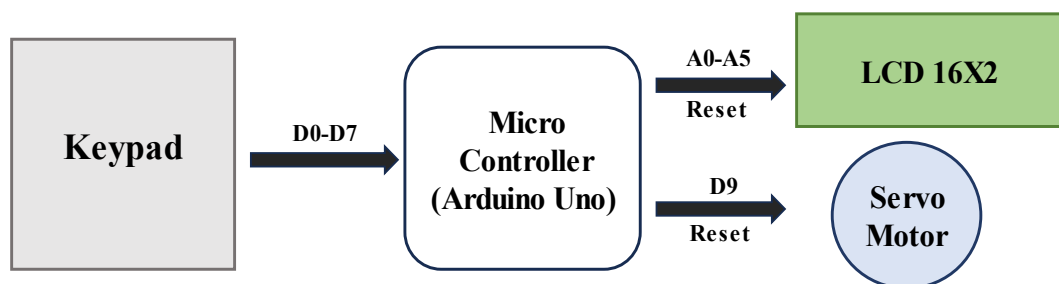


AUTOMATIC DOOR LOCK SYSTEM

Description: Working Principle of Arduino Based Door Lock System

You just need to enter the password through the keypad provided. If the password is matched with the Arduino, it sends a signal to the servo and the servo rotate 180 degrees and then the door will open. Also, the LCD display shows a message “Access Granted”. In a smart home, smart locks allow a homeowner to enter their home or provide others access without requiring a traditional key. Instead, the user uses their smartphone or a key fob to wirelessly verify and mechanically unlock the door.

Block Diagram:



Inputs and Outputs:

S.No	Description	Name	Type	Data Direction	Specification	Remarks
1	Keypad row A	A	INP	DI	Digital	Active High
2	Keypad row B	B	INP	DI	Digital	Active High
3	Keypad row C	C	INP	DI	Digital	Active High
4	Keypad row D	D	INP	DI	Digital	Active High
5	Keypad column 1	1	INP	DI	Digital	Active High
6	Keypad column 2	2	INP	DI	Digital	Active High
7	Keypad column 3	3	INP	DI	Digital	Active High
8	Servo motor pin 1	SM1	OUT	DO	Digital	Active High
9	Servo motor pin 2	SM2	OUT	DO	Digital	Active High
10	LCD EN	EN	OUT	DO	Digital	Active High
11	LCD Data Pin	D4	OUT	DO	Digital	Active High
12	LCD Data Pin	D5	OUT	DO	Digital	Active High
13	LCD Data Pin	D6	OUT	DO	Digital	Active High
14	LCD Data Pin	D7	OUT	DO	Digital	Active High
15	LCD RST	RS	OUT	DO	Digital	Active High

Source Code:

```
#include <LiquidCrystal.h>
#include <Servo.h>
#include <Keypad.h>
Servo myservo;
int pos=0; // position of servo motor
LiquidCrystal lcd(A4, A5, A3, A2, A1, A0);
const byte rows=4;
const byte cols=3;

char key[rows][cols]={
{'1','2','3'},
{'4','5','6'},
{'7','8','9'},
{'*','0','#'}};
};
byte rowPins[rows]={0,1,2,3};
byte colPins[cols]={4,5,6};
Keypad keypad= Keypad(makeKeymap(key),rowPins,colPins,rows,cols);
char* password="0123";
```

```

int currentposition=0;

void setup()
{
  displayscreen();
  //Serial.begin(9600);
  myservo.attach(9); //Servo motor connection

  lcd.begin(16,2);
}

void loop()
{
  if( currentposition==0)
  {
    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
    {
incorrect();
currentposition=0;

    }
}
}

//----- Function 1- OPEN THE DOOR-----//

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(" ");

for(pos = 180; pos>=0; pos-=5) // open the door
{
myservo.write(pos);
delay(5);
}
delay(2000);

delay(1000);
counterbeep();

delay(1000);

for(pos = 0; pos <= 180; pos +=5) // close the door
{ // in steps of 1 degree
myservo.write(pos);
delay(15);

```

```

currentposition=0;

lcd.clear();
displayscreen();}
}

//-----Function 2- Wrong code-----//

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");
delay(3000);
lcd.clear();
displayscreen();
}
//-----Function 3 - 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(" ");
}

//-----Function 4 - DISPLAY FUNCTION-----//
void displayscreen()
{

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

```

```
lcd.println("TO OPEN DOOR!!");  
}
```

```
//-----Function 5 - Count down-----//
```

```
void counterbeep()  
{  
  delay(1200);
```

```
  lcd.clear();
```

```
  lcd.setCursor(2,15);  
  lcd.println(" ");  
  lcd.setCursor(2,14);  
  lcd.println(" ");  
  lcd.setCursor(2,0);  
  delay(200);  
  lcd.println("GET IN WITHIN::");
```

```
  lcd.setCursor(4,1);  
  lcd.print("5");  
  delay(200);  
  lcd.clear();  
  lcd.setCursor(2,0);  
  lcd.println("GET IN WITHIN:");  
  delay(1000);  
  lcd.setCursor(2,0);  
  lcd.println("GET IN WITHIN:");  
  lcd.setCursor(4,1); //2  
  lcd.print("4");  
  delay(100);  
  lcd.clear();  
  lcd.setCursor(2,0);  
  lcd.println("GET IN WITHIN:");  
  delay(1000);
```

```
  lcd.setCursor(2,0);  
  lcd.println("GET IN WITHIN:");  
  lcd.setCursor(4,1);  
  lcd.print("3");  
  delay(100);  
  lcd.clear();  
  lcd.setCursor(2,0);  
  lcd.println("GET IN WITHIN:");  
  delay(1000);
```

```
lcd.setCursor(2,0);
lcd.println("GET IN WITHIN:");
lcd.setCursor(4,1);
lcd.print("2");
delay(100);
lcd.clear();
lcd.setCursor(2,0);
lcd.println("GET IN WITHIN:");
delay(1000);

lcd.setCursor(4,1);
lcd.print("1");
delay(100);
lcd.clear();
lcd.setCursor(2,0);
lcd.println("GET IN WITHIN::");

delay(1000);
delay(40);
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);
}
```

Schematic:

