

# Smart Garage Anti-Theft System

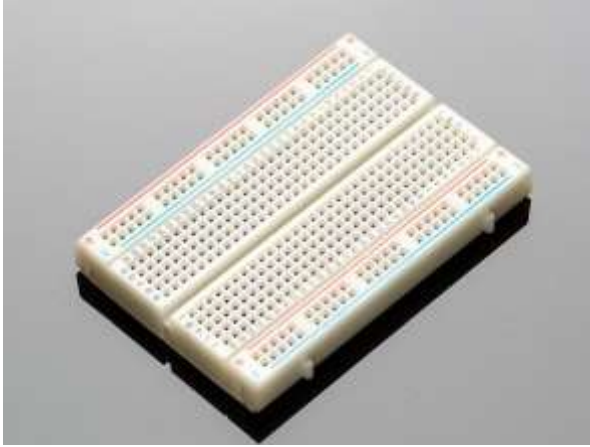
**TEAM: 03**

# 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



- Arduino



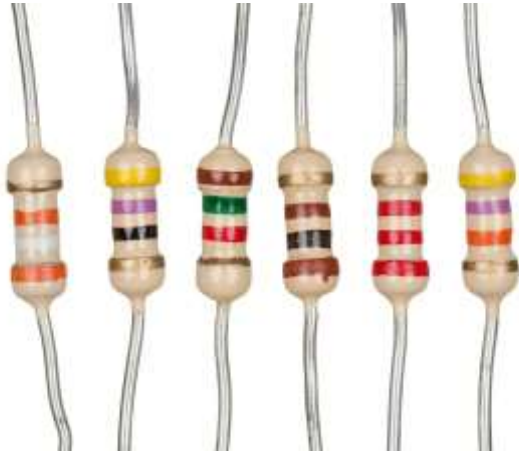
- Ultrasonic Sensor



- Jumper wires



- Resistors



- LED Display



- 4\*4 Matrix calculator



- Power bank



- Male pins



- Buzzer



- Servo Motor



- Arduino UNO Cable



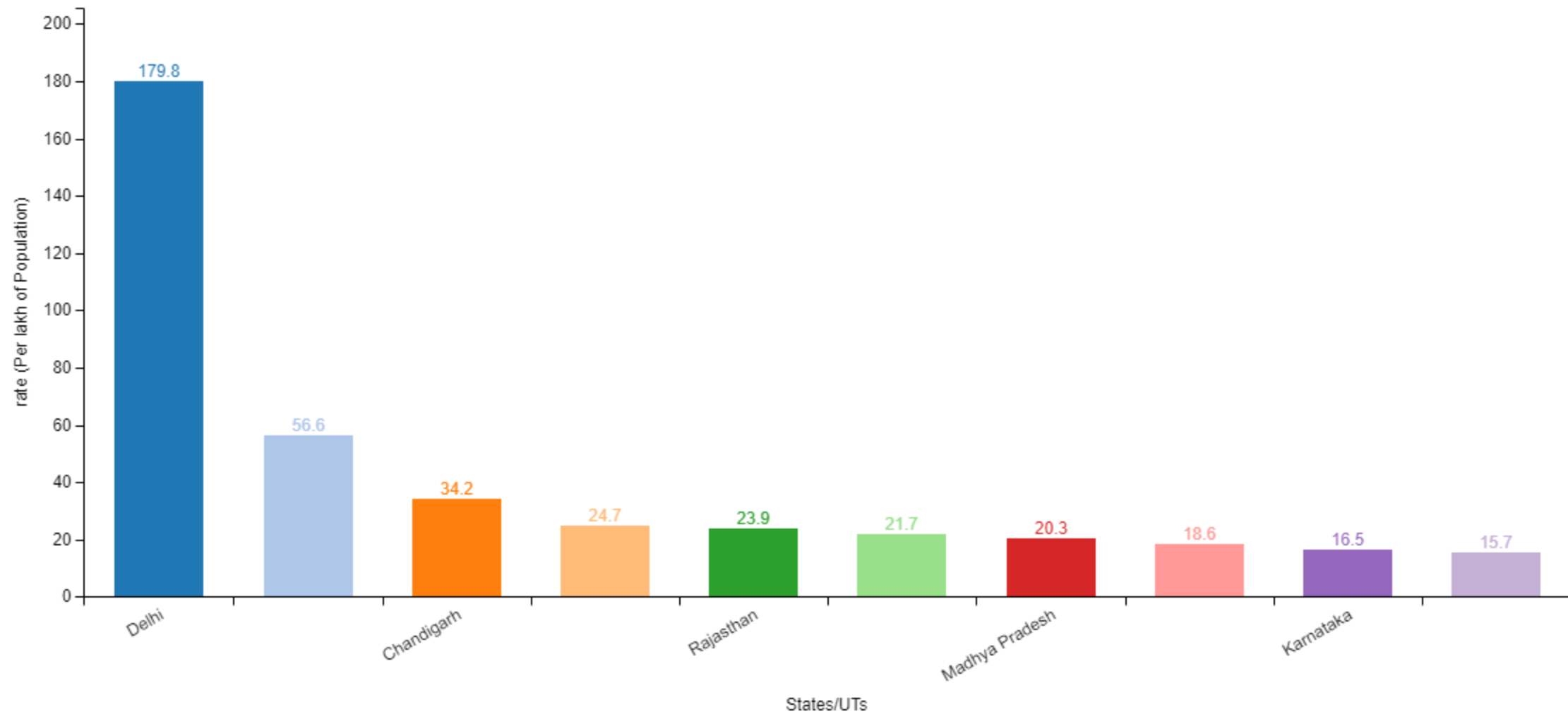
➤ Vehicle theft has been increasing day by day in recent years, as evidenced by the increased theft of vehicles.

