

# SECURITY BASED AUTOMATIC DOOR LOCK SYSTEM

# INTRODUCTION

- Security describes protection of life and property. The safety in the house is very important. Besides the traditional method door that used a key can be easily open by non authorized person or burglar if they have the right key . This will allow them to steal the valuable things in the house.
- This project is totally protected as it is password based. Only person who knows the correct password can enter the house .

# PROBLEM STATEMENT

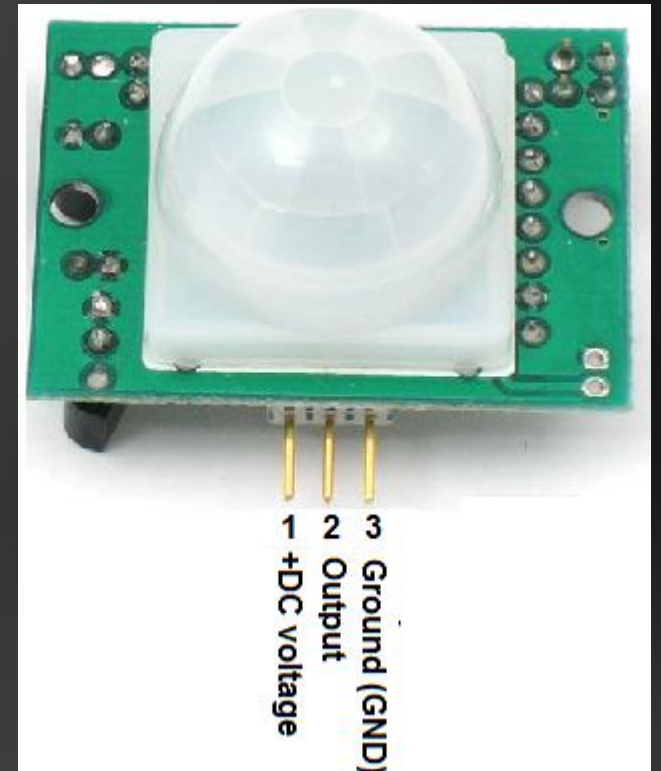
- Opening and closing of doors is tedious and time consuming especially in places like shopping malls, hospitals ,theatres where a person is always required to open the door for visitors.
- Smart door system provide automation for owners. These door will automatically open when a person comes near to the door and also for security purpose person has to enter the password so that only authorized person can enter the door.

## COMPONENTS USED:-

- PIR sensor
- Servo motor
- 16\*2 lcd
- 4\*4 keypad
- Arduino uno
- Buzzer
- Potentiometer
- RGB led
- Resistors, Jumper wires and breadboard.

# PIR SENSOR

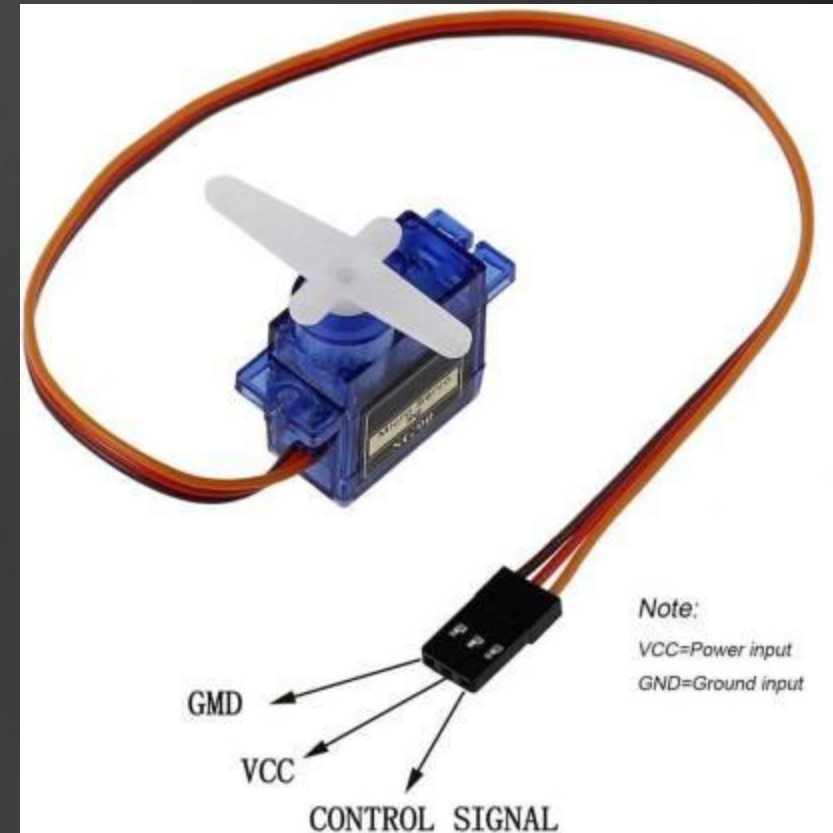
- The PIR sensor stands for Passive Infrared sensor.
- It is a low cost sensor which can detect the Presence of Human beings or animals.
- It covers a distance of about  $120^\circ$  and 7 meters.





