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/*
   circuits4you.com
   Digital Code Lock Demo
*/
#include <Keypad.h>
#include <LiquidCrystal.h>
#include <Servo.h>
Servo myservo;
// initialize the library with the numbers of the interface pins
LiquidCrystal lcd(9, 8, 7, 6, 5, 4);
int pos = 0;

const byte ROWS = 4; //four rows
const byte COLS = 4; //four columns
//define the cymbols on the buttons of the keypads
char hexaKeys[ROWS][COLS] = {
  {'7','8','9','/'},
  {'4','5','6','*'},
  {'1','2','3','-'},
  {'C','0','=','+'}
};
byte rowPins[ROWS] = {3, 2, 19, 18}; //connect to the row pinouts of the keypad
byte colPins[COLS] = {17, 16, 15, 14}; //connect to the column pinouts of the keypad

//initialize an instance of class NewKeypad
Keypad customKeypad = Keypad( makeKeymap(hexaKeys), rowPins, colPins, ROWS, COLS);

const int LED_RED=10; //Red LED
const int LED_GREEN=11; //Green LED
const int RELAY=12; //Lock Relay or motor

char keycount=0;
char code[4]; //Hold pressed keys


//=====================================================================
//                SETUP
//=====================================================================
void setup(){
   myservo.attach(0);
  pinMode(LED_RED,OUTPUT);
  pinMode(LED_GREEN,OUTPUT);
  pinMode(RELAY,OUTPUT);

   // set up the LCD's number of columns and rows:
  lcd.begin(16, 2);
   myservo.attach(12);
  Serial.begin(9600);
  // Print a message to the LCD.
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  lcd.print("Password Access:");
  lcd.setCursor(0,1); //Move coursor to second Line
 // Turn on the cursor
  lcd.cursor();
  digitalWrite(LED_GREEN,HIGH);  //Green LED Off
  digitalWrite(LED_RED,LOW);     //Red LED On
  digitalWrite(RELAY,LOW);       //Turn off Relay (Locked)
}
//=====================================================================
//                LOOP
//=====================================================================
void loop(){
  char customKey = customKeypad.getKey();

  if (customKey && (keycount<4) && (customKey !='=') && (customKey !='C')){
      //lcd.print(customKey); //To display entered keys
      lcd.print('*');    //Do not display entered keys
      code[keycount]=customKey;
      keycount++;
  }

  if(customKey == 'C')      //Cancel/Lock Key is pressed clear display and lock
  {
    Lock();    //Lock and clear display
  }

  if(customKey == '=')   //Check Password and Unlock
  {
    if((code[0]=='1') && (code[1]=='2') && (code[2]=='3') && (code[3]=='4'))  //Match the password
    {
      digitalWrite(LED_GREEN,LOW);  //Green LED Off
      digitalWrite(LED_RED,HIGH);     //Red LED On
      digitalWrite(RELAY,HIGH);       //Turn on Relay (Unlocked)
      lcd.setCursor(0,1);
      lcd.print("Door Open       ");
      delay(4000);      //Keep Door open for 4 Seconds
      Lock();
      servomove();
    }
    else
    {
      lcd.setCursor(0,1);
      lcd.print("Invalid Password");  //Display Error Message
      delay(1500); //Message delay
      Lock();
      myservo.write(180);
    }
  }
}
```

```
//================================================================
//                LOCK and Update Display
//================================================================

void Lock()
{
   lcd.setCursor(0,1);
   lcd.print("Door Locked     ");
   delay(1500);
   lcd.setCursor(0,1);
   lcd.print("                "); //Clear Password
   lcd.setCursor(0,1);
   keycount=0;
   digitalWrite(LED_GREEN,HIGH);  //Green LED Off
   digitalWrite(LED_RED,LOW);     //Red LED On
   digitalWrite(RELAY,LOW);       //Turn off Relay (Locked)
}

  void servomove()
  {
     pos = 90;
    myservo.write(pos);
    delay(2000);
    myservo.write(180);
  }
```