innobase

Maeng JI Woo

기존 코드

```python
# pip install paho-mqtt
import paho.mqtt.client as mqtt
import time
import base64

Hostname = "mqtt.thingstream.io"
DeviceID = "device:401bd3e2-fb92-42d9-97dc-f990d6467d94"
Username = "MX5CMIDPC0QQFSBOJXO6"
Password = "oga/JJJ3E1EWT+xvUF42k2qwEXrlZiDGP9FwxUca"
dataset = []

def message_handler(client, userdata, message):
    print("\n\nReceived message\n" + str(message.payload.decode("utf-8")) + "\n" + message.topic +
          "\nQoS: " + str(message.qos))

def on_connect(client, userdata, flags, reason_code, properties):
    if reason_code == 0:
        print("connected OK")
    else:
        print("Bad connection Returned code=", reason_code)

def on_disconnect(client, userdata, flags, rc=0):
    print(str(rc))

def on_subscribe(client, userdata, mid, granted_qos, properties=None):
    print("subscribed: " + str(mid) + " " + str(granted_qos))

def on_message(client, userdata, msg):
    print(str(msg.payload.decode("utf-8")))

# 클라이언트 설정
client = mqtt.Client(client_id=DeviceID, callback_api_version=mqtt.CallbackAPIVersion.VERSION2)

# 핸들러 연결
client.on_connect = on_connect
client.on_disconnect = on_disconnect
client.on_subscribe = on_subscribe
client.on_message = message_handler

# 유저 네임
client.username_pw_set(username=Username, password=Password)

# 호스트 네임
client.connect(Hostname)

# 구독 토픽 지정
client.subscribe( topic: 'htns/com/things/tms/hicos2/korea/tracking/004016', qos: 2)

# 무한 반복
client.loop_forever()
```

Python 프로그램

- MQTT 데이터를 불러오는 프로그램

```
Run    connect
C:\Users\MaengJiwoo\AppData\Local\Microsoft\WindowsApps\pytho
connected OK
subscribed: 1 [ReasonCode(Suback, 'Granted QoS 2')]


Received message
{"G":["ACgQGQETEg0dS8nkOBX7DNgAAAAACQAAYxIEAgoBABkAHgoef/9//w
htns/com/things/tms/hicos2/korea/tracking/004016
QoS: 0

[MQTT_PYTHON] > connect.py    22:50  CRLF  UTF-8  4 spaces  Python 3.7
```

mqtt_messages_20241224_143021
mqtt_messages_20241224_142521
mqtt_messages_20241224_142021
mqtt_messages_20241224_141520

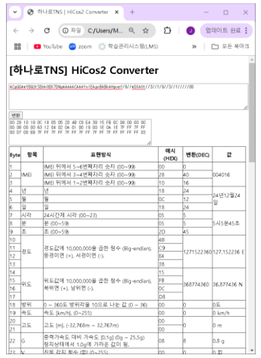
엑셀 파일 저장

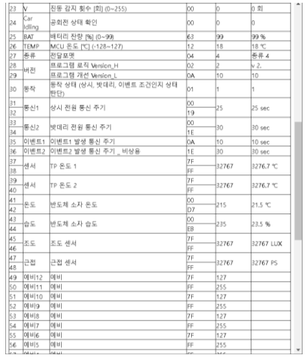
- 4가지 항목 저장 (Timestamp, Message, Topic, QoS)
- Message에 10개의 데이터가 한번에 수신
- 데이터 저장할 때마다 파일이 새로 생성

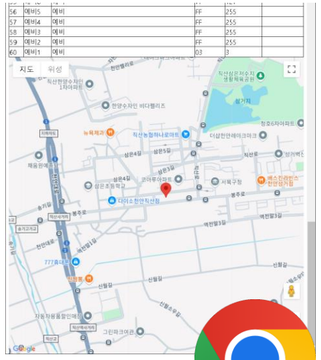
	A	B	C	D
1	Timestamp	Message	Topic	QoS
2	2024-12-24 14:10:21	{"G":["ACgQGAwYBQUtS8nkOBX7DNgAAAAACAAAYxIEAgoBABkAHgoef/9//wDXAOt//3//f9//3//f////8D","ACgQGAwYBQYPS8nkOBX7DNgAAAAACAAAYxIEAgoBABkAHgoef/9//wDYAOp//3//f9//3//f////8D","ACgQGAwYBQYtS8nkOBX7DNgAAAAACAAAYxIEAgoBABkAHgoef/9//wDZAOh//3//f9//3//f////8D","ACgQGAwYBQcPS8nkOBX7DNgAAAAACAAAYxIEAgoBABkAHgoef/9//wDZAOh//3//f9//3//f////8D","ACgQGAwYBQctS8nkOBX7DNgAAAAACAAAYxIEAgoBABkAHgoef/9//wDYAOh//3//f9//3//f////8D","ACgQGAwYBQgPS8nkOBX7DNgAAAAACAAAYxMEAgoBABkAHgoef/9//wDXAOh//3//f9//3//f////8D","ACgQGAwYBQgtS8nkOBX7DNgAAAAACAAAYxIEAgoBABkAHgoef/9//wDXAOd//3//f9//3//f////8D","ACgQGAwYBQkPS8nkOBX7DNgAAAAACAAAYxIEAgoBABkAHgoef/9//wDXAOd//3//f9//3//f////8D","ACgQGAwYBQktS8nkOBX7DNgAAAAACAAAYxIEAgoBABkAHgoef/9//wDVAOd//3//f9//3//f////8D","ACgQGAwYBQoPS8nkOBX7DNgAAAAACAAAYxIEAgoBABkAHgoef/9//wDVAOp//3//f9//3//f////8D"]}	htns/com/things/tms/hicos2/korea/tracking/004016	0
3				