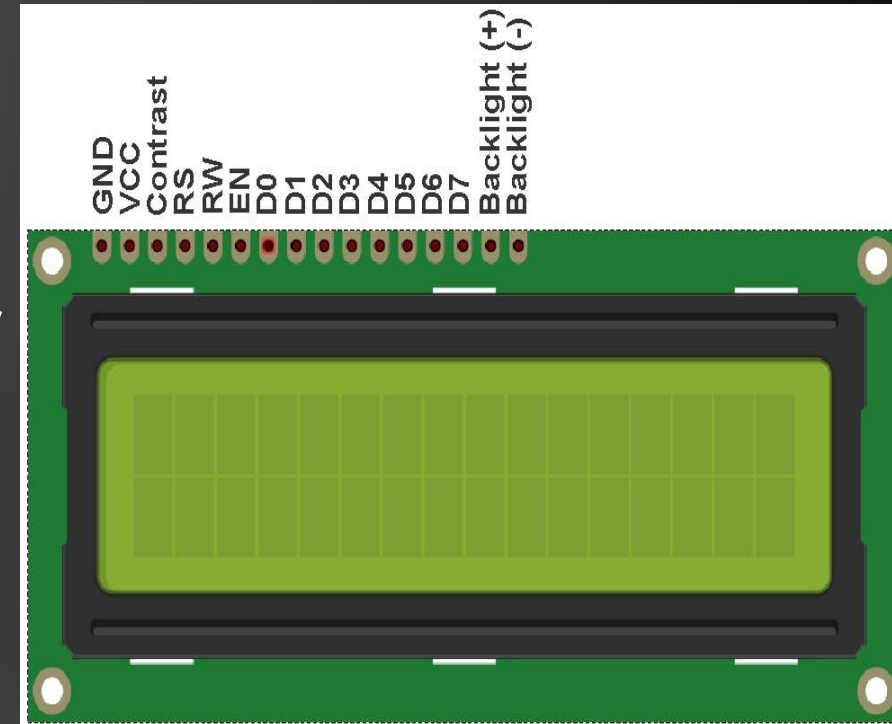
# SERVO MOTOR

- A **servo motor** is a type of motor that can rotate with great precision.
- If you want to rotate an object at some specific angles or distance, then you use a servo motor.
- Operating Voltage is +5V typically
- Rotation :  $0^{\circ}$ - $180^{\circ}$



