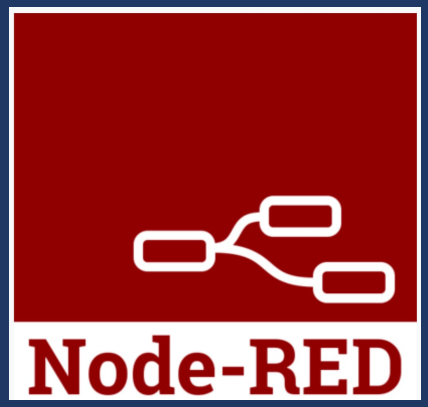
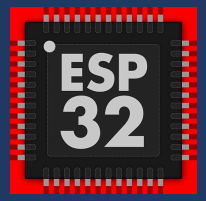




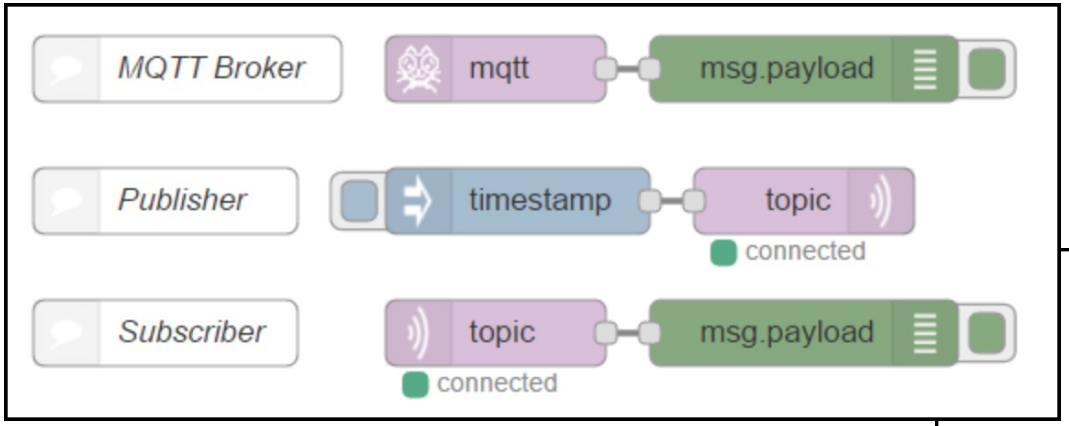
IoT MQTT with NodeRED Monitoring Server Room Temperature & Humidity Level

