KNOCK SENSING DOOR LOCK

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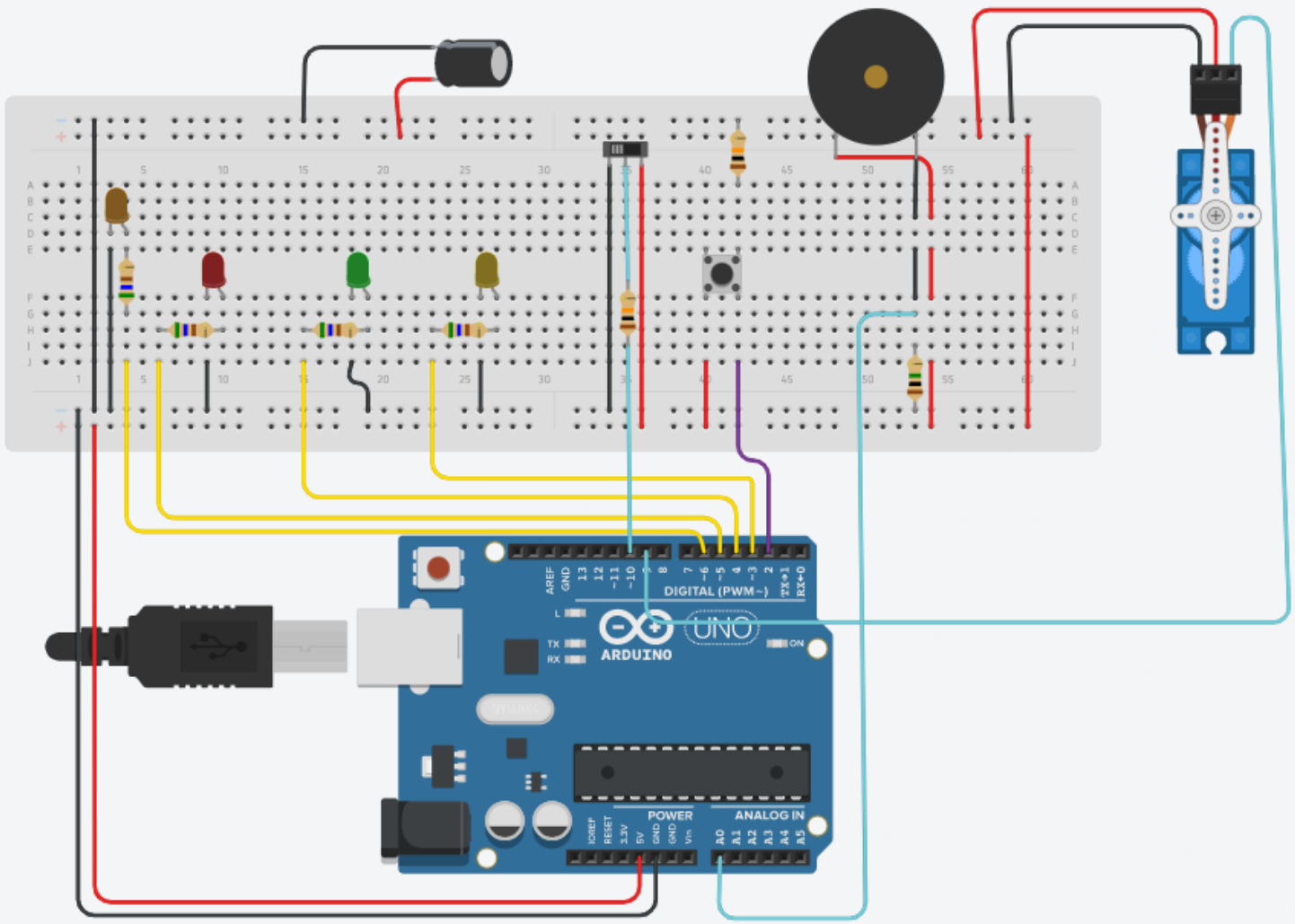
FEATURES

- Allows to open a door using a set knocking pattern.
- The knock pattern can be changed easily anytime.
- Low cost.
- The sensitivity of the knock can be changed programmatically.

