



# RFID Based Security and Access Control System using ARDUINO

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## ABSTRACT

*There has been rising demand for secure system that must be dependable and quick respond for the industries and company. To secure industries and companies this concept is helpful.*

*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. This project is based upon security access and control system using RFID and Arduino. Security access system is very convenient to use at home, office and commercial buildings*

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### I. EXISTING METHOD

In the long ago the barcode's are more preferable as compared to RFID because of their cost. In those days these barcode's are available for low cost and they are popular in those days. The barcode is scanned by barcode reader and it displays the stored information, thus it provides security.

#### Limitations:

- The Bar code should be placed nearer to the reader when compare to RFID tags.
- These are very slow than the RFID readers.
- These are inconsistent and inefficient.

### II. PROPOSED METHODOLOGY

The proposed method is based on RFID (Radio Frequency Identification) technology .RFID tags are made to eventually replace barcodes in different chains. RFID tags or simply "tags" are small transponders that respond to queries from a reader by wirelessly transmitting a serial number or alike identifier. They are greatly used to track items in production environment and to label items in supermarkets. They are usually thought of as a highly developed barcode.

### III. RADIO FREQUENCY IDENTIFICATION (RFID)

#### A. Introduction

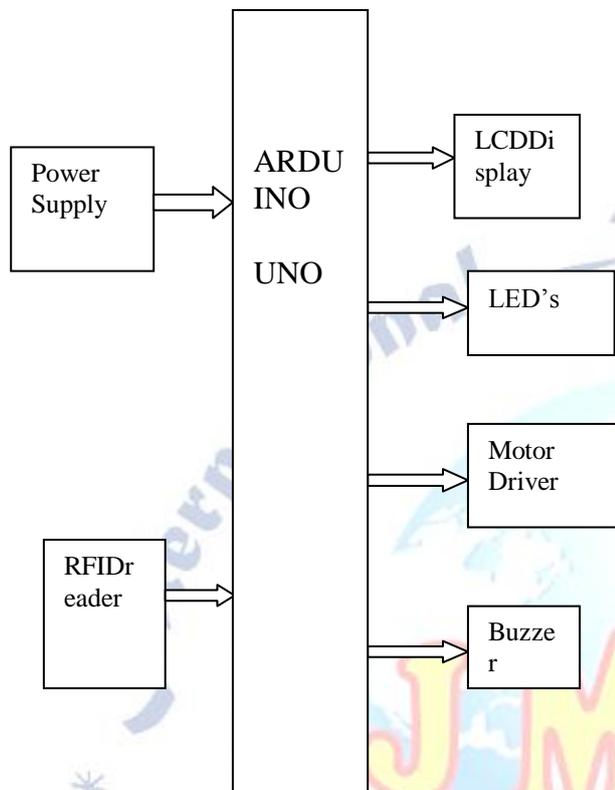
Radio Frequency Identification (RFID) technology has been attracting considerable attention with the expectation of improved supply chain visibility for both suppliers and retailers. It will also improve the consumer shopping experience by making it more likely that the products they want to purchase are available.

Recent announcements from some key retailers have brought the interest in RFID to the forefront. This guide is an attempt to familiarize the reader with RFID technology so that they can be asking the right questions when considering the technology.

RFID (Radio Frequency Identification) is a method of identifying unique items using radio waves. Typical RFID systems are made up of 2 major components: readers and tags. The reader, sometimes called the interrogator, sends and receives RF data to and from the tag via antennas. A reader may have multiple antennas that are responsible for sending and receiving the radio waves. The tag, or transponder, is made up

of the microchip that stores the data, an antenna, and a carrier to which the chip and antenna are mounted.

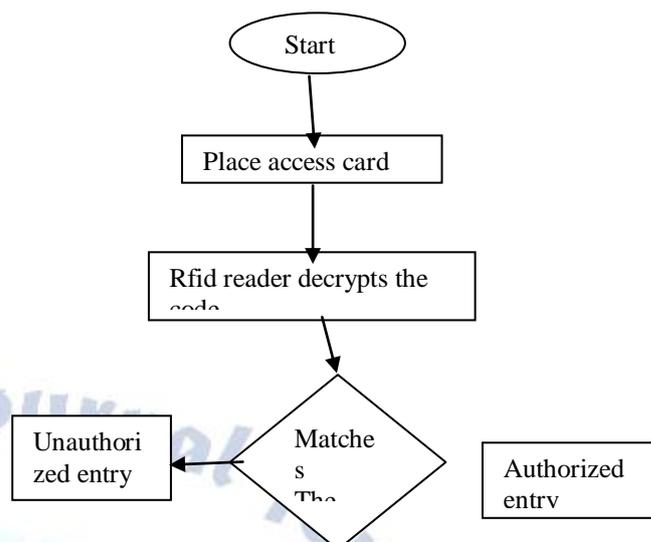
### B. Block Diagram



### C. Working

- When RFID tag placed on the RFID reader as it read the data and through reader its code send to 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 we have noted down earlier and then connect Arduino board with pc,upload the sketch into the board.
- After access control system the information is displayed on LCD and if the information is not correct the alarm will start ringing.

### D. Flow Chart



### E. Advantages:

- These are more secure and fast responded as compared to other system like biometric.
- This 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.
- User can Change the function accordingly by using Arduino.
- It is easier to use and accurate also.

### F. Applications:

- Security and access control systems is very convenient use at home.
- Used in office and commercial buildings.
- Used in industries

### 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 card can be interfaced with

### Simulation Results



If the code matches with stored code then it shows on the LCD like this.



If the code does not matches with the stored code it will show like this.



## REFERENCES

- [1] [www.electronicstrends.com](http://www.electronicstrends.com)
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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 simultaneously for faster processing and lesser resources. Automatic scanning & availability of products can be introduced. Pay preparation feature will be the latest trend in upcoming years due to the boost in the ecommerce industry.

e.g.:1. In malls for generating bills without standing in queue.

2. Gaming zone
3. Environmental problems to control and make nature friendly.
4. Used 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.