데이터 변환

- Message의 데이터를
  복사해서 넣으면,
  변환해서 값을 보여줌







file:///C:/Users/MaengJiwoo/OneDrive%20-%20%ED%98%B8%EC%84%9C%EB%8C%80%ED%95%99%EA%B5%90/%EB%B0%94%ED%83%95%20%ED%99%94%EB%A9%B4/intern/innobase/%EC%BD%94%EB%93%9C%20%EB%B3%80%ED%99%98html/20210716_%ED%95%98%EB%82%98%EB%A1%9CTNS_HiCos2Converter_rev05/HiCos2.html

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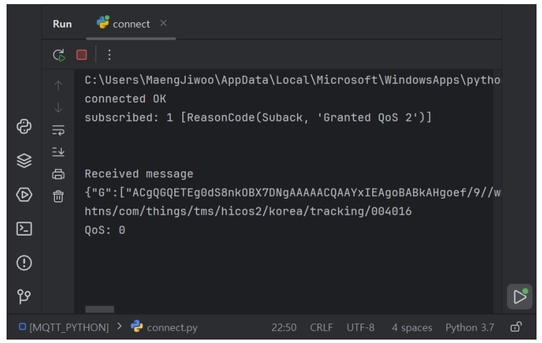
기존 코드

Python 프로그램

- MQTT 데이터를 불러오는 프로그램



Received message

- 30초 주기로 데이터를 모아, 총 10개가 되면 MQTT 통신을 통해 보냄

  ex) 00:00:00 / 00:00:30 / 00:01:00 / 00:01:30 / 00:02:00 / 00:02:30

  00:03:00 / 00:03:30 / 00:04:00 / 00:04:30

- Received messag는 Python 프로그램을 통해 받은 것

Received message
{"G":["ACgQGQETEg0dS8nkOBX7DNgAAAAACQAAYxIEAgoBABkAHgoef/9//wDYANx//3//f/9//3//f//
///8D","ACgQGQETEg07S8nkOBX7DNgAAAAACAAAYxIEAgoBABkAHgoef/9//wDYANx//3//f/9//3//f
/////8D","ACgQGQETEg4dS8nkOBX7DNgAAAAACAAAYxIEAgoBABkAHgoef/9//wDYANp//3//f/9//3/
/f////8D","ACgQGQETEg47S8nkOBX7DNgAAAAACAAAYxIEAgoBABkAHgoef/9//wDZANt//3//f/9//
3//f////8D","ACgQGQETEg8dS8nkOBX7DNgAAAAACAAAYxIEAgoBABkAHgoef/9//wDZANt//3//f/9
//3//f////8D","ACgQGQETEg87S8nkOBX7DNgAAAAACAAAYxIEAgoBABkAHgoef/9//wDYANx//3//f/
9//3//f////8D","ACgQGQETEhAdS8nkOBX7DNgAAAAACAAAYxIEAgoBABkAHgoef/9//wDXANp//3/
/f/9//3//f////8D","ACgQGQETEhA7S8nkOBX7DNgAAAAACAAAYxIEAgoBABkAHgoef/9//wDYANx//
3//f/9//3//f////8D","ACgQGQETEhEdS8nkOBX7DNgAAAAACQAAYxIEAgoBABkAHgoef/9//wDXANx
//3//f/9//3//f////8D","ACgQGQETEhE7S8nkOBX7DNgAAAAACAAAYxIEAgoBABkAHgoef/9//wDXA
Nx//3//f/9//3//f////8D"]}
htns/com/things/tms/hicos2/korea/tracking/004016
QoS: 0

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기존 코드

```python
# pip install paho-mqtt
import paho.mqtt.client as mqtt
import time
import base64

Hostname = "mqtt.thingstream.io"
DeviceID = "device:491bd3e2-fb92-42d9-97dc-f990d6467d94"
Username = "MX5CMIDPC0QQFSBOJXQ6"
Password = "oga/JJJ3E1EWT+xvUF42k2qwEXrlZiDGP9FwxUca"
dataset = []

def message_handler(client, userdata, message):
    print("\n\nReceived message\n" + str(message.payload.decode("utf-8")) + "\n" + message.topic +
          "\nQoS: " + str(message.qos))

def on_connect(client, userdata, flags, reason_code, properties):
    if reason_code == 0:
        print("connected OK")
    else:
        print("Bad connection Returned code=", reason_code)

def on_disconnect(client, userdata, flags, rc=0):
    print(str(rc))

def on_subscribe(client, userdata, mid, granted_qos, properties=None):
    print("subscribed: " + str(mid) + " " + str(granted_qos))

def on_message(client, userdata, msg):
    print(str(msg.payload.decode("utf-8")))

# 클라이언트 접속
client = mqtt.Client(client_id=DeviceID, callback_api_version=mqtt.CallbackAPIVersion.VERSION2)

# 핸들러 연결
client.on_connect = on_connect
client.on_disconnect = on_disconnect
client.on_subscribe = on_subscribe
client.on_message = message_handler

# 접속 내정
client.username_pw_set(username=Username, password=Password)

# 호스트 내정
client.connect(Hostname)

# 구독 토픽 지정
client.subscribe( topic 'htns/com/things/tms/hicos2/korea/tracking/004016', qos 2)

# 무한 반복
client.loop_forever()
```