➤ 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



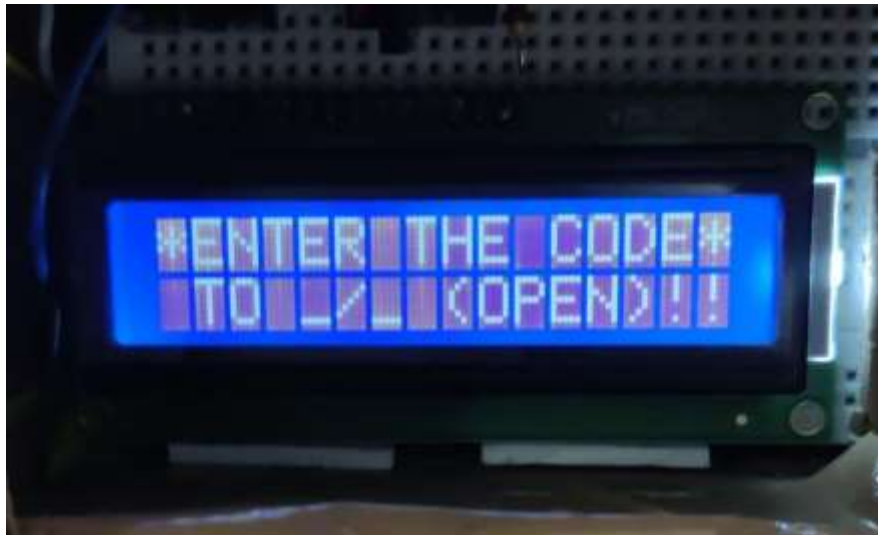
# Design Of The Project

- 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.

How to solve  
Anti-Theft  
System



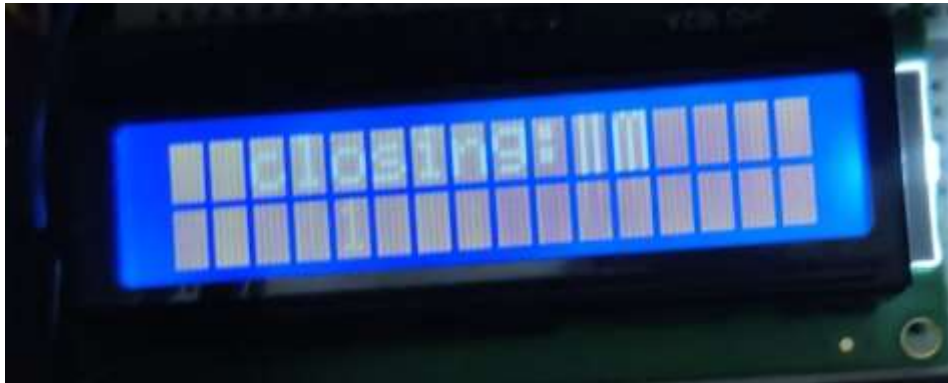




- If an unknown individual enters the erroneous password, the buzzer sensor gives a hint by emitting a continuous sound.