v1 mar2021

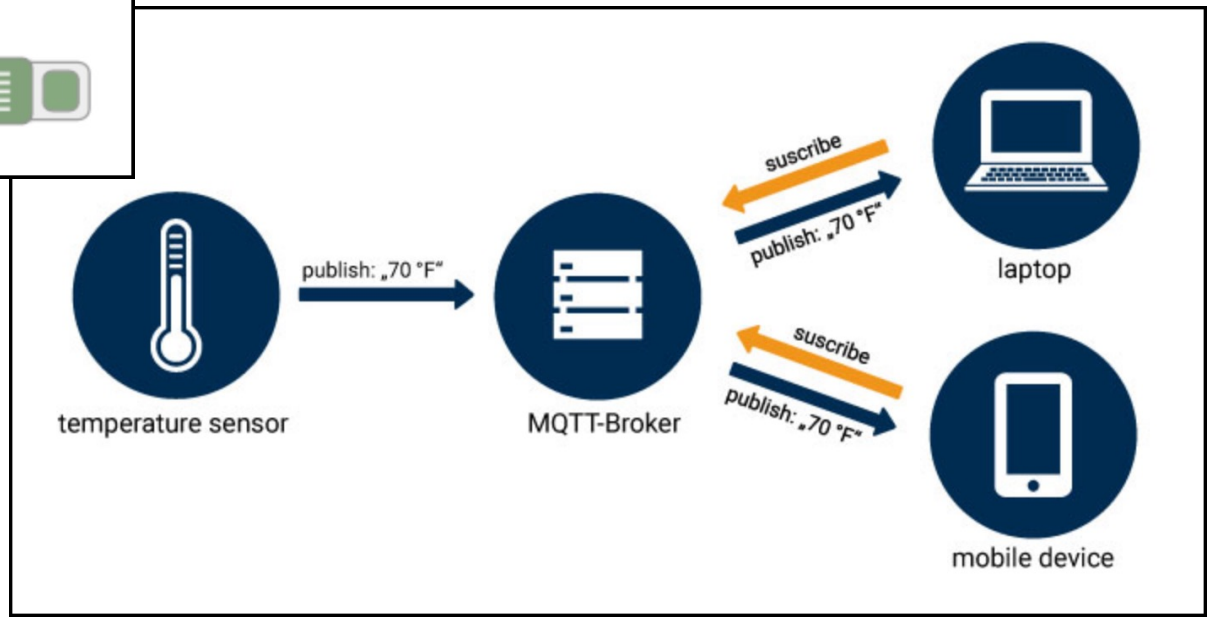
iezan74@gmail.com

script WORKZ

Scenario: Display temperature & humidity data on Node-RED using MQTT communication protocol.

