Smart Garage
Anti-Theft System

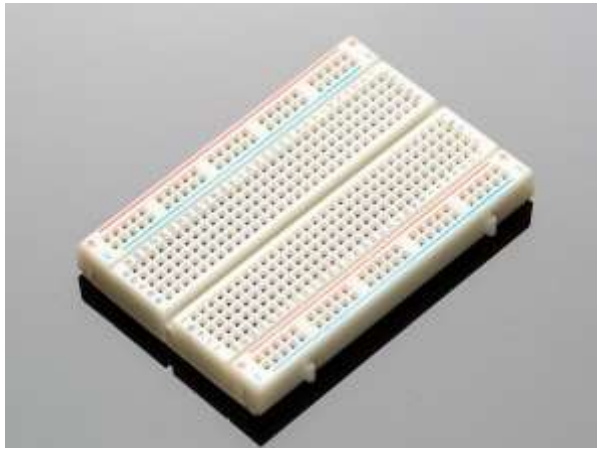
TEAM: 03

Introduction

- Theft security of a garage in rural areas has become a matter of concern.
- So, we have come up with a concept that is primarily based on biometric and face recognition systems.
- When an unknown individual touches the unlocking system, it emits an audible signal to alert us.
- This system is implanted for an anti-theft using a micro controller with global system for Mobile communication

