

Project Overview:

This project **measures ambient light intensity using an LDR sensor** and **automatically adjusts the brightness of an LED** based on the detected light level.

◆ How It Works?

1. The **LDR sensor detects light intensity** and sends an analog signal to Arduino.
2. Arduino **reads the LDR value** (0-1023) and maps it to a **PWM signal (0-255)**.
3. The LED **brightness increases in darkness** and **decreases in bright light**.
4. The **Serial Monitor displays real-time LDR values**.

◆ Key Components:

- ✓ **Arduino Uno** – Microcontroller
- ✓ **LDR Sensor** – Measures light intensity
- ✓ **LED** – Adjusts brightness based on light level
- ✓ **10K Ω Resistor** – Used in LDR voltage divider

◆ Applications:

- ✓ **Smart lighting systems**
- ✓ **Automatic night lamps**
- ✓ **Energy-efficient lighting**