**Task 2: Fading LED (PWM Control)**

**Objective:**

**To gradually increase and decrease the brightness of an LED using Pulse Width Modulation (PWM).**

**Components Used:**

* **ESP32**
* **LED**
* **Resistor (220Ω)**
* **Breadboard & Jumper Wires**

**Circuit Explanation:**

* **The LED is connected to GPIO 14 of the ESP32.**
* **PWM is used to control brightness by adjusting duty cycle values.**

**Code Overview:**

* **The PWM frequency is set to 5000 Hz, with an 8-bit resolution.**
* **A loop gradually increases brightness (0→255) and then decreases brightness (255→0).**