Python 프로그램

- MQTT 데이터를 불러오는 프로그램

```
Run    connect
C:\Users\MaengJiwoo\AppData\Local\Microsoft\WindowsApps\pytho
connected OK
subscribed: 1 [ReasonCode(Suback, 'Granted QoS 2')]


Received message
{"G":["ACgQGQETEg0dS8nkOBX7DNgAAAAACQAAYxIEAgoBABkAHgoef/9//w
htns/com/things/tms/hicos2/korea/tracking/004016
QoS: 0

[MQTT_PYTHON] > connect.py   22:50  CRLF  UTF-8  4 spaces  Python 3.7
```

mqtt_messages_20241224_143021
mqtt_messages_20241224_142521
mqtt_messages_20241224_142021
mqtt_messages_20241224_141520

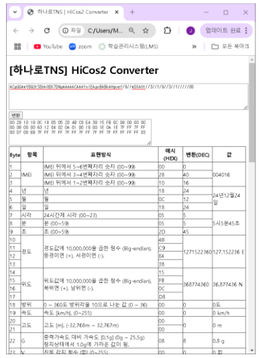
엑셀 파일 저장

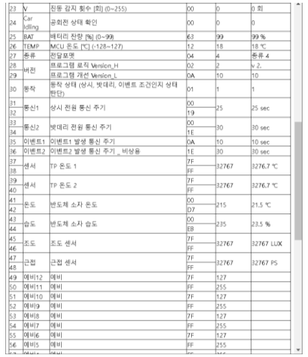
- 4가지 항목 저장 (Timestamp, Message, Topic, QoS)
- Message에 10개의 데이터가 한번에 수신
- 데이터 저장할 때마다 파일이 새로 생성

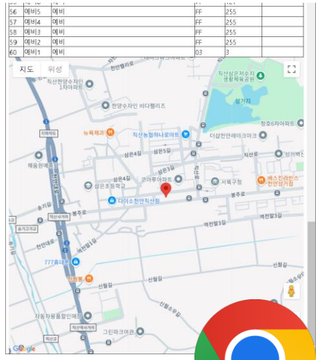
	A	B	C	D
1	Timestamp	Message	Topic	QoS
2	2024-12-24 14:10:21	{"G":["ACgQGAwYBQUtS8nkOBX7DNgAAAAACAAAYxIEAgoBABkAHgoef/9//wDXAOt//3//f9//3//f////8D","ACgQGAwYBQYPS8nkOBX7DNgAAAAACAAAYxIEAgoBABkAHgoef/9//wDYAOp//3//f9//3//f////8D","ACgQGAwYBQYtS8nkOBX7DNgAAAAACAAAYxIEAgoBABkAHgoef/9//wDZAOh//3//f9//3//f////8D","ACgQGAwYBQcPS8nkOBX7DNgAAAAACAAAYxIEAgoBABkAHgoef/9//wDZAOh//3//f9//3//f////8D","ACgQGAwYBQctS8nkOBX7DNgAAAAACAAAYxIEAgoBABkAHgoef/9//wDYAOh//3//f9//3//f////8D","ACgQGAwYBQgPS8nkOBX7DNgAAAAACAAAYxMEAgoBABkAHgoef/9//wDXAOh//3//f9//3//f////8D","ACgQGAwYBQgtS8nkOBX7DNgAAAAACAAAYxIEAgoBABkAHgoef/9//wDXAOd//3//f9//3//f////8D","ACgQGAwYBQkPS8nkOBX7DNgAAAAACAAAYxIEAgoBABkAHgoef/9//wDXAOd//3//f9//3//f////8D","ACgQGAwYBQktS8nkOBX7DNgAAAAACAAAYxIEAgoBABkAHgoef/9//wDVAOd//3//f9//3//f////8D","ACgQGAwYBQoPS8nkOBX7DNgAAAAACAAAYxIEAgoBABkAHgoef/9//wDVAOp//3//f9//3//f////8D"]}	htns/com/things/tms/hicos2/korea/tracking/004016	0
3				

데이터 변환

- Message의 데이터를
  복사해서 넣으면,
  변환해서 값을 보여줌







file:///C:/Users/MaengJiwoo/OneDrive%20-%20%ED%98%B8%EC%84%9C%EB%8C%80%ED%95%99%EA%B5%90/%EB%B0%94%ED%83%95%20%ED%99%94%EB%A9%B4/intern/innobase/%EC%BD%94%EB%93%9C%20%EB%B3%80%ED%99%98html/20210716_%ED%95%98%EB%82%98%EB%A1%9CTNS_HiCos2Converter_rev05/HiCos2.html

