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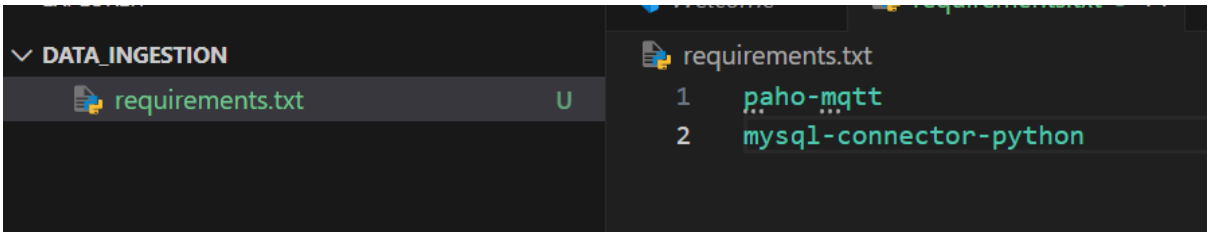
Mata Kuliah : Internet Of Thinks

TUGAS PRAKTIKUM

MENGHUBUNGKAN ANTARA SERVER DENGAN MYSQL

1. Buka teks editor VSCode, buat project (folder) dengan nama ‘data_ingestion’. Buat file dengan nama ‘requirements.txt’. Isi seperti pada gambar.



2. Install pakage yang telah di masukan ke dalam file

   Install satu persatu

```
D:\Tisa\Tisa\IOT\Praktikum 5 kah\PRTKM_6\data_ingestion>pip install paho-mqtt
Collecting paho-mqtt
  Downloading paho_mqtt-2.1.0-py3-none-any.whl.metadata (23 kB)
Downloading paho_mqtt-2.1.0-py3-none-any.whl (67 kB)
Installing collected packages: paho-mqtt
Successfully installed paho-mqtt-2.1.0

[notice] A new release of pip is available: 25.2 -> 25.3
[notice] To update, run: python.exe -m pip install --upgrade pip
```

```
D:\Tisa\Tisa\IOT\Praktikum 5 kah\PRTKM_6\data_ingestion>pip install mysql-connector-python
Collecting mysql-connector-python
  Downloading mysql_connector_python-9.5.0-cp313-cp313-win_amd64.whl.metadata (7.7 kB)
Downloading mysql_connector_python-9.5.0-cp313-cp313-win_amd64.whl (16.5 MB)
   ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 16.5/16.5 MB 936.8 kB/s  0:00:17
Installing collected packages: mysql-connector-python
Successfully installed mysql-connector-python-9.5.0

[notice] A new release of pip is available: 25.2 -> 25.3
[notice] To update, run: python.exe -m pip install --upgrade pip
```

Install satu kali

```
D:\Tisa\Tisa\IOT\Praktikum 5 kah\PRTKM_6\data_ingestion>pip install -r requirements.txt
Requirement already satisfied: paho-mqtt in c:\users\nikeo\appdata\local\programs\python\python313\lib\sit
e-packages (from -r requirements.txt (line 1)) (2.1.0)
Requirement already satisfied: mysql-connector-python in c:\users\nikeo\appdata\local\programs\python\pyth
on313\lib\site-packages (from -r requirements.txt (line 2)) (9.5.0)

[notice] A new release of pip is available: 25.2 -> 25.3
[notice] To update, run: python.exe -m pip install --upgrade pip
```