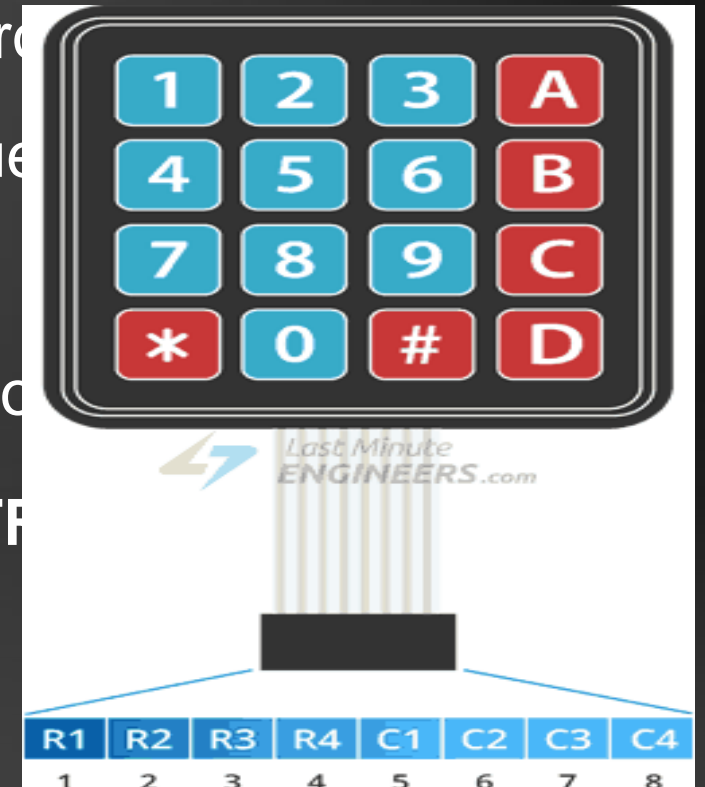
# 16\*2 LCD

- An LCD screen is an electronic display module that uses liquid crystal to produce a visible image.
- The 16×2 translates to a display 16 characters per line in 2 such lines. In this LCD each character is displayed in a 5×7 pixel matrix.



# 4\*4 KEYPAD

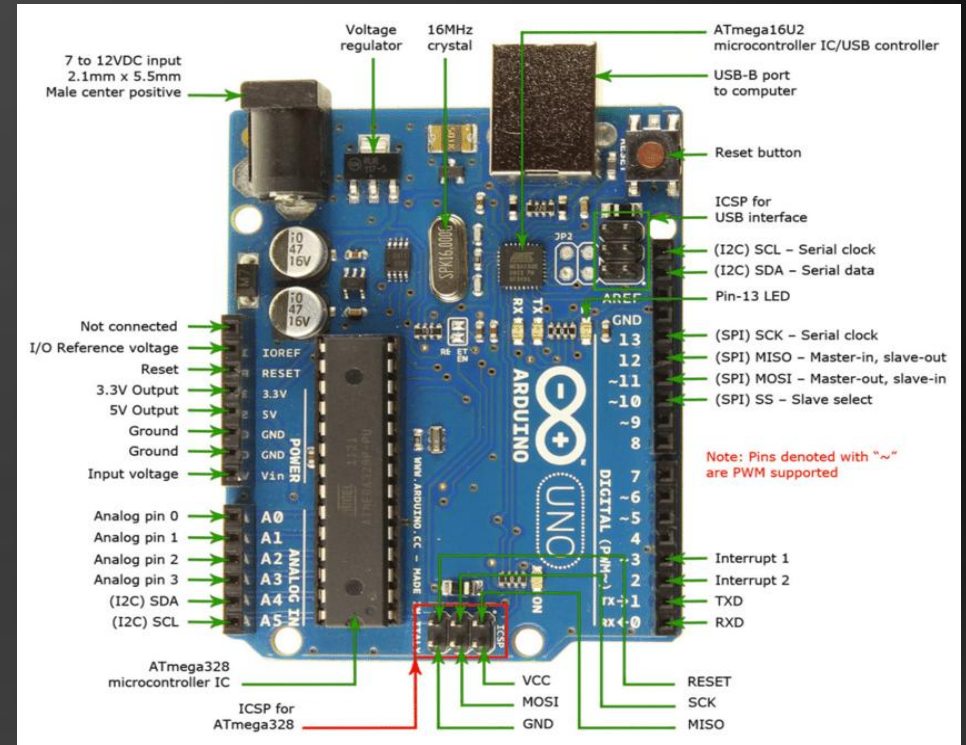
- The 4 x 4 matrix keypad usually is used as input in a project. It has 16 keys in total, which means the same input value can be generated by different key combinations.
- **4X4 KEYPAD** will have **EIGHT TERMINALS**. In them four are **ROWS** of **MATRIX** and four are **COLUMNS** of **MATRIX**.