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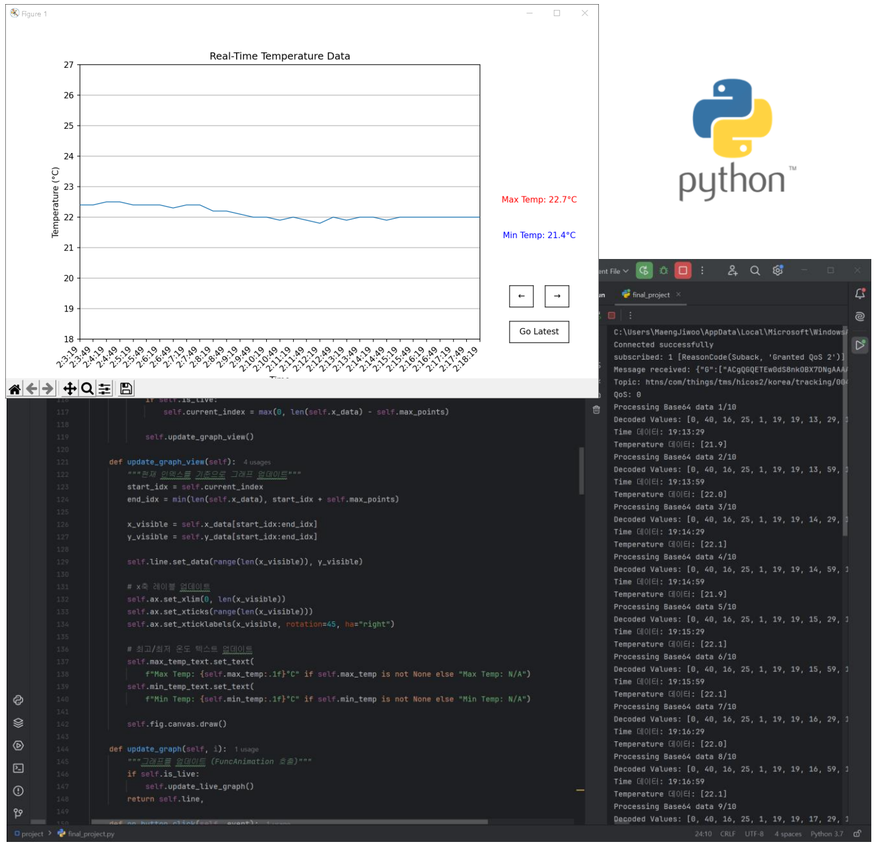
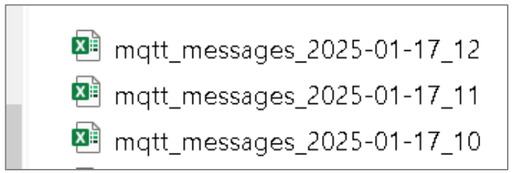
수정 코드

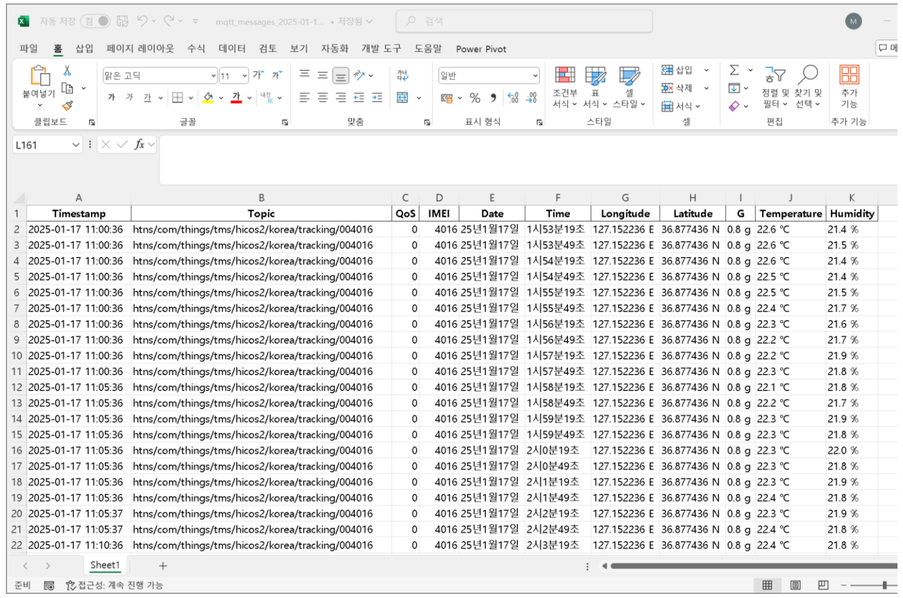


python™

Python 프로그램

- MQTT 데이터를 불러오는 프로그램
- 데이터 변환 및 처리
- 데이터 실시간 시각화 및 최고/최저 온도 표기
- 특정 데이터 8가지 항목만 따로 저장