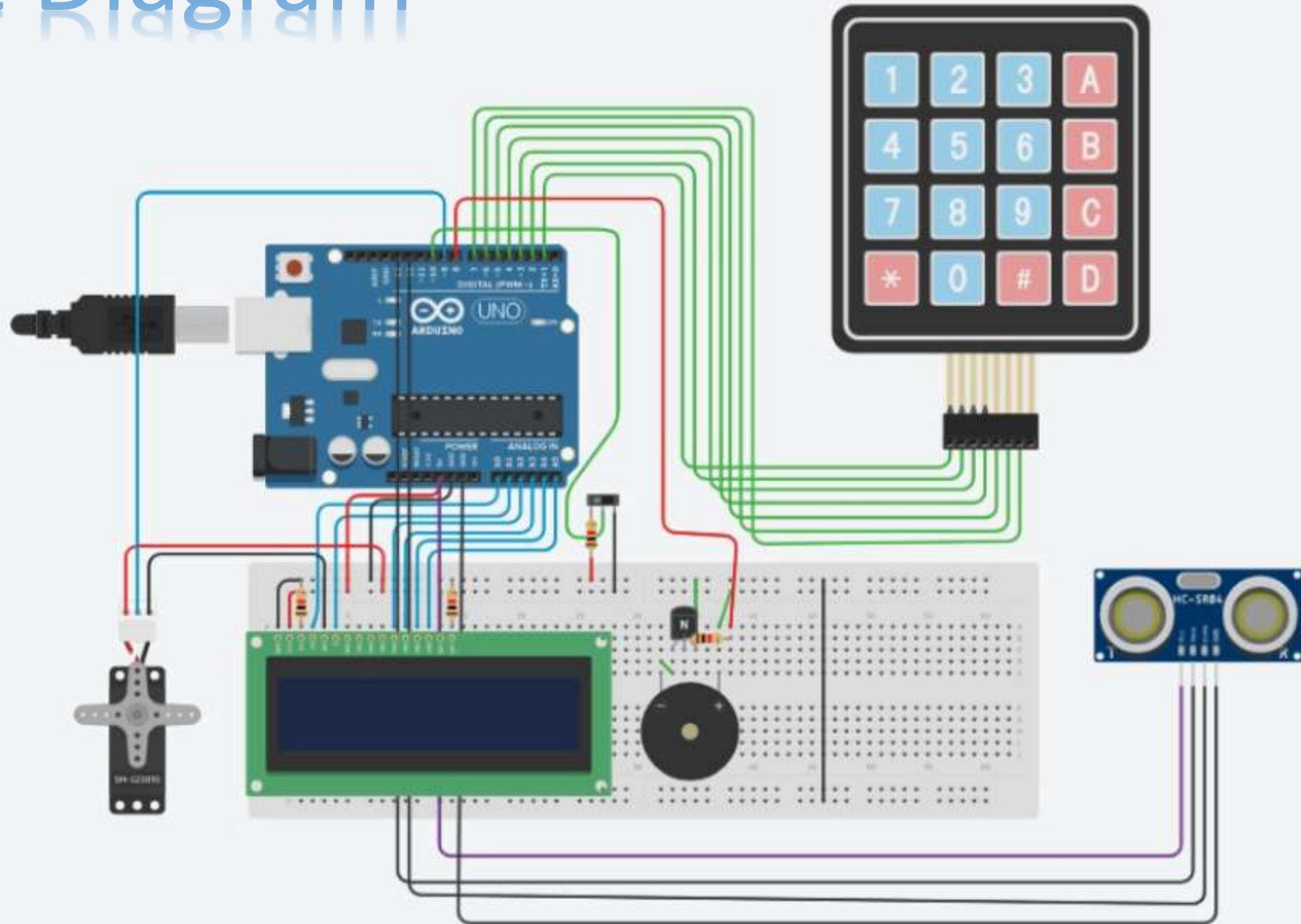


- When the four-digit pin matches the original pin, the automobile is given access to get into the garage.



