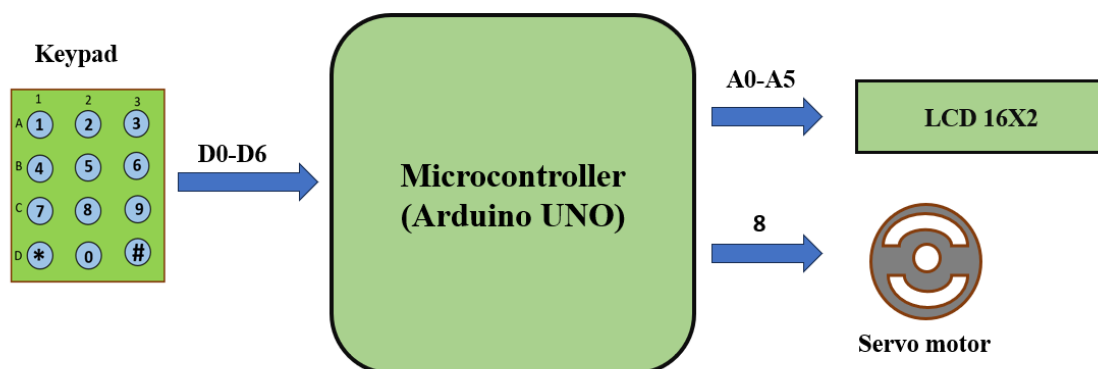


Password based Door Locking System Using Arduino UNO

Description:

A password-based door locking system using Arduino Uno and an LCD display servo motor is a more advanced version of the simple password lock system. It uses a keypad module to enter the password, an LCD display module to show the status, and a servo motor to lock and unlock the door. The system works by entering the correct password using the keypad module. If the password is correct, the LCD display will show "Access granted" and the servo motor will rotate to unlock the door for a second before returning to its original position. If the password is incorrect, the LCD display will show "Access denied" for a second before clearing.

Block Diagram:



Input and Output:

S.No	Description	Name	Type	Data Direction	Specification	Remarks
1	4X4 KEYPAD(COLUMNS)	A	INP	DI	Digital	Active High
2	4X4 KEYPAD(COLUMNS)	B	INP	DI	Digital	Active High

3	4X4 KEYPAD(COLUMNS)	C	INP	DI	Digital	Active High
4	4X4 KEYPAD(COLUMNS)	D	INP	DI	Digital	Active High
5	4X4 KEYPAD(ROW)	1	INP	DI	Digital	Active High
6	4X4 KEYPAD(ROW)	2	INP	DI	Digital	Active High
7	4X4 KEYPAD(ROW)	3	INP	DI	Digital	Active High
8	SERVO VCC	VCC	OUT	DO	Digital	Active High
9	SERVO GND	GND	OUT	DO	Digital	Active High
10	SERVO IN	8	OUT	DO	Digital	Active High
11	LCD RST	RS	OUT	DO	Digital	Active High
12	LCD EN	EN	OUT	DO	Digital	Active High
13	LCD DATA PIN	D4	OUT	DO	Digital	Active High
14	LCD DATA PIN	D5	OUT	DO	Digital	Active High
15	LCD DATA PIN	D6	OUT	DO	Digital	Active High
16	LCD DATA PIN	D7	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="1112";
int currentposition=0;
void setup()
{
  displayscreen();
  //Serial.begin(9600);
  myservo.attach(8); //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("LALITHASHREE");
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(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("Access");
lcd.setCursor(6,0);
lcd.print("Denied");
lcd.setCursor(15,1);
lcd.println(" ");
lcd.setCursor(4,1);
lcd.println("TRY AGAIN !");
lcd.setCursor(13,1);

```

```

lcd.println(" ");
Serial.println("CODE INCORRECT YOU ARE UNAUTHORIZED");
delay(1000);
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:

