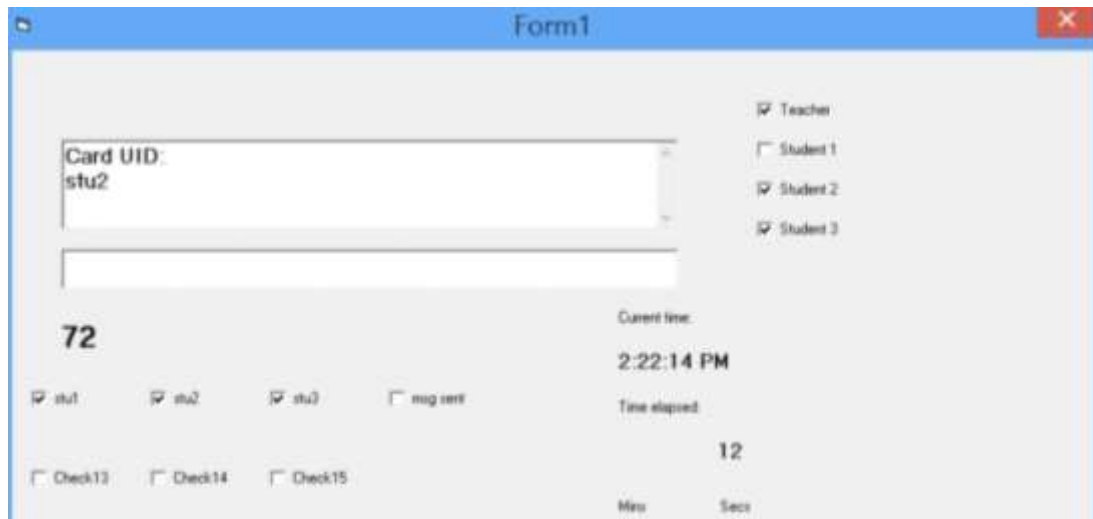**Figure 2. Working of RFID waves**

IV. RESULTS

Figure 3. Microsoft Visual Basic Results

In this part, many limitations were identified, Due to some limitations of sources and demo purpose, just four cards were simulated in experiments. There are some problems needed to be solved although to reduce before RFID technology becomes widely spreader systems. As, in given figure1. The details are shown on screen with UID of tag been tapped. Along with all students, and if any student is absent, then the message of their absentee will be messaged to their parents. There may be some issue when number of people is increased, the accuracy of output may occur with defects. Because as number of peoples is increased there may be possibilities of having same body structure, features, which needs with more features. Also, the real time capability may be considered for future enhancement to our system.

V. CONCLUSION

This system gives time saving, easy control and reliability. It is very easy to handle and very convenient for College/Universities level. This method removes the manually attendance problems where information are transferred quickly. Considering the fact that there are many different ways for tracking students, this system is very easy to cope and to colleges, etc. This automated technology is flexible and even reduces environmental impact to some extent as lots of papers can be saved. It also holds more data. As RFID costs are moving down nowadays, and efficiency are rising and libraries are improved similarly. This system is taking off in many places like shopping malls, libraries, tracking wild life management, office buildings, etc. and change work lives with new ideas to usher a bright future.

VI. ACKNOWLEDGEMENT

VII.　　REFERENCES

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