- 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

```
1 #include <Keypad.h>
2
3 #include <LiquidCrystal.h>
4 #include <Servo.h>
5
6 Servo myservo;
7 int pos=0; // LCD Connections
8 LiquidCrystal lcd(A0,A1,A2,A3,A4,A5);
9 const byte rows=4;
10 const byte cols=3;
11
12 long duration; // variable for the duration of sound wave travel
13 int distance; // variable for the distance measurement
14 char key[rows][cols]={
15 {'1','2','3'},
16 {'4','5','6'},
17 {'7','8','9'},
18 {'*','0','#'}};
19 };
20 byte rowPins[rows]={1,2,3,4};
21 byte colPins[cols]={5,6,7};
22 Keypad keypad= Keypad(makeKeymap(key), rowPins, colPins, rows, cols);
23 char* password="4567";
24 int currentposition=0;
25 int redled=10;
26 int greenled=11;
27 int buzz=8;
28 int invalidcount=12;
29 int trigPin=13;
30 int echoPin=12;
31 void setup()
32 {
33
34   displayscreen();
35   Serial.begin(9600);
36   pinMode(redled, OUTPUT);
37   pinMode(greenled, OUTPUT);
38   pinMode(buzz, OUTPUT);
39   myservo.attach(9);
40   pinMode(trigPin,OUTPUT);
41   pinMode(echoPin,INPUT);
42
43   lcd.begin(16,2);
44 }
45
46
47 void loop()
```

```
50 {
51   displayscreen();
52 }
53
54 int l ;
55 char code=keypad.getKey();
56 if(code!=NO_KEY)
57 {
58   lcd.clear();
59   lcd.setCursor(0,0);
60   lcd.print("PASSWORD:");
61   lcd.setCursor(7,1);
62   lcd.print(" ");
63   lcd.setCursor(7,1);
64   for(l=0;l<=currentposition;++l)
65   {
66
67     lcd.print("*");
68     keypad();
69   }
70
71   if (code==password[currentposition])
72   {
73     ++currentposition;
74     if(currentposition==4)
75     {
76
77       unlockdoor();
78       currentposition=0;
79
80     }
81
82   }
83
84   else
85   {
86     ++invalidcount;
87     incorrect();
88     currentposition=0;
89
90   }
91
92
93
94 }
95 // LOOP ENDS!!!!//
96 }
97
98 //*****OPEN THE DOOR FUNCTION!!!!*****//
```

```

100 void unlockdoor()
101 {
102   delay(900);
103
104   lcd.setCursor(0,0);
105   lcd.println(" ");
106   lcd.setCursor(1,0);
107   lcd.print("Access Granted");
108   lcd.setCursor(4,1);
109   lcd.println("WELCOME!!");
110   lcd.setCursor(15,1);
111   lcd.println(" ");
112   lcd.setCursor(16,1);
113   lcd.println(" ");
114   lcd.setCursor(14,1);
115   lcd.println(" ");
116   lcd.setCursor(13,1);
117   lcd.println(" ");
118   unlockbuzz();
119
120   for(pos = 180; pos>=0; pos-=5) // goes from 180 degrees to 0 degrees
121   {
122     myservo.write(pos); // tell servo to go to position in variable 'pos'
123     delay(5); // waits 15ms for the servo to reach the position
124   }
125   delay(2000);
126
127   checkforcar();
128
129 }
130
131 //*****WRONG CODE FUNCTION*****//
132
133 void incorrect()
134 {
135   delay(500);
136   lcd.clear();
137   lcd.setCursor(1,0);
138   lcd.print("CODE");
139   lcd.setCursor(6,0);
140   lcd.print("INCORRECT");
141   lcd.setCursor(15,1);
142   lcd.println(" ");
143   lcd.setCursor(4,1);
144   lcd.println("GET AWAY!!!");
145
146   lcd.setCursor(13,1);

```

```

148   lcd.println(" ");
149   Serial.println("CODE INCORRECT YOU ARE UNAUTHORIZED");
150   digitalWrite(redled, HIGH);
151   digitalWrite(buzz, HIGH);
152   delay(3000);
153   lcd.clear();
154   digitalWrite(redled, LOW);
155   digitalWrite(buzz, LOW);
156   displayscreen();
157 }
158 //***** CLEAR THE SCREEN!!!*****//
159 void clearscren()
160 {
161   lcd.setCursor(0,0);
162   lcd.println(" ");
163   lcd.setCursor(0,1);
164   lcd.println(" ");
165   lcd.setCursor(0,2);
166   lcd.println(" ");
167   lcd.setCursor(0,3);
168   lcd.println(" ");
169 }
170 //*****KEYPRESS*****//
171 void keypress()
172 {
173
174
175   digitalWrite(buzz, HIGH);
176   delay(50);
177   digitalWrite(buzz, LOW);
178 }
179 //*****DISPALAY FUNCTION!!!*****//
180 void displayscreen()
181 {
182
183   lcd.setCursor(0,0);
184   lcd.println("ENTER THE CODE");
185   lcd.setCursor(1 ,1);
186
187   lcd.println("TO / (OPEN)!!");
188 }
189 //***** ARM SERVO*****//
190 void armservo()
191 {
192
193   for (pos=180;pos<=180;pos+=50)
194   {
195     myservo.write(pos);