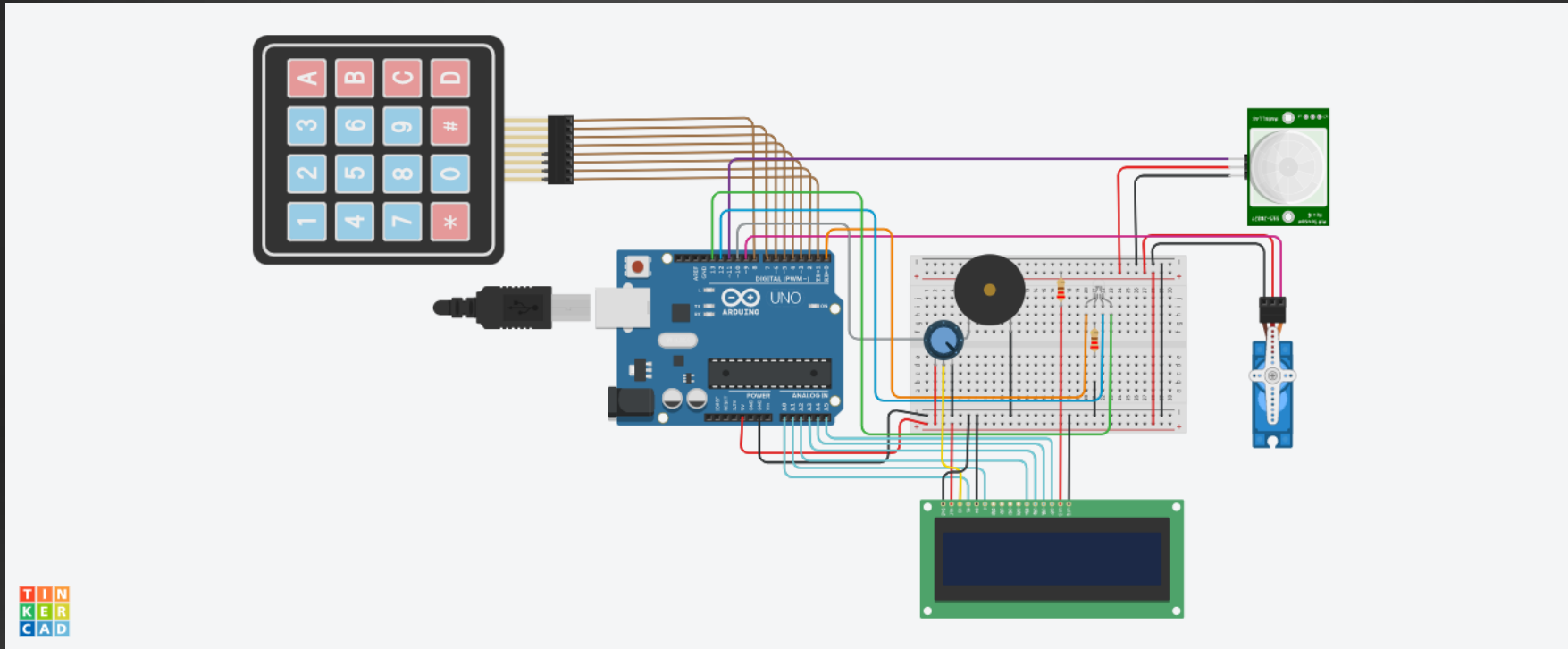


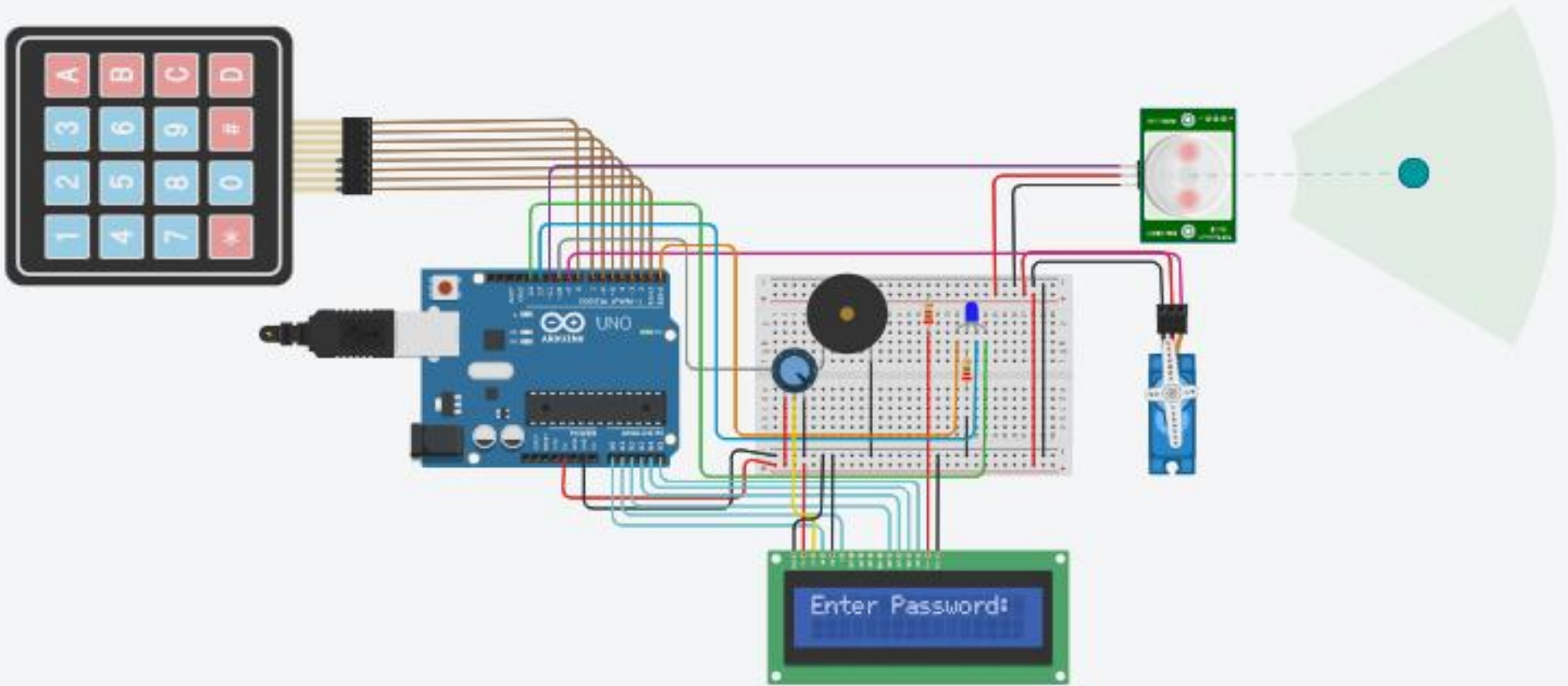
# ARDUINO UNO

- The Arduino Uno is a microcontroller board based on the ATmega328. It has 20 digital input/output pins (of which 6 can be used as PWM outputs and 6 can be used as analog inputs).
