RFID BASED SECURITY SYSTEM USING ARDUINO MODULE

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ABSTRACT: There has been rising demand for securesystem that must be dependable and quick respond for the industries and company. RFID (Radio Frequency Identification) is one of the consistent and fast means of identify the material object**.** In the long-ago the barcode's are more preferable as compared to RFID because of their cost but now a day's RFID are easily available and are more convenient to use. Research has made some drastic changes which makes its programming a lot shorter and easier is because of replacing microcontroller with arduino. Arduino makes the circuit and programming a lot easier to understand. Paper is based upon security access using RFID and Arduino module.

Keywords: EM-18 Reader Module, RFID tags, Arduino UNO ATmega 328 board.

I.INTRODUCTION

RADIO FREQUENCY IDENTIFICATION (RFID):

This paper provides knowledge on radio frequency identification (RFID) technology. Initially RFID tags were made to eventually replace barcodes in different chains. Their advantages are that they can be read wirelessly and with no line of sight, contain more data than barcodes, and are stronger. As the paper describes the recent technology, include the frequency ranges used and standards required. With the increase in ubiquity of RFID tags, however, privacy became unease. The paper outlines probable attack that can go against one's privacy and it also describes contradict measures. The RFID technology did not stop at thing-level tagging. Since the uses for RFID tags are so extensive, there is a large interest in lowering the costs for production of RFID tags. It turns out that printing tags may become a possible alternative to traditional production.

RFID tags :

An RFID tag is a smooth card of credit-card size (Fig. 3), which is read by an RFID reader. It works at 125kHz and comes with a unique 32-bit ID. Normally, each tag has a unique ID number which cannot be changed. We can find out its unique ID through software.

EM 18 reader: We had usedEM-18 RFID reader module which operates at 125kHz. The module comes with an on-chip antenna and can be powered with a 5V power supply. The transmit

pin of the module is connected to receive pin of Arduino UNO board. It basic use is to provide authorize access as this module can only provide access when we are having an access card or tag if there is any unauthorized people try to break the security system then this would make the system trigger the alarm.
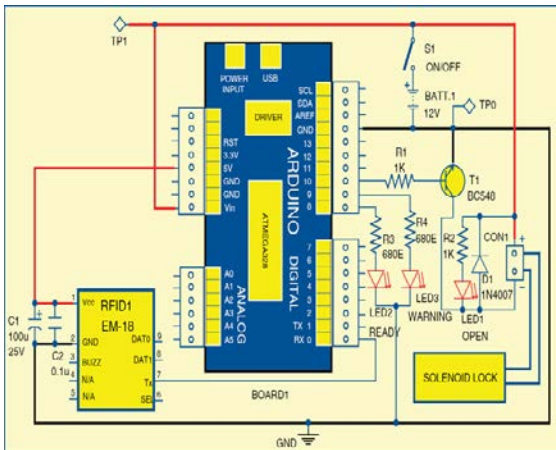

ARDUINO UNO BOARD: It is an open sourceelectronics prototyping platform based on bendable, easy-to-employ hardware and software. It is proposed for artists, designer, hobbyists & anyone interested in generating various design for objects or environmental purpose. Arduino UNO is a board based on ATmega328 microcontroller. It consist of 14 digital input/output pins, six analogue inputs, a USB link for programming the on-board microcontroller, power jack, an ICSP header & a reset button. It is work due to 16MHz crystal oscillator & contains everything needed to support the microcontroller. It is easier to use as the user simply needs to connect it to a computer with a USB cable or power it with an AC-to-DC

adaptor or battery to get in progress. The microcontroller on the board is programmed using Arduino programming language & Arduino development environment.

II. LOGIC BEHIND THE SYSTEM

A. Concept

Relay: We are using 12 volt relay. Relay driver circuit is used to turn on the relay. Using this relay user can control any AC or DC device.

Buzzer: We are using piezoelectric buzzer. This is a warning / indication that invalid attempt is done to gain access to system.

DC motor: It will be used to show demonstration of door or gate opening.