```



```

197 delay(5);
198 }
199 delay(5000);
200
201 for(pos=180;pos>=0;pos-=50)
202 {
203   myservo.write(pos);
204 }
205
206 }
207 //*****UNLOCK BUZZ*****//
208 void unlockbuzz()
209 {
210
211   digitalWrite(buzz, HIGH);
212   delay(80);
213   digitalWrite(buzz, LOW);
214   delay(80);
215   digitalWrite(buzz, HIGH);
216   delay(80);
217   digitalWrite(buzz, LOW);
218   delay(200);
219   digitalWrite(buzz, HIGH);
220   delay(80);
221   digitalWrite(buzz, LOW);
222   delay(80);
223   digitalWrite(buzz, HIGH);
224   delay(80);
225   digitalWrite(buzz, LOW);
226   delay(80);
227 }
228 void checkforcar(){
229   digitalWrite(trigPin, LOW);
230   delayMicroseconds(2000);
231   // Sets the trigPin HIGH (ACTIVE) for 10 microseconds
232   digitalWrite(trigPin, HIGH);
233   delayMicroseconds(1000);
234   digitalWrite(trigPin, LOW);
235
236   duration = pulseIn(echoPin, HIGH);
237
238   distance = duration*0.03436/2;
239   if(distance<=5){
240     delay(1200);
241     lcd.clear();
242     digitalWrite(buzz, HIGH);
243     lcd.setCursor(2,15);
244     lcd.println(" ");
245     lcd.setCursor(2,14);

```

```

246     lcd.println(" ");
247     lcd.setCursor(2,0);
248     delay(200);
249     lcd.println("closing:");
250
251     lcd.setCursor(4,1);
252     lcd.print("5");
253     delay(200);
254     lcd.clear();
255     lcd.setCursor(2,0);
256     lcd.println("closing:");
257     digitalWrite(buzz,LOW);
258     delay(1000);
259     //2
260     digitalWrite(buzz, HIGH);
261     lcd.setCursor(2,0);
262     lcd.println("closing:");
263     lcd.setCursor(4,1); //2
264     lcd.print("4");
265     delay(100);
266     lcd.clear();
267     lcd.setCursor(2,0);
268     lcd.println("closing:");
269     digitalWrite(buzz,LOW);
270     delay(1000);
271     //3
272     digitalWrite(buzz, HIGH);
273     lcd.setCursor(2,0);
274     lcd.println("closing:");
275     lcd.setCursor(4,1); //3
276     lcd.print("3");
277     delay(100);
278     lcd.clear();
279     lcd.setCursor(2,0);
280     lcd.println("closing:");
281     digitalWrite(buzz,LOW);
282     delay(1000);
283     //4
284     digitalWrite(buzz, HIGH);
285     lcd.setCursor(2,0);
286     lcd.println("closing:");
287     lcd.setCursor(4,1); //4
288     lcd.print("2");
289     delay(100);
290     lcd.clear();
291     lcd.setCursor(2,0);
292     lcd.println("closing:");
293     digitalWrite(buzz,LOW);
294     delay(1000);

```

```

295 //
296 digitalWrite(buzz, HIGH);
297 lcd.setCursor(4,1);
298 lcd.print("1");
299 delay(100);
300 lcd.clear();
301 lcd.setCursor(2,0);
302 lcd.println("closing:");
303 digitalWrite(buzz,LOW);
304 delay(1000);
305 //5
306 digitalWrite(buzz, HIGH);
307 delay(40);
308 digitalWrite(buzz,LOW);
309 delay(40);
310 digitalWrite(buzz, HIGH);
311 delay(40);
312 digitalWrite(buzz,LOW);
313 delay(40);
314 digitalWrite(buzz, HIGH);
315 delay(40);
316 digitalWrite(buzz,LOW);
317 delay(40);
318 digitalWrite(buzz, HIGH);
319 delay(40);
320 digitalWrite(buzz,LOW);
321 lcd.clear();
322 lcd.setCursor(2,0);
323 lcd.print("RE-LOCKING");
324 delay(500);
325 lcd.setCursor(12,0);
326 lcd.print(".");
327 delay(500);
328 lcd.setCursor(13,0);
329 lcd.print(".");
330 delay(500);
331 lcd.setCursor(14,0);
332 lcd.print(".");
333 delay(400);
334 lcd.clear();
335 lcd.setCursor(4,0);
336 lcd.print("LOCKED!");
337 delay(440);
338   for(pos = 0; pos <= 90; pos +=5) // goes from 0 degrees to 180 degrees
339 { // in steps of 1 degree
340 myservo.write(pos); // tell servo to go to position in variable 'pos'
341 delay(15);
342 currentposition=0;
343 lcd.clear();

```

```

344 displayscreen();
345   }}
346   else{
347       Serial.println("a");
348       checkforcar();}
349
350 }

```

# CONCLUSION:

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



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