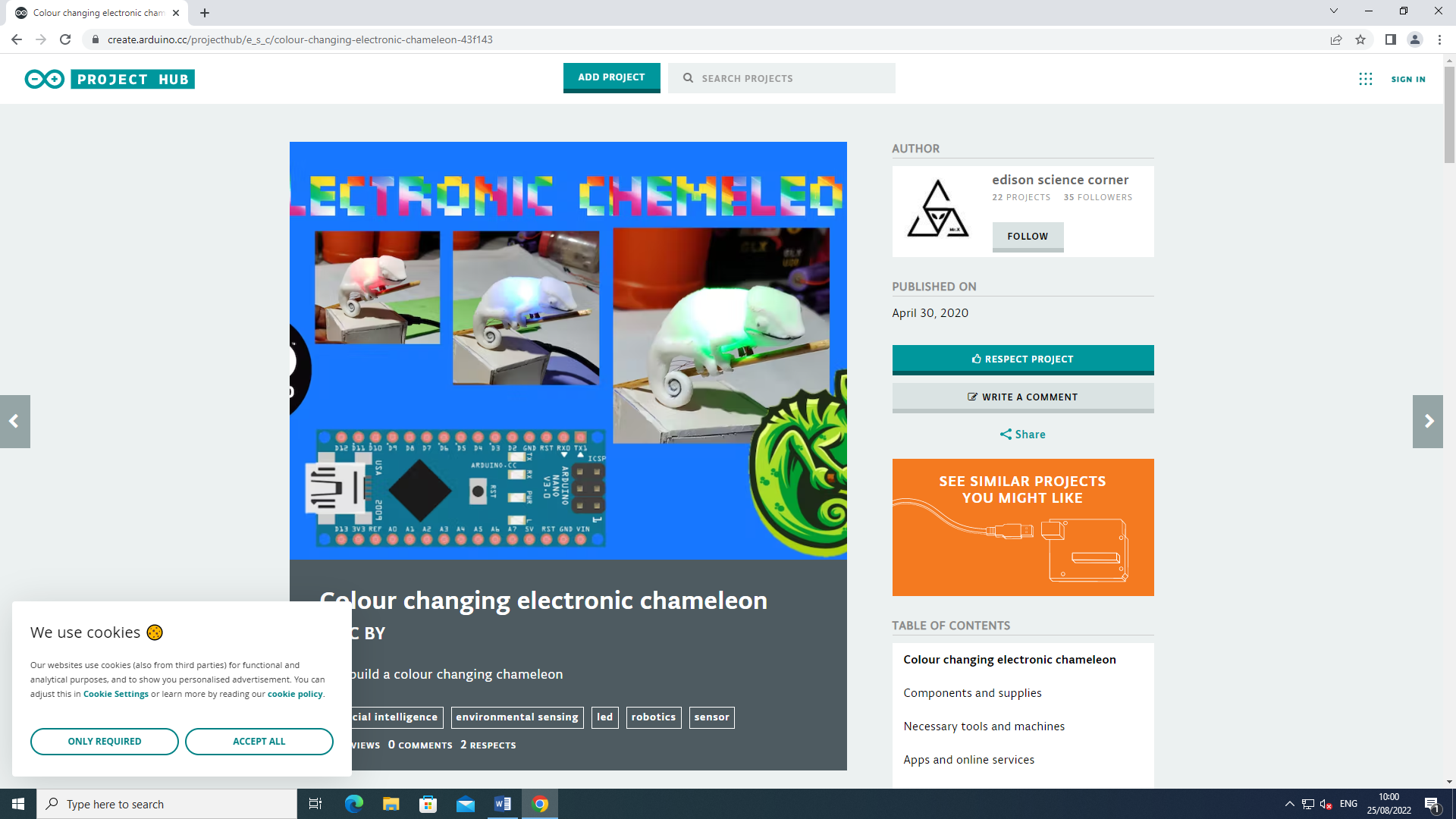
OPIS PROJEKTA ZA UČITELJA

Cameleon z Arduino nano

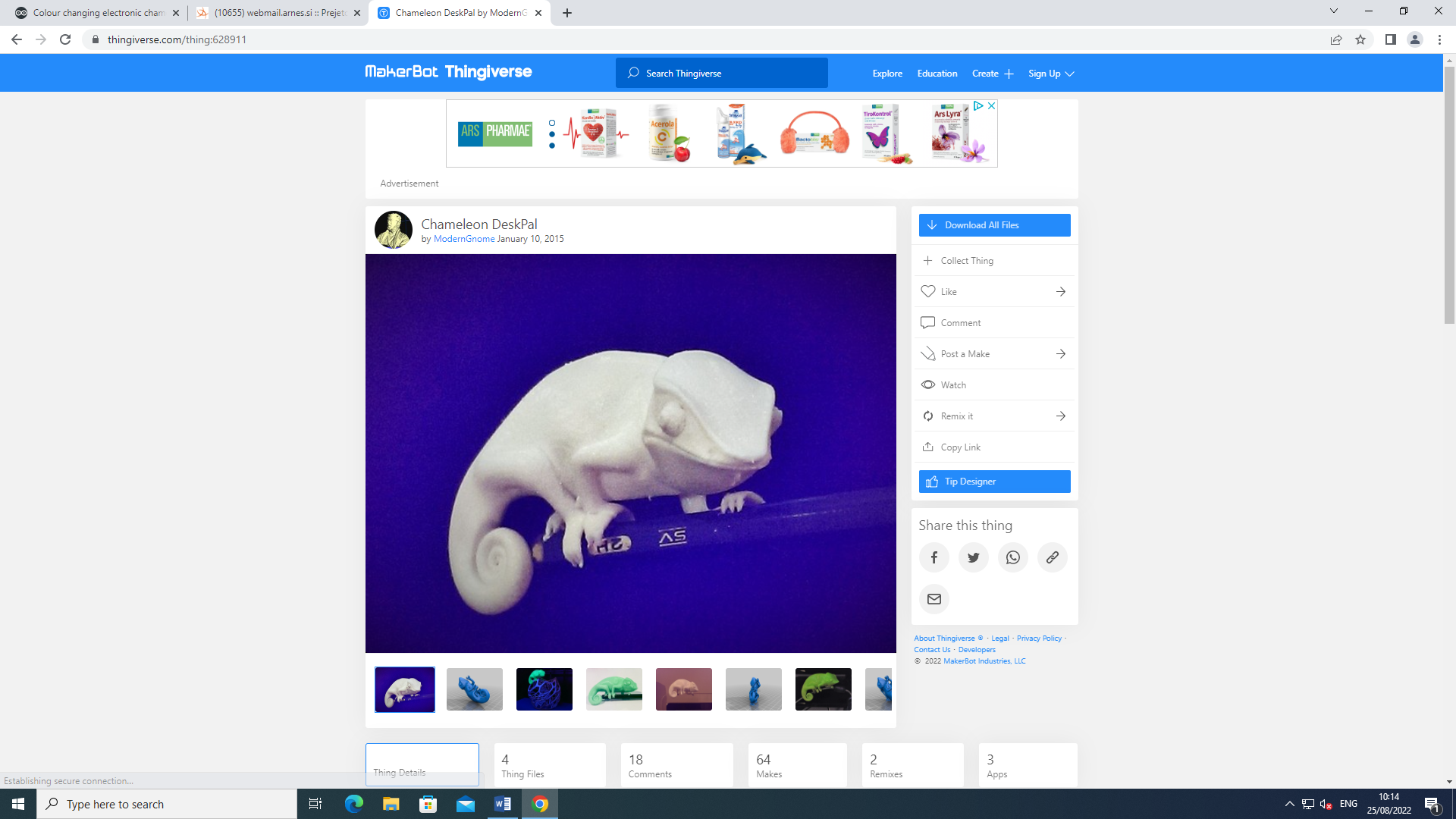


Problem: model, ki prikazuje delovanje obrambnega mehanizma kameleona