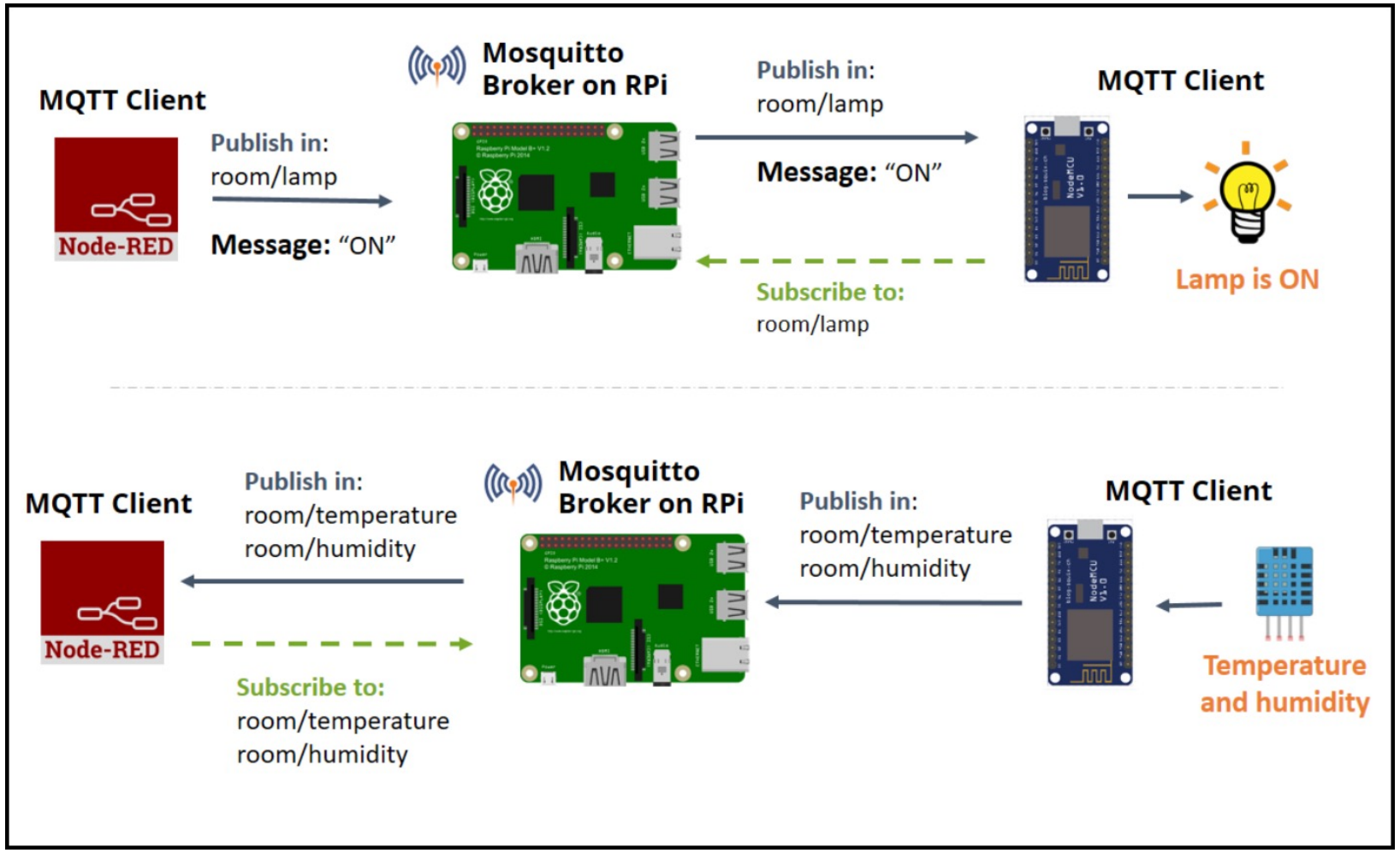


https://flows.nodered.org/node/node-red-contrib-mqtt-broker



https://www.opc-router.com/what-is-mqtt/

MQTT


MQTT Client
Node-RED
Publish in:
room/lamp
Message: "ON"
Mosquitto
Broker on RPi
Publish in:
room/lamp
Message: "ON"
MQTT Client
Lamp is ON
Subscribe to:
room/lamp
MQTT Client
Node-RED
Publish in:
room/temperature
room/humidity
Subscribe to:
room/temperature
room/humidity
Mosquitto
Broker on RPi
Publish in:
room/temperature
room/humidity
MQTT Client
Temperature
and humidity

