**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  
✅ **10KΩ Resistor** – Used in LDR voltage divider

**🔹 Applications:**

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