UTM
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بسم الله الرحمن الرحيم

# Plant Watcher

## Individual Project

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# Project Architecture

**MQTT Server**

1 An MQTT server that's working as a broker between publishers and subscribers

**Fog Layer**

2 Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor. Donec facilisis lacus eget mauris.

**Sensor Node**

3 Senses temperature and humidity for both soil and air around the plant.

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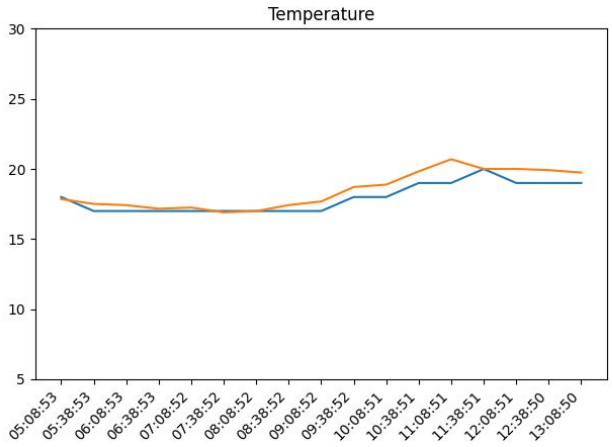
# Project Images

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# Sensors

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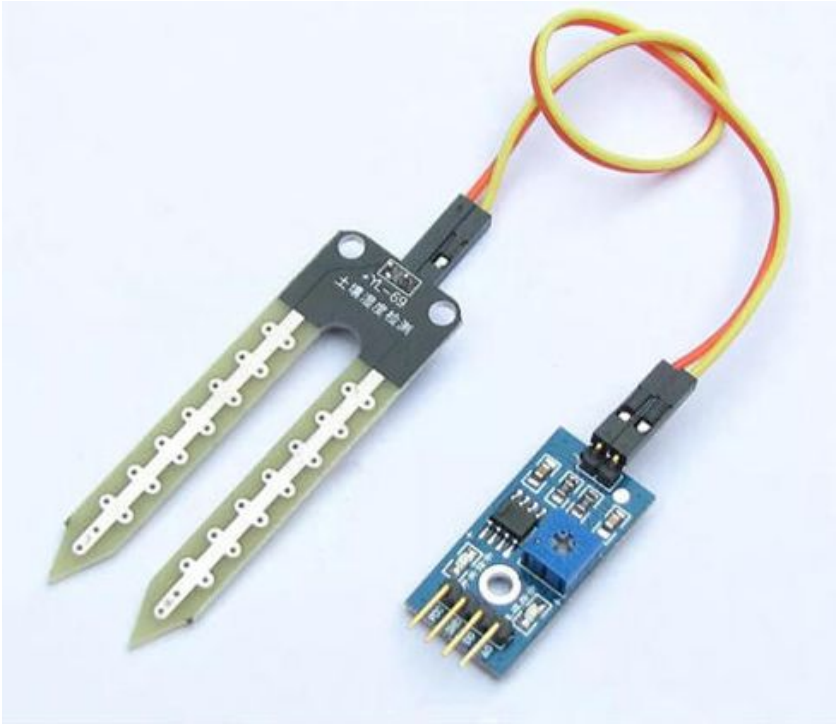
# Moisture Sensor

- This Moisture Sensor uses the two probes to pass current through the soil.
- Reads that resistance to get the moisture level.
- More water makes the soil conduct electricity more easily while dry soil conducts electricity poorly.



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# Temperature sensor (thermistor)

- The resistance in 25 °C is 10K
- The resistance goes down as it gets warmer.
- Often used for places where they can get damp.

