

## Starting Mosquitto Broker

```
C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.22631.3447]
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L:\mosquitto>mosquitto

L:\mosquitto>mosquitto -v
1742265043: mosquitto version 2.0.21 starting
1742265043: Using default config.
1742265043: Starting in local only mode. Connections will only be possible from clients running on this machine.
1742265043: Create a configuration file which defines a listener to allow remote access.
1742265043: For more details see https://mosquitto.org/documentation/authentication-methods/
1742265043: Opening ipv4 listen socket on port 1883.
1742265043: Opening ipv6 listen socket on port 1883.
1742265043: mosquitto version 2.0.21 running
```

## Publisher.py

```
publisher.py 1 X
C: > Users > anves > OneDrive > Desktop > publisher.py > ...
1  import paho.mqtt.client as mqtt
2  import json
3  import time
4
5  # Define MQTT broker and topic
6  broker = "localhost" # Change to cloud broker if needed
7  port = 1883
8  topic = "crowd/sector1/sensor123"
9
10 # Create MQTT client and connect
11 client = mqtt.Client()
12 client.connect(broker, port, 60)
13
14 # Publish sensor data periodically
15 while True:
16     message = {
17         "sector": "sector1",
18         "device_id": "sensor123",
19         "timestamp": time.strftime("%Y-%m-%d %H:%M:%S"),
20         "crowd_density": 85
21     }
22     client.publish(topic, json.dumps(message), qos=1)
23     print(f"Published: {message}")
24     time.sleep(5) # Send data every 5 seconds
25
```

## Subscriber.py

```
publisher.py 1 subscriber.py 1 X
C: > Users > anves > OneDrive > Desktop > subscriber.py > ...
1 import paho.mqtt.client as mqtt
2
3 # Callback function when a message is received
4 def on_message(client, userdata, message):
5     print(f"Received message: {message.payload.decode()} from {message.topic}")
6
7 # Define MQTT broker and topic
8 broker = "localhost"
9 port = 1883
10 topic = "crowd/sector1/#" # Subscribe to all devices in Sector 1
11
12 # Create MQTT client and connect
13 client = mqtt.Client()
14 client.on_message = on_message
15 client.connect(broker, port, 60)
16 client.subscribe(topic, qos=1)
17
18 # Listen for incoming messages
19 client.loop_forever()
```

## published

```
PS C:\Users\anves> & C:\Users\anves\AppData\Local\Microsoft\WindowsApps\python3.12.exe c:\Users\anves\OneDrive\Desktop\publisher.py
c:\Users\anves\OneDrive\Desktop\publisher.py:11: DeprecationWarning: Callback API version 1 is deprecated, update to latest version
client = mqtt.Client()
Published: {'sector': 'sector1', 'device_id': 'sensor123', 'timestamp': '2025-03-18 08:31:43', 'crowd_density': 85}
Published: {'sector': 'sector1', 'device_id': 'sensor123', 'timestamp': '2025-03-18 08:31:48', 'crowd_density': 85}
Published: {'sector': 'sector1', 'device_id': 'sensor123', 'timestamp': '2025-03-18 08:31:53', 'crowd_density': 85}
```

## Subscribed

```
broker = "localhost"
port = 1883
topic = "crowd/sector1/#" # Subscribe to all devices in Sector 1

# Create MQTT client and connect
client = mqtt.Client()
client.on_message = on_message
client.connect(broker, port, 60)
client.subscribe(topic, qos=1)

# Listen for incoming messages
client.loop_forever()
3] 26.8s

C:\Users\anves\AppData\Local\Temp\ipykernel_12896\4028585870.py:13: DeprecationWarning: Callback API version 1 is deprecated, update to latest version
client = mqtt.Client()
Received message: {"sector": "sector1", "device_id": "sensor123", "timestamp": "2025-03-18 08:31:53", "crowd_density": 85} from crowd/sector1/sensor123
Received message: {"sector": "sector1", "device_id": "sensor123", "timestamp": "2025-03-18 08:31:58", "crowd_density": 85} from crowd/sector1/sensor123
Received message: {"sector": "sector1", "device_id": "sensor123", "timestamp": "2025-03-18 08:32:03", "crowd_density": 85} from crowd/sector1/sensor123
Received message: {"sector": "sector1", "device_id": "sensor123", "timestamp": "2025-03-18 08:32:08", "crowd_density": 85} from crowd/sector1/sensor123
Received message: {"sector": "sector1", "device_id": "sensor123", "timestamp": "2025-03-18 08:32:13", "crowd_density": 85} from crowd/sector1/sensor123
```

## Mosquito broker

```
C:\Windows\System32\cmd.e x + v
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L:\mosquitto>mosquitto -v
1742266987: mosquitto version 2.0.21 starting
1742266987: Using default config.
1742266987: Starting in local only mode. Connections will only be possible from clients running on this machine.
1742266987: Create a configuration file which defines a listener to allow remote access.
1742266987: For more details see https://mosquitto.org/documentation/authentication-methods/
1742266987: Opening ipv4 listen socket on port 1883.
1742266987: Opening ipv6 listen socket on port 1883.
1742266987: mosquitto version 2.0.21 running
1742266992: New connection from ::1:50838 on port 1883.
1742266992: New client connected from ::1:50838 as auto-F081341A-4DEE-811A-C170-EA4E42C2BE16 (p2, c1, k60).
1742266992: No will message specified.
1742266992: Sending CONNACK to auto-F081341A-4DEE-811A-C170-EA4E42C2BE16 (0, 0)
1742266992: Received SUBSCRIBE from auto-F081341A-4DEE-811A-C170-EA4E42C2BE16
1742266992:   crowd/sector1/# (QoS 1)
1742266992: auto-F081341A-4DEE-811A-C170-EA4E42C2BE16 1 crowd/sector1/#
1742266992: Sending SUBACK to auto-F081341A-4DEE-811A-C170-EA4E42C2BE16
1742267018: New connection from ::1:50841 on port 1883.
1742267018: New client connected from ::1:50841 as auto-4503FE95-7519-665F-1317-E645FE6B88D7 (p2, c1, k60).
1742267018: No will message specified.
1742267018: Sending CONNACK to auto-4503FE95-7519-665F-1317-E645FE6B88D7 (0, 0)
1742267018: Received PUBLISH from auto-4503FE95-7519-665F-1317-E645FE6B88D7 (d0, q1, r0, m1, 'crowd/sector1/sensor123',
... (104 bytes))
1742267018: Sending PUBLISH to auto-F081341A-4DEE-811A-C170-EA4E42C2BE16 (d0, q1, r0, m1, 'crowd/sector1/sensor123', ...
(104 bytes))
1742267018: Sending PUBACK to auto-4503FE95-7519-665F-1317-E645FE6B88D7 (m1, rc0)
1742267018: Received PUBACK from auto-F081341A-4DEE-811A-C170-EA4E42C2BE16 (Mid: 1, RC:0)
1742267023: Received PUBLISH from auto-4503FE95-7519-665F-1317-E645FE6B88D7 (d0, q1, r0, m2, 'crowd/sector1/sensor123',
```