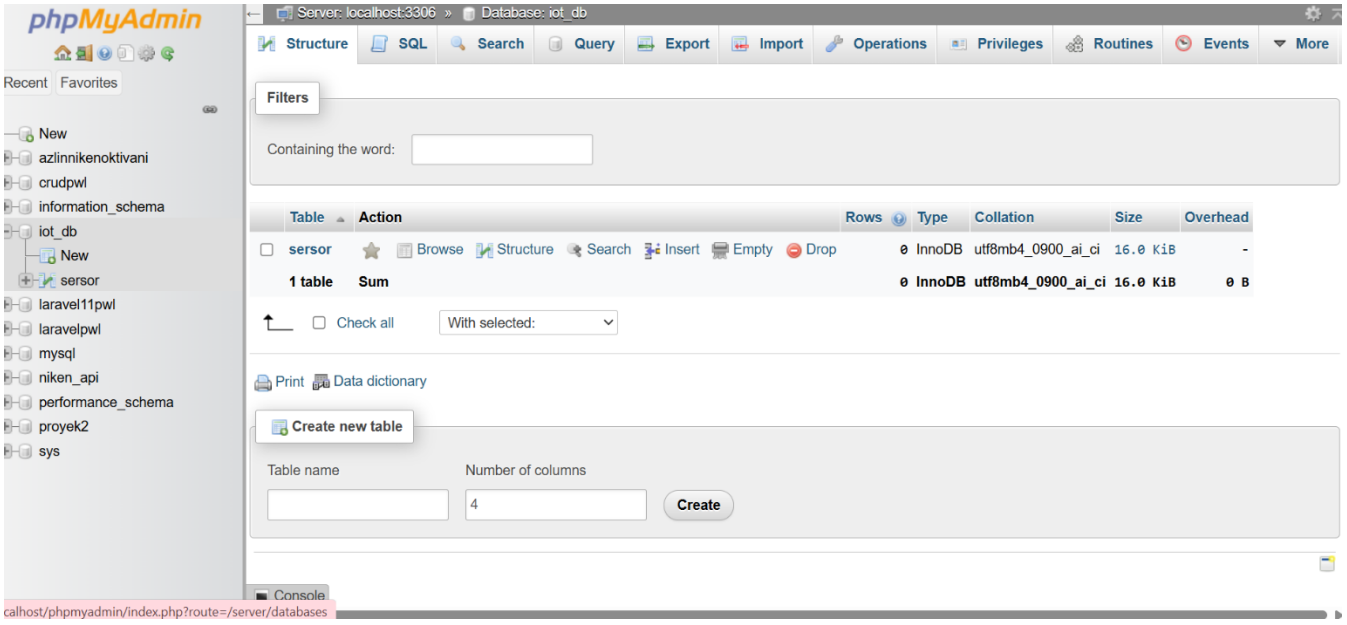
3. Buat file baru dengan nama ‘koneksi.py’. Isi dengan kode program berikut

```
import mysql.connector

# Connect to server
cnx = mysql.connector.connect(
    host="127.0.0.1",
    port=3306,
    user="root",
    password="")

# Get a cursor
cur = cnx.cursor()

# Execute a query
cur.execute("SELECT CURDATE()")

# Fetch one result
row = cur.fetchone()
print("Current date is: {0}".format(row[0]))

# Close connection
cnx.close()
```

