Door Lock Security System

A Project submitted in partial fulfilment of B.Tech. in

Electrical and Electronics Engineering

SUBMITTED BY:

GALEGAVE AJINKYA ARJUN   -   211EE119

R JIVITH ABHISHEK   -   211EE134

ROHANRAJ SHINDE   -   211EE138

SUBMITTED TO:

Dr. B. Dastagiri Reddy

**NATIONAL INSTITUTE OF TECHNOLOGY KARNATAKA
SURATHKAL, SRINIVASNAGAR, D.K. MANGALORE - 575025**

5 th DECEMBER 2022

D E C L A R A T I O N
by the B.Tech. Student

I/We hereby *declare* that the Project Work Report entitled

Automatic door locking system using solenoid.

which is being submitted to the **National Institute of Technology Karnataka**, Surathkal for the award of the Degree of Bachelor of Technology in Electronics and Electrical Engineering.

This is a *bonafide report of the work carried out by me/us.* The material contained in this Project Work Report has not been submitted to any University or Institution for the award of any degree.

Register Number, Name & Signature of the Student(s):

(1) 211EE119   -   Galegave Ajinkya Arjun

(2) 211EE134   -   R Jivith Abhishek

(3) 211EE138   -   Rohanraj Shinde

Department of
Electronics and Electrical Engineering

Place: NITK, SURATHKAL

Date: 05-12-2022

<u>**C E R T I F I C A T E**</u>

This is to *certify* that the B.Tech. Project Work Report entitled submitted by:

Sl.No. Register Number & Name of Student(s) :

(1) 211EE119   -   Galegave Ajinkya Arjun

(2) 211EE134   -   R Jivith Abhishek

(3) 211EE138   -   Rohanraj Shinde

as the record of the work carried out by him/her/them, *is accepted as the B.Tech. Project Work Report submission* in partial fulfilment of the requirements for the award of degree of **Bachelor of Technology** in **Electronics and Electrical Engineering.**

Chairman - DUGC

(Signature with Date and Seal)

ACKNOWLEDGEMENT

My sincere effort has made me to accomplish the task of completing this project. I have taken efforts in this project. However, it would not have been possible without the kind support and help of many individuals.

I would like to express my sincere gratitude to my professor Dr. B. Dastagiri Reddy and the institute for providing me with facilities required to do my project.

My thanks and appreciation go to my classmates and laboratory. Assistant in development my project and to the people who have willingly helped me out with their abilities.

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Aim: To build a working model of an electronic lock using Arduino.

Components Used:

S.No.	Components	Quantity
1	Arduino Uno Dev. Board	1
2	Solenoid Lock(12v)	1
3	Relay(5v)	1
4	Numeric Keypad(4x4)	1
5	12v Li-Ion Battery	1
6	Breadboard	1
7	LED(20mA)	1
8	Resistor(220ohm)	2
9	Buzzer	1
10	Jumper Wire	-

PRINCIPLE

The main component of the model is solenoid lock and it works on the principle of electromagnetism.

At the simplest level, a solenoid is a length of wire coiled around a core. The core often has two parts-- a stationary core and a moveable one, which is the armature. The two parts are spring-loaded.

When the current goes through the wire, it creates a magnetic field that moves the armature away from the stationary core (or toward it, depending on the solenoid's use and construction). When the current stops, the spring snaps the armature back into its original position.
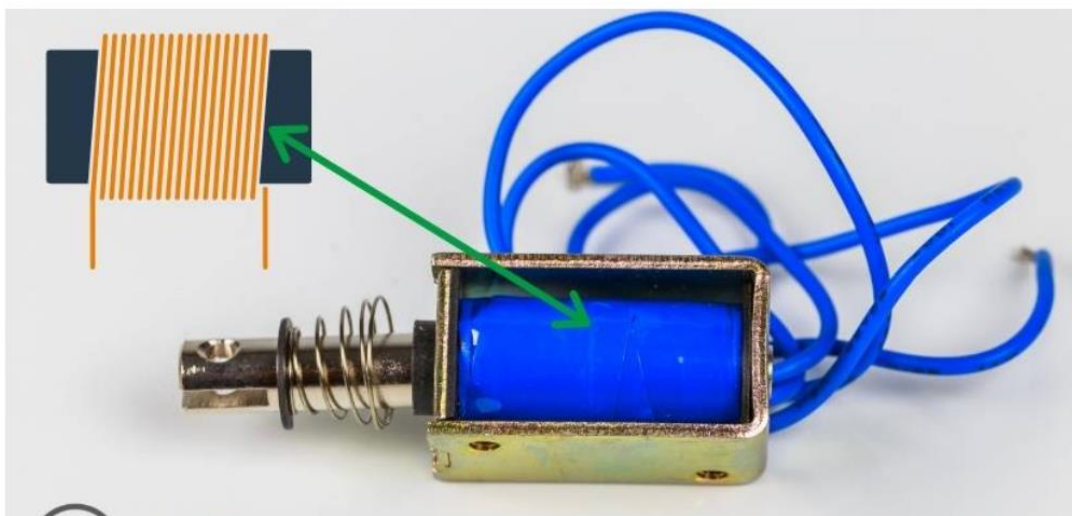
WORKING:

1. To open the door lock, correct password has to be entered on the keypad.
2. If password is correct, the Arduino will send signal to relay which then allows the current from 12V battery to flow.
3. The current flows through the solenoid lock. When current passes through coil inside the solenoid lock, it creates a magnetic field which attracts the iron core. As a result, soring gets compressed.
4. When Door unlocks, an LED will glow and Buzzer sounds for 700ms.
5. Later if we press the star key it stops the current flow and as a result, the solenoid demagnetises and spring comes to rest position, which locks the door.
6. If the password is incorrect, signal is not sent to relay and door remains locked.

References:

https://www.youtube.com/watch?v=BLrHTHUjPuw&t=2s

https://playground.arduino.cc/Code/Keypad/https://playground.arduino.cc/Code/Keypad/