



Universitatea Politehnica din Bucuresti  
Facultatea de Automatica si Calculatoare



# **Proiect SMP**

## **Iluminat stradal inteligent**



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Grupa: 334AB

## **Tema + Descriere Proiect:**

TEMA : Sistem de iluminat stradal

DESCRIERE : un sistem de iluminat stradal, inteligent, care va porni becul doar atunci cand detecteaza prezenta unui obiect(om/masina/bicicleta etc) eficientizand consumul de energie electrica. Sistem de iluminare la cerere bazat pe senzor de mișcare vor fi utilizate în locații selectate din oraș pentru a spori nevoia de siguranță a publicului.

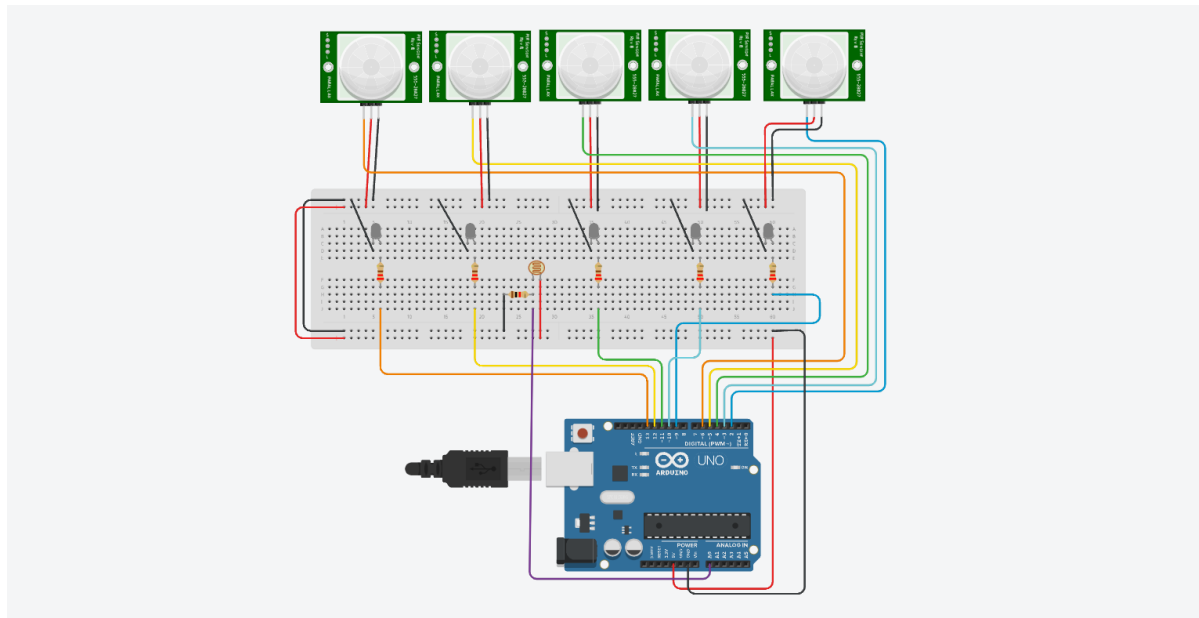
## **Avantaje:**

- Un principal avantaj este consumul mai redus de energie.
- Lumina potrivită la locul potrivit la momentul potrivit îmbunătățește în mod clar percepția de siguranță a cetățenilor.
- Soluția inteligentă de iluminat stradal oferă un control precis asupra luminilor stradale, permițând orașului să ofere o iluminare adecvată care să sporească atât siguranța cetățenilor, cât și siguranța traficului.