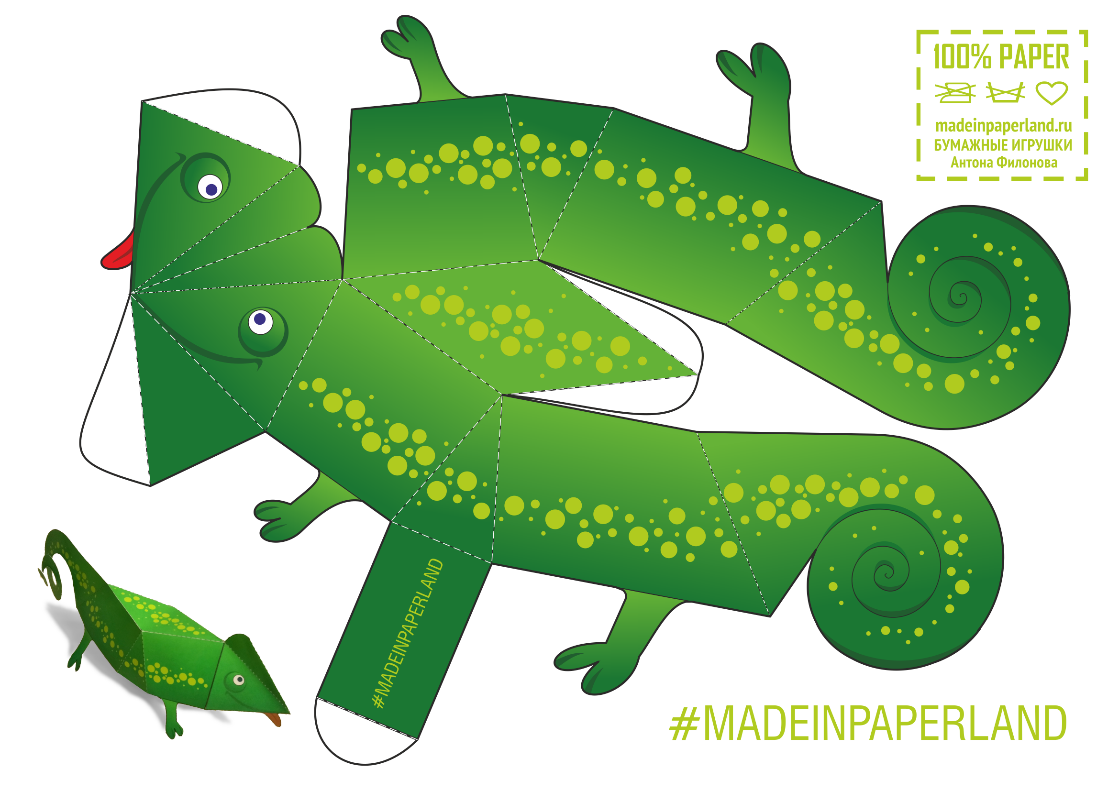
Predhodno znanje: učenci poznajo osnove dleovanje arduina, prav tako so že posamično spoznali delovanje Led diode in RGB color sensor.

Modulacija: 3D model s terarijem, osvetljevanje terarija z led diodo.

Izdelati 3D risbo v SketchUp po videovodiču ali le tega prenesti s spletne strani thingiverse (<https://www.thingiverse.com/thing:628911>)