Requirement:

i. Experience with Node-RED, DHT11 & ESP32 would be an advantage.
ii. DHT 11 & ESP32 (with its accessories).
ii. PC/Laptop/Raspberry Pi.

To Do:

A. Hardware Section
i. Download & Install Arduino IDE
ii. Install ESP32 board
iii. Download DHT11 library & client library for MQTT messaging – PubSubClient
iv. Connect/assemble & test hardware
v. Download sketch from xxxx & test.

https://www.arduino.cc/reference/en/libraries/pubsubclient/

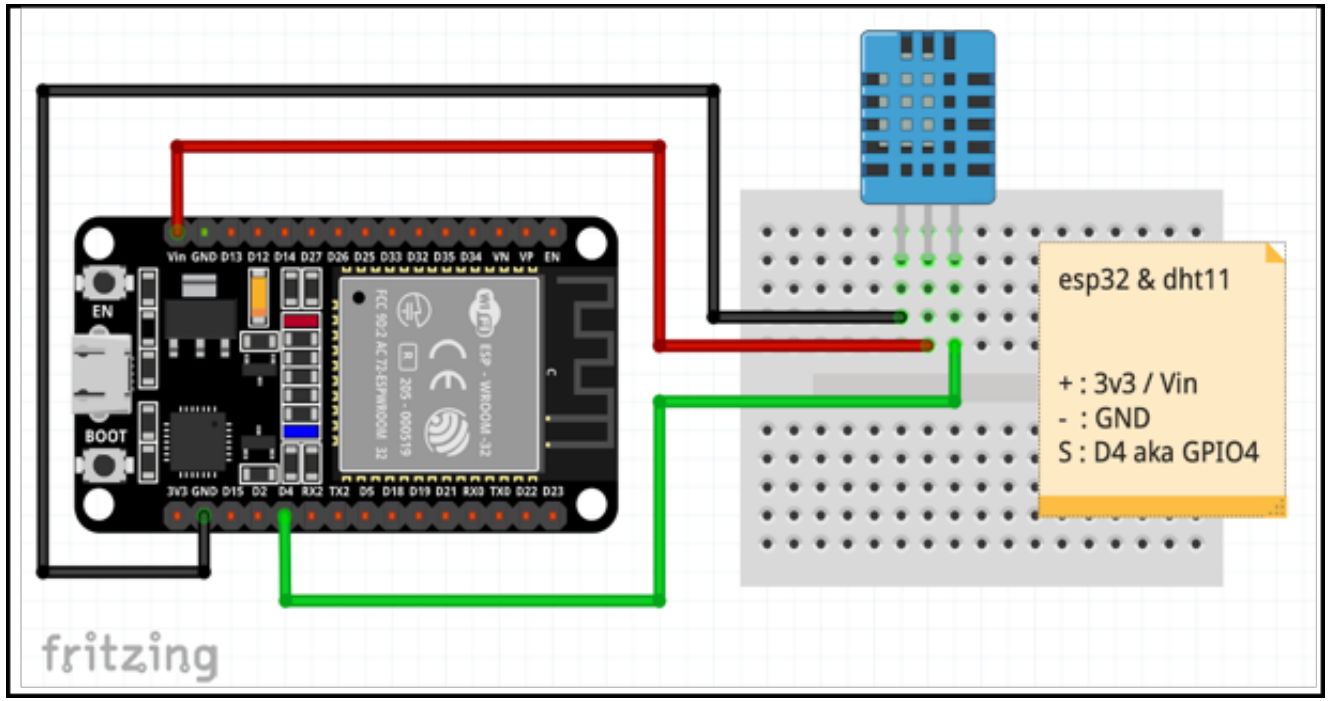
B. Node-RED Section
i. Install Aedes Broker.