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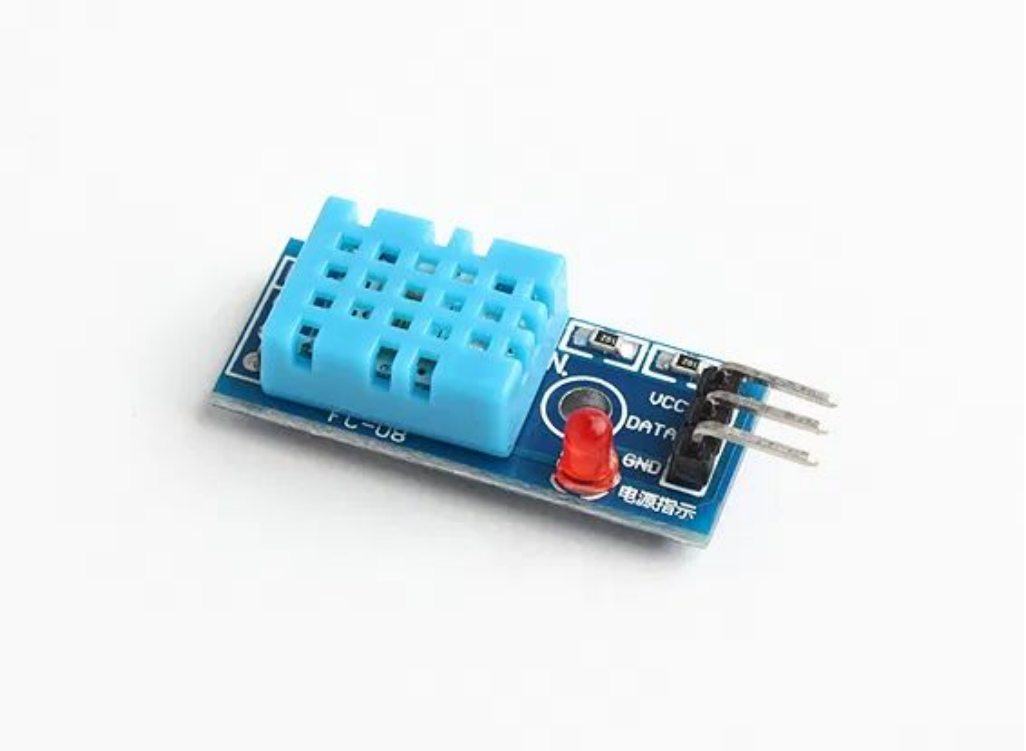
# Air Humidity & Temperature (DHT-11)

The DHT sensors are made of two parts,

- Capacitive humidity sensor
- Thermistor

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# Communication

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# WiFi, RTC & NTP

- Communication with Fog node is done through WiFi.
- Real Time Clock (RTC) is used to be able to add timestamp to messages.
- Network Time Protocol (NTP) makes the sensor node aware of the current time after a power loss.

