**📘 ESP32-CAM LPR + MQTT + PythonAnywhere Setup Guide**

**🧰 Requirements**

* ESP32-CAM module
* USB-to-Serial adapter (for initial flashing)
* Mosquitto installed on your PC (e.g., Windows)
* PythonAnywhere account (or any server for ANPR processing)
* Wi-Fi connection
* External power source (e.g., 5V adapter for ESP32)
* MQTT client library (PubSubClient) in Arduino IDE

**🔌 Step 1: Setup Mosquitto MQTT Broker**

1. **Install Mosquitto** (Skip if already installed):
   * Windows: https://mosquitto.org/download/
2. **Create MQTT config file** (e.g., mqtt.conf):

listener 1883

allow\_anonymous true

1. **Run Mosquitto** in terminal:

mosquitto -c Y:\ExperienceGhaith\4TWIN3\Pi\mqtt.conf -v

1. You should see logs like:

mosquitto version 2.0.21 starting

Opening ipv4 listen socket on port 1883.

mosquitto version 2.0.21 running

**🖥️ View Logs from Another Terminal**

To **view messages published by the ESP32-CAM**, open a second terminal window and subscribe to the topic:

mosquitto\_sub -h localhost -t lpr/plate

📝 localhost is your PC. If you're on another machine in the network, replace it with the IP address of the PC running Mosquitto.

When the ESP32 publishes a message, you'll see something like:

{"plate":"A235FB", "image":"https://yourdomain.com/image.jpg"}

**📷 Step 2: Setup ESP32-CAM in Arduino**

1. **Install ESP32 board manager in Arduino IDE**
   * URL: https://raw.githubusercontent.com/espressif/arduino-esp32/gh-pages/package\_esp32\_index.json
2. **Install these libraries** via Library Manager:
   * PubSubClient (for MQTT)
   * WiFi (built-in)
   * WiFiClientSecure (for HTTPS POST)
3. **Upload the code** you provided (with your WiFi and MQTT IP updated).