	Timestamp	Topic	QoS	IMEI	Date	Time	Longitude	Latitude	G	Temperature	Humidity
2	2025-01-17 11:00:36	htns/com/things/tms/hicos2/korea/tracking/004016	0	4016	25년1월17일	1시53분19초	127.152236 E	36.877436 N	0.8 g	22.6 ℃	21.4 %
3	2025-01-17 11:00:36	htns/com/things/tms/hicos2/korea/tracking/004016	0	4016	25년1월17일	1시53분49초	127.152236 E	36.877436 N	0.8 g	22.6 ℃	21.5 %
4	2025-01-17 11:00:36	htns/com/things/tms/hicos2/korea/tracking/004016	0	4016	25년1월17일	1시54분19초	127.152236 E	36.877436 N	0.8 g	22.6 ℃	21.4 %
5	2025-01-17 11:00:36	htns/com/things/tms/hicos2/korea/tracking/004016	0	4016	25년1월17일	1시54분49초	127.152236 E	36.877436 N	0.8 g	22.5 ℃	21.4 %
6	2025-01-17 11:00:36	htns/com/things/tms/hicos2/korea/tracking/004016	0	4016	25년1월17일	1시55분19초	127.152236 E	36.877436 N	0.8 g	22.5 ℃	21.5 %
7	2025-01-17 11:00:36	htns/com/things/tms/hicos2/korea/tracking/004016	0	4016	25년1월17일	1시55분49초	127.152236 E	36.877436 N	0.8 g	22.4 ℃	21.7 %
8	2025-01-17 11:00:36	htns/com/things/tms/hicos2/korea/tracking/004016	0	4016	25년1월17일	1시56분19초	127.152236 E	36.877436 N	0.8 g	22.3 ℃	21.6 %
9	2025-01-17 11:00:36	htns/com/things/tms/hicos2/korea/tracking/004016	0	4016	25년1월17일	1시56분49초	127.152236 E	36.877436 N	0.8 g	22.2 ℃	21.7 %
10	2025-01-17 11:00:36	htns/com/things/tms/hicos2/korea/tracking/004016	0	4016	25년1월17일	1시57분19초	127.152236 E	36.877436 N	0.8 g	22.2 ℃	21.9 %
11	2025-01-17 11:00:36	htns/com/things/tms/hicos2/korea/tracking/004016	0	4016	25년1월17일	1시57분49초	127.152236 E	36.877436 N	0.8 g	22.3 ℃	21.8 %
12	2025-01-17 11:05:36	htns/com/things/tms/hicos2/korea/tracking/004016	0	4016	25년1월17일	1시58분19초	127.152236 E	36.877436 N	0.8 g	22.1 ℃	21.8 %
13	2025-01-17 11:05:36	htns/com/things/tms/hicos2/korea/tracking/004016	0	4016	25년1월17일	1시58분49초	127.152236 E	36.877436 N	0.8 g	22.2 ℃	21.7 %
14	2025-01-17 11:05:36	htns/com/things/tms/hicos2/korea/tracking/004016	0	4016	25년1월17일	1시59분19초	127.152236 E	36.877436 N	0.8 g	22.3 ℃	21.9 %
15	2025-01-17 11:05:36	htns/com/things/tms/hicos2/korea/tracking/004016	0	4016	25년1월17일	1시59분49초	127.152236 E	36.877436 N	0.8 g	22.3 ℃	21.8 %
16	2025-01-17 11:05:36	htns/com/things/tms/hicos2/korea/tracking/004016	0	4016	25년1월17일	2시0분19초	127.152236 E	36.877436 N	0.8 g	22.3 ℃	22.0 %
17	2025-01-17 11:05:36	htns/com/things/tms/hicos2/korea/tracking/004016	0	4016	25년1월17일	2시0분49초	127.152236 E	36.877436 N	0.8 g	22.3 ℃	21.8 %
18	2025-01-17 11:05:36	htns/com/things/tms/hicos2/korea/tracking/004016	0	4016	25년1월17일	2시1분19초	127.152236 E	36.877436 N	0.8 g	22.3 ℃	21.9 %
19	2025-01-17 11:05:36	htns/com/things/tms/hicos2/korea/tracking/004016	0	4016	25년1월17일	2시1분49초	127.152236 E	36.877436 N	0.8 g	22.4 ℃	21.8 %
20	2025-01-17 11:05:37	htns/com/things/tms/hicos2/korea/tracking/004016	0	4016	25년1월17일	2시2분19초	127.152236 E	36.877436 N	0.8 g	22.3 ℃	21.9 %
21	2025-01-17 11:05:37	htns/com/things/tms/hicos2/korea/tracking/004016	0	4016	25년1월17일	2시2분49초	127.152236 E	36.877436 N	0.8 g	22.4 ℃	21.8 %
22	2025-01-17 11:10:36	htns/com/things/tms/hicos2/korea/tracking/004016	0	4016	25년1월17일	2시3분19초	127.152236 E	36.877436 N	0.8 g	22.4 ℃	21.8 %

엑셀 파일 저장

- 수집된 데이터를 정각마다 새로운 엑셀 파일에 저장
- 특정 데이터 8가지 항목만 엑셀 저장
  (IMEI, 연월일, 시각, 경도, 위도, G, 온도, 습도)

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변화

수정 전

- 데이터 수집
- 데이터 변환 및 처리
- 데이터 저장

수정 후

- 데이터 수집
- 데이터 변환 및 처리
- 실시간 데이터 시각화
- 최고/최저 데이터 표시
- 정각 단위 데이터 저장

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주요 기능

MQTT 통신을 통한 실시간 데이터 수집, 그래프 시각화 및 시간 단위 데이터 저장 시스템 구현

1. 데이터 수집

- MQTT 프로토콜을 사용하여 IoT 디바이스 또는 센서에서 실시간으로 데이터를 수집.
- paho.mqtt 라이브러리를 통해 메시지 처리 및 데이터 큐에 저장.

2. 데이터 변환 및 처리

- Base64 형식으로 수신된 데이터를 정수 또는 부호 비트 처리를 통해 변환.
- 변환된 데이터를 적절히 매핑하여 온도, 시간 등으로 활용.

주요 기능

MQTT 통신을 통한 실시간 데이터 수집, 그래프 시각화 및 시간 단위 데이터 저장 시스템 구현

3. 실시간 데이터 시각화

- 수집된 데이터를 matplotlib를 활용하여 실시간으로 그래프에 표시.
- 실시간 모드와 과거 데이터 탐색 기능(좌/우 버튼으로 데이터 범위 이동) 지원.

