**Project Overview: LED Brightness Control using PWM**

This project gradually increases and decreases the brightness of an LED using **Pulse Width Modulation (PWM)** on an **Arduino board**.

**How It Works:**

1. The **LED pin (D12)** is set as an output.
2. In the loop(), the brightness of the LED is controlled using analogWrite().
3. A **for loop** increases the brightness from **0 (OFF) to 255 (FULL brightness)**.
4. Another **for loop** decreases the brightness from **255 back to 0**.
5. A small **delay of 20ms** between each brightness change creates a smooth fading effect.
6. A **200ms delay** at the end provides a brief pause before repeating the cycle.

**Applications:**

* Smooth LED dimming effects
* Indicator lights with adjustable brightness
* LED-based visual alerts