C. System Deployment
i. Part A + Part B.

D. MySQL (if time permits)

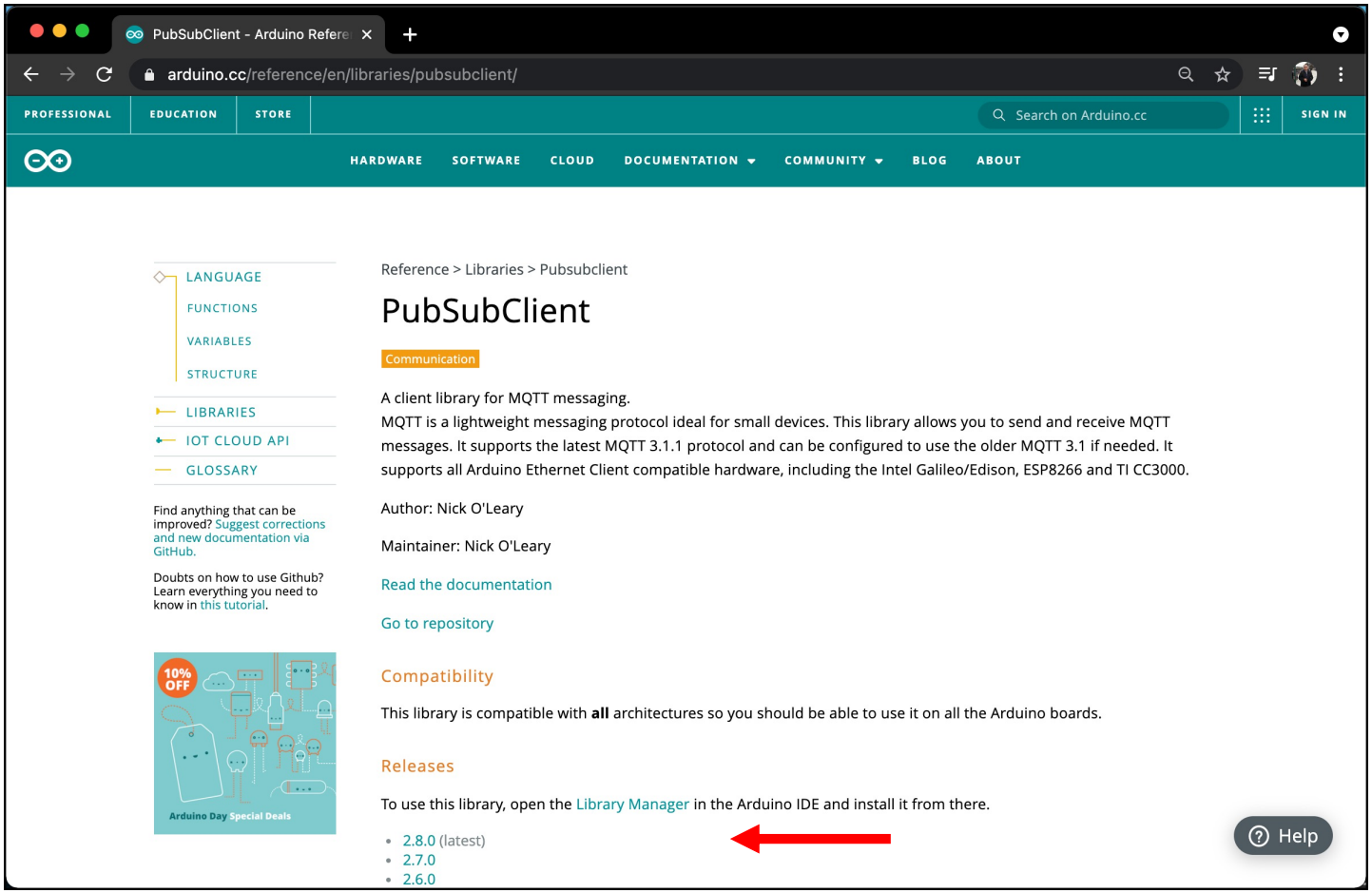
A. HARDWARE SECTION

i. Board Connection



B. PROGRAMMING SECTION

i. Download Ardiono's PubSubClient Library

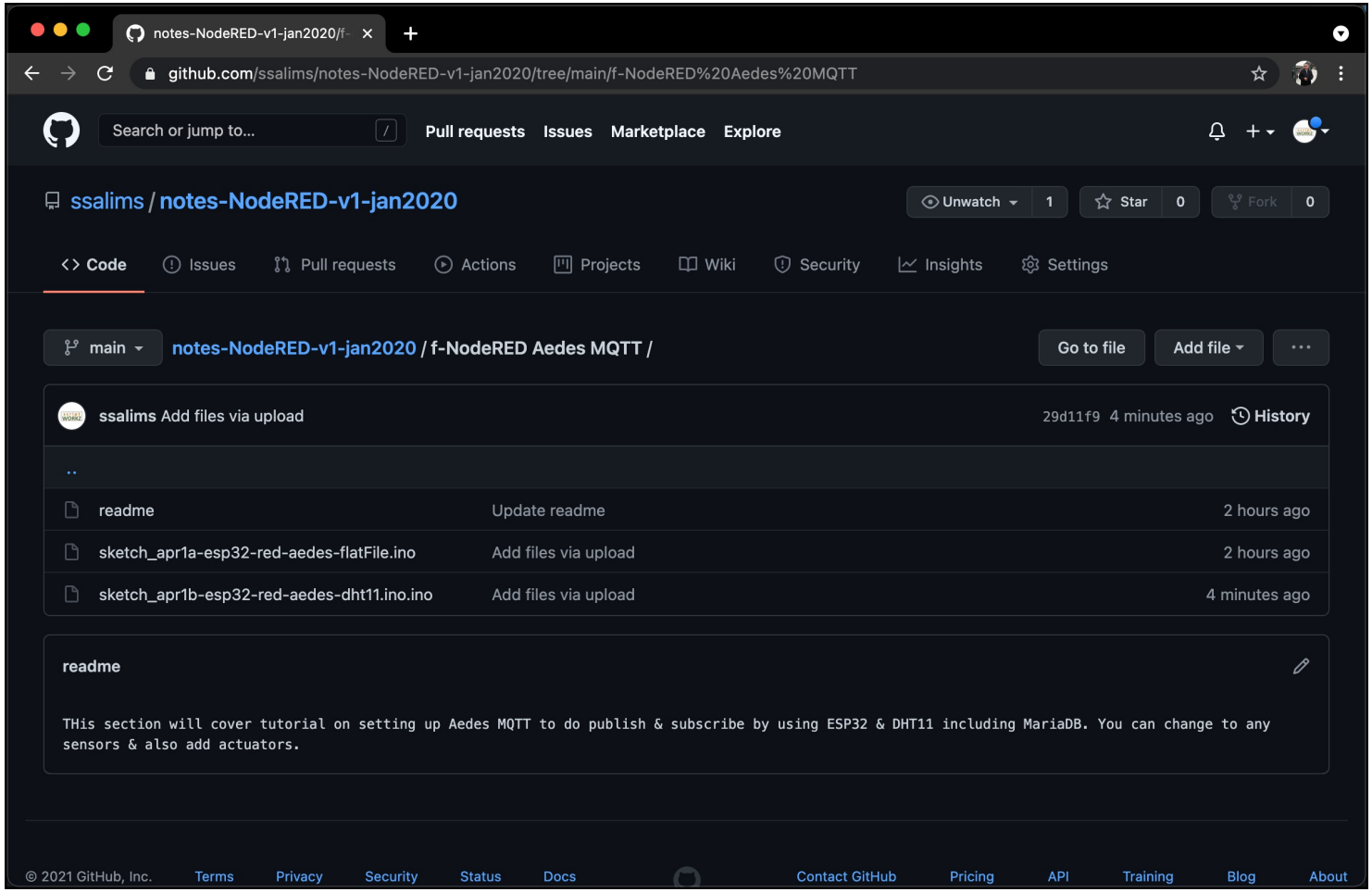


Link: PubSubClient
