

Báo cáo IoT ngày 22/10/2025

a)

The screenshot shows a Python script named `publisher.py` in a code editor. The script is designed to publish data to an MQTT broker. It includes a `try` block with a `while` loop that runs for 60 seconds, generating random temperature and humidity data and publishing it. An `except KeyboardInterrupt` block handles manual interruption. The output window shows a series of JSON payloads being sent, each containing `client_id`, `temperature`, `humidity`, and `timestamp`.

```
44 try:
45     while time.time() - start_time < 60: # gửi trong 60 giây
46         data = {
47             "client_id": CLIENT_ID,
48             "temperature": round(random.uniform(25.0, 30.0), 2),
49             "humidity": round(random.uniform(58.0, 88.0), 2),
50             "timestamp": int(time.time())
51         }
52         json_data = json.dumps(data)
53         client.publish(DATA_TOPIC, json_data, qos=2)
54         print(f"Sent: {json_data}")
55         time.sleep(1)
56
57 except KeyboardInterrupt:
58     print("⚠ Interrupted manually")
59
60 # Kết thúc và báo offline
61 client.publish(STATUS_TOPIC, payload="offline", qos=2, retain=True)
62 client.loop_stop()
```

Run subscriber publisher

Sent: {"client_id": "esp32-01", "temperature": 26.47, "humidity": 54.26, "timestamp": 1761149529}
Sent: {"client_id": "esp32-01", "temperature": 28.75, "humidity": 66.82, "timestamp": 1761149530}
Sent: {"client_id": "esp32-01", "temperature": 27.43, "humidity": 58.31, "timestamp": 1761149531}
Sent: {"client_id": "esp32-01", "temperature": 27.26, "humidity": 58.22, "timestamp": 1761149532}
Sent: {"client_id": "esp32-01", "temperature": 26.68, "humidity": 59.23, "timestamp": 1761149533}
Sent: {"client_id": "esp32-01", "temperature": 28.66, "humidity": 59.2, "timestamp": 1761149534}
Sent: {"client_id": "esp32-01", "temperature": 28.81, "humidity": 63.06, "timestamp": 1761149535}
Sent: {"client_id": "esp32-01", "temperature": 25.21, "humidity": 68.8, "timestamp": 1761149536}
Sent: {"client_id": "esp32-01", "temperature": 28.69, "humidity": 69.93, "timestamp": 1761149537}
Sent: {"client_id": "esp32-01", "temperature": 27.88, "humidity": 78.27, "timestamp": 1761149538}
Sent: {"client_id": "esp32-01", "temperature": 27.31, "humidity": 55.57, "timestamp": 1761149539}
Sent: {"client_id": "esp32-01", "temperature": 29.91, "humidity": 77.75, "timestamp": 1761149540}
Sent: {"client_id": "esp32-01", "temperature": 25.85, "humidity": 70.07, "timestamp": 1761149541}
Sent: {"client_id": "esp32-01", "temperature": 29.77, "humidity": 57.92, "timestamp": 1761149542}

b)

The screenshot shows a Python script named `subscriber.py` in a code editor. The script sets up an MQTT client, connects to a broker, and subscribes to a topic. It includes a `handle_data` function to process incoming messages by writing them to a log file. The output window shows the received JSON payloads and the corresponding log entries.

```
87 def handle_data(client_id, json_payload): 1 usage
88
89     log_files[client_id].write(line)
90     log_files[client_id].flush()
91     print(f"📄 Ghi log: {line.strip()}")
92
93 except json.JSONDecodeError:
94     print("⚠ Lỗi parse JSON")
95
96 # -----
97 # 4. Kết nối broker và vòng lặp
98 # -----
99
100 client = mqtt.Client(mqtt.CallbackAPIVersion.VERSION2, client_id=CLIENT_ID)
101 client.on_connect = on_connect
102 client.on_message = on_message
103 client.tls_set()
104
105 client.username_pw_set(username="ttien", password="A2k61@yoo")
106
107 client.connect(BROKER, PORT, keepalive=60)
```

Run subscriber publisher

📄 Ghi log: 1761149541,1761149541,25.85,70.07
Received: sensor/esp32-01/data → {"client_id": "esp32-01", "temperature": 29.77, "humidity": 57.92, "timestamp": 1761149542}
📄 Ghi log: 1761149542,1761149542,29.77,57.92
Received: sensor/esp32-01/data → {"client_id": "esp32-01", "temperature": 29.56, "humidity": 51.54, "timestamp": 1761149543}
📄 Ghi log: 1761149543,1761149543,29.56,51.54
Received: sensor/esp32-01/data → {"client_id": "esp32-01", "temperature": 28.62, "humidity": 58.88, "timestamp": 1761149544}
📄 Ghi log: 1761149544,1761149544,28.62,58.88
Received: sensor/esp32-01/data → {"client_id": "esp32-01", "temperature": 27.47, "humidity": 63.47, "timestamp": 1761149545}
📄 Ghi log: 1761149545,1761149545,27.47,63.47

c)

