

Automatic Light ON System Using LDR

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Introduction

The Automatic Light ON System is a simple automation project that automatically turns ON a light during darkness and turns it OFF during brightness. This system uses an LDR (Light Dependent Resistor) sensor to detect the intensity of light and an Arduino UNO to control the operation.

The main purpose of this project is to reduce electricity wastage and automate lighting systems used in streets, homes, gardens, and parking areas. When the surrounding light becomes low, the system automatically switches ON the LED or bulb. During daytime or bright conditions, the light turns OFF automatically.

This project is cost-effective, easy to implement, and useful for energy-saving applications.

Principle

The Automatic Light ON System works on the principle of light intensity detection using an LDR (Light Dependent Resistor). The LDR senses the surrounding light conditions and sends the values to the Arduino UNO.

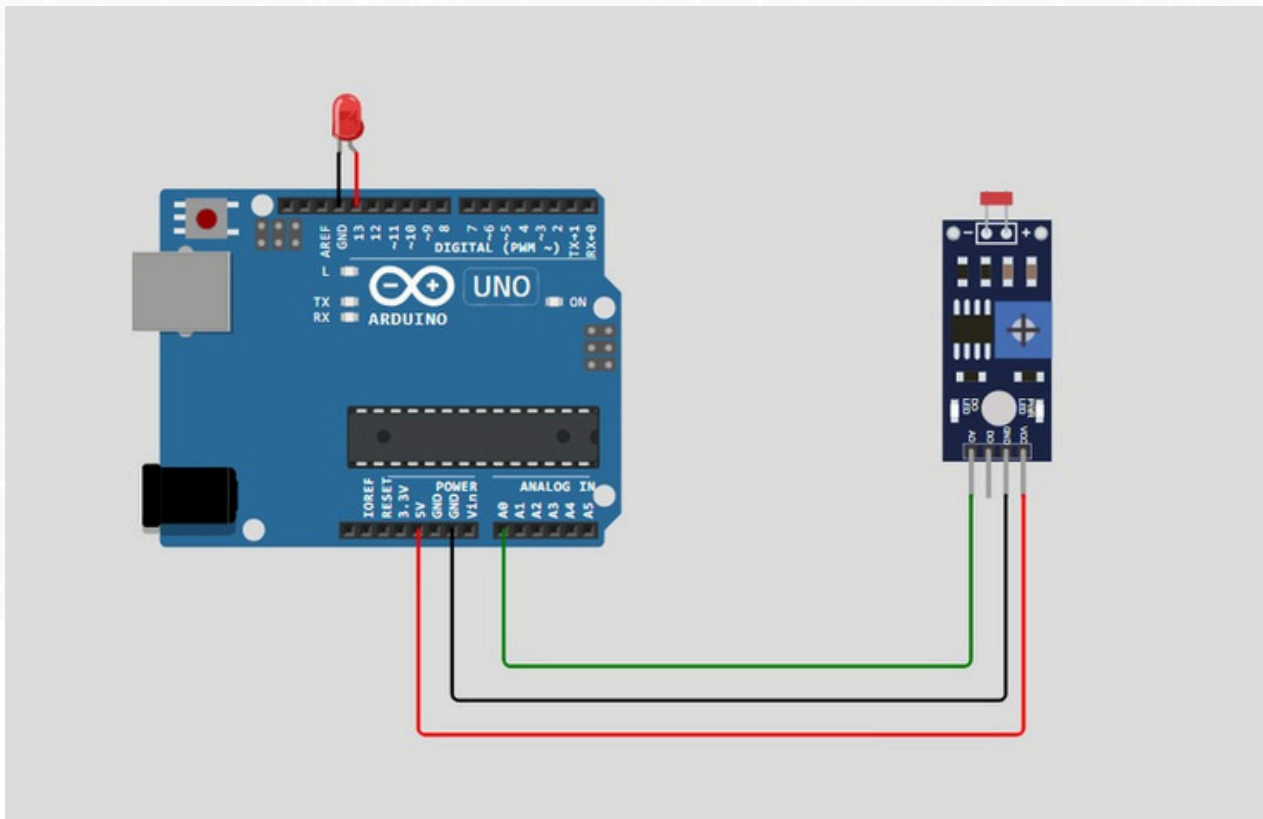
When the environment becomes dark, the Arduino automatically turns ON the LED or light source, and during bright conditions, the light turns OFF automatically. This system helps in automatic lighting control and energy saving.



Components Required

- 1) Arduino UNO
- 2) LDR (Light Dependent Resistor)
- 3) LED
- 4) Jumper wires
- 5) Arduino UNO Port (For uploading code)

Circuit Diagram



Code

```
int ldrPin = A0;
```

```
int ledPin = 13;
```

```
int ldrValue = 0;
```

```
void setup() {  
  pinMode(ledPin, OUTPUT);  
  Serial.begin(9600);  
}
```

```
void loop() {  
  ldrValue = analogRead(ldrPin);  
  Serial.println(ldrValue);  
  if (ldrValue > 500) {  
    digitalWrite(ledPin, HIGH);  
  } else {  
    digitalWrite(ledPin, LOW);  
  }  
  delay(200);  
}
```



Code Explanation

The Automatic Light ON System uses an LDR sensor and Arduino UNO to control lighting automatically based on surrounding light intensity. The LDR sensor detects the amount of light present in the environment and sends the value to the Arduino board.

The Arduino continuously reads the sensor value using the `analogRead()` function. When the surrounding environment becomes dark, the Arduino detects the change and turns ON the LED using the `digitalWrite()` function. During bright conditions, the LED automatically turns OFF.

This project helps in reducing electricity wastage and minimizes manual operation of lights. It is simple, cost-effective, and can be used in applications such as automatic street lights, smart homes, and garden lighting systems.

Applications of this Project

1. Automatic street lighting systems
2. Smart home lighting automation
3. Garden and pathway lighting
4. Parking area lighting systems
5. Outdoor lighting control systems



Conclusion

The Automatic Light ON System using Arduino UNO and LDR was successfully designed and tested. The system automatically controls the lighting based on the surrounding light intensity without human intervention.

When the environment becomes dark, the LED turns ON automatically, and during bright conditions, the LED turns OFF. This project helps in saving electricity, reducing manual effort, and improving energy efficiency.

The project is simple, cost-effective, and suitable for applications such as automatic street lights, smart homes, parking areas, and garden lighting systems.

Thank You.....!