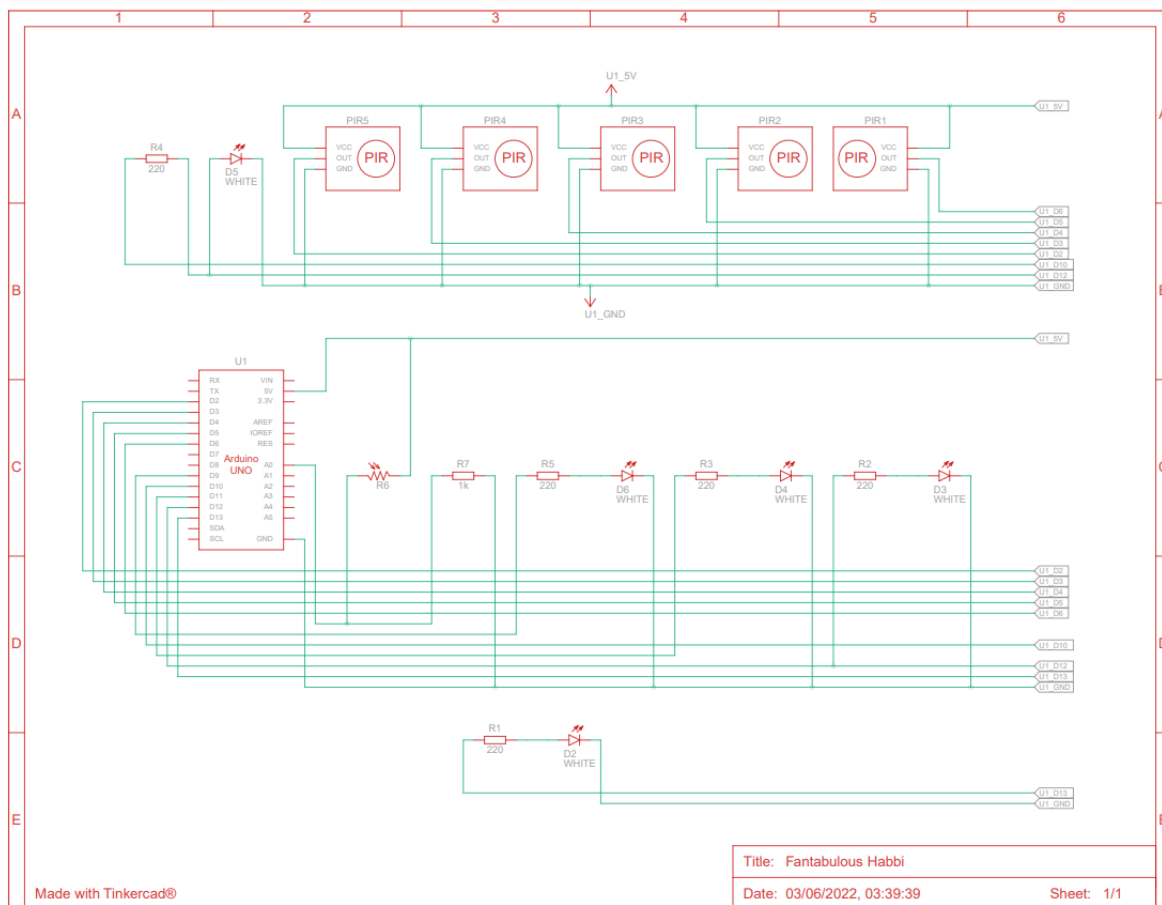
## **Link proiect TinkerCad:**

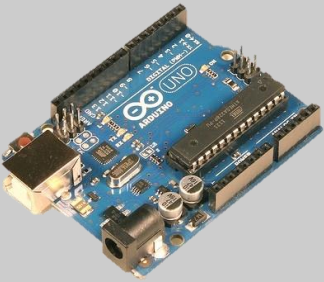
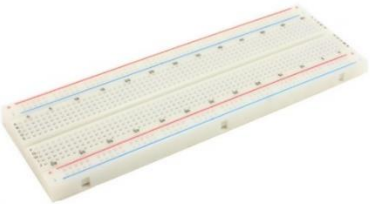
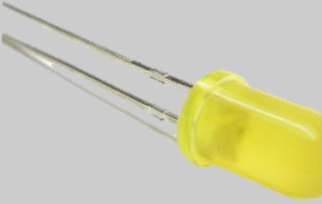
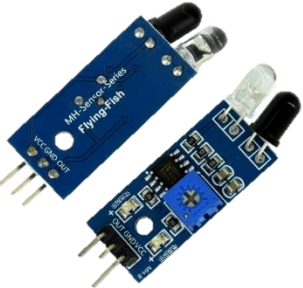
<https://www.tinkercad.com/things/gtHXrtRtjD3-fantabulous-habbi/editel?tenant=circuits>

## Schema Tinkercad



## Schema proiect :



Cantitate	Denumire	Ilustare
1	Placuta Arduino	
1	Breadboard	
5	Leduri	
5	Modul Senzor Infrarosu (Comparator LM393)	

