RESULT:

1. **To run Python script to connect the secure connection with the MQTT Broker with tls/ssl certificates**

```
(venv) porwalmohit789@cloudshell:~/MQTT_Reader__Secure (certain-acre-317300)$ python mqtt_subscriber_8883.py
Client ID: mqtt_reader_client
CA Certificate Path: /home/porwalmohit789/MQTT_Reader__Secure/certs_copy/ca-root.crt
Client Certificate Path: /home/porwalmohit789/MQTT_Reader__Secure/certs_copy/mosquitto.crt
Client Key Path: /home/porwalmohit789/MQTT_Reader__Secure/certs_copy/mosquitto.key
Connected to MQTT broker at localhost:8883
Subscribed to topic: /events
Received message on /events: {"sensor_value":20.2}
Received message on /events: {"sensor_value":20.2}
```

2.Publishing the data to from MQTT broker to subscribe script with authentication

```
porwalmohit789@cloudshell:~/MQTT_Reader__Secure (certain-acre-317300)$ mosquitto_pub -h localhost -p 8883 -t /events  -m "{"sensor_value":20.2}" --cafile cer
ts_copy/ca-root.crt --key certs_copy/mosquitto.key --cert certs_copy/mosquitto.crt -d
Client (null) sending CONNECT
Client (null) received CONNACK (0)
Client (null) sending PUBLISH (d0, q0, r0, m1, '/events', ... (25 bytes))
Client (null) sending DISCONNECT
porwalmohit789@cloudshell:~/MQTT_Reader__Secure (certain-acre-317300)$ mosquitto_pub -h localhost -p 8883 -t /events  -m "{"sensor_value":20.2}" --cafile cer
ts_copy/ca-root.crt --key certs_copy/mosquitto.key --cert certs_copy/mosquitto.crt -d
Client (null) sending CONNECT
Client (null) received CONNACK (0)
Client (null) sending PUBLISH (d0, q0, r0, m1, '/events', ... (25 bytes))
Client (null) sending DISCONNECT
```

3.Local testing of subscribing the data with authentication

```
(venv) porwalmohit789@cloudshell:~/MQTT_Reader__Secure (certain-acre-317300)$ mosquitto_sub -h localhost -p 8883 -t /events  --cafile certs_copy/ca-root.crt
--key certs_copy/mosquitto.key --cert certs_copy/mosquitto.crt -d
Client (null) sending CONNECT
Client (null) received CONNACK (0)
Client (null) sending SUBSCRIBE (Mid: 1, Topic: /events, QoS: 0, Options: 0x00)
Client (null) received SUBACK
Subscribed (mid: 1): 0
Client (null) received PUBLISH (d0, q0, r0, m0, '/events', ... (25 bytes))
{"sensor_value":20.2}
Client (null) received PUBLISH (d0, q0, r0, m0, '/events', ... (25 bytes))
{"sensor_value":20.2}
```

4. Local testing to publish the data with authentications

```
porwalmohit789@cloudshell:~/MQTT_Reader__Secure (certain-acre-317300)$  mosquitto_pub -h localhost -p 8883 -t /events  -m "{"sensor_value":20.2}" --cafile ce
rts_copy/ca-root.crt --key certs_copy/mosquitto.key --cert certs_copy/mosquitto.crt -d
Client (null) sending CONNECT
Client (null) received CONNACK (0)
Client (null) sending PUBLISH (d0, q0, r0, m1, '/events', ... (25 bytes))
Client (null) sending DISCONNECT
porwalmohit789@cloudshell:~/MQTT_Reader__Secure (certain-acre-317300)$ mosquitto_pub -h localhost -p 8883 -t /events  -m "{"sensor_value":20.2}" --cafile cer
ts_copy/ca-root.crt --key certs_copy/mosquitto.key --cert certs_copy/mosquitto.crt -d
Client (null) sending CONNECT
Client (null) received CONNACK (0)
Client (null) sending PUBLISH (d0, q0, r0, m1, '/events', ... (25 bytes))
Client (null) sending DISCONNECT
```

5 Without authentication
Publishing and Subscribing

.

```
(venv) porwalmohit789@cloudshell:~/MQTT_Reader__Secure (certain-acre-317300)$  mosquitto_sub -h localhost -p 1883 -t /events

{"sensor_value":20.2}
{"sensor_value":20.2}
{"sensor_value":20.2}
```

```
porwalmohit789@cloudshell:~/MQTT_Reader__Secure (certain-acre-317300)$ mosquitto_pub -h localhost -p 1883 -t /events  -m "{"sensor_value":20.2}"
porwalmohit789@cloudshell:~/MQTT_Reader__Secure (certain-acre-317300)$ mosquitto_pub -h localhost -p 1883 -t /events  -m "{"sensor_value":20.2}"
porwalmohit789@cloudshell:~/MQTT_Reader__Secure (certain-acre-317300)$
```

```
porwalmohit789@cloudshell:~/MQTT_Reader__Secure (certain-acre-317300)$ docker ps
CONTAINER ID   IMAGE                      COMMAND                  CREATED         STATUS          PORTS                                              NAMES
a07b63bf43b7   eclipse-mosquitto:latest   "/docker-entrypoint.…"   42 minutes ago  Up 41 minutes   1883/tcp                                           mqtt_rea
der__secure_mqtt-sub_1
6719d44df7e21  eclipse-mosquitto:latest   "/docker-entrypoint.…"   42 minutes ago  Up 41 minutes   0.0.0.0:1883->1883/tcp, 0.0.0.0:8883->8883/tcp     mqtt_rea
der__secure_mosquitto_1
```

6. Publishing through the Docker Container To publish data through the Docker container, execute: docker-compose run --rm mqtt-pub.

```
porwalmohit789@cloudshell:~/MQTT_Reader__Secure (certain-acre-317300)$ docker-compose run --rm mqtt-pub
Starting mqtt_reader__secure_mosquitto_1 ... done
Client null sending CONNECT
Client null received CONNACK (0)
Client null sending PUBLISH (d0, q0, r0, m1, '/events', ... (21 bytes))
Client null sending DISCONNECT
```

7. Subscribing through the Docker Container To subscribe to data through the Docker container, use: docker-compose run --rm mqtt-sub

```
erts_copy)  docker-compose.txt  Dockerfile      mqtt_subscriber_1883.py  README.md       venv
(venv) porwalmohit789@cloudshell:~/MQTT_Reader__Secure (certain-acre-317300)$ python mqtt_subscriber_1883.py
Connected to MQTT broker at localhost:1883
Subscribed to topic: /events
Received message on /events: {"sensor_value":20.2}
Received message on /events: {"sensor_value":20.2}
```

```
^C(venv) porwalmohit789@cloudshell:~/MQTT_Reader__Secure (certain-acre-317300)$ docker-compose run --rm mqtt-sub
Starting mqtt_reader__secure_mosquitto_1 ... done
Client null sending CONNECT
Client null received CONNACK (0)
Client null sending SUBSCRIBE (Mid: 1, Topic: /events, QoS: 0, Options: 0x00)
Client null received SUBACK
Subscribed (mid: 1): 0
Client null received PUBLISH (d0, q0, r0, m0, '/events', ... (21 bytes))
{"sensor_value":20.2}
Client null received PUBLISH (d0, q0, r0, m0, '/events', ... (21 bytes))
{"sensor_value":20.2}
Client null sending PINGREQ
Client null received PINGRESP
```