Task 11: Temperature upload over MQTT using Raspberry Pi and DHT22 Sensor

**Aim:**

To upload the temperature over MQTT using Raspberry Pi and DHT22 sensor.

**Components Required:**

1. Raspberry Pi 3

2. DHT22 sensor

3. Resistors

4. Bread board

5.Jumper wires

**Procedure:**

**Step1:** Connect the components according to the circuit diagram

**Step2:**Connect the DHT22 to the Raspberry as shown

DHT-22 Pin Raspberry Pi Pin

DHT-22 Data Raspberry Pi GPIO 4

DHT-22 VCC Raspberry Pi 3.3V

DHT-22 GND (-) Raspberry Pi GND

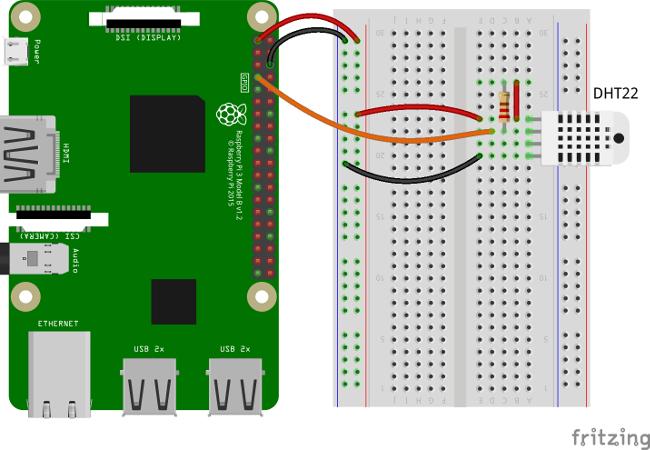
**Step3:**Create a new device in Things Board web and make note of Access Token provided.

**Step4:**Install all the required libraries for Raspberry Pi and MQTT .

**Step5:** Include the hosting website and access token values in the code.

**Step6:** Start the simulation.

**Circuit diagram:**



**CODE:**

importos

importtime

importsys

importAdafruit\_DHTasdht

importpaho.mqtt.clientasmqtt

importjson

THINGSBOARD\_HOST='demo.thingsboard.io'

ACCESS\_TOKEN='DHT22\_DEMO\_TOKEN'

*# Data capture and upload interval in seconds. Less interval will eventually hang the DHT22.*

INTERVAL=2

sensor\_data={'temperature':0,'humidity':0}

next\_reading=time.time()

client=mqtt.Client()

*# Set access token*

client.username\_pw\_set(ACCESS\_TOKEN)

*# Connect to ThingsBoard using default MQTT port and 60 seconds keepalive interval*

client.connect(THINGSBOARD\_HOST,1883,60)

client.loop\_start()

try:

whileTrue:

humidity, temperature=dht.read\_retry(dht.DHT22,4)

humidity=round(humidity,2)

temperature=round(temperature,2)

print(u"Temperature: {:g}\u00b0C, Humidity: {:g}%".format(temperature,humidity))

sensor\_data['temperature']=temperature

sensor\_data['humidity']=humidity

*# Sending humidity and temperature data to ThingsBoard*

client.publish('v1/devices/me/telemetry',json.dumps(sensor\_data),1)

next\_reading+=INTERVAL

sleep\_time=next\_reading-time.time()

ifsleep\_time>0:

time.sleep(sleep\_time)

exceptKeyboardInterrupt:

pass

client.loop\_stop()

client.disconnect()

**OUTPUT:**

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**RESULT:** Thus the execution of uploading temperature values over MQTT using Raspberry Pi and DHT22 sensor is done successfully.