5

Rezistente 220 $\Omega$



1

Rezistenta 1k  $\Omega$



$\infty$

Fire



1

Senzor lumina



## **Cod sursa :**

### **1. Leduri**

*int led1 = 9;*

*int led2 = 10;*

*int led3 = 11;*

*int led4 = 12;*

*int led5 = 13;*

### **2. Senzori**

*int sensor1 = 2;*

*int sensor2 = 3;*

*int sensor3 = 4;*

*int sensor4 = 5;*

*int sensor5 = 6;*

### **3. Senzor lumina**

*int ldr = A0;*

*int value=0;*

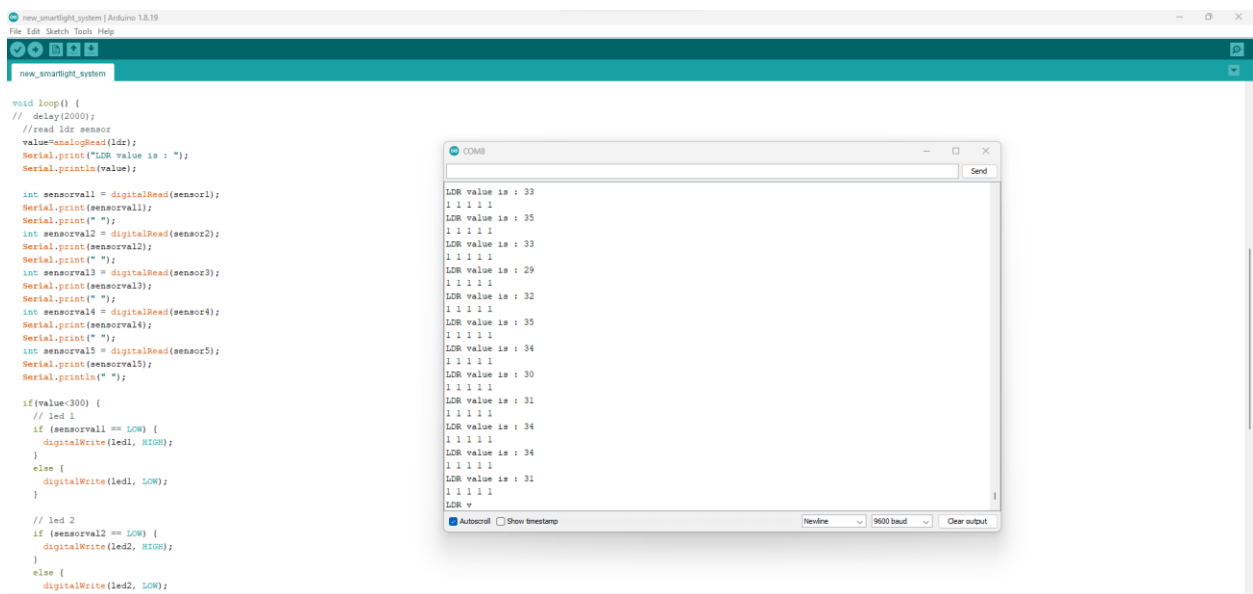
#### **4.Aprindere led in functie de semnalul senzorilor**

```
if (sensorval1 == LOW) {  
    digitalWrite(led1, HIGH);  
}  
else {  
    digitalWrite(led1, LOW);  
}
```

#### **4. Testare :**

```
value=analogRead(ldr);  
Serial.print("LDR value is : ");  
Serial.println(value);  
  
int sensorval1 = digitalRead(sensor1);  
Serial.print(sensorval1);  
Serial.print(" ");  
int sensorval2 = digitalRead(sensor2);  
Serial.print(sensorval2);  
Serial.print(" ");  
int sensorval3 = digitalRead(sensor3);
```

```
Serial.print(sensorval3);  
  
Serial.print(" ");  
  
int sensorval4 = digitalRead(sensor4);  
  
Serial.print(sensorval4);  
  
Serial.print(" ");  
  
int sensorval5 = digitalRead(sensor5);  
  
Serial.print(sensorval5);  
  
Serial.println(" ");
```