4. 최고/최저 데이터 표시

- 수집된 데이터에서 최고 및 최저 값을 실시간으로 계산하여 그래프 영역에 표시

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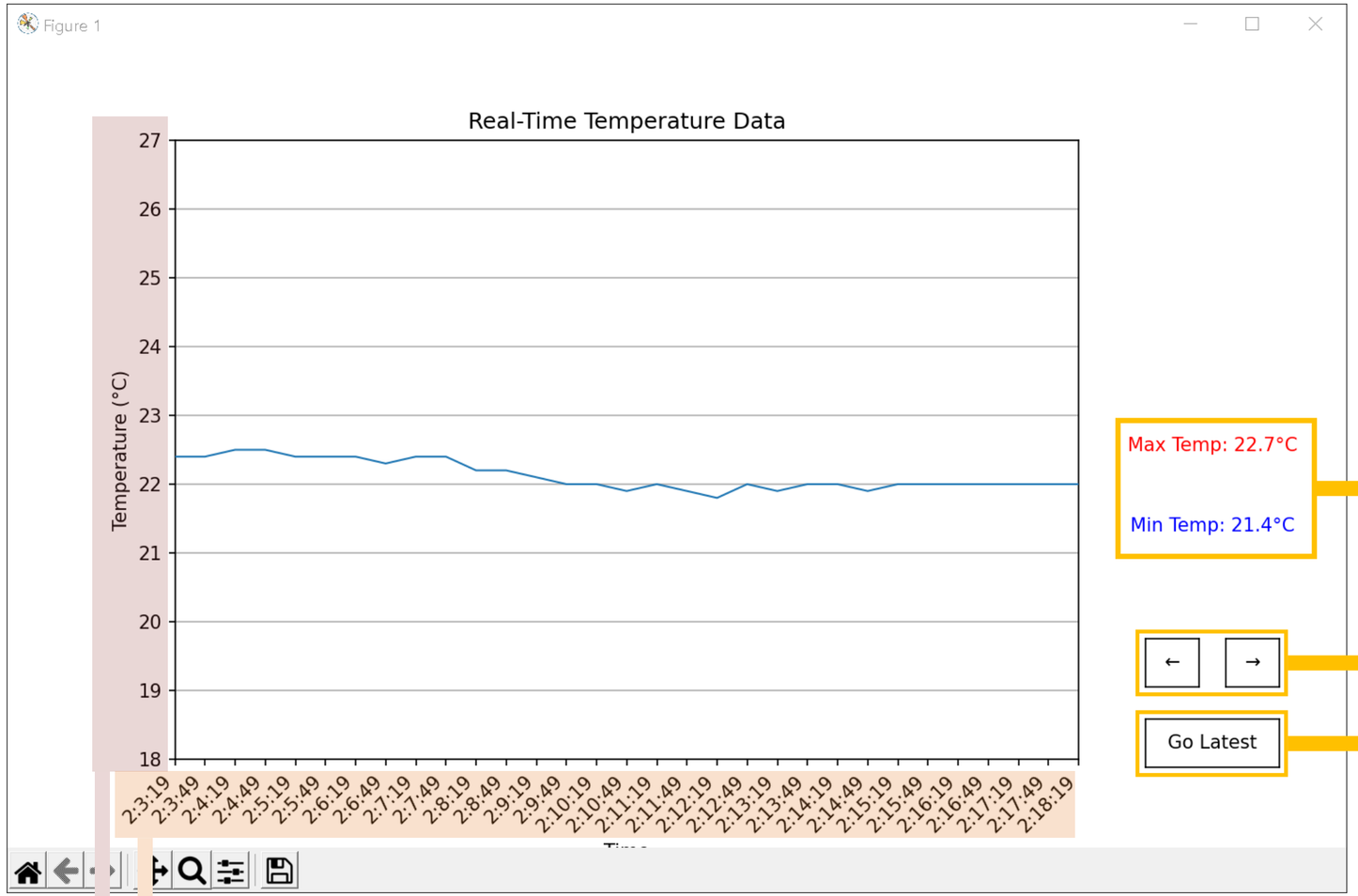
데이터 시각화



Max Temp: 22.7°C

Min Temp: 21.4°C

최고 온도

최저 온도

←

→

화면 이동(과거 데이터 확인용)

