# SMART DOOR LOCKER USING RFID MODULE

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# INTRODUCTION

- The smart door locker using RFID module is based on the Radio Frequency Identification technology.
- An RFID reader combines the functions of radio transmitter, receiver and data interface.
- All the user will need is an **RFID** tag to be able to unlock and **lock** the **door**.
- In this project LCD is used to display Entry is denied or Available.

# REQUIRED COMPONENTS

- Arduino
- RFID Module
- RFID Tag
- LCD Display (Liquid Crystal Display)
- Solenoid Switch
- Relay
- Adapter

# How RFID work?

- An RFID system consists of two main components, a transponder or a tag which is located on the object that we want to be identified, and a transceiver or a reader.
- The RFID reader consist of a radio frequency module, a control unit and an antenna coil which generates high frequency electromagnetic field. On the other hand, the tag is usually a passive component, which consist of just an antenna and an electronic microchip, so when it gets near the electromagnetic field of the transceiver, due to induction, a voltage is generated in its antenna coil and this voltage serves as power for the microchip.

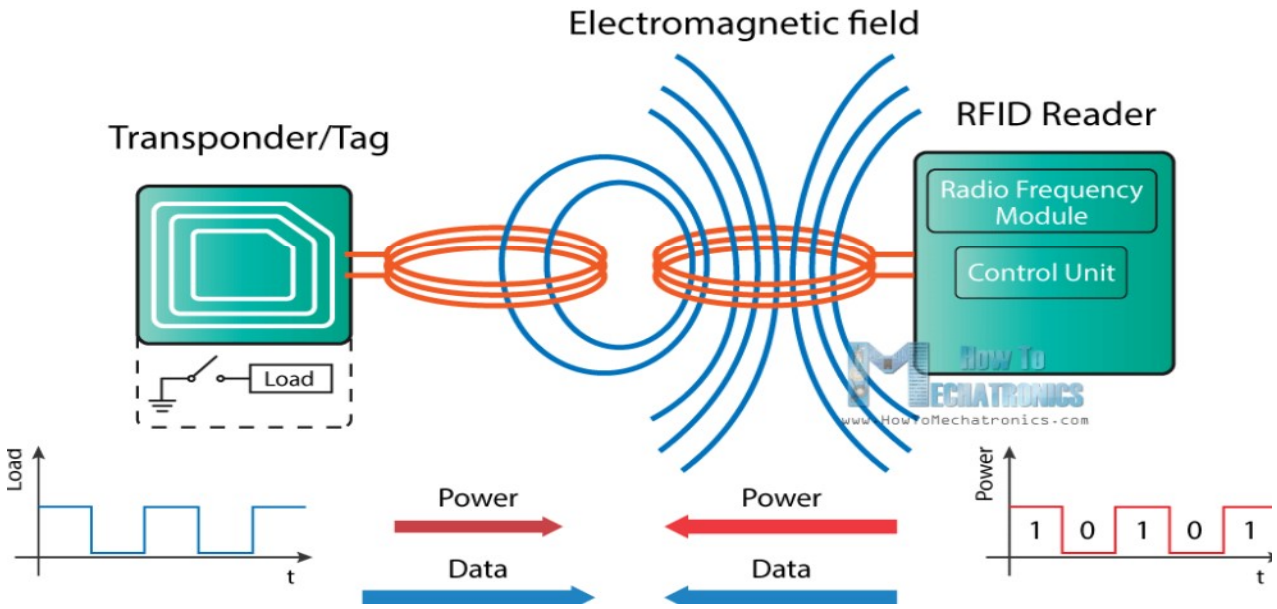


Fig: working of RFID

# BLOCK DIAGRAM

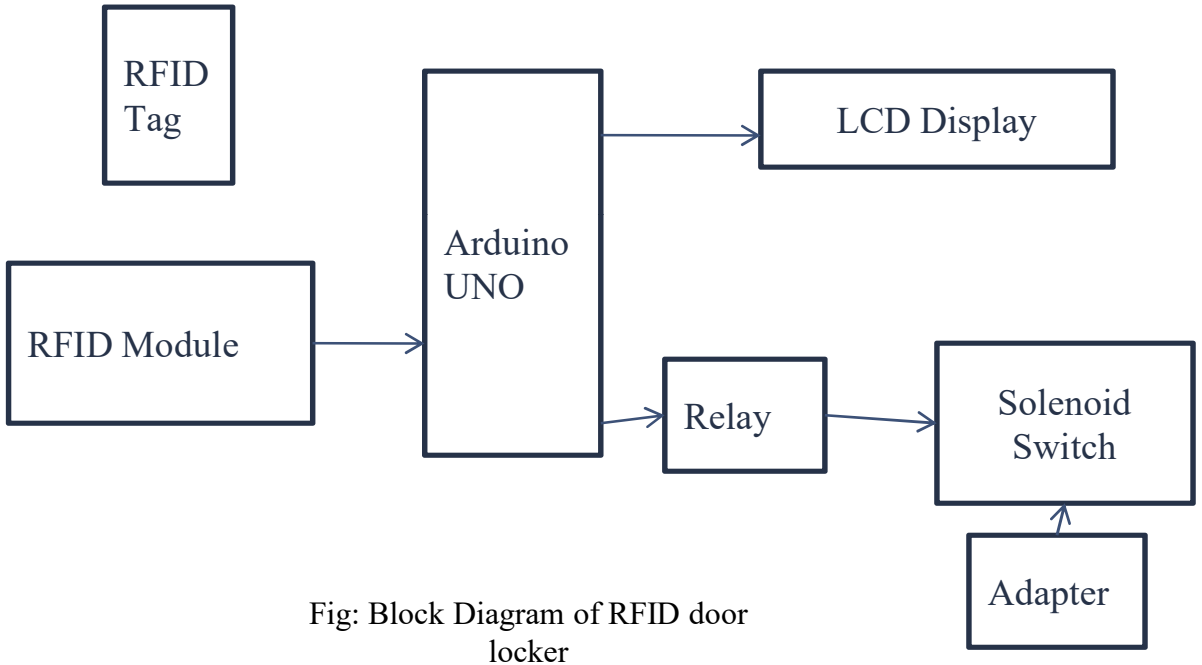


Fig: Block Diagram of RFID door locker

# WORKING

- First we have to set a master tag and then the system goes into normal mode. If we scan an unknown tag the access will be denied, but if we scan the master we will enter a program mode from where we can add and authorize the unknown tag. So now if we scan the tag again the access will be granted so we can open the door.
- The door will automatically lock after we will close the door. If we want to remove a tag from the system we just have to go again into program mode, scan the know tag and it will be removed.
- Arduino.cc application is used for programming to the Arduino board.

# ADVANTAGES

- This maintains the lock system security.
- RFID locks allow you to achieve more than a traditional lock could. They allow you to operate home safety features in ways homeowners never could with key locks. It enables them to complete more safety actions with less work.
- RFID cards can be programmed and reprogrammed as the aspects of security requirements change.

# DISADVANTAGE

- Just like traditional keys, you can forget your keycard. It is possible the system can be hacked or bypassed by someone who is tech-savvy, so they aren’t foolproof. One major problem is that electric RFID systems may malfunction during power outages.

# APPLICATIONS

- It is used in offices.
- It is used in smart home automation.

# CONCLUSION

We have implemented a digital security system contains door lock system using passive RFID. A centralized system is being deployed for controlling and transaction operations. The door locking system functions in real time as the user put the tag in contact with the reader, the door open and the check-in information is stored in central server along with basic information of the user. We utilize RFID technology to provide solution for secure access of a space while keeping record of the user.