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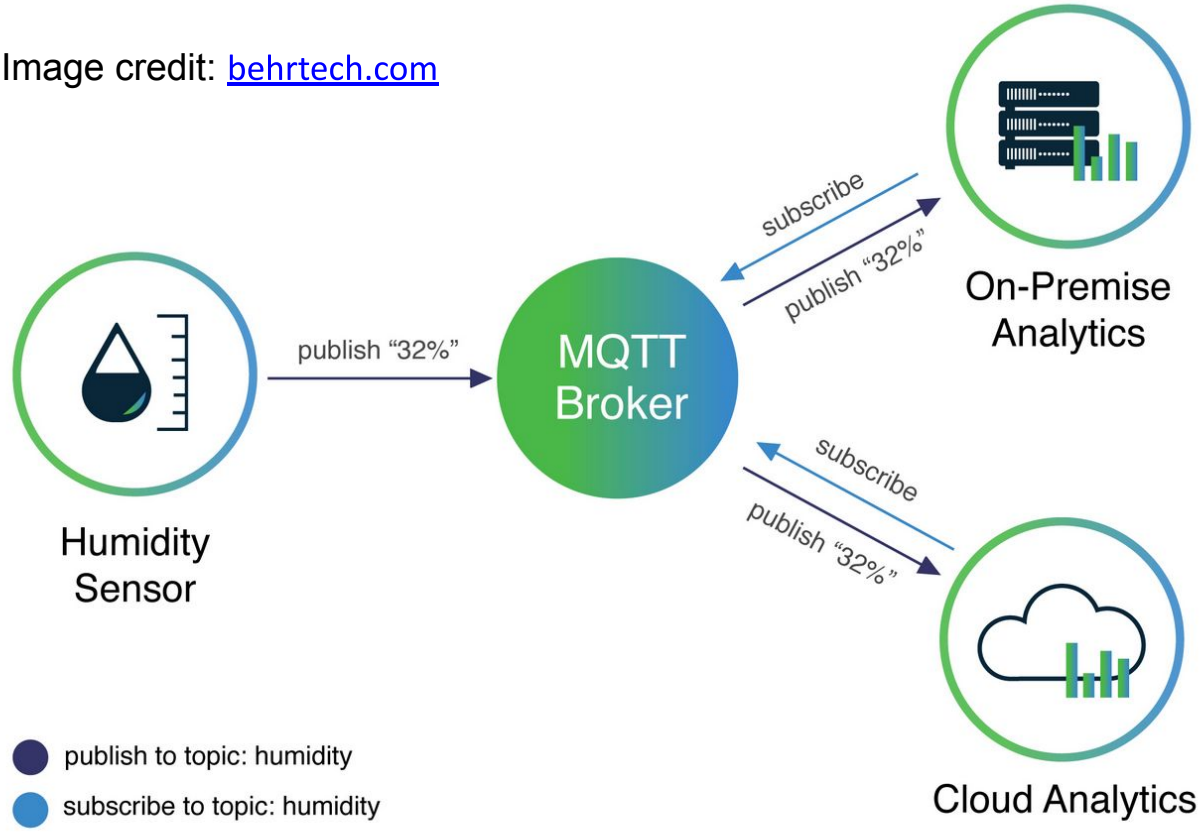
# MQTT

Developed by Andy Stanford-Clark and Arlen Nipper in 1999

Image credit: behrtech.com



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# MQTT | Over Network

- Max payload 256MB with binary data.
- Uses can use TCP which supports encryption using TLS.

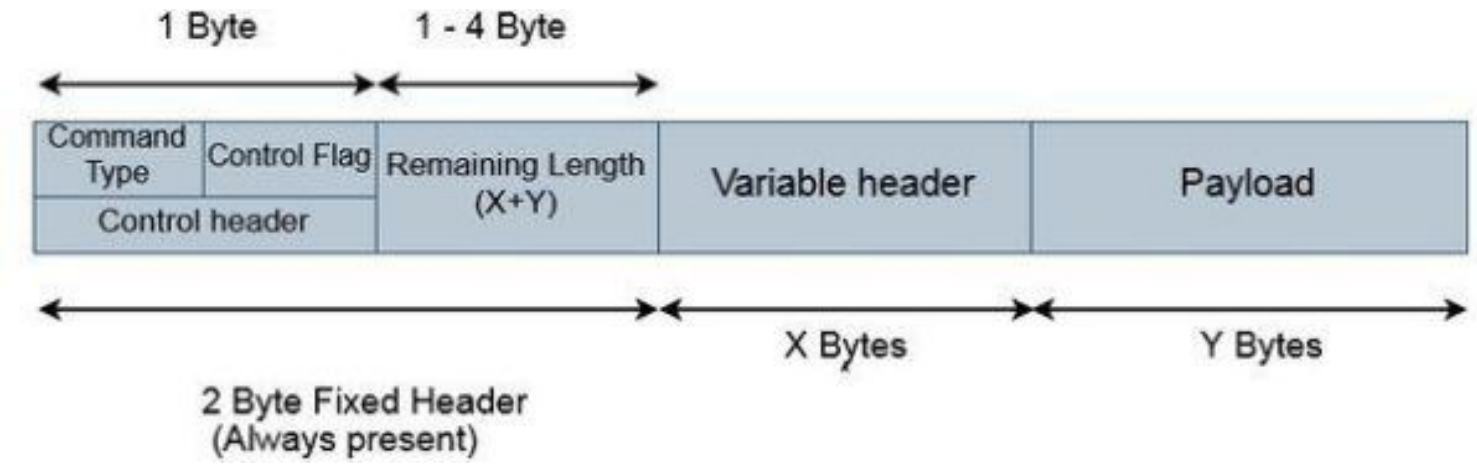


Image credit: openlabpro.com

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# MQTT Use case

- MQTT is a lightweight protocol with few control options.
- It’s most suitable for large networks of small devices that need to be monitored or controlled