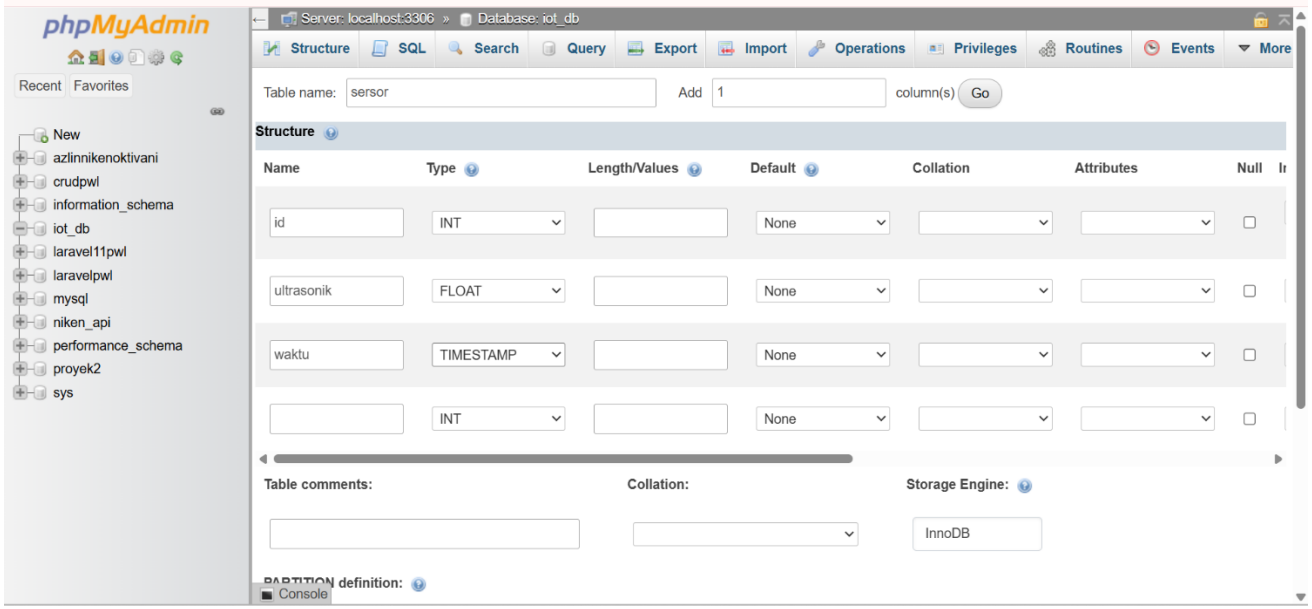
4. Run koneksi.py

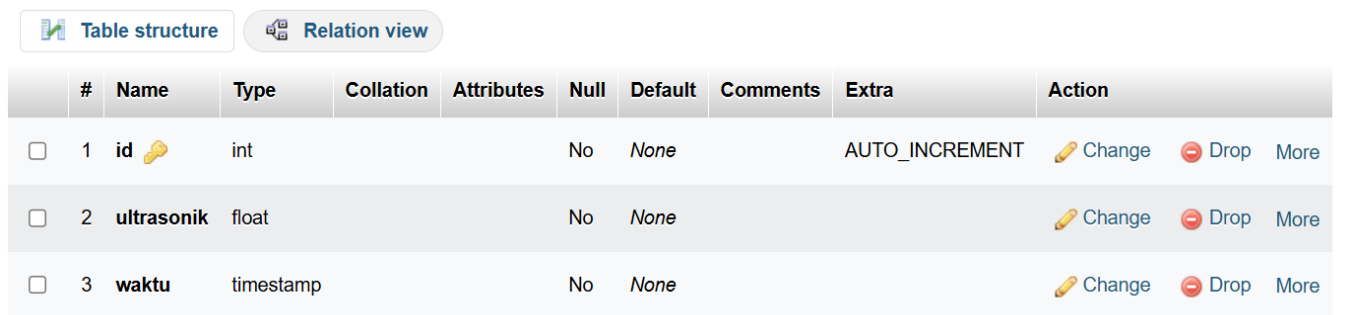
```
Active code page: 65001

D:\Tisa\Tisa\IOT\data_ingestion>python koneksi.py
Current date is: 2025-11-20

D:\Tisa\Tisa\IOT\data_ingestion>
```

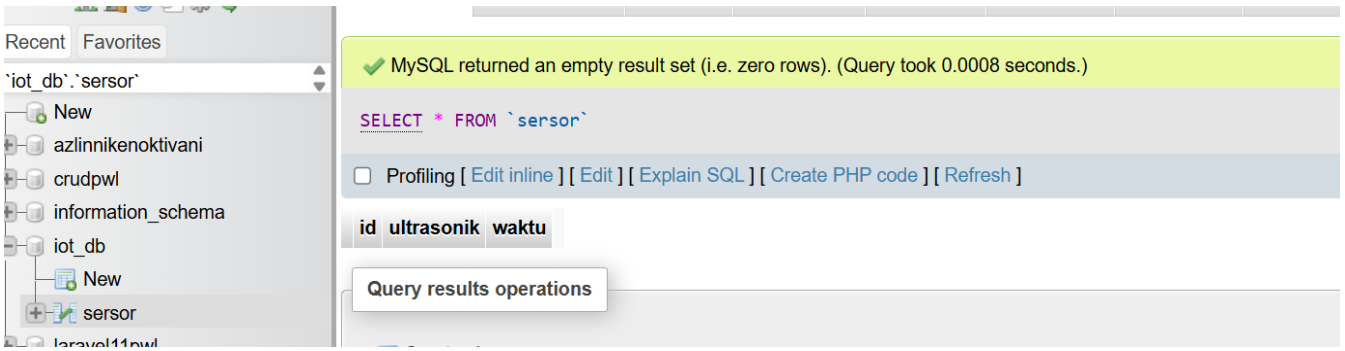
5. Buat *database* baru di localhost, buat table baru dengan nama ‘sensor’ (namun typo pada penulisan, jadi nama table nya ‘sersor’).