Go Latest

가장 최신 데이터로 이동

X축: 실제 시간

Y축: 온도

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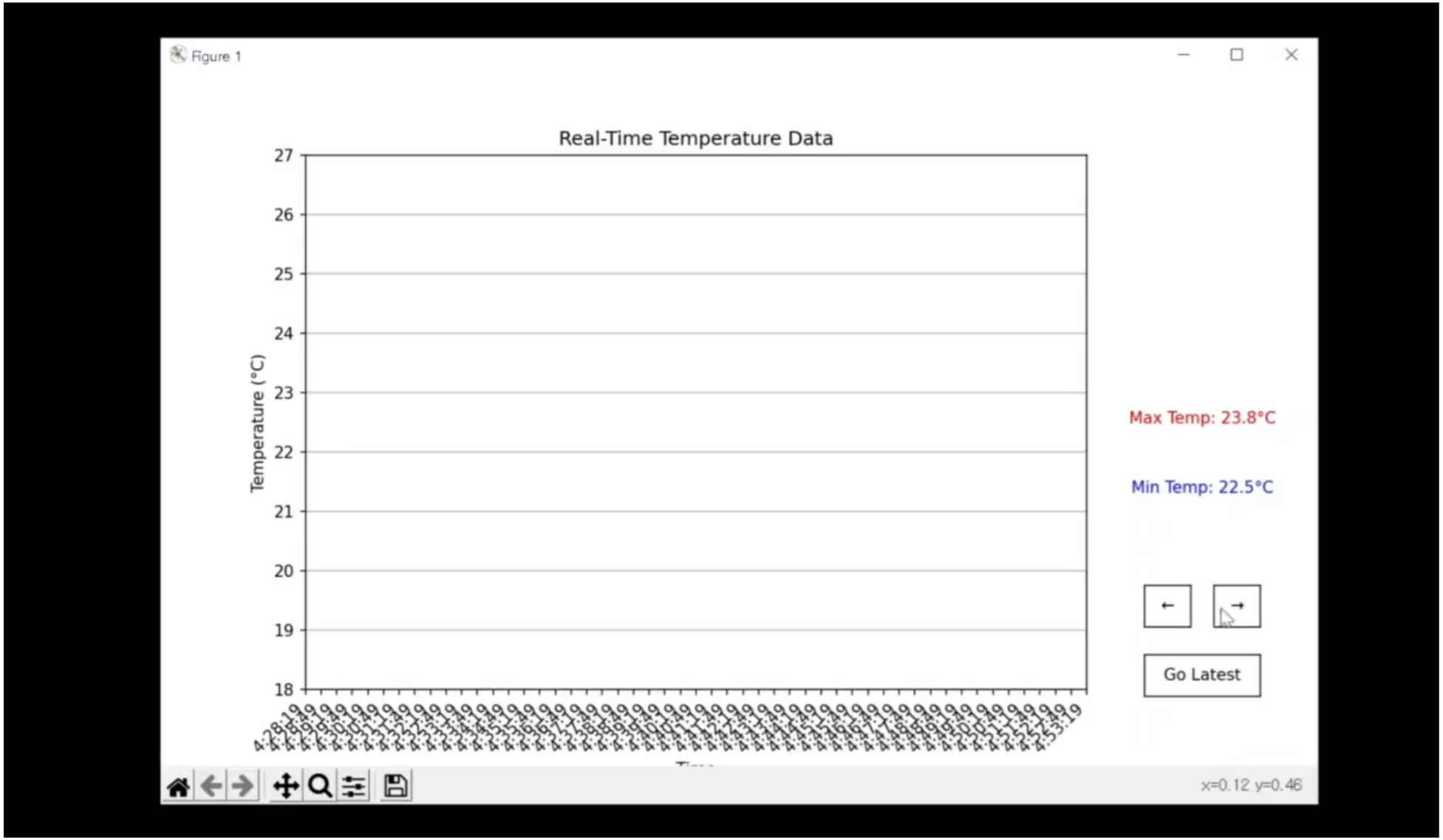
데이터 시각화



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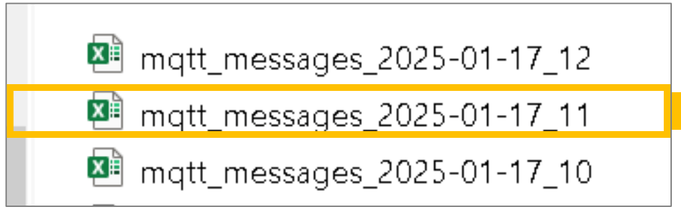
주요 기능

MQTT 통신을 통한 실시간 데이터 수집, 그래프 시각화 및 시간 단위 데이터 저장 시스템 구현

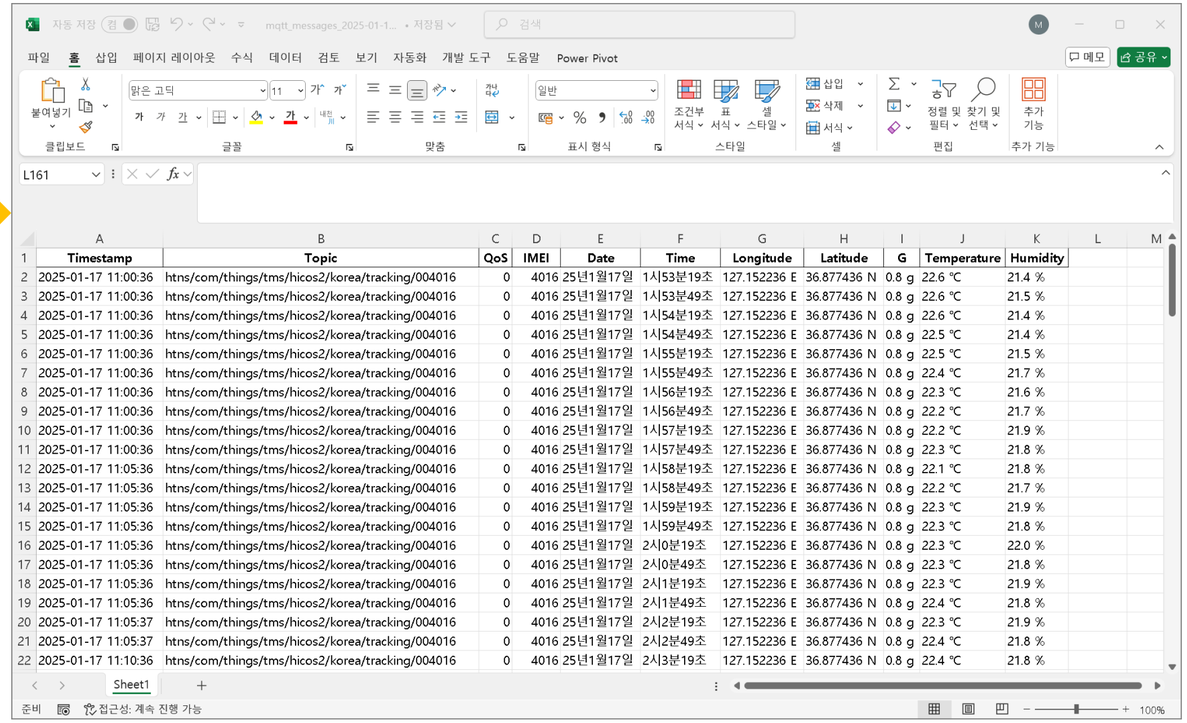
5. 정각 단위 데이터 저장

- 수집된 데이터를 정각마다 새로운 엑셀 파일에 저장.
- 시간 단위로 파일 이름을 자동 생성하여 데이터를 체계적으로 관리.



