

Password based Door Locking System

Using Arduino UNO

Description:

A password-based door locking system using an Arduino UNO is a security system that allows you to unlock a door by entering a specific password. The system consists of an Arduino UNO board, a keypad, LCD display and a servo motor. As usual keypad module is used to enter the password, where LCD display is used to display the current status and a servo motor is used to lock and unlock the door. When we approached the door, by entering the correct password on the keypad. if the password is correct, the servo motor unlocks the door. If the password is incorrect, the door remains locked. Overall, this system provides a simple and cost-effective way to secure a room or building without the need for keys.

Block Diagram:



Input and Output:

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

3	4X4 KEYPAD(COLUMNS)	3	INP	DI	Digital	Active High
4	4X4 KEYPAD(ROW)	A	INP	DI	Digital	Active High
5	4X4 KEYPAD(ROW)	B	INP	DI	Digital	Active High
6	4X4 KEYPAD(ROW)	C	INP	DI	Digital	Active High
7	4X4 KEYPAD(ROW)	D	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="4321"; 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("KOKIL
A");
lcd.setCursor(4,1);
lcd.println("WEL
COME");
lcd.setCursor(15,1);
lcd.println(" ");
lcd.setCursor(16,1);
lcd.println(" ");

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```

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:

