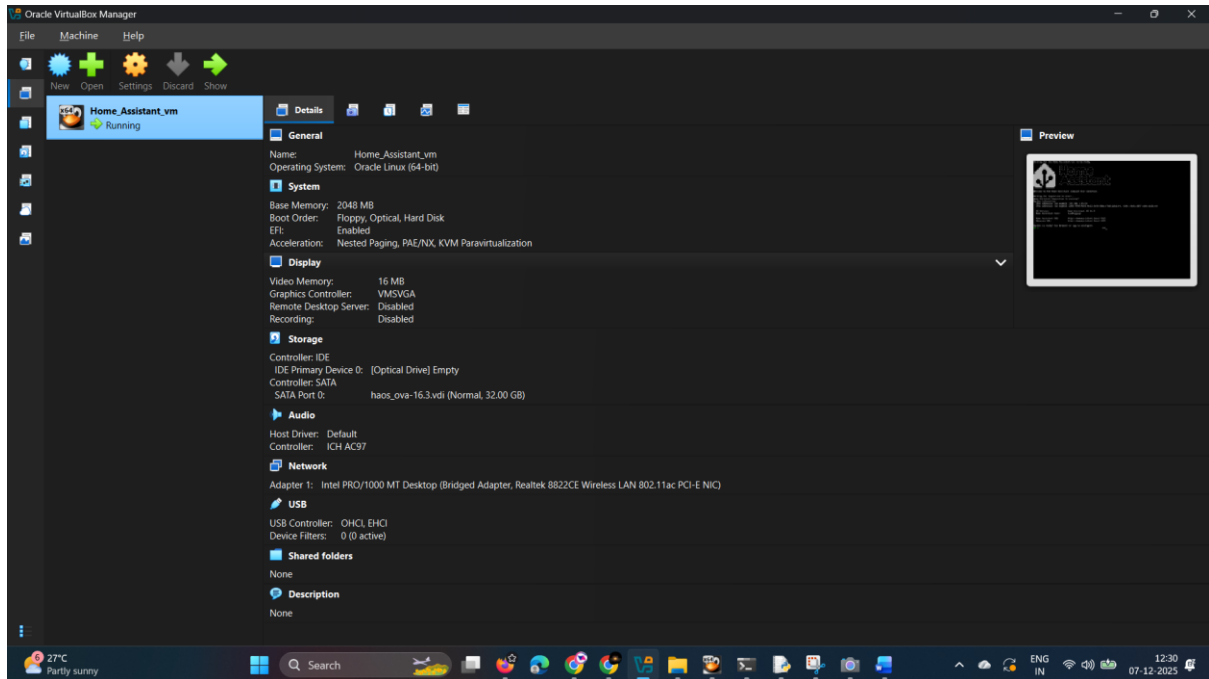


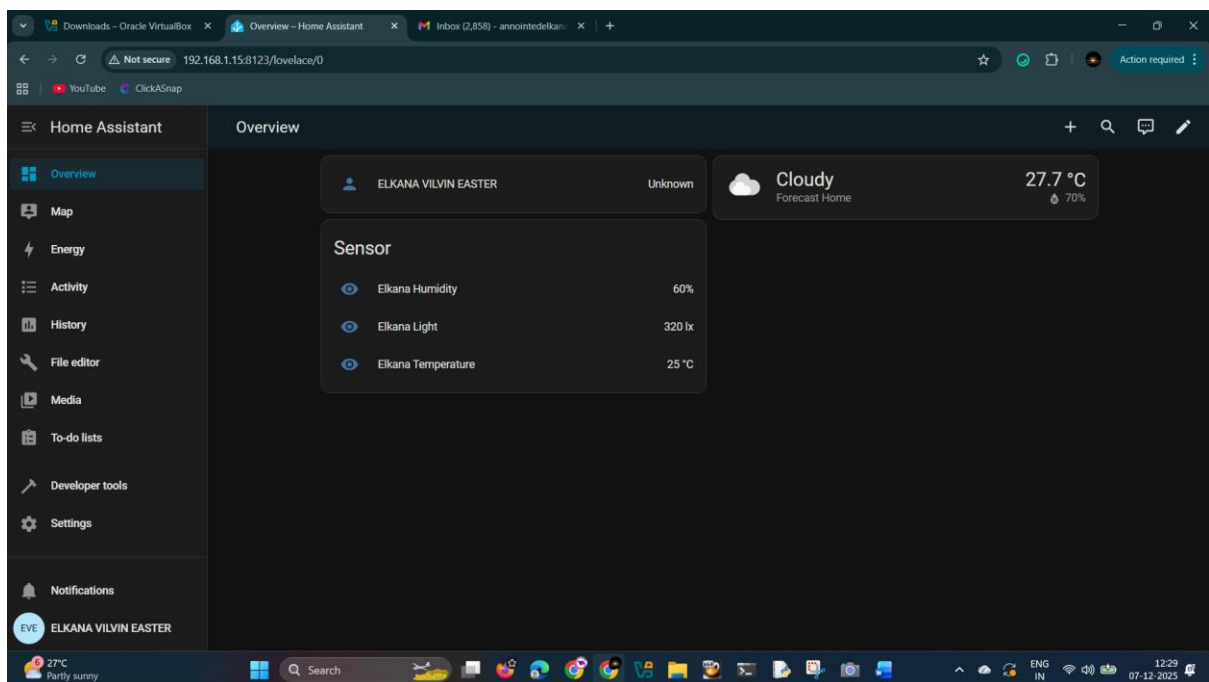
NAME: ELKANA VILVIN EASTER

Register Number: 42611034

## Virtual Box (Machine )



## Dashboard



## Python Script

```
elkana_mqtt.py - C:/Users/Mizpah Prayer Tower/Desktop/elkana_mqtt.py (3.10.5)
File Edit Format Run Options Window Help

import json
import time
import paho.mqtt.client as mqtt

student_name = "ELKANA VILVIN EASTER"
unique_id = "42611034"
topic = "home/elkanae-2025/sensor"

broker = "192.168.1.15"
port = 1883

mqtt_username = "mqttuser"
mqtt_password = "mqttpassword123"

def main():
    client = mqtt.Client()
    client.username_pw_set(mqtt_username, mqtt_password)
    client.connect(broker, port, 60)
    client.loop_start()

    while True:
        temperature = 25
        humidity = 60
        light = 320

        payload = {
            "student_name": student_name,
            "unique_id": unique_id,
            "temperature": temperature,
            "humidity": humidity,
            "light": light
        }

        message = json.dumps(payload)
        print("Publishing:", message)

        client.publish(topic, message, qos=0, retain=False)
        time.sleep(5)

if __name__ == "__main__":
    main()

Ln: 6 Col: 22
```

