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**.