The screenshot shows the Arduino IDE interface. The main window displays a C++ sketch for an LDR sensor system. The sketch includes a `void loop()` function that reads five LDR sensor values, prints them with spaces, and then prints a newline. It also includes logic to control two LEDs based on the sensor readings. A serial monitor window is open, showing the output of the sketch, which consists of five lines of sensor values followed by a newline character.

```
void loop() {  
  // delay(2000);  
  //read ldr sensor  
  value=analogRead(ldr);  
  Serial.print("LDR value is : ");  
  Serial.println(value);  
  
  int sensorval1 = digitalRead(sensor1);  
  Serial.print(sensorval1);  
  Serial.print(" ");  
  int sensorval2 = digitalRead(sensor2);  
  Serial.print(sensorval2);  
  Serial.print(" ");  
  int sensorval3 = digitalRead(sensor3);  
  Serial.print(sensorval3);  
  Serial.print(" ");  
  int sensorval4 = digitalRead(sensor4);  
  Serial.print(sensorval4);  
  Serial.print(" ");  
  int sensorval5 = digitalRead(sensor5);  
  Serial.print(sensorval5);  
  Serial.println(" ");  
  
  if(value<300) {  
    // led 1  
    if (sensorval1 == LOW) {  
      digitalWrite(led1, HIGH);  
    }  
    else {  
      digitalWrite(led1, LOW);  
    }  
  
    // led 2  
    if (sensorval2 == LOW) {  
      digitalWrite(led2, HIGH);  
    }  
    else {  
      digitalWrite(led2, LOW);  
    }  
  }  
}
```

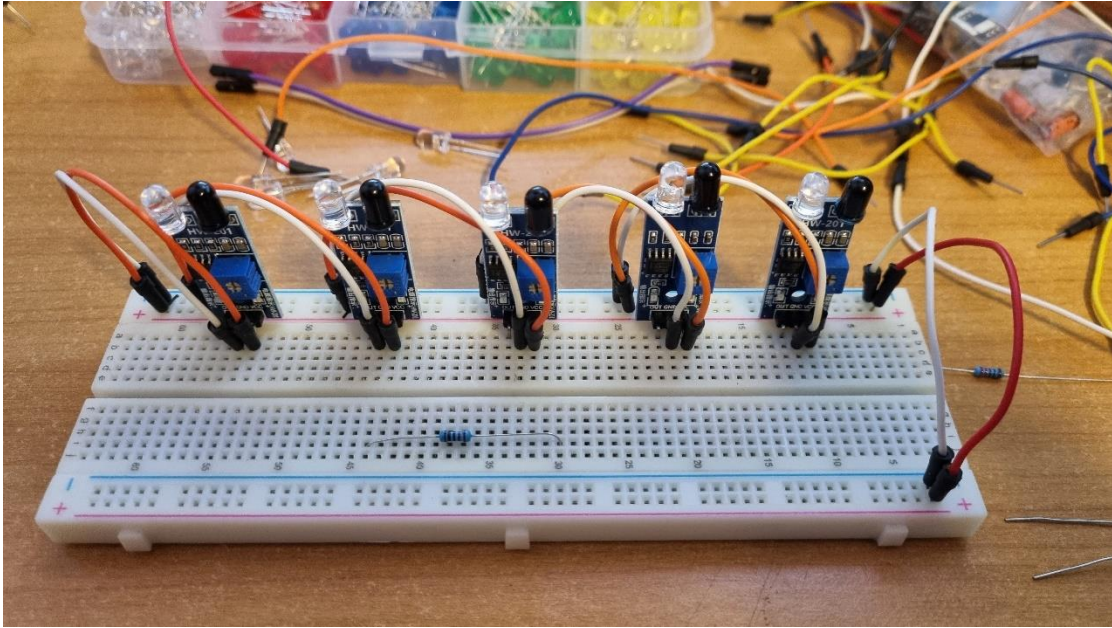
Serial Monitor Output:

```
LDR value is : 33  
1 1 1 1 1  
LDR value is : 35  
1 1 1 1 1  
LDR value is : 33  
1 1 1 1 1  
LDR value is : 29  
1 1 1 1 1  
LDR value is : 32  
1 1 1 1 1  
LDR value is : 35  
1 1 1 1 1  
LDR value is : 34  
1 1 1 1 1  
LDR value is : 30  
1 1 1 1 1  
LDR value is : 31  
1 1 1 1 1  
LDR value is : 34  
1 1 1 1 1  
LDR value is : 34  
1 1 1 1 1  
LDR value is : 31  
1 1 1 1 1  
LDR v
```