특정 데이터 8가지 항목만 엑셀 저장

(IMEI, 연월일, 시각, 경도, 위도, G, 온도, 습도)



	A	B	C	D	E	F	G	H	I	J	K
1	Timestamp	Topic	QoS	IMEI	Date	Time	Longitude	Latitude	G	Temperature	Humidity
2	2025-01-17 11:00:36	htns/com/things/tms/hicos2/korea/tracking/004016	0	4016	25년1월17일	1시53분19초	127.152236 E	36.877436 N	0.8 g	22.6 ℃	21.4 %
3	2025-01-17 11:00:36	htns/com/things/tms/hicos2/korea/tracking/004016	0	4016	25년1월17일	1시53분49초	127.152236 E	36.877436 N	0.8 g	22.6 ℃	21.5 %
4	2025-01-17 11:00:36	htns/com/things/tms/hicos2/korea/tracking/004016	0	4016	25년1월17일	1시54분19초	127.152236 E	36.877436 N	0.8 g	22.6 ℃	21.4 %
5	2025-01-17 11:00:36	htns/com/things/tms/hicos2/korea/tracking/004016	0	4016	25년1월17일	1시54분49초	127.152236 E	36.877436 N	0.8 g	22.5 ℃	21.4 %
6	2025-01-17 11:00:36	htns/com/things/tms/hicos2/korea/tracking/004016	0	4016	25년1월17일	1시55분19초	127.152236 E	36.877436 N	0.8 g	22.5 ℃	21.5 %
7	2025-01-17 11:00:36	htns/com/things/tms/hicos2/korea/tracking/004016	0	4016	25년1월17일	1시55분49초	127.152236 E	36.877436 N	0.8 g	22.4 ℃	21.7 %
8	2025-01-17 11:00:36	htns/com/things/tms/hicos2/korea/tracking/004016	0	4016	25년1월17일	1시56분19초	127.152236 E	36.877436 N	0.8 g	22.3 ℃	21.6 %
9	2025-01-17 11:00:36	htns/com/things/tms/hicos2/korea/tracking/004016	0	4016	25년1월17일	1시56분49초	127.152236 E	36.877436 N	0.8 g	22.2 ℃	21.7 %
10	2025-01-17 11:00:36	htns/com/things/tms/hicos2/korea/tracking/004016	0	4016	25년1월17일	1시57분19초	127.152236 E	36.877436 N	0.8 g	22.2 ℃	21.9 %
11	2025-01-17 11:00:36	htns/com/things/tms/hicos2/korea/tracking/004016	0	4016	25년1월17일	1시57분49초	127.152236 E	36.877436 N	0.8 g	22.3 ℃	21.8 %
12	2025-01-17 11:05:36	htns/com/things/tms/hicos2/korea/tracking/004016	0	4016	25년1월17일	1시58분19초	127.152236 E	36.877436 N	0.8 g	22.1 ℃	21.8 %
13	2025-01-17 11:05:36	htns/com/things/tms/hicos2/korea/tracking/004016	0	4016	25년1월17일	1시58분49초	127.152236 E	36.877436 N	0.8 g	22.2 ℃	21.7 %
14	2025-01-17 11:05:36	htns/com/things/tms/hicos2/korea/tracking/004016	0	4016	25년1월17일	1시59분19초	127.152236 E	36.877436 N	0.8 g	22.3 ℃	21.9 %
15	2025-01-17 11:05:36	htns/com/things/tms/hicos2/korea/tracking/004016	0	4016	25년1월17일	1시59분49초	127.152236 E	36.877436 N	0.8 g	22.3 ℃	21.8 %
16	2025-01-17 11:05:36	htns/com/things/tms/hicos2/korea/tracking/004016	0	4016	25년1월17일	2시0분19초	127.152236 E	36.877436 N	0.8 g	22.3 ℃	22.0 %
17	2025-01-17 11:05:36	htns/com/things/tms/hicos2/korea/tracking/004016	0	4016	25년1월17일	2시0분49초	127.152236 E	36.877436 N	0.8 g	22.3 ℃	21.8 %
18	2025-01-17 11:05:36	htns/com/things/tms/hicos2/korea/tracking/004016	0	4016	25년1월17일	2시1분19초	127.152236 E	36.877436 N	0.8 g	22.3 ℃	21.9 %
19	2025-01-17 11:05:36	htns/com/things/tms/hicos2/korea/tracking/004016	0	4016	25년1월17일	2시1분49초	127.152236 E	36.877436 N	0.8 g	22.4 ℃	21.8 %
20	2025-01-17 11:05:37	htns/com/things/tms/hicos2/korea/tracking/004016	0	4016	25년1월17일	2시2분19초	127.152236 E	36.877436 N	0.8 g	22.3 ℃	21.9 %
21	2025-01-17 11:05:37	htns/com/things/tms/hicos2/korea/tracking/004016	0	4016	25년1월17일	2시2분49초	127.152236 E	36.877436 N	0.8 g	22.4 ℃	21.8 %
22	2025-01-17 11:10:36	htns/com/things/tms/hicos2/korea/tracking/004016	0	4016	25년1월17일	2시3분19초	127.152236 E	36.877436 N	0.8 g	22.4 ℃	21.8 %