6. Isi struktur table.



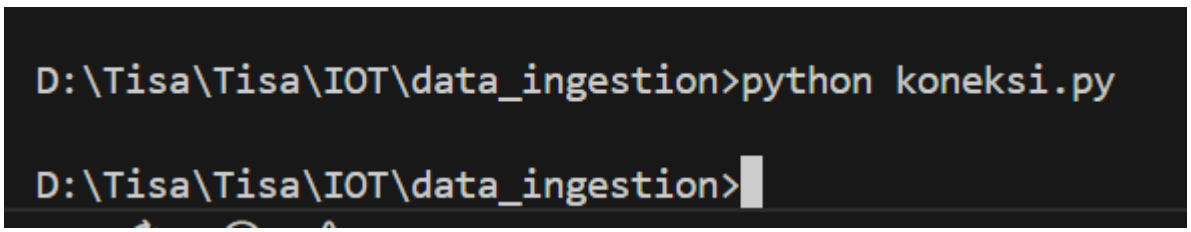




7. Ubah kode program koneksi.py menjadi seperti berikut

```
import mysql.connector
# Connect to server
cnx = mysql.connector.connect(
    host="127.0.0.1",
    port=3306,
    user="root",
    password="",
    database='iot_db')

# Get a cursor
cur = cnx.cursor()

# Execute a query
# cur.execute("SELECT CURDATE()")
# Fetch one result
# row = cur.fetchone()
# print("Current date is: {0}".format(row[0]))

tesTambahData = "INSERT INTO sersor (ultrasonik, waktu) VALUES (%s, NOW())"
#tesTambahData = ("INSERT INTO sensor " "(ultrasonik)" "VALUES (%s)")
data_ultrasonik = ("100",)
cur.execute(tesTambahData, data_ultrasonik)
cnx.commit()
cur.close()


# Close connection
cnx.close()
```

8. Run koneksi.py



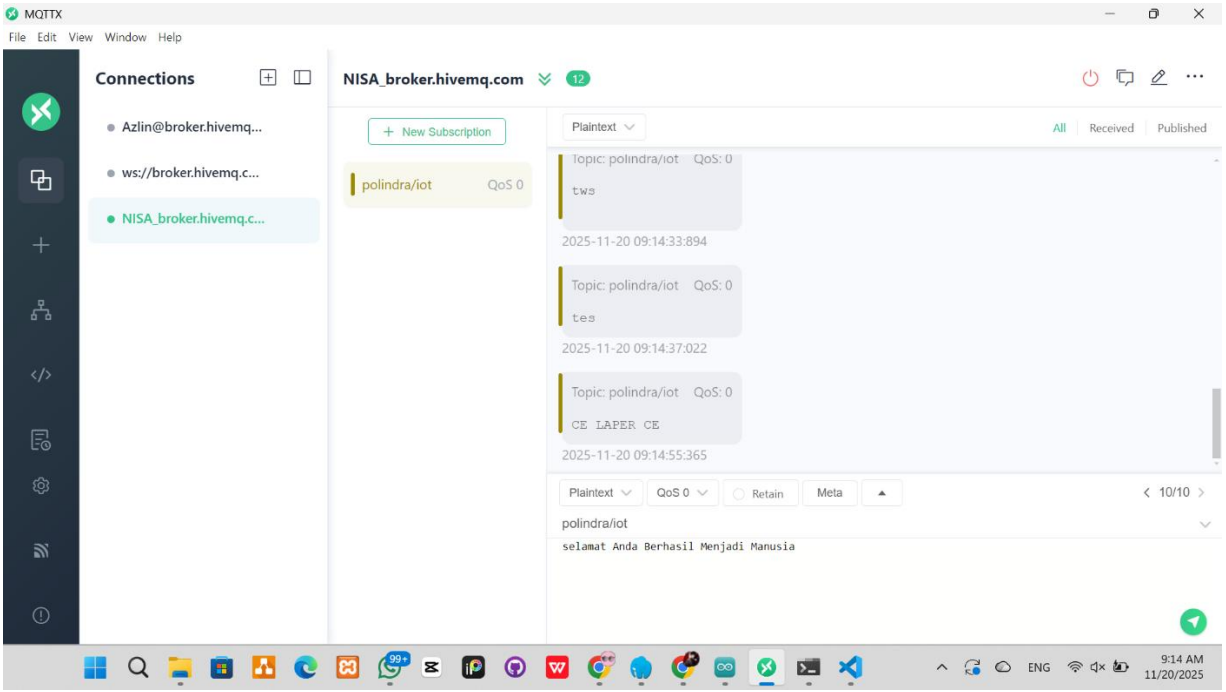
	id	ultrasonik	waktu
Edit Copy Delete	1	100	2025-11-20 09:04:41

