

IOT AND ROBOTICS

SMART LIGHTING SYSTEM

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Concept of Smart Lighting

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Use of IoT

- . Concept of Smart Lighting
- .Detect human presence (using PIR sensor)
- .Measure room brightness (using LDR sensor)
- .Automatically switch light ON/OFF
- .Allow remote control using smartphone

2. Components Used

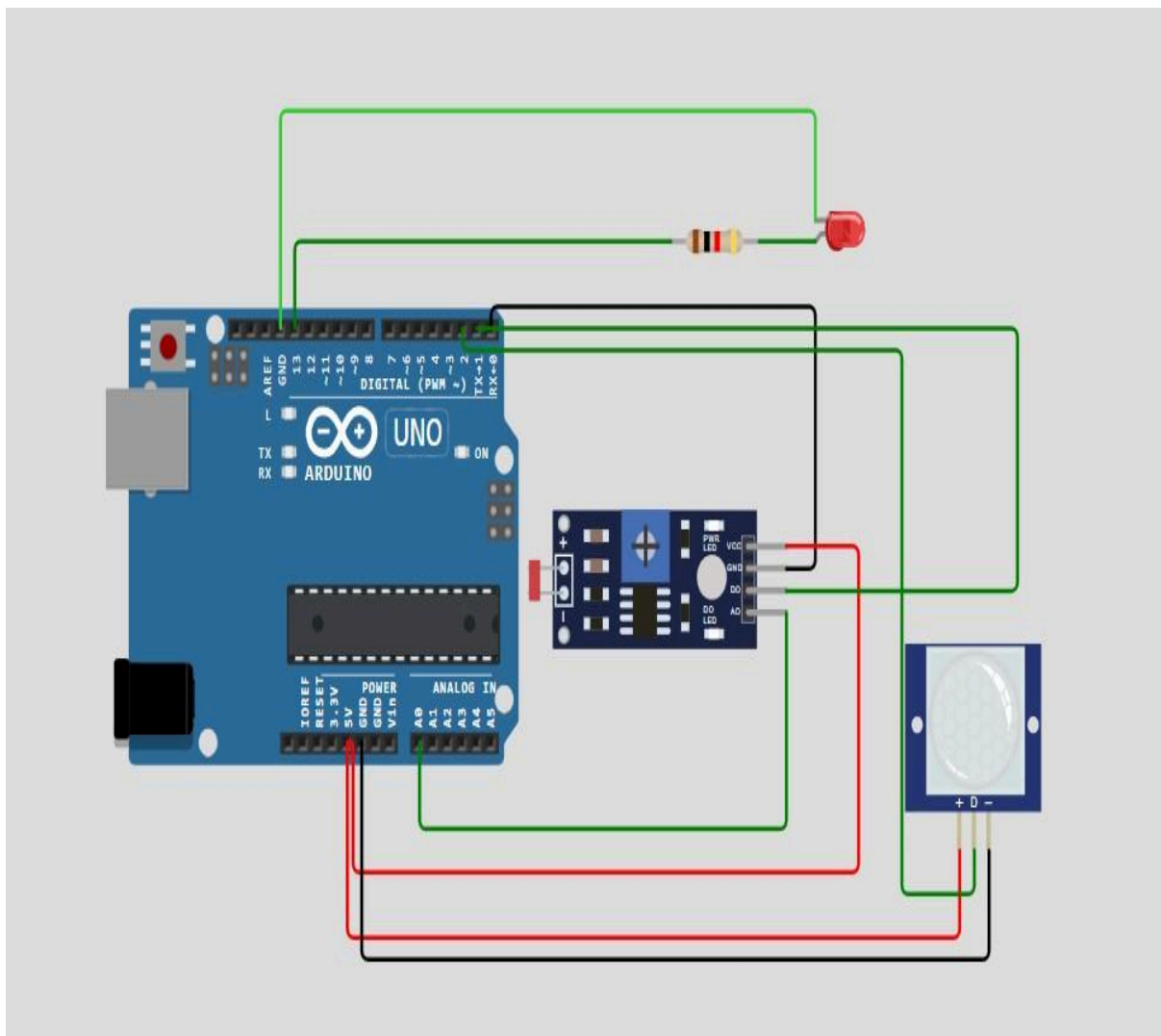
COMPONENTS

Arduino Uno
PIR Sensor
LDR Sensor
LED

PURPOSE

Microcontroller
Detects motion
Detects light
After Signal

DIAGRAM



CODE

CODE:

```
#define LDR A0 //LDR connect to A0
#define LED 13 //LED connect to pin 13
#define PIR 2 //PIR connect to pin2
int illumination = 500; // Threshold value for darkness

void setup() {
  pinMode(LED, OUTPUT); // Set LED pin as output
  pinMode(LDR, INPUT); // Set LDR pin as INPUT
  pinMode(PIR,INPUT); // Set PIR pin as INPUT
  Serial.begin(9600); // Start serial communication
}

void loop() {
  // Read value from LDR
  int ldrValue = analogRead(LDR);
  // Read value from PIR
  int pirValue=digitalRead(PIR);

