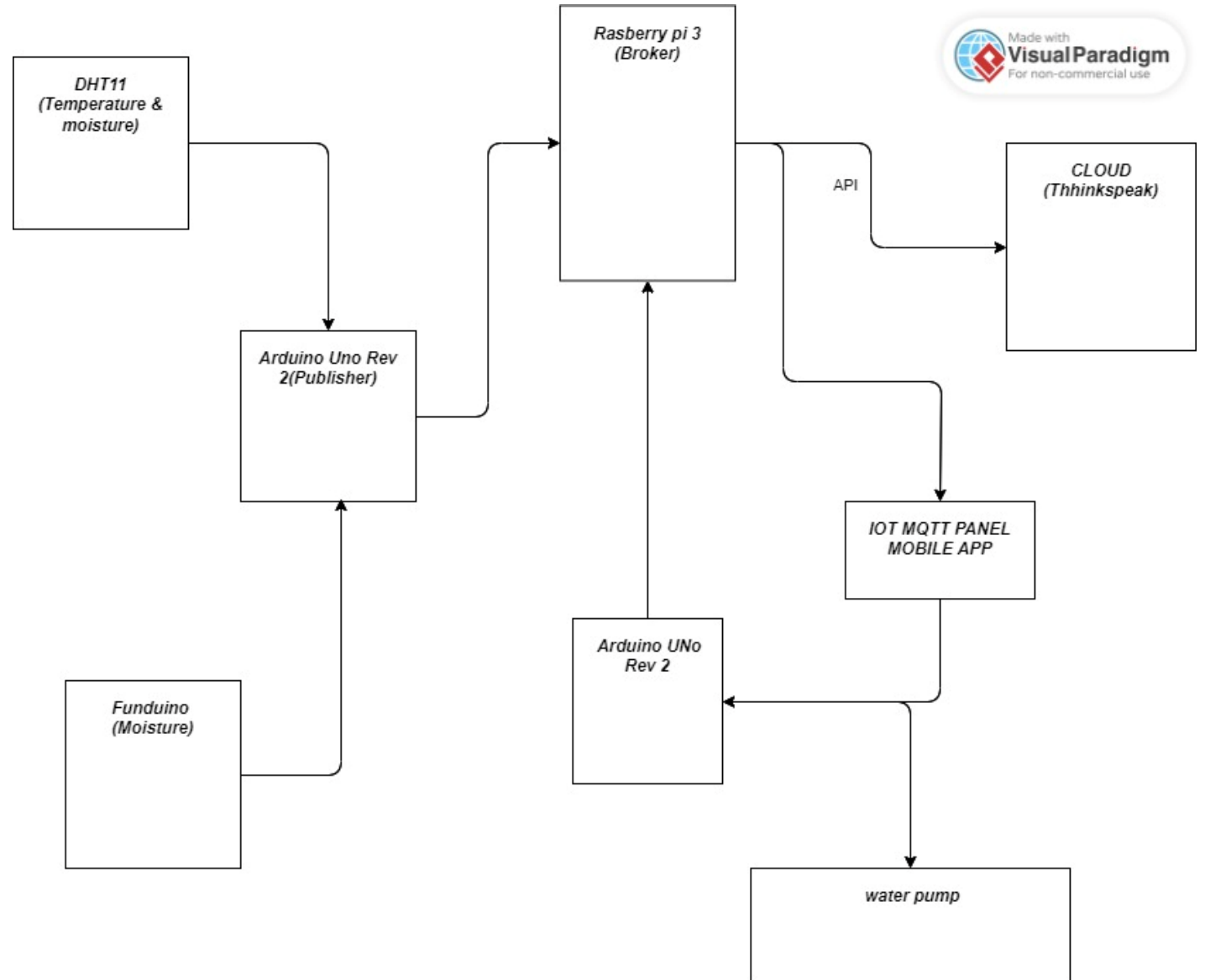# Smart Garden

Kuye Doluwamu

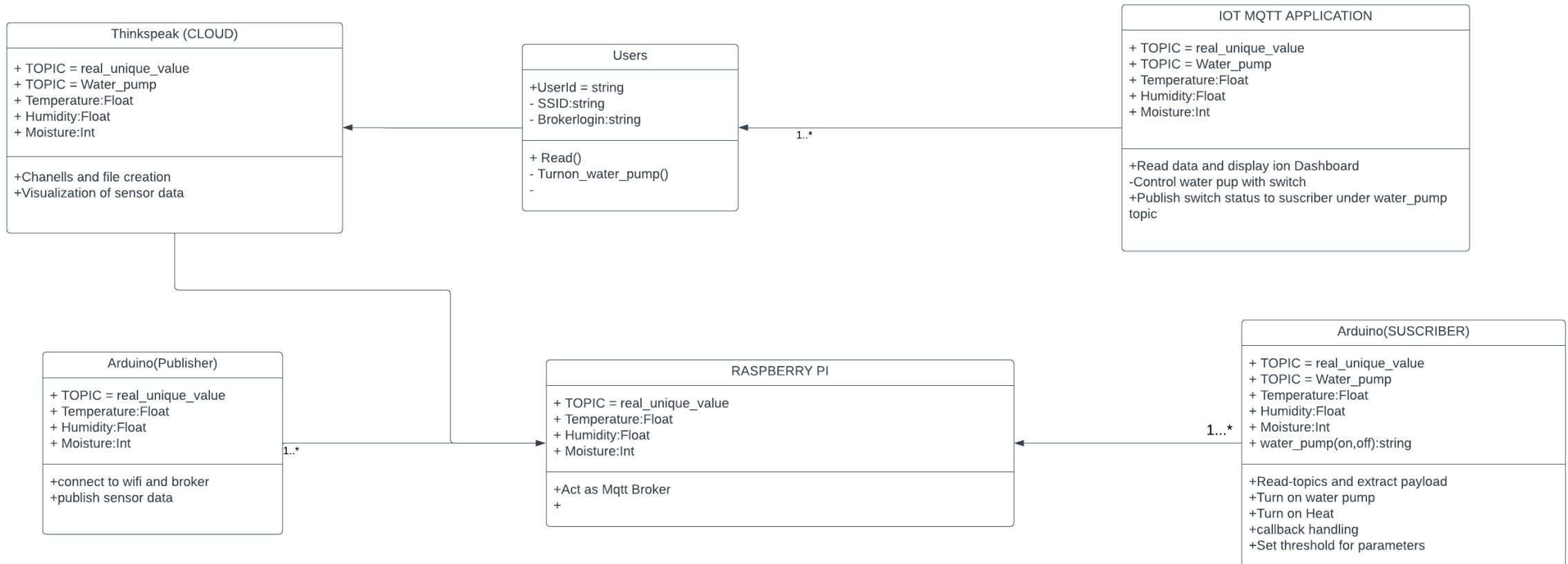Ashraf

Ajay Paul
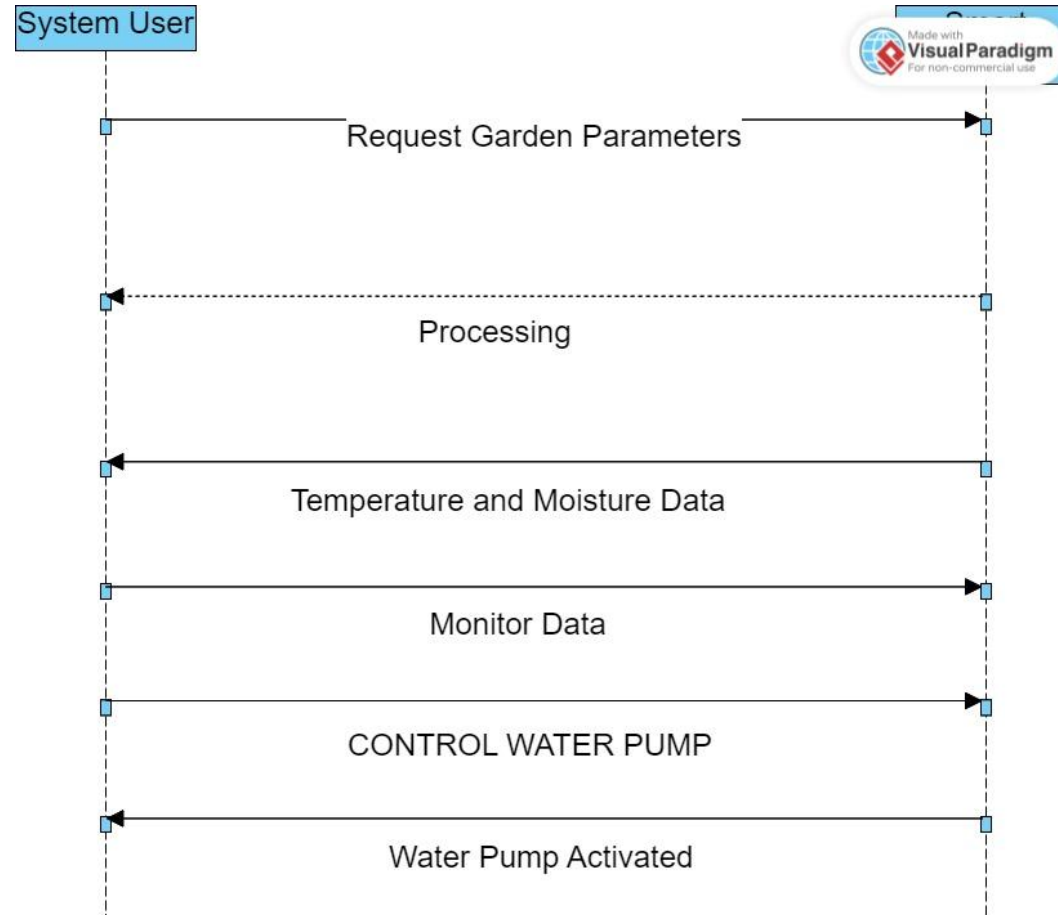
Smart Garden Block Diagram
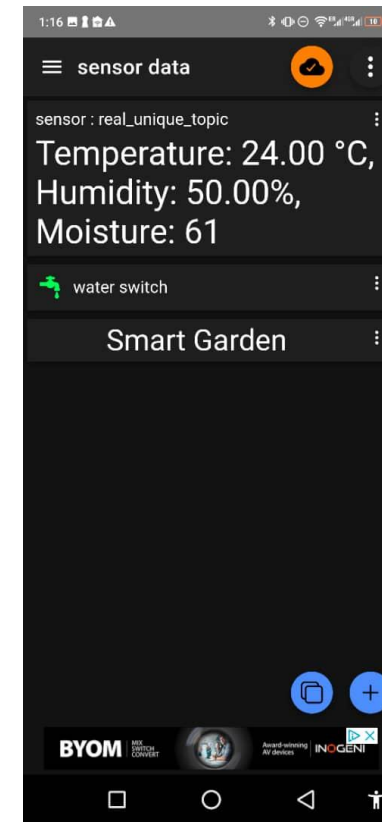
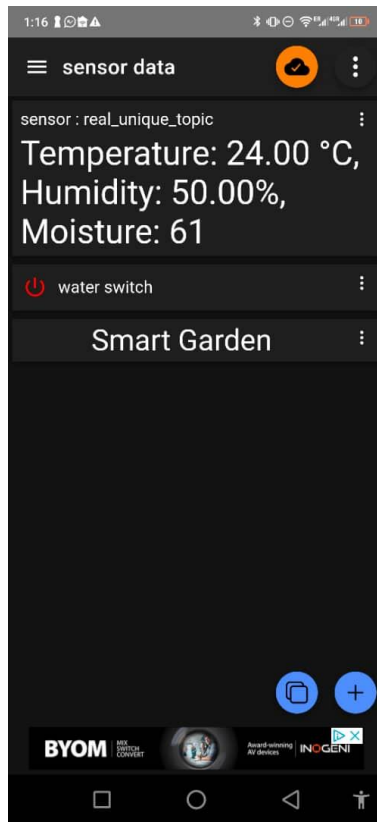# Smart Garden Class diagram

Thinkspeak (CLOUD)

+ TOPIC = real_unique_value
+ TOPIC = Water_pump
+ Temperature:Float
+ Humidity:Float
+ Moisture:Int

+Chanells and file creation
+Visualization of sensor data

Users

+UserId = string
- SSID:string
- Brokerlogin:string

+ Read()
- Turnon_water_pump()
-

IOT MQTT APPLICATION

+ TOPIC = real_unique_value
+ TOPIC = Water_pump
+ Temperature:Float
+ Humidity:Float
+ Moisture:Int

+Read data and display ion Dashboard
-Control water pup with switch
+Publish switch status to suscriber under water_pump topic

1..*

Arduino(Publisher)

+ TOPIC = real_unique_value
+ Temperature:Float
+ Humidity:Float
+ Moisture:Int

+connect to wifi and broker
+publish sensor data

1..*

RASPBERRY PI

+ TOPIC = real_unique_value
+ Temperature:Float
+ Humidity:Float
+ Moisture:Int

+Act as Mqtt Broker
+

1...*

Arduino(SUSCRIBER)

+ TOPIC = real_unique_value
+ TOPIC = Water_pump
+ Temperature:Float
+ Humidity:Float
+ Moisture:Int
+ water_pump(on,off):string