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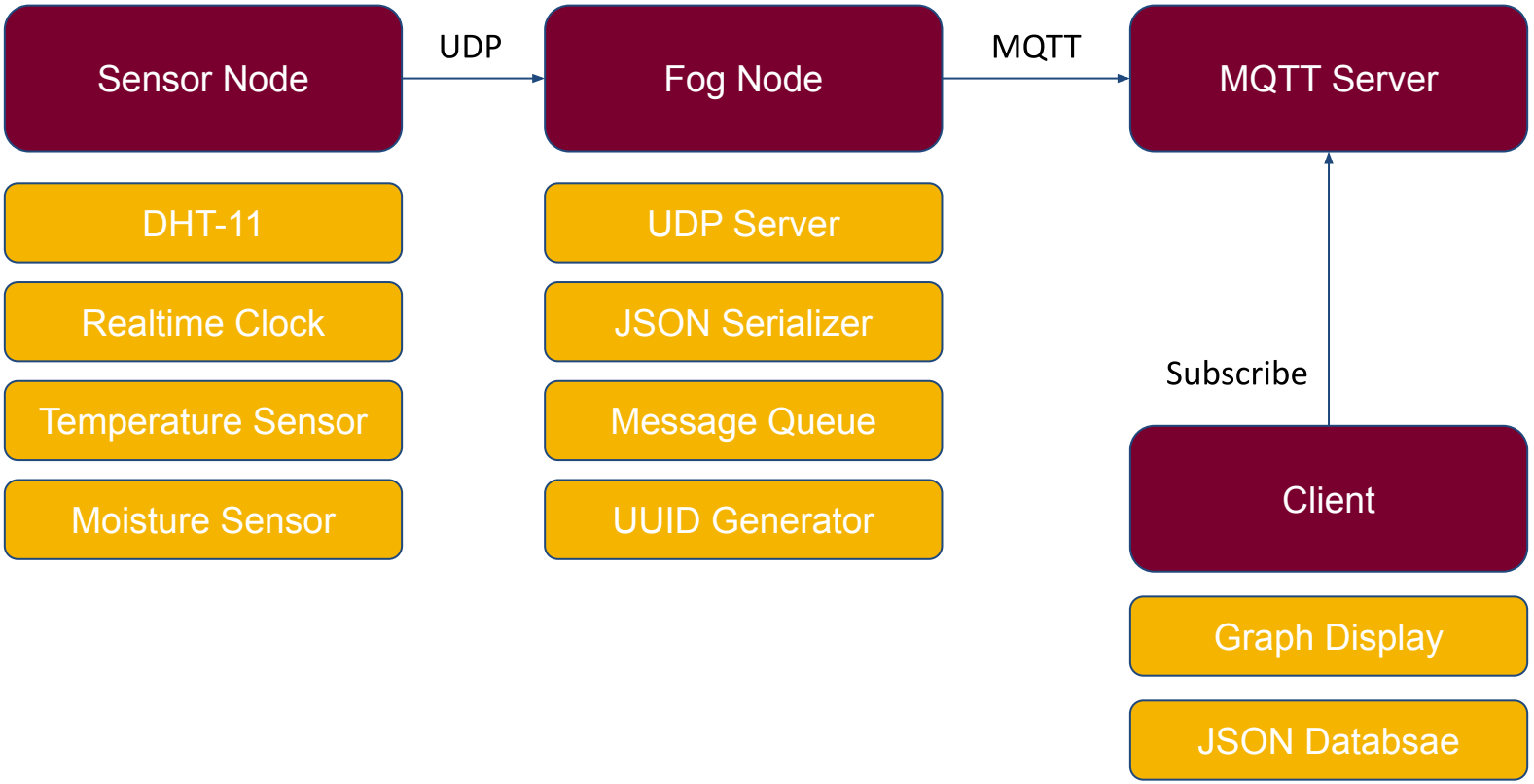
# Code diagram