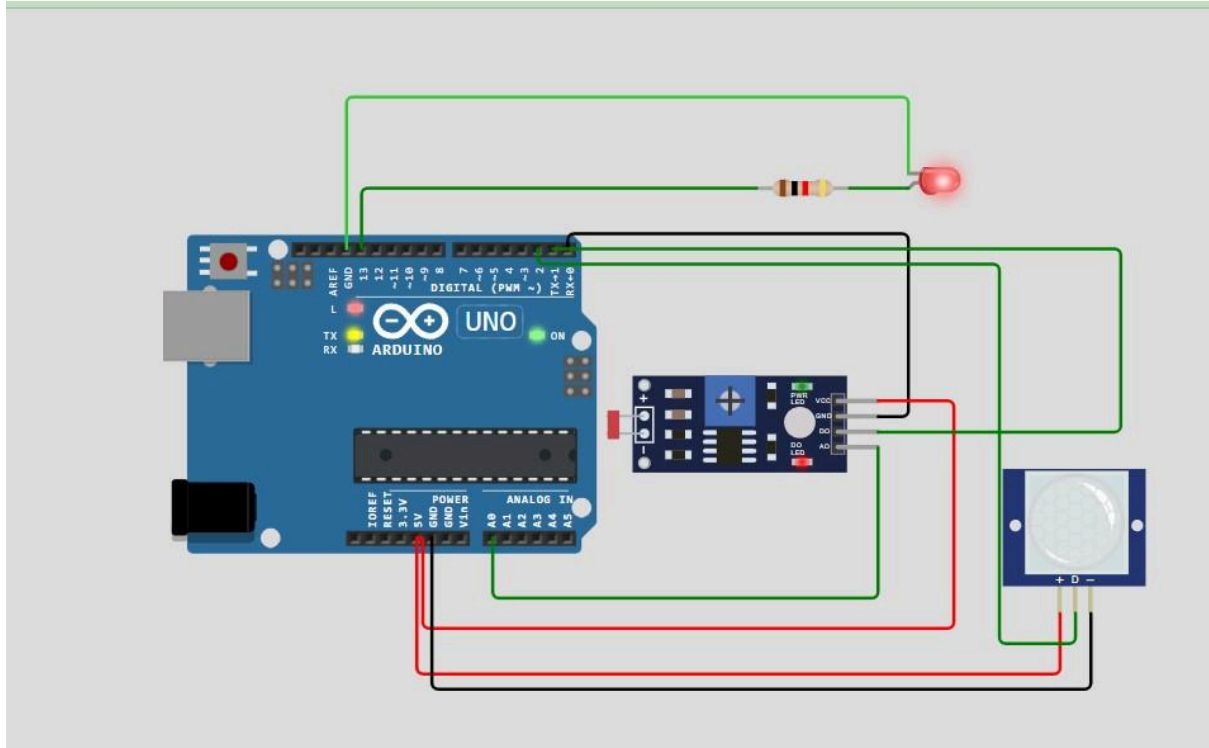
  // Print sensor readings to serial monitor
  Serial.print("LDR");
  Serial.print(ldrValue);
  Serial.print("| PIR");
  Serial.println(pirValue);

  // Control LED based on sensor inputs
  if (ldrValue <illumination && pirValue == HIGH ) {

    // Turn LED on
    digitalWrite(LED, HIGH);
  } else {
```

```
digitalWrite(LED, LOW); // Turn LED off
}  
delay(200); //delay 200 milliseconds  
}
```

OUTPUT:



.The led glows when the motion is detected and in the dark

.If motion detects and it was light ,LED will not Glow

.The light will glow when the conditions are same

USES OF IOT

1. *Smart Home Automation*: Control lighting, temperature, and security systems remotely.
2. *Wearables*: Track fitness, health, and wellness metrics using smartwatches, fitness trackers, or smart glasses.
3. *Smart Appliances*: Control and monitor home appliances.
4. *Smart Traffic Management*: Optimize traffic flow, reduce congestion, and improve safety using real-time traffic monitoring.
5. *Remote Patient Monitoring*: Track patient vital signs, monitor health metrics, and enable remote care.