*Enostavneje bi lahko kameleona izdelali 2D s pomočjo šeleshamerja.*



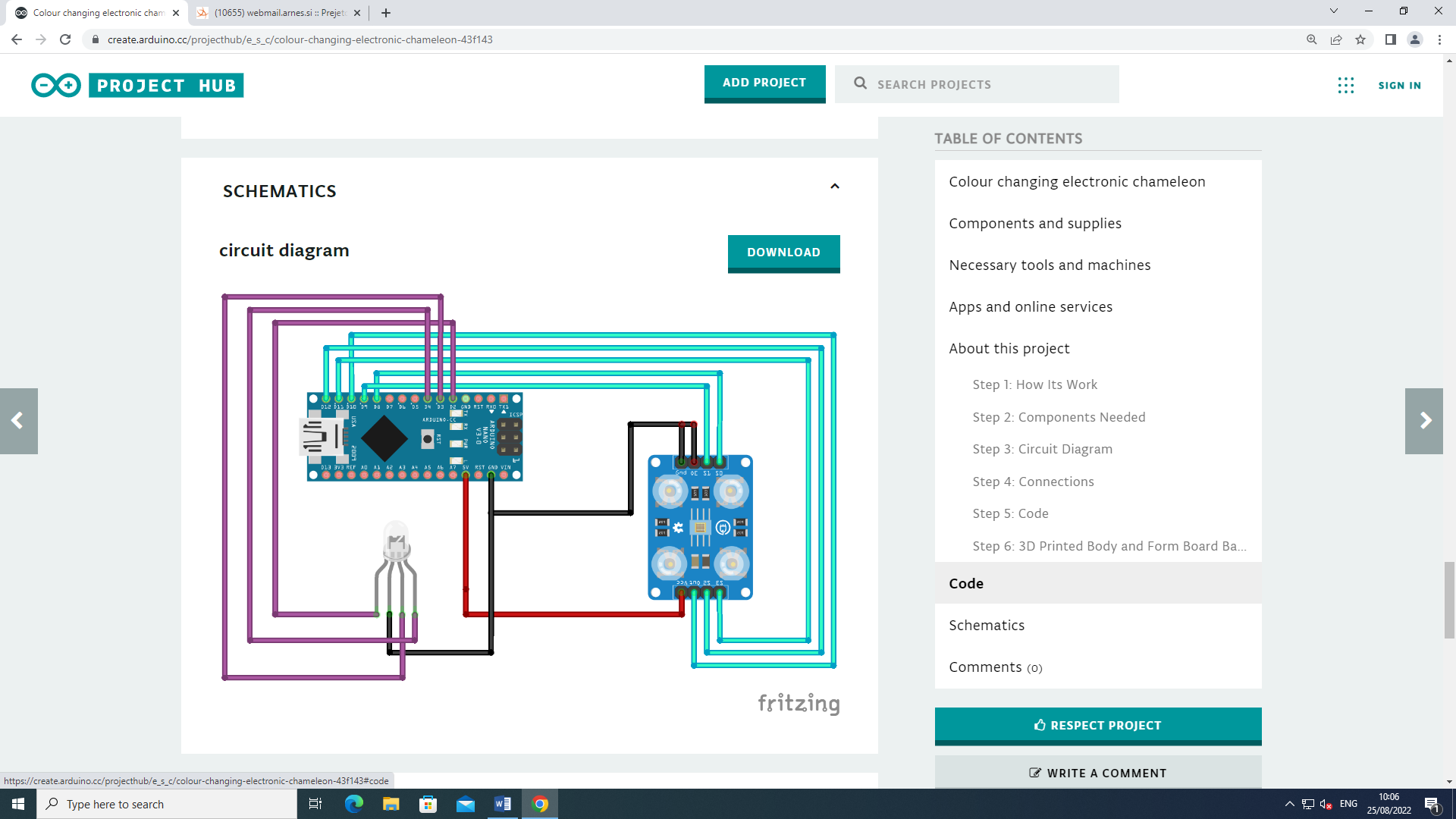
*Načrt bi bilo potrebno natisniti v svetlejšo sivi barvi.*

Sledi 3D tisk kameleona s tiskanjem, kjer je potrebno **nastaviti debelejšo debelino zunanje** plasti. Notranjost kameleona naj bo votla.

Zatem je potrebno izdelati ohišje terarija z vejico.



Sledi naj sestavljanje vezja po načrtu s spletne strani.



Algoritem:

Ponavljajoče prižiganje Led diode v naključnih osnovnih barvah (modra, rdeča, zelena, rumena) za nekaj sekund (3-4 sekund) in prižiganje Led diode na kameleonu s pomočjo podatkov z barvnega senzorja.