LCD Display: 16 by 2 Liquid Crystal Display (LCD) will be used in this project. It displays on 2 lines each containing 16 characters. LCD display has total 16 pins for interface with processor. RS is instruction or data select line. This pin is kept high or low by microcontroller to indicate command instruction or data bytes on data bus db0-db7. Special feature of this LCD module is it allows reading of data bytes stored in RAM. Pin no. 5 i.e. R/W is used for deciding read operation or write operation. Graphic display has RAM memory for storing characters codes to be displayed on LCD.
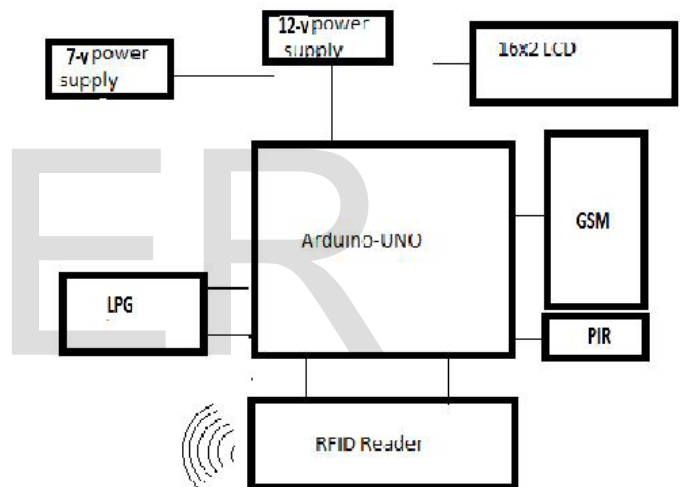
III. WORKING AND RESULT

When RFID tag placed on the RFID reader as it read the data and through reader its code send to the controller which access with the controller match and receives code
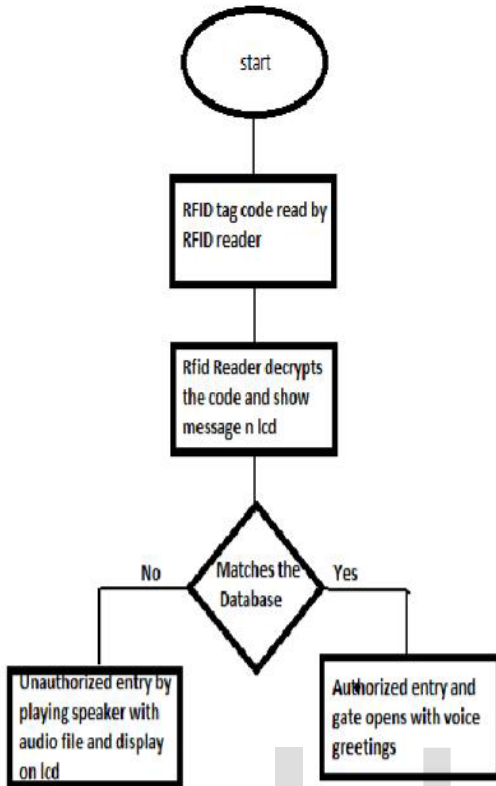
with store code if the code is same then the security system is authorized to use and access the data. Change the tag ID in Access Control into sketch with the ID you have noted down earlier and then connect arduino board with PC, upload the sketch into the board. After access control system the information is display on LCD and if the information is not correct the alarm will start ringing.

If uploading is doing well, you will see the glowing of LED. It means the system is prepared to read the tag. Now, bring the tag near to RFID reader. If tag ID matches with the ID in the code, lock will open for five seconds. It closes manually after five seconds. Glowing of LED indicate that the lock is open. Glowing of caution LED means that you are using the wrong tag.

BLOCK DIAGRAM:

FLOW CHART OF THE SYSTEM:

can be introduced. Pay preparation feature will be the latest trend in upcoming years due to the boost in the ecommerce industry.

1. In malls for generating bills without standing in a queue.
2. Gaming zone
3. Environmental problems to control and make nature friendly.
4. **Uses in ATM machines**

IV. CONCLUSION

RFID based security and access control system is more secure and fast responded as compared to the other system like biometric. The advantage of the RFID system is contact-less and works without-line-of-sight. By using arduino it is easy to access and works very quickly while burning the code it is like plug and play device. Users can change the function accordingly by using arduino. It is easier to use and accurate also. Hence this project can be useful for implementation of access control application for tracking system as well as providing the security benefits. This project can improve by raising the range of reader in which the tag read.

V. FUTURE SCOPE

It depends upon how original one could be to enhance the use of this project. But for us this project is practical for future uses such as Smart cart can be interfaced with wireless technologies to make it completely portable in the near future. Payment of bills using mobile can be implemented. A low cost RFID scanner can be manufactured and used which can scan multiple tags (products) simultaneously for faster processing and lesser resources. Automatic scanning & availability of products

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