Components

- Bread Board

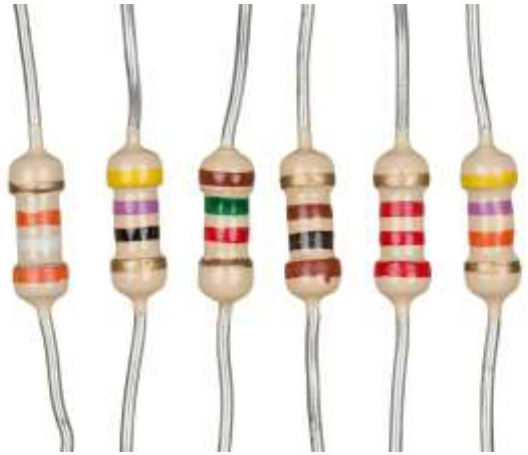


- Ultrasonic Sensor

- Arduino

- Jumper wires

- Resistors



- 4*4 Matrix calculator

- LED Display

- Power bank

- Male pins

- Servo Motor

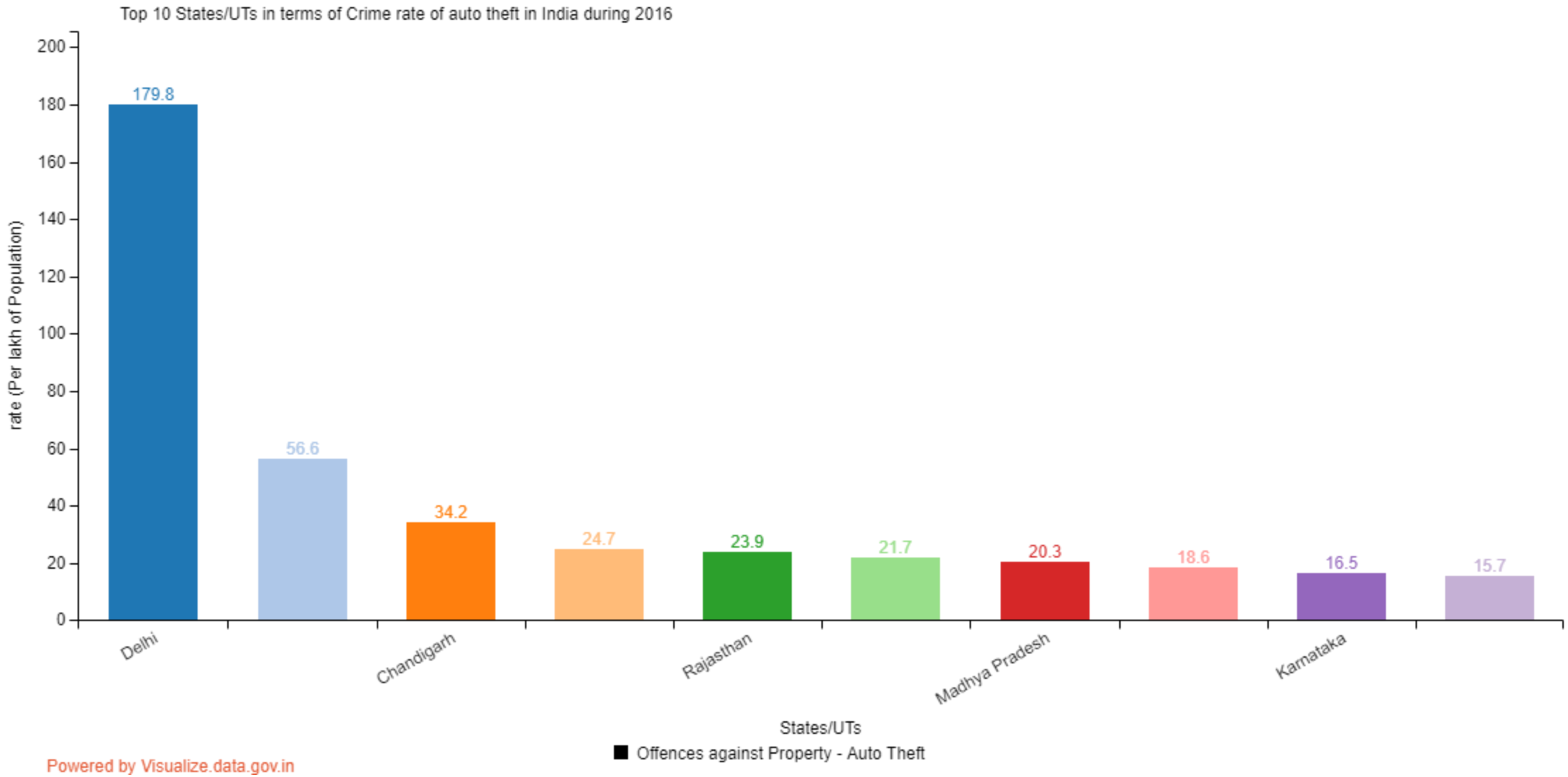
- Buzzer

- Arduino UNO Cable

- Vehicle theft has been increasing day by day in recent years, as evidenced by the increased theft of vehicles.

- The 5 most vehicle theft prone states in India

  - Delhi
  - Uttar Pradesh
  - Rajasthan
  - Maharashtra
  - Karnataka


Top 10 States/UTs in terms of Crime rate of auto theft in India during 2016
rate (Per lakh of Population)
200
180
160
140
120
100
80
60
40
20
0
179.8
56.6
34.2
24.7
23.9
21.7
20.3
18.6
16.5
15.7
Delhi
Chandigarh
Rajasthan
Madhya Pradesh
Karnataka
States/UTs
Offences against Property - Auto Theft
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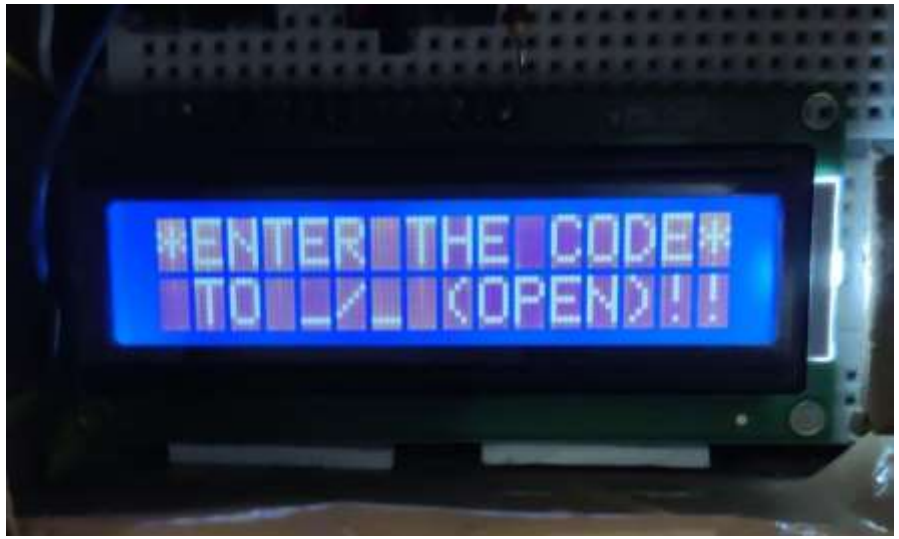
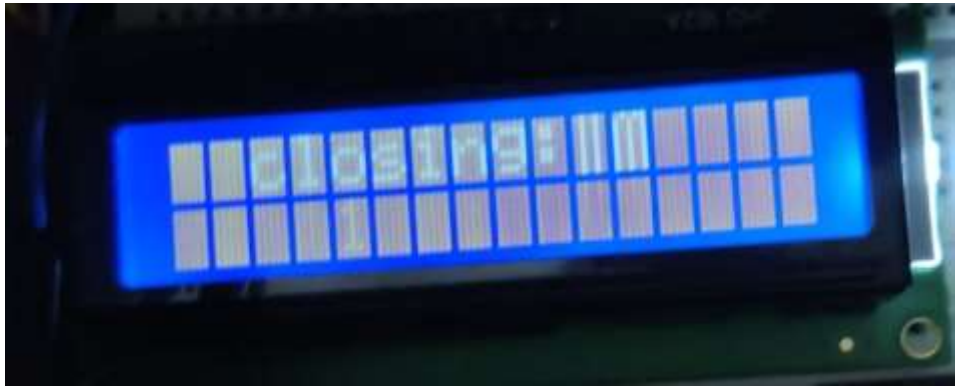
Design Of The Project