Program:

|  |
| --- |
| // EDISON SCIENCE CORNER // |
|  | // EDISON SCIENCE CORNER // |
|  | // EDISON SCIENCE CORNER // |
|  | // EDISON SCIENCE CORNER // |
|  |  |
|  |  |
|  | const int s0 = 8; |
|  | const int s1 = 9; |
|  | const int s2 = 12; |
|  | const int s3 = 11; |
|  | const int out = 10; |
|  | // LED pins connected to Arduino |
|  | int redLed = 2; |
|  | int greenLed = 3; |
|  | int blueLed = 4; |
|  | // Variables |
|  | int red = 0; |
|  | int green = 0; |
|  | int blue = 0; |
|  |  |
|  | void setup() |
|  | { |
|  | Serial.begin(9600); |
|  | pinMode(s0, OUTPUT); |
|  | pinMode(s1, OUTPUT); |
|  | pinMode(s2, OUTPUT); |
|  | pinMode(s3, OUTPUT); |
|  | pinMode(out, INPUT); |
|  | pinMode(redLed, OUTPUT); |
|  | pinMode(greenLed, OUTPUT); |
|  | pinMode(blueLed, OUTPUT); |
|  | digitalWrite(s0, HIGH); |
|  | digitalWrite(s1, HIGH); |
|  | } |
|  |  |
|  | void loop() |
|  | { |
|  | color(); |
|  | Serial.print("Red:"); |
|  | Serial.print(red, DEC); |
|  | Serial.print(" Greeen: "); |
|  | Serial.print(green, DEC); |
|  | Serial.print(" Blue : "); |
|  | Serial.print(blue, DEC); |
|  | Serial.println(); |
|  |  |
|  | if ((red < blue&&green)&&(red<30) ) |
|  | { |
|  | Serial.println(" - (Red Color)"); |
|  | digitalWrite(redLed, HIGH); // Turn RED LED ON |
|  | digitalWrite(greenLed, LOW); |
|  | digitalWrite(blueLed, LOW); |
|  | } |
|  | if ((blue <red&&green)&&(blue<30)) |
|  | { |
|  | Serial.println(" - (Blue Color)"); |
|  | digitalWrite(redLed, LOW); |
|  | digitalWrite(greenLed, LOW); |
|  | digitalWrite(blueLed, HIGH); // Turn BLUE LED ON |
|  | } |
|  | if ((red<10)&&(green&&blue<20)) |
|  | { |
|  | Serial.println(" - (yelllow Color)"); |
|  | digitalWrite(redLed, HIGH); |
|  | digitalWrite(greenLed,HIGH); |
|  | digitalWrite(blueLed,LOW); // Turn YELLOW LED ON |
|  | } |
|  | if ((green<red&&blue)&&(green<30)) |
|  | { |
|  | Serial.println(" - (Green Color)"); |
|  | digitalWrite(redLed, LOW); |
|  | digitalWrite(greenLed, HIGH); // Turn GREEN LED ON |
|  | digitalWrite(blueLed, LOW); |
|  | } |
|  |  |
|  |  |
|  | if (red&&green&&blue>50){ |
|  | Serial.println("no colour"); |
|  | } |
|  | delay(300); |
|  | digitalWrite(redLed, LOW); |
|  | digitalWrite(greenLed, LOW); |
|  | digitalWrite(blueLed, LOW); |
|  | } |
|  |  |
|  | void color() |
|  | { |
|  | digitalWrite(s2, LOW); |
|  | digitalWrite(s3, LOW); |
|  | //count OUT, pRed, RED |
|  | red = pulseIn(out, digitalRead(out) == HIGH ? LOW : HIGH); |
|  | digitalWrite(s3, HIGH); |
|  | //count OUT, pBLUE, BLUE |
|  | blue = pulseIn(out, digitalRead(out) == HIGH ? LOW : HIGH); |
|  | digitalWrite(s2, HIGH); |
|  | //count OUT, pGreen, GREEN |
|  | green = pulseIn(out, digitalRead(out) == HIGH ? LOW : HIGH); |
|  | } |