- Arduino UNO is a low-cost, flexible, and easy-to-use programmable open-source microcontroller board that can be integrated into a variety of electronic projects.



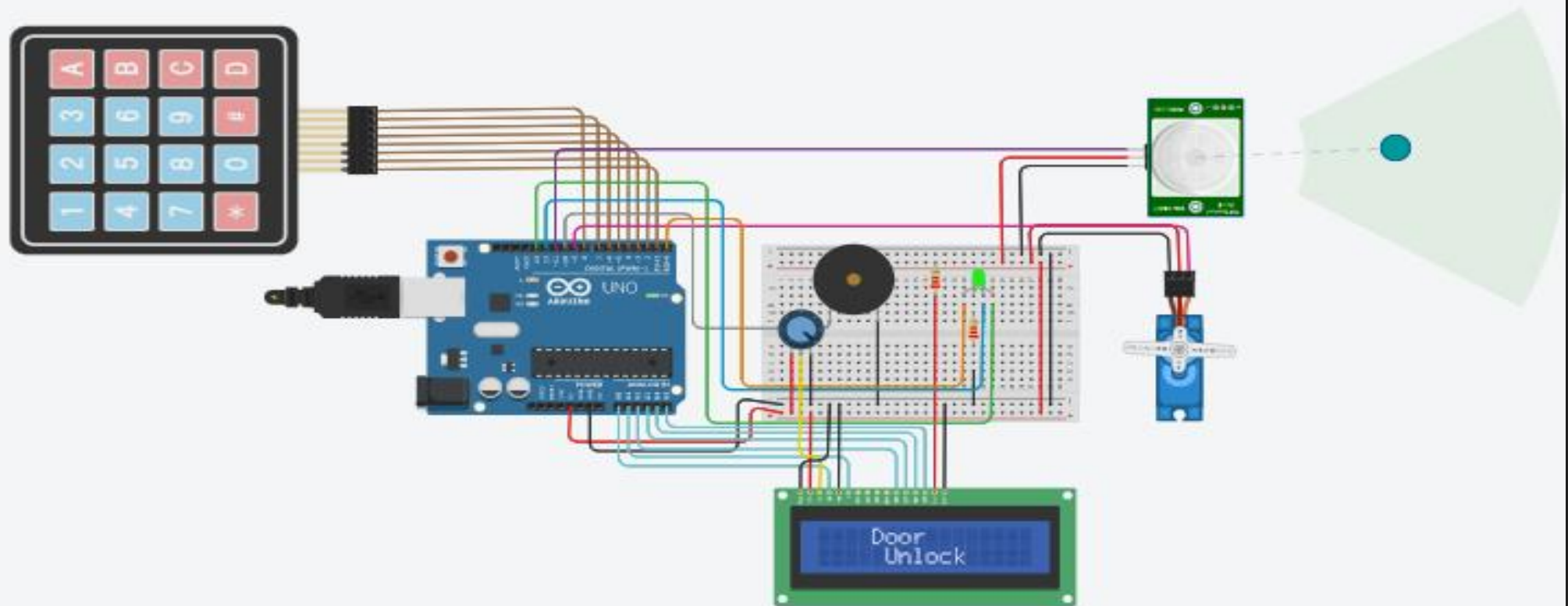
# CIRCUIT DIAGRAM & WORKING :