COMPONENTS REQUIRED:

Component Name	Quantity
Arduino Uno	1
Resistor 560Ω	4
Resistor 10KΩ	2
Resistor 1MΩ	1
Piezo Buzzer	1
Capacitor 10V 100µF	1
Led Red, Green, Yellow, Orange	1
Micro Servo	1
9V Dc Adapter	1
SPST Push Switch	1
Slide Switch	1

CIRCUIT



CODE

```
#include <Servo.h>
 Servo myServo;
 const int piezo = A0;
 const int switchPin = 2;
 const int yellowLed = 3;
 const int orangeLed=6;
 const int greenLed = 4;
 const int redLed = 5;
 const int slideSwitch=10;
 int knockVal;
 int reqKnock=3;
 int tmp;
 int tmp2;
 int switchVal;
 int slideSwitchVal;
 const int quietKnock = 8;
 const int loudKnock = 78;
 boolean locked = false;
 int numberOfKnocks = 0;
```

```
void setup(){
 myServo.attach(9);
 pinMode(slideSwitch,INPUT);
 pinMode(yellowLed, OUTPUT);
 pinMode(orangeLed, OUTPUT);
 pinMode(redLed, OUTPUT);
 pinMode(greenLed, OUTPUT);
 pinMode(switchPin, INPUT);
 Serial.begin(9600);
 digitalWrite(greenLed, HIGH);
 digitalWrite(orangeLed,LOW);
 myServo.write(0);
 Serial.println("the box is unlocked!");
 }
```

```
void loop(){
 slideSwitchVal=digitalRead(slideSwitch);
 if(slideSwitchVal==LOW){
  Serial.println("In working stage ");
 if(locked == false){
 switchVal = digitalRead(switchPin);
 if(switchVal == HIGH){
 locked = true;
 digitalWrite(greenLed,LOW);
 digitalWrite(redLed,HIGH);
 myServo.write(90);
 Serial.println("the box is locked!");
 delay (1000);
 }
 }
 if(locked == true){
 knockVal = analogRead(piezo);
 if(numberOfKnocks < 3 && knockVal > 0){
 if(checkForKnock(knockVal) == true){
 numberOfKnocks++;
 }
 Serial.print(3 - numberOfKnocks);
 Serial.println(" more knocks to go");
 }
```

```
if(numberOfKnocks >= reqKnock){
 locked = false;
 myServo.write(0);
 delay(20);
 digitalWrite(greenLed,HIGH);
 digitalWrite(redLed,LOW);
 Serial.println("the box is unlocked!");
 }
 }
 }
 else {
  Serial.println("In password change state ");
  digitalWrite(greenLed,LOW);
  digitalWrite(orangeLed,HIGH);
  tmp2=digitalRead(slideSwitch);
  while(tmp2!=LOW){
  knockVal = analogRead(piezo);
  if(knockVal>0){
  reqKnock=0;
  Serial.println("Resetting knock value now input new kock value ");
  while(true){
  if(checkForKnock(knockVal)==true){
   reqKnock++;
   Serial.print("Required knock value = ");
   Serial.println(reqKnock);
  }
```

```
delay(100);
  knockVal = analogRead(piezo);
  tmp=digitalRead(slideSwitch);
  if(tmp==LOW){
    digitalWrite(orangeLed,LOW);
    Serial.println("Done Resetting");
    break;
  }
 }
 }
 tmp2=digitalRead(slideSwitch);
 }
 }
 }
```

```
boolean checkForKnock(int value){
 if(value > quietKnock && value < loudKnock){
 digitalWrite(yellowLed, HIGH);
 delay(50);
 digitalWrite(yellowLed, LOW);
 Serial.print("Valid knock of value ");
 Serial.println(value);
return true;
 }
 else {
 Serial.print("Bad knock value ");
 Serial.println(value);
return false;
 }
 }
```

CODE EXPLANATION

- The sensitivity of the lock can be changed by changing the values of loudKnock and quietKnock.
- The lock pattern can be changed using the slide switch and then knocking the new pattern and then again putting the slide to original position.
- If a knock is valid then a yellow led blinks.
- The variable reqKnock is the number of knocks required to open the lock by default it is initialized to 3.
- The door can be locked using the push button.