Sketch>Include Library>Add .Zip Library…

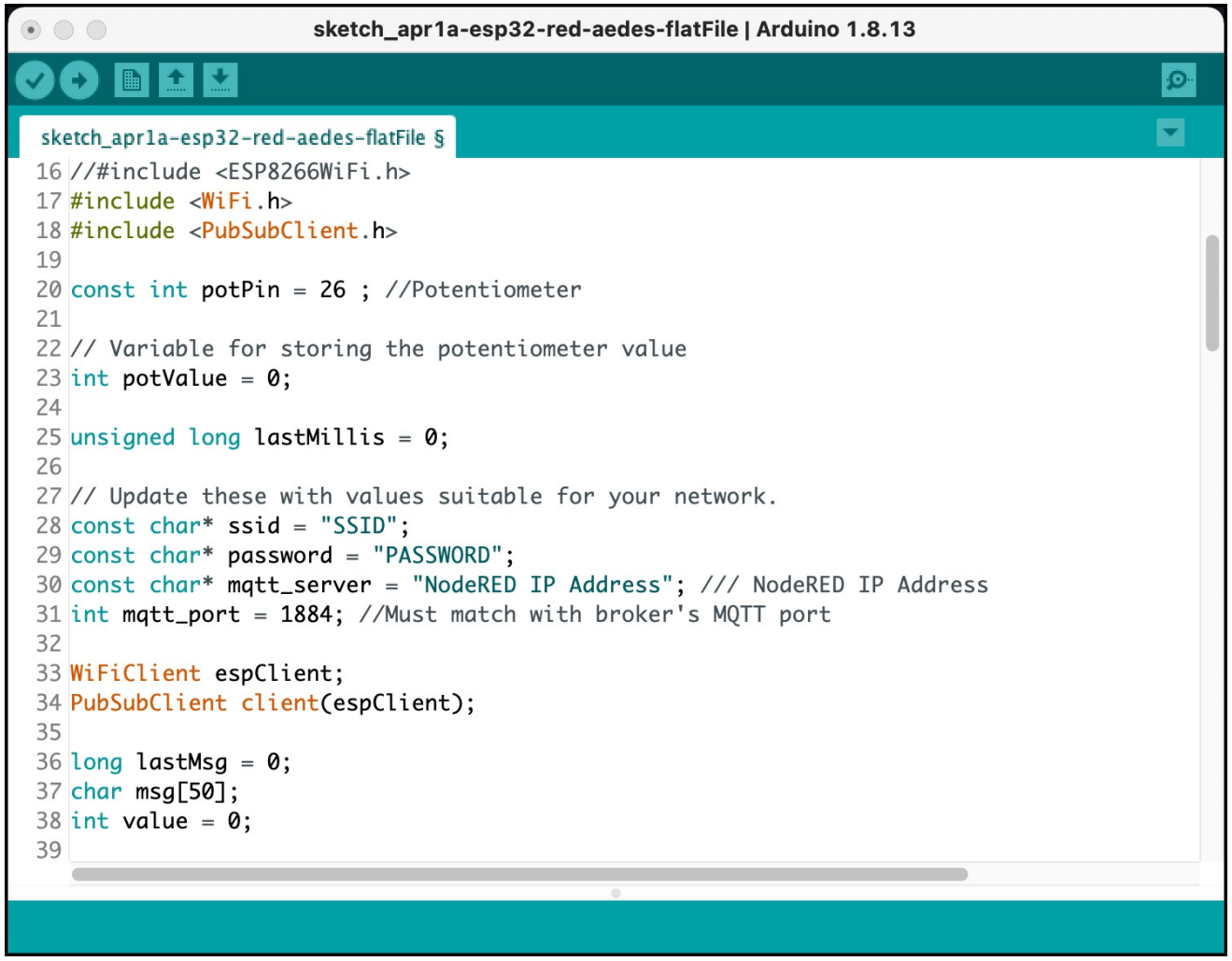
https://www.arduino.cc/reference/en/libraries/pubsubclient/

ii. Download Sketches from File Repo

https://github.com/ssalims/notes-NodeRED-v1-jan2020/tree/main/f-NodeRED%20Aedes%20MQTT



iii. Arduino Code Walkthrough