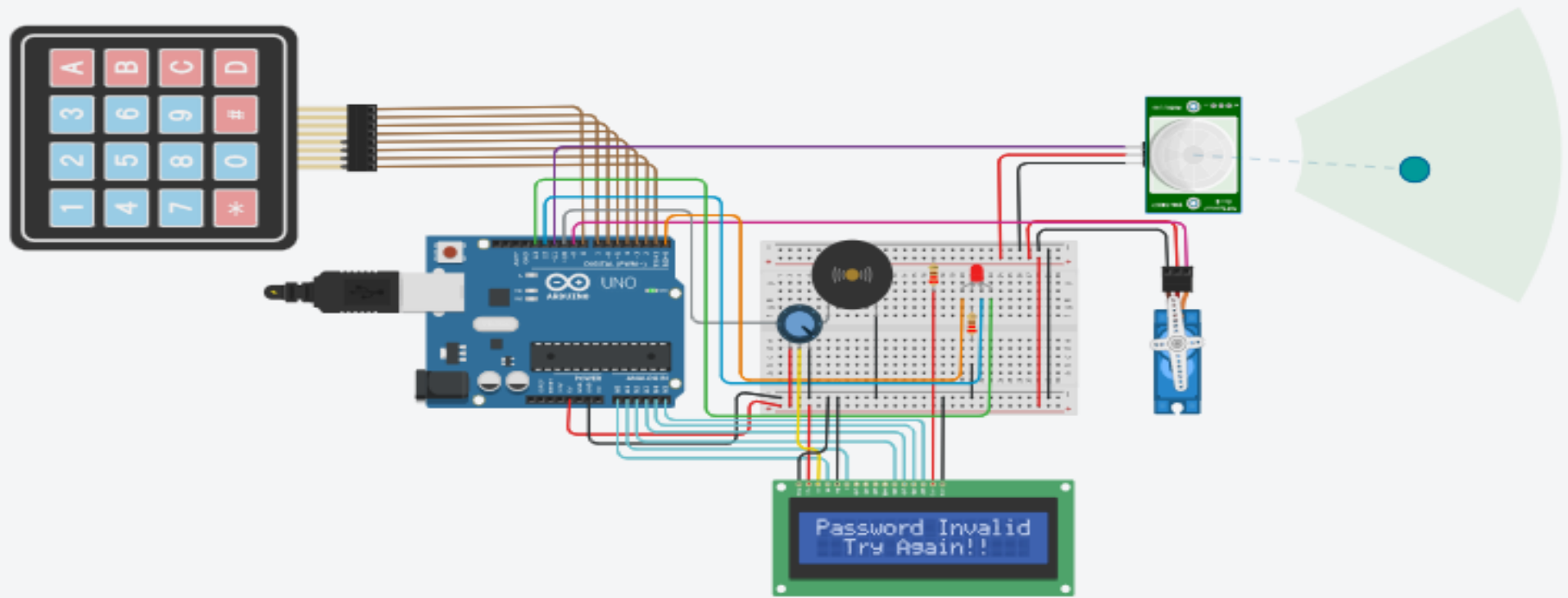


Firstly, the PIR sensor detects a person if someone is near its range. If a person is in the range , then lcd will display to enter the password by the user.