Check all *With selected:* Edit Copy Delete Export

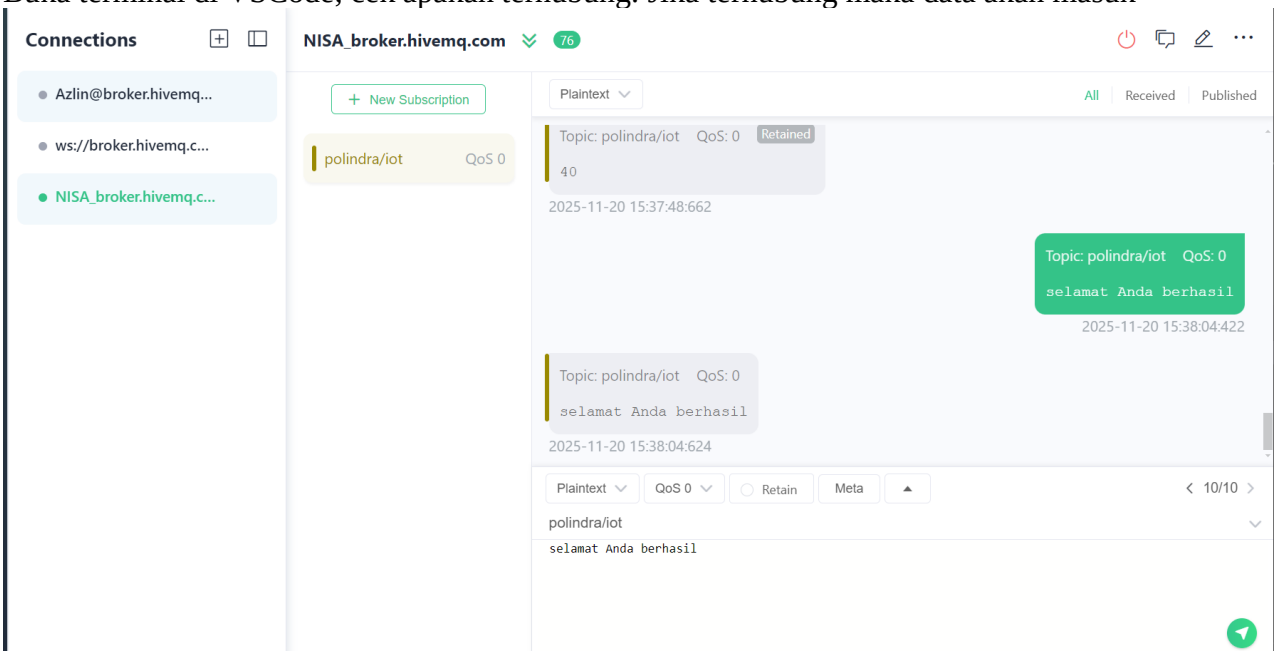
9. Buat file baru ‘mqtt.py’