## Output (Publishing)

```
*IDLE Shell 3.10.5*
File Edit Shell Debug Options Window Help

Python 3.10.5 (tags/v3.10.5:f377153, Jun 6 2022, 16:14:13) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.

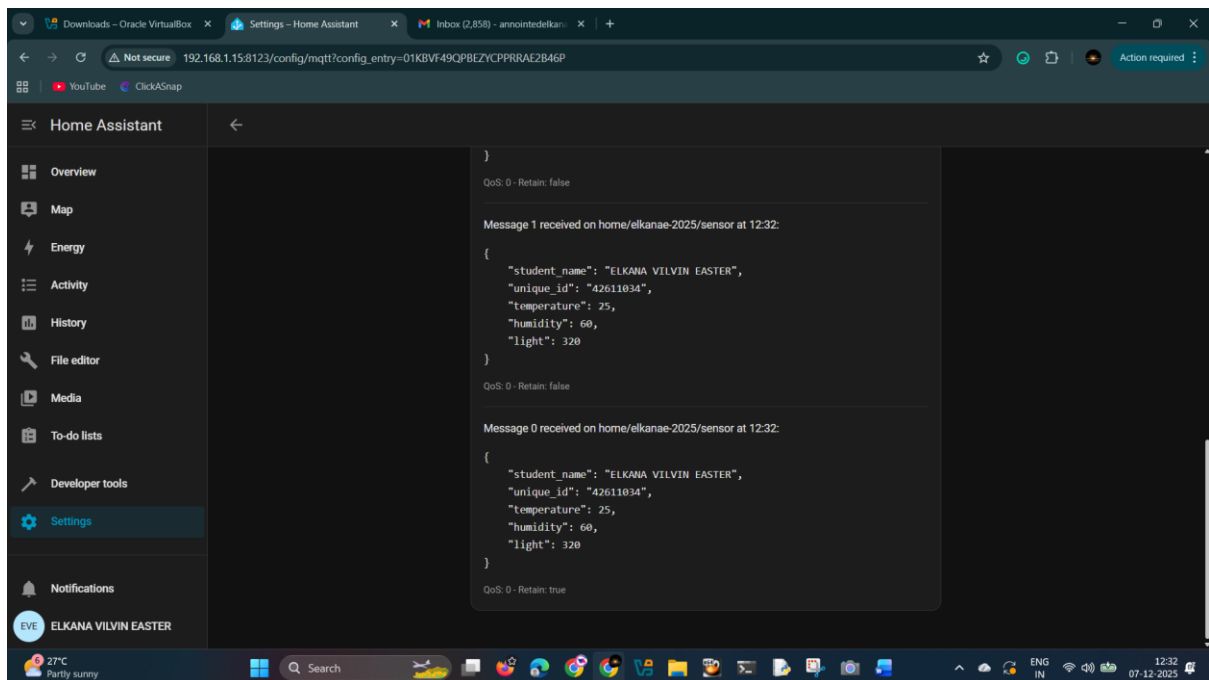
>>>

===== RESTART: C:/Users/Mizpah Prayer Tower/Desktop/elkana_mqtt.py =====

Warning (from warnings module):
  File "C:/Users/Mizpah Prayer Tower/Desktop/elkana_mqtt.py", line 16
    client = mqtt.Client()
DeprecationWarning: Callback API version 1 is deprecated, update to latest version
Publishing: {"student_name": "ELKANA VILVIN EASTER", "unique_id": "42611034", "temperature": 25, "humidity": 60, "light": 320}
Publishing: {"student_name": "ELKANA VILVIN EASTER", "unique_id": "42611034", "temperature": 25, "humidity": 60, "light": 320}
Publishing: {"student_name": "ELKANA VILVIN EASTER", "unique_id": "42611034", "temperature": 25, "humidity": 60, "light": 320}

Ln: 13 Col: 0
```

## MQTT Listening SS:



Extra sensor : Light sensor used



## Explanation of this Project:

In this project, I installed Home Assistant inside a VirtualBox machine. After Home Assistant finished setting up, I installed the Mosquitto MQTT Broker add-on and enabled the MQTT integration. Then I wrote a Python script on my Windows laptop. This script sends temperature, humidity, and an extra sensor value (light) to a fixed MQTT topic. I added my name, register number, and topic in the script as required.

Home Assistant receives these MQTT messages through the Mosquitto broker. I created three MQTT sensors in the configuration.yaml file so Home Assistant can read the JSON values and show them on the dashboard.

After restarting Home Assistant, I could see all three values updating live on the dashboard while the Python script was running. This shows that MQTT communication between Python and Home Assistant is working correctly.

**Conclusion Of this Project:**

This assignment helped me understand how MQTT works and how Python, Home Assistant, and the MQTT broker connect together. I learned how to publish data using Python and how Home Assistant reads and displays it.

Everything worked successfully in the end — the values from my script updated live on the Home Assistant dashboard. This shows that my setup and configuration were correct.

This was a good learning experience and it helped me understand IoT communication in a simple, practical way.