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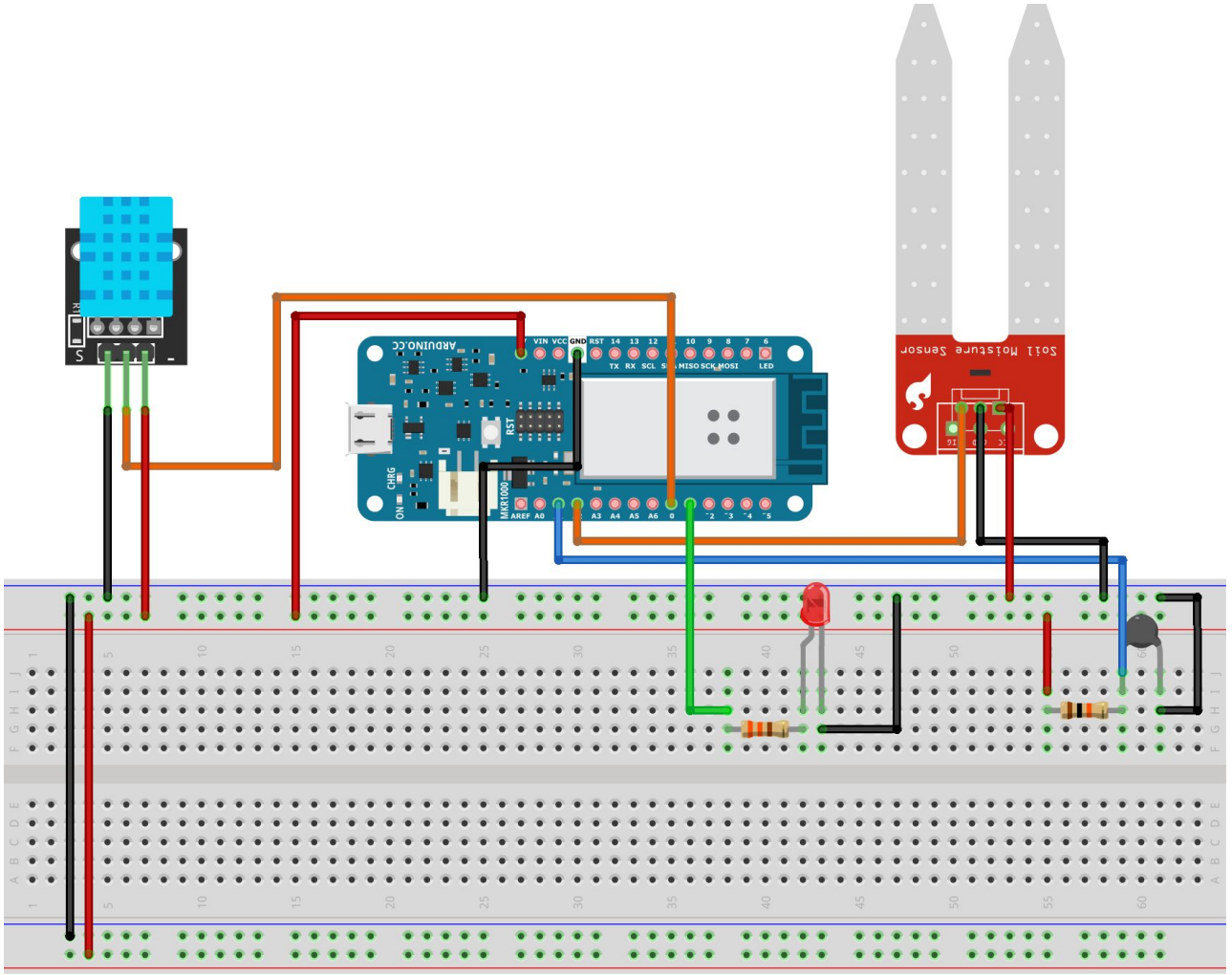
# Sensor Circuit

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# References


- https://vasters.com/blog/From-MQTT-to-AMQP-and-back/


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