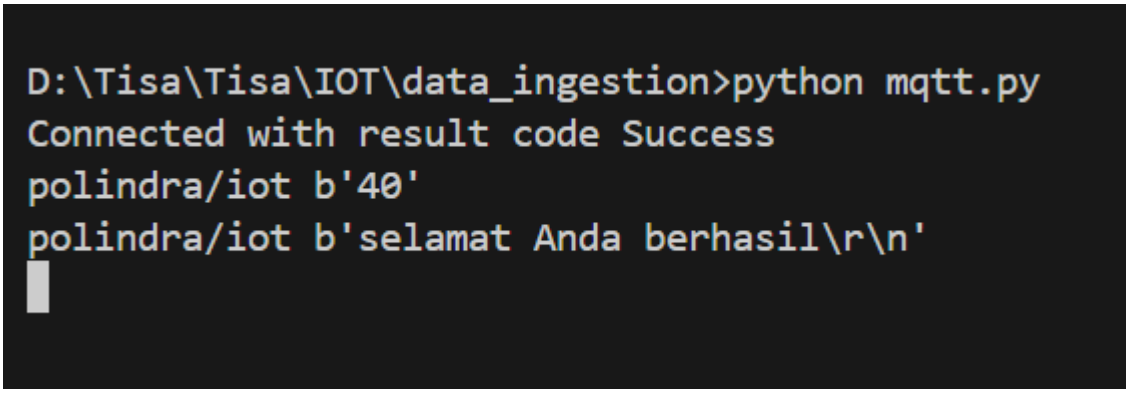
```
import paho.mqtt.client as mqtt

# The callback for when the client receives a CONNACK response from the server.
def on_connect(client, userdata, flags, reason_code, properties):
    print(f"Connected with result code {reason_code}")
    # Subscribing in on_connect() means that if we lose the connection and
    # reconnect then subscriptions will be renewed.
    client.subscribe("polindra/iot")

# The callback for when a PUBLISH message is received from the server.
def on_message(client, userdata, msg):
    print(msg.topic+" "+str(msg.payload)) #pesan yang keluar di terminal itu dari kodingan ini

mqttc = mqtt.Client(mqtt.CallbackAPIVersion.VERSION2)
mqttc.on_connect = on_connect
mqttc.on_message = on_message

mqttc.connect("broker.hivemq.com", 1883, 60)

# Blocking call that processes network traffic, dispatches callbacks and
# handles reconnecting.
# Other loop*() functions are available that give a threaded interface and a
# manual interface.
mqttc.loop_forever()
```

10. Hubungkan dengan mqtt.broker sesuaikan subcribe & topik nya.



11. Buka terminal di VSCode, cek apakah terhubung. Jika terhubung maka data akan masuk





12. Buat file baru dengan nama ‘gabung.py’ (menghubungkan mqtt dan *database*, hingga menjadi *realtime*)

```
import mysql.connector
import paho.mqtt.client as mqtt

cnx = mysql.connector.connect(
    host="127.0.0.1",
    port=3306,
    user="root",
    password="",
    database='iot_db'
)
cur = cnx.cursor()

# Query insert
query_insert = "INSERT INTO sersor (ultrasonik, waktu) VALUES (%s, NOW())"

def on_connect(client, userdata, flags, reason_code, properties):
    print(f"Connected with result code {reason_code}")
    client.subscribe("polindra/iot/ultrasonic")

def on_message(client, userdata, msg):
    payload = msg.payload.decode()

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

    # Insert ke database setiap ada pesan baru
    try:
        cur.execute(query_insert, (payload,))
        cnx.commit()
        print("Data disimpan ke database.")
    except Exception as e:
        print("Gagal insert:", e)
mqttc = mqtt.Client(mqtt.CallbackAPIVersion.VERSION2)
mqttc.on_connect = on_connect
mqttc.on_message = on_message

mqttc.connect("broker.hivemq.com", 1883, 60)

mqttc.loop_forever()
```

13. Coba kirimkan data di mqtt, buka teminal jika masuk maka berhasil terhubung.

```
Gagal insert: 1265 (01000): Data truncated for column 'ultrasonik' at row 1
polindra/iot : 1509

Data disimpan ke database.
polindra/iot : naila laperr

Gagal insert: 1265 (01000): Data truncated for column 'ultrasonik' at row 1
polindra/iot : rumahmu dimana
Gagal insert: 1265 (01000): Data truncated for column 'ultrasonik' at row 1
polindra/iot : kumau kesana
Gagal insert: 1265 (01000): Data truncated for column 'ultrasonik' at row 1
polindra/iot : 1509123
Data disimpan ke database.
```

14. Buka database yang telah dibuat, cek apakah data nya sudah masuk

	id	ultrasonik	waktu
Edit Copy Delete	1	100	2025-11-20 09:04:41
Edit Copy Delete	2	100	2025-11-20 09:22:49
Edit Copy Delete	3	40	2025-11-20 09:25:36
Edit Copy Delete	4	130	2025-11-20 09:25:51
Edit Copy Delete	5	1509	2025-11-20 09:26:24
Edit Copy Delete	6	1509120	2025-11-20 09:28:07