SMART DOOR LOCK SYSTEM (USING ARDUINO UNO)

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#Project Overview

This project implements a password-protected door lock system using Arduino. The system requires a user to enter a correct password to unlock the door. The password is compared to a master password, and if matched, the servo motor opens the door. The system also displays messages on the LCD display for user feedback and uses an LED to indicate the door's status.

#Equipment Used

1. Arduino Board
2. Keypad (4x4)
3. LCD Display (16x2)
4. Servo Motor
5. Breadboard and Jumper Wires
6. Red LED
7. Potentiometer
8. Resistor

#Libraries Included

1. Keypad.h
2. LiquidCrystal.h
3. Servo.h

#Code:

```
#include <Keypad.h>

#include <LiquidCrystal.h>

#include <Servo.h>
```

```
Servo myservo;
LiquidCrystal lcd(A0, A1, A2, A3, A4, A5);
#define Password_Length 5
int pos = 0;
char Data[Password_Length];
char Master[Password_Length] = "1234";
byte data_count = 0, master_count = 0;
bool Pass_is_good;
char customKey;
const byte ROWS = 4;
const byte COLS = 4;
char keys[ROWS][COLS] = { {'1', '2', '3'}, {'4', '5', '6'}, {'7', '8', '9'}, {'*', '0', '#'} };
bool door = true;
byte rowPins[ROWS] = {1, 2, 3, 4};
byte colPins[COLS] = {5, 6, 7, 8};
Keypad customKeypad( makeKeymap(keys), rowPins, colPins, ROWS, COLS);
void setup(){
  pinMode(10,OUTPUT);
  myservo.attach(9);
  ServoClose();
  lcd.begin(16, 2);
  lcd.print(" Arduino Door");
  lcd.setCursor(0, 1);
  lcd.print("--Look project--");
  delay(3000);
  lcd.clear();
}
```

```
void loop(){
  if (door == 0){
    customKey = customKeypad.getKey();
    if (customKey == '#') {
      lcd.clear();
      ServoClose();
      lcd.print("  Door is close");
      digitalWrite(10,LOW);
      delay(3000);
      door = 1;
    }
  }
  else Open();
}

void clearData(){
  while (data_count != 0) {
    Data[data_count--] = 0;
  }
  return;
}

void ServoOpen(){
  for (pos = 180; pos >= 0; pos -= 5) {
    myservo.write(pos);
    delay(15);
  }
```

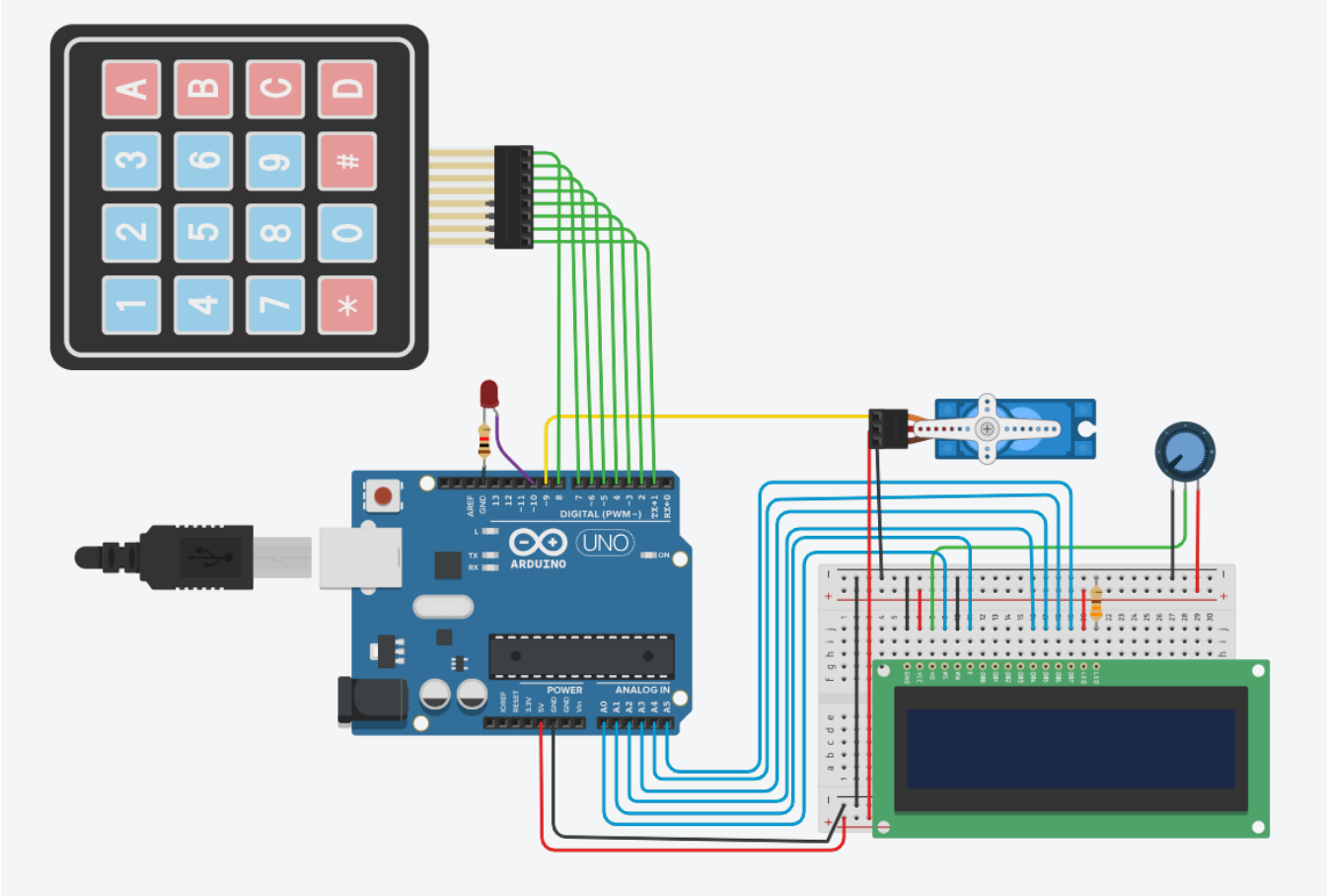
```
}

void ServoClose(){
  for (pos = 0; pos <= 180; pos += 5) {
    myservo.write(pos);
    delay(15);
  }
}

void Open(){
  lcd.setCursor(0, 0);
  lcd.print(" Enter Password");
  customKey = customKeypad.getKey();
  if (customKey) {
    Data[data_count] = customKey;
    lcd.setCursor(data_count, 1);
    lcd.print(Data[data_count]);
    data_count++;
  }
  if (data_count == Password_Length - 1) {
    if (!strcmp(Data, Master)) {
      lcd.clear();
      digitalWrite(10,HIGH);
      ServoOpen();
      lcd.print("  Door is Open");
      door = 0;
    }
```

```
    else {
      lcd.clear();
      lcd.print("  Wrong Password");
      delay(1000);
      door = 1;
    }
    clearData();
  }
}
```

CIRCUIT DIAGRAM



Conclusion

This project demonstrates a secure password-protected door lock system using Arduino. The system provides a user-friendly way to control door access and uses a red LED to indicate the door's status. To enhance it, consider adding multiple user accounts, password encryption, biometric authentication, wireless connectivity, and advanced lock mechanisms.

TinkerCad Link:

https://www.tinkercad.com/things/ga1vQSktsvo-password-access-control-system/editel