

RFID, Fingerprint and Password Based 3 Step Security System

About This Project:

In this project here we mainly focused on a security system which mainly works with fingerprint sensor, RFID and a keypad. In a door lock security fingerprint and RFID is the best thing which is not very easy to steal by any person. At first the user will scan a finger in the fingerprint sensor, then scan the ID card in RFID reader and then press the keypad for enter the password. If everything is matched Arduino sends a signal in the servo motor then the servo motor will rotate and the door will be open for few minutes. After few minutes later it will be locked again. For this kind of security only authorized people can entered through this system.

Biometric is an automated technique of recognizing a person based on his physical attributes which includes face, fingerprint, hand geometry, handwriting, iris, retinal, vein, and voice. Biometric data are considered as different and distinct from personal information because it cannot be reverse-engineered to recreate any personal information and cannot be stolen to attempt theft. It requires the imaging and comparison of the print pattern, which patterns are unique to every individual.

RFID module consists of RFID tag and RFID reader. When the user punches his card then a serial number of the tag is read by the RFID reader and is sent to the microcontroller. The microcontroller then compares the data with the existing data stored in internal memory of the microcontroller. If the data matches with the existing data in the memory, it means the person is authorized and the user enters the second stage of the security system. If the data is not matched then the user will not be permitted to enter inside.

The door will not open if the user just uses a fingerprint. Same case will happen if users only show his /her id card. When the user input fingerprint, scans the ID card and the key for right password then only the Arduino sends a signal in servo motor. After this all sequence motor will turn and the door will be open. After a sudden time the door will close.

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Block Diagram:

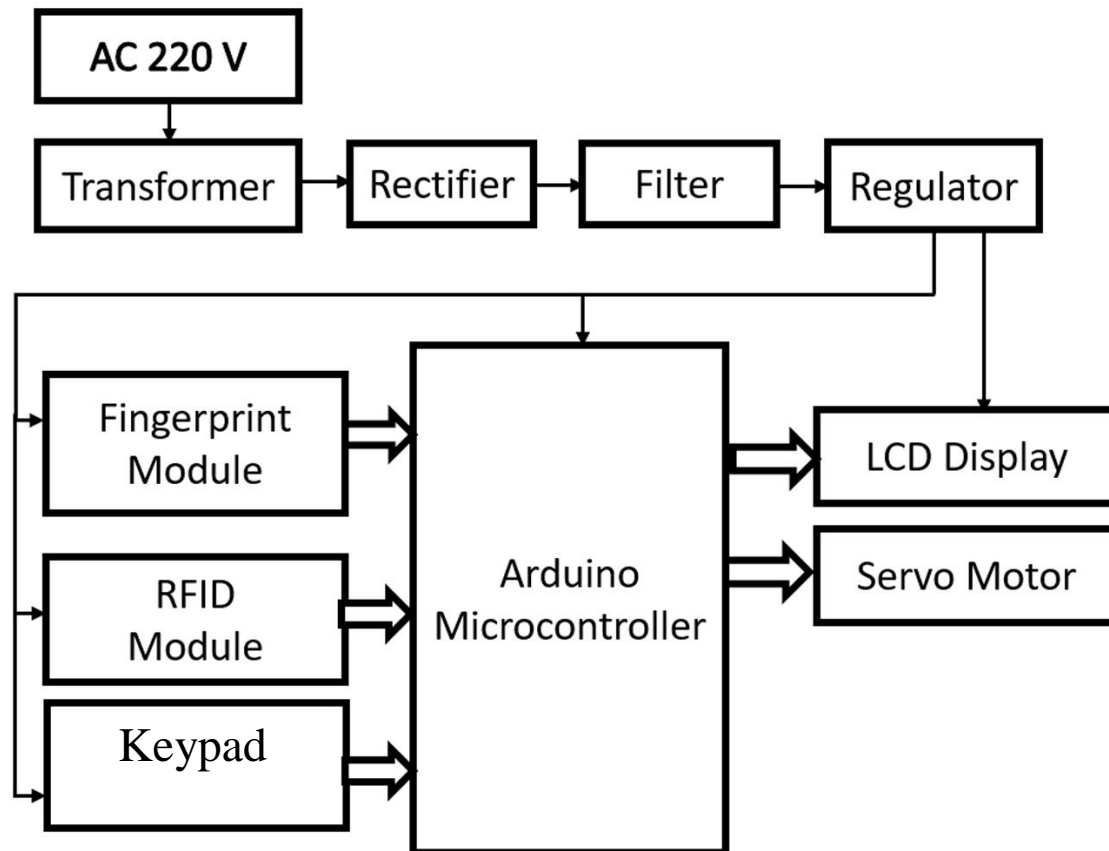


Figure: RFID, Fingerprint and Password Based 3 Step Security System

Required Instrument:

- Arduino Nano.
- LCD Display.
- Fingerprint Module.
- RFID Moduel.
- Keypad
- Servo Motor.
- Transformer.
- Bridge Rectifier.
- Voltage Regulator.
- Diode.
- Capacitor.

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Advantages:

There are certainly many advantages of our project and some of the major ones have been given below:

- The project is compact, cheap and user friendly
- The whole system consumes very little energy
- Our system is fully automatic.
- The project is Fingerprint, RFID and password based 3 step security system.
- The system can be implemented anywhere with very little effort.
- Requires low maintenance.
- Without human interface the door cannot be opened or closed.
- Highly Security.

Applications:

Our project has many application areas and actually we need to use it in many places to verify the exact person which have the proper access. Some of the application areas of the project has been pointed out below:

- The system can be implemented in industrial areas
- It can be implemented in bank and residential areas
- It can be implemented in shopping malls, in restaurants etc.

N.B: *Any modification of this project can be done as per your requirement. We will make the project according to your needs. Contact us with your any innovative engineering projects idea. We will help you to implement your project.*

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