**1. Update & Install Dependencies**

sudo apt update && sudo apt upgrade -y

sudo apt install mosquitto mosquitto-clients -y

sudo systemctl enable mosquitto

* mosquitto → MQTT broker
* mosquitto-clients → test publisher & subscriber

**2. Install Paho MQTT Python Library**

pip install paho-mqtt

If Paho library is not installed then installed it using apt

sudo apt install python3-paho-mqtt -y

Then you can import it in Python as:

import paho.mqtt.client as mqtt

**✅ Option 2: Use Virtual Environment (recommended for projects)**

Create a venv in your project folder:

python3 -m venv mqtt\_env

source mqtt\_env/bin/activate

pip install paho-mqtt

**3. Test Broker (Local Communication)**

Open two terminals on Pi:

**Subscriber Terminal:**

mosquitto\_sub -h localhost -t test/topic

**Publisher Terminal:**

mosquitto\_pub -h localhost -t test/topic -m "Hello MQTT from Raspberry Pi 5"

**4. Python MQTT Publisher (on Pi)**

import paho.mqtt.client as mqtt

import time

broker = "localhost"

port = 1883

topic = "pi5/test"

client = mqtt.Client()

client.connect(broker, port, 60)

while True:

message = "Hello from Raspberry Pi 5"

client.publish(topic, message)

print("Message sent:", message)

time.sleep(2)

**5. Python MQTT Subscriber (on Pi or another device)**

import paho.mqtt.client as mqtt

broker = "localhost"

port = 1883

topic = "pi5/test"

def on\_message(client, userdata, msg):

print(f"Received: {msg.payload.decode()} on topic {msg.topic}")

client = mqtt.Client()

client.on\_message = on\_message

client.connect(broker, port, 60)

client.subscribe(topic)

client.loop\_forever()

Find your Pi’s IP:

hostname -I

Step 1: Is Mosquitto Running?

Run:

systemctl status mosquitto

You should see **active (running)**.  
If not, start it:

sudo systemctl start mosquitto

**🔍 Step 4: Test Listener Ports**

Run on Pi:

sudo netstat -tlnp | grep 1883

You should see:

tcp 0 0 0.0.0.0:1883 0.0.0.0:\* LISTEN mosquitto

If nothing → Mosquitto not running or misconfigured.

**✅ Quick Fix Script**

If Mosquitto is installed but not listening on all interfaces, edit config:

sudo nano /etc/mosquitto/mosquitto.conf

Add:

listener 1883

allow\_anonymous true

Save → Restart broker:

sudo systemctl restart mosquitto

**Code for the My MQTT Mobile App**

import paho.mqtt.client as mqtt

import time

import random

broker = "192.168.1.50" # Replace with Pi's IP

port = 1883

topic = "iot/pi5/temperature"

client = mqtt.Client()

client.connect(broker, port, 60)

while True:

temp = round(random.uniform(25.0, 30.0), 2) # Simulated temp

client.publish(topic, temp)

print("Published:", temp)

time.sleep(2)