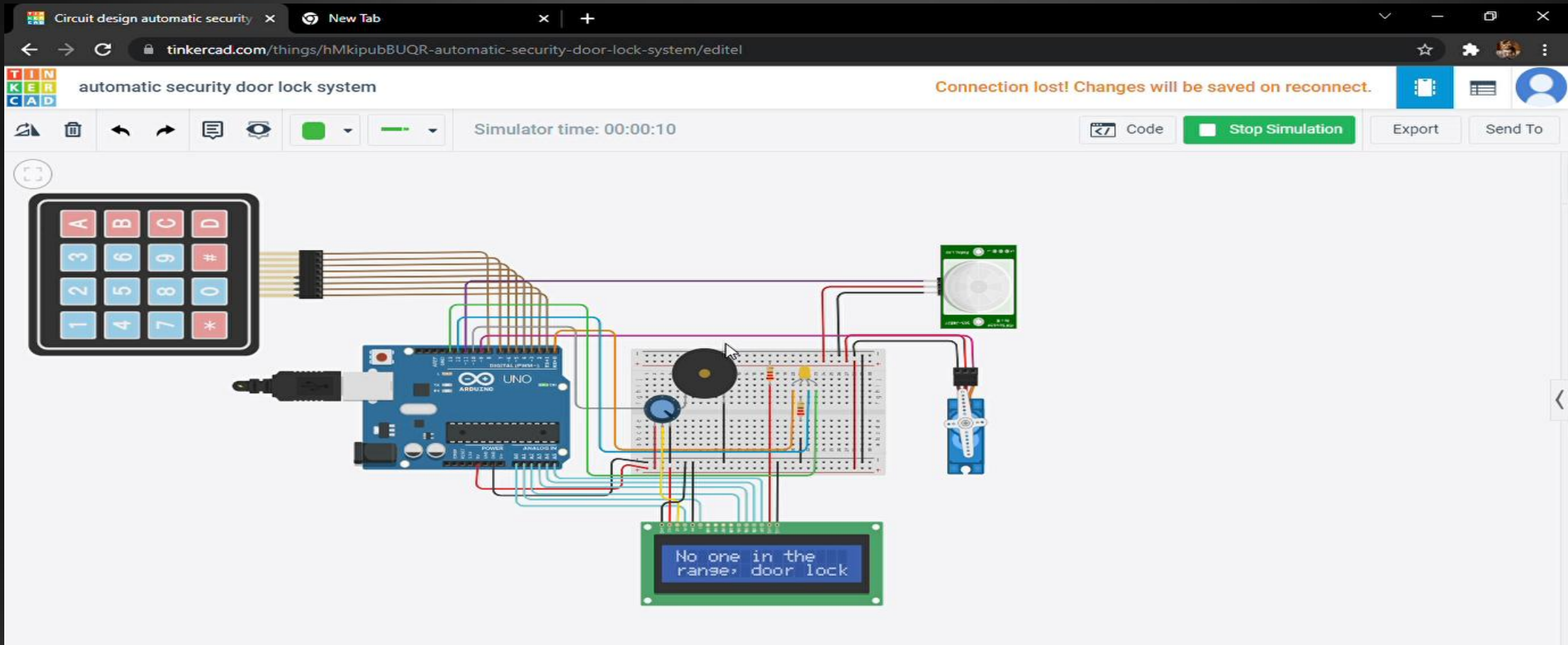


If the user enters the correct password, then servo motor will automatically rotate to open the lock and at the same time RGB led turns green and after a certain time the door will automatically lock once again.



If the password entered by the user is incorrect, then servo motor will not work and lcd display shows invalid password and at the same time buzzer buzzes. RGB led also turns red which shows the password entered by user is incorrect.





**Project Link:** [https://www.tinkercad.com/things/hMkipubBUQR-automatic-security-door-lock-system/editel?sharecode=2wb76R\\_FRyD\\_BEmptCcWSAJEnjd64nQJcq72QcWfcO4](https://www.tinkercad.com/things/hMkipubBUQR-automatic-security-door-lock-system/editel?sharecode=2wb76R_FRyD_BEmptCcWSAJEnjd64nQJcq72QcWfcO4)

# APPLICATIONS

- Control of doors and window shutters.
- Faster operation and efficient.
- Security system.
- It can be used in offices, home, Industries , Shops.
- Can be used for garage doors and gates.

# FUTURE SCOPE OF PROJECT

- Instead of keypad we can add fingerprint sensor so entry will be allowed for the authorized person using their fingerprints.
- We can send this data to a remote location using mobile or internet.
- We can add fire, wind and LPG sensors so that in case of accident, the doors will automatically open.

**“Thank You”**