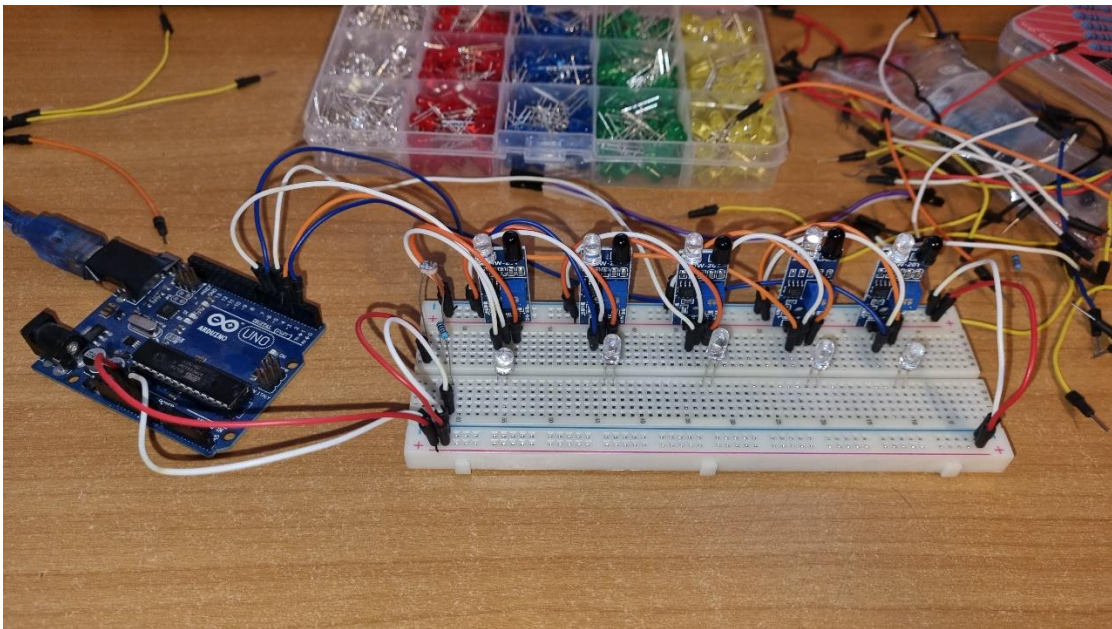


## Model Fizic

### 1. Montam senzorii

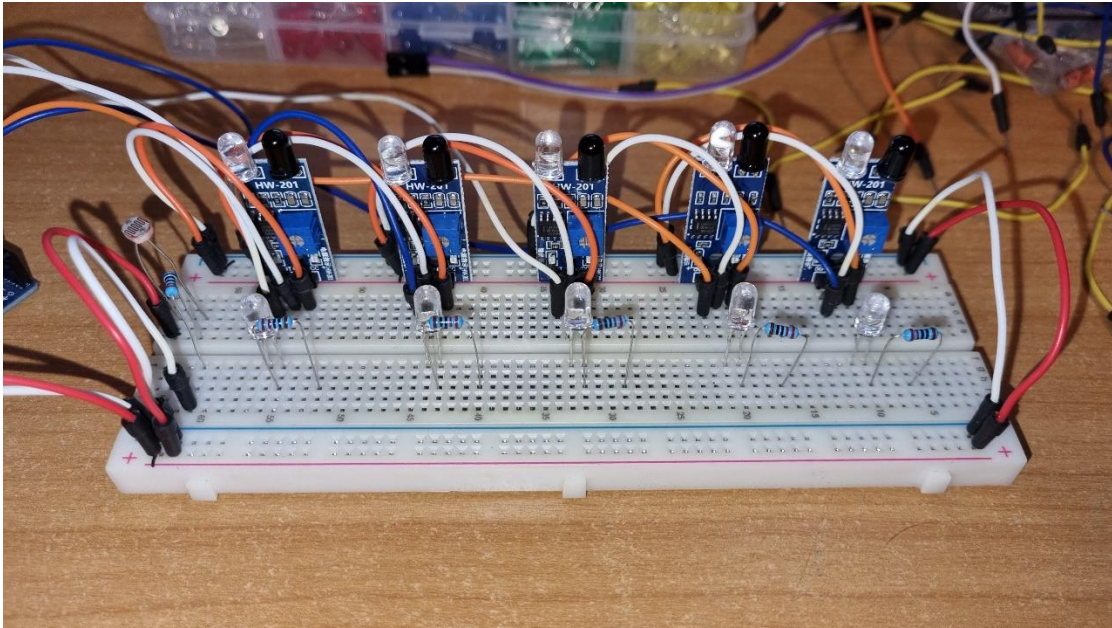


### 2. Montam led-urile + senzor lumina





### 3. Montam rezistentele led-urilor



### 4. Conectare la placuta Arduino

