**Project Overview: Potentiometer-Controlled LED Brightness**

This project **controls the brightness of an LED** using a **potentiometer**.

**Working Principle:**

1. The **potentiometer** acts as a **variable resistor**, providing an **analog input** (0-1023) based on its position.
2. The **Arduino reads** this analog value using analogRead().
3. The value is **scaled to 0-255** using the map() function.
4. The **LED brightness is adjusted** using analogWrite(), which controls the **PWM signal** sent to the LED.
5. The **current brightness value** is printed on the **Serial Monitor**.

**Use Case:**

* This setup is commonly used in **light dimmers**, **motor speed control**, and **variable power circuits**.