+Read-topics and extract payload
+Turn on water pump
+Turn on Heat
+callback handling
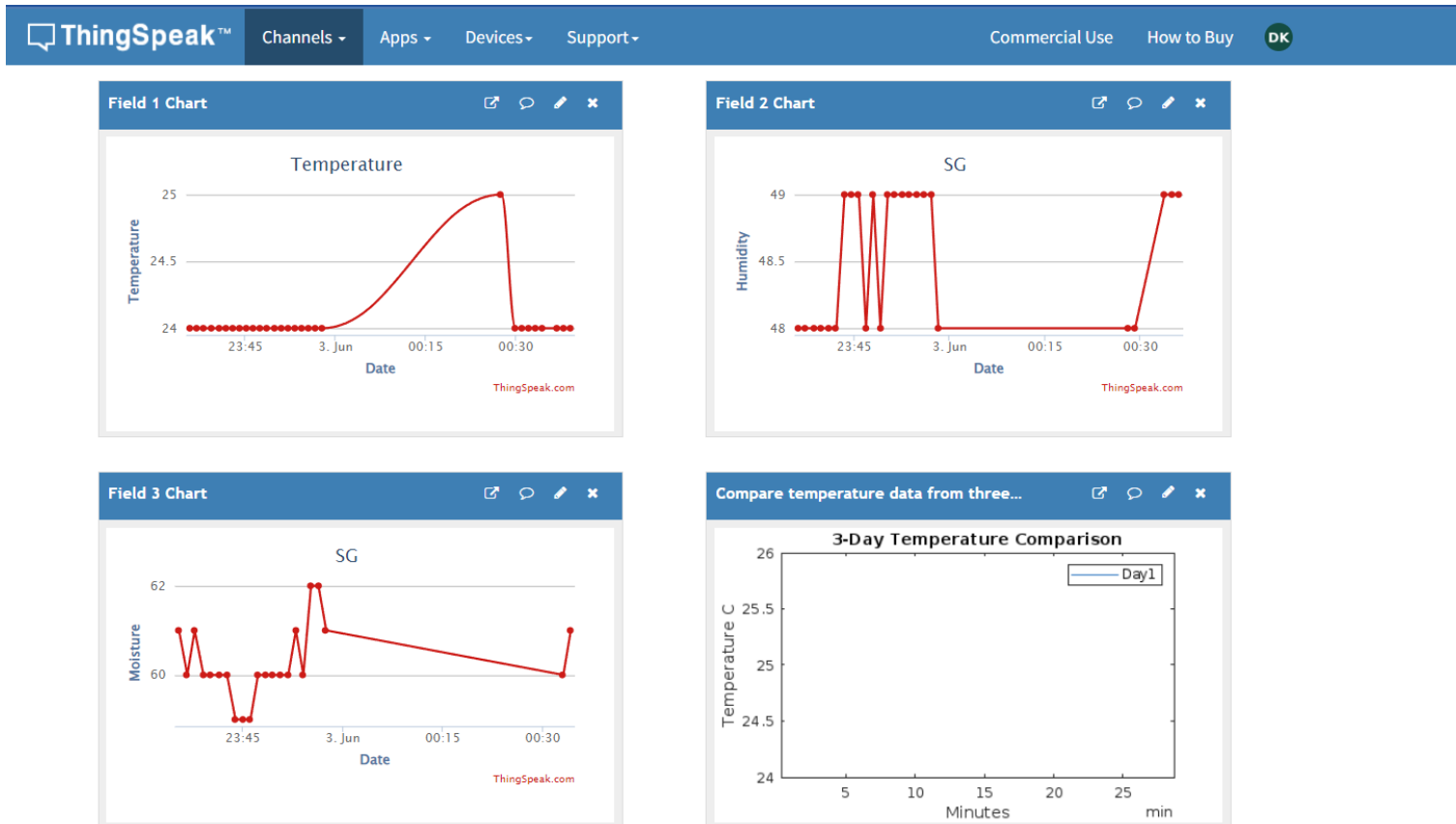+Set threshold for parameters

User Interaction

Iot MQTT panel

Python code for Thinkspeak

```python
1   import paho.mqtt.client as mqtt
2   import requests
3   import time
4
5   # MQTT broker settings
6   broker = "172.20.10.4"
7   port = 1883
8   username = "teamd"  # Replace with your MQTT broker username
9   password = "TeamD2023"  # Replace with your MQTT broker password
10
11  # ThingSpeak settings
12  channel_id = "2164717"  # Replace with your ThingSpeak channel ID
13  api_key = "L2T932BU6SPRNEBH"  # Replace with your ThingSpeak API key
14
15  # MQTT on_connect callback
16  def on_connect(client, userdata, flags, rc):
17      print("Connected to MQTT broker")
18      client.subscribe("real_unique_topic")  # Subscribe to the topic where data is being published
19
20  # MQTT on_message callback
21  def on_message(client, userdata, msg):
22      payload = msg.payload.decode()
23      print("Received message:", payload)
24
25      # Extract temperature, humidity, and moisture readings
26      temperature_start = payload.find("Temperature:") + len("Temperature:")
27      temperature_end = payload.find("°C", temperature_start)
28      temperature = payload[temperature_start:temperature_end].strip()
29
30      humidity_start = payload.find("Humidity:")
```

Thinkspeak Cloud

Thanks !