- Theft of Automobiles has been on the rise in recent years, therefore we came up with the concept of an anti-theft garage security system.
- The main idea of the project is to protect vehicles from the theft. So, we developed an anti-theft garage system, introducing a four digit password locker that only unlocks the garage door when the four digit password is entered correctly.



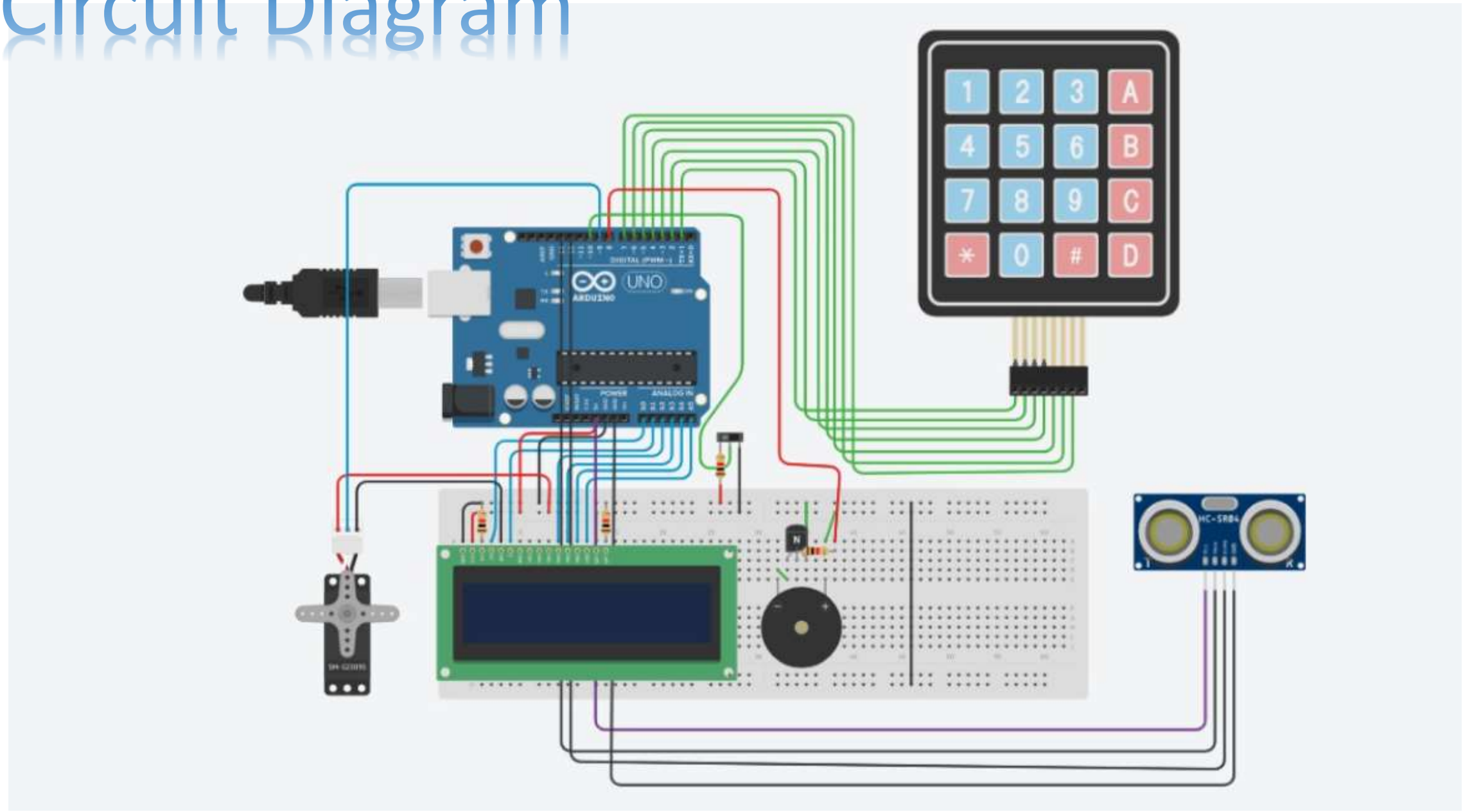
- If an unknown individual enters the erroneous password, the buzzer sensor gives a hint by emitting a continuous sound.

- When the four-digit pin matches the original pin, the automobile is given access to get into the garage.



- When the automobile enters the garage, the ultrasonic sensor starts and detects the distance between the car and the wall; when the car gets closer to the wall, the ultrasonic sensor activates a beep sound; then the timer begins; and the garage door closes when the timer expires.

Circuit Diagram



CODE

```
#include <Keypad.h>

#include <LiquidCrystal.h>
#include <Servo.h>

Servo myservo;
int pos=0; // LCD Connections
LiquidCrystal lcd(A0,A1,A2,A3,A4,A5);
const byte rows=4;
const byte cols=3;

long duration; // variable for the duration of sound wave travel
int distance; // variable for the distance measurement
char key[rows][cols]={
{'1','2','3'},
{'4','5','6'},
{'7','8','9'},
{'*','0','#'}
};
byte rowPins[rows]={1,2,3,4};
byte colPins[cols]={5,6,7};
Keypad keypad= Keypad(makeKeymap(key),rowPins,colPins,rows,cols);
char* password="4567";
int currentposition=0;
int redled=10;
int greenled=11;
int buzz=8;
int invalidcount=12;
int trigPin=13;
int echoPin=12;
void setup()
{

displayscreen();
Serial.begin(9600);
pinMode(redled, OUTPUT);
pinMode(greenled, OUTPUT);
pinMode(buzz, OUTPUT);
myservo.attach(9);
pinMode(trigPin,OUTPUT);
pinMode(echoPin,INPUT);

lcd.begin(16,2);

}

void loop()
{
displayscreen();

}
int l ;
char code=keypad.getKey();
if(code!=NO_KEY)
{
lcd.clear();
lcd.setCursor(0,0);
lcd.print("PASSWORD:");
lcd.setCursor(7,1);
lcd.print(" ");
lcd.setCursor(7,1);
for(l=0;l<=currentposition;++l)
{

lcd.print("*");
keypress();
}

if (code==password[currentposition])
{
++currentposition;
if(currentposition==4)
{

unlockdoor();
currentposition=0;

}

}

else
{
++invalidcount;
incorrect();
currentposition=0;

}




}
// LOOP ENDS!!!//
}

//**************OPEN THE DOOR FUNCTION!!!!****************//
```

```
void unlockdoor()
{
delay(900);

lcd.setCursor(0,0);
lcd.println(" ");
lcd.setCursor(1,0);
lcd.print("Access Granted");
lcd.setCursor(4,1);
lcd.println("WELCOME!!");
lcd.setCursor(15,1);
lcd.println(" ");
lcd.setCursor(16,1);
lcd.println(" ");
lcd.setCursor(14,1);
lcd.println(" ");
lcd.setCursor(13,1);
lcd.println(" ");
unlockbuzz();

for(pos = 180; pos>=0; pos-=5) // goes from 180 degrees to 0 degrees
{
myservo.write(pos); // tell servo to go to position in variable 'pos'
delay(5); // waits 15ms for the servo to reach the position
}
delay(2000);


checkforcar();

}

//***********WRONG CODE FUNCTION***************//

void incorrect()
{
delay(500);
lcd.clear();
lcd.setCursor(1,0);
lcd.print("CODE");
lcd.setCursor(6,0);
lcd.print("INCORRECT");
lcd.setCursor(15,1);
lcd.println(" ");
lcd.setCursor(4,1);
lcd.println("GET AWAY!!!");

lcd.setCursor(13,1);
lcd.println(" ");
Serial.println("CODE INCORRECT YOU ARE UNAUTHORIZED");
digitalWrite(redled, HIGH);
digitalWrite(buzz, HIGH);
delay(3000);
lcd.clear();
digitalWrite(redled, LOW);
digitalWrite(buzz,LOW);
displayscreen();
}
//********** CLEAR THE SCREEN!!!********//
void clearscreen()
{
lcd.setCursor(0,0);
lcd.println(" ");
lcd.setCursor(0,1);
lcd.println(" ");
lcd.setCursor(0,2);
lcd.println(" ");
lcd.setCursor(0,3);
lcd.println(" ");
}
//***********KEYPRESS***********//
void keypress()
{



digitalWrite(buzz, HIGH);
delay(50);
digitalWrite(buzz, LOW);
}
//***********DISPALAY FUNCTION!!!*********************//
void displayscreen()
{

lcd.setCursor(0,0);
lcd.println("ENTER THE CODE");
lcd.setCursor(1 ,1);

lcd.println("TO / (OPEN)!!");
}
//********* ARM SERVO*************************//
void armservo()
{

for (pos=180;pos<=180;pos+=50)
{
myservo.write(pos);
```

```
delay(5);
}
delay(5000);

for(pos=180;pos>=0;pos-=50)
{
myservo.write(pos);
}

}
//***********UNLOCK BUZZ************//
void unlockbuzz()
{

digitalWrite(buzz, HIGH);
delay(80);
digitalWrite(buzz, LOW);
delay(80);
digitalWrite(buzz, HIGH);
delay(80);
digitalWrite(buzz, LOW);
delay(200);
digitalWrite(buzz, HIGH);
delay(80);
digitalWrite(buzz, LOW);
delay(80);
digitalWrite(buzz, HIGH);
delay(80);
digitalWrite(buzz, LOW);
delay(80);
}
void checkforcar(){
digitalWrite(trigPin, LOW);
  delayMicroseconds(2000);
  // Sets the trigPin HIGH (ACTIVE) for 10 microseconds
  digitalWrite(trigPin, HIGH);
  delayMicroseconds(1000);
  digitalWrite(trigPin, LOW);

  duration = pulseIn(echoPin, HIGH);

  distance = duration*0.03436/2;
  if(distance<=5){
  delay(1200);
    lcd.clear();
    digitalWrite(buzz, HIGH);
    lcd.setCursor(2,15);
lcd.println(" ");
lcd.setCursor(2,14);
lcd.println(" ");
lcd.setCursor(2,0);
delay(200);
lcd.println("closing:");

lcd.setCursor(4,1);
lcd.print("5");
delay(200);
lcd.clear();
lcd.setCursor(2,0);
lcd.println("closing:");
digitalWrite(buzz,LOW);
delay(1000);
//2
digitalWrite(buzz, HIGH);
lcd.setCursor(2,0);
lcd.println("closing:");
lcd.setCursor(4,1); //2
lcd.print("4");
delay(100);
lcd.clear();
lcd.setCursor(2,0);
lcd.println("closing:");
digitalWrite(buzz,LOW);
delay(1000);
//3
digitalWrite(buzz, HIGH);
lcd.setCursor(2,0);
lcd.println("closing:");
lcd.setCursor(4,1); //3
lcd.print("3");
delay(100);
lcd.clear();
lcd.setCursor(2,0);
lcd.println("closing:");
digitalWrite(buzz,LOW);
delay(1000);
//4
digitalWrite(buzz, HIGH);
lcd.setCursor(2,0);
lcd.println("closing:");
lcd.setCursor(4,1); //4
lcd.print("2");
delay(100);
lcd.clear();
lcd.setCursor(2,0);
lcd.println("closing:");
digitalWrite(buzz,LOW);
delay(1000);
```

```
//
digitalWrite(buzz, HIGH);
lcd.setCursor(4,1);
lcd.print("1");
delay(100);
lcd.clear();
lcd.setCursor(2,0);
lcd.println("closing:");
digitalWrite(buzz,LOW);
delay(1000);
//5
digitalWrite(buzz, HIGH);
delay(40);
digitalWrite(buzz,LOW);
delay(40);
digitalWrite(buzz, HIGH);
delay(40);
digitalWrite(buzz,LOW);
delay(40);
digitalWrite(buzz, HIGH);
delay(40);
digitalWrite(buzz,LOW);
delay(40);
digitalWrite(buzz, HIGH);
delay(40);
digitalWrite(buzz,LOW);
lcd.clear();
lcd.setCursor(2,0);
lcd.print("RE-LOCKING");
delay(500);
lcd.setCursor(12,0);
lcd.print(".");
delay(500);
lcd.setCursor(13,0);
lcd.print(".");
delay(500);
lcd.setCursor(14,0);
lcd.print(".");
delay(400);
lcd.clear();
lcd.setCursor(4,0);
lcd.print("LOCKED!");
delay(440);
  for(pos = 0; pos <= 90; pos +=5) // goes from 0 degrees to 180 degrees
{ // in steps of 1 degree
myservo.write(pos); // tell servo to go to position in variable 'pos'
delay(15);
currentposition=0;
lcd.clear();
```

```
displayscreen();
  }}
    else{
      Serial.println("a");
    checkforcar();}

}
```

CONCLUSION:

WE CONCLUDE THAT OUR PROJECT WILL ASSIST IN REAL TIME WORLD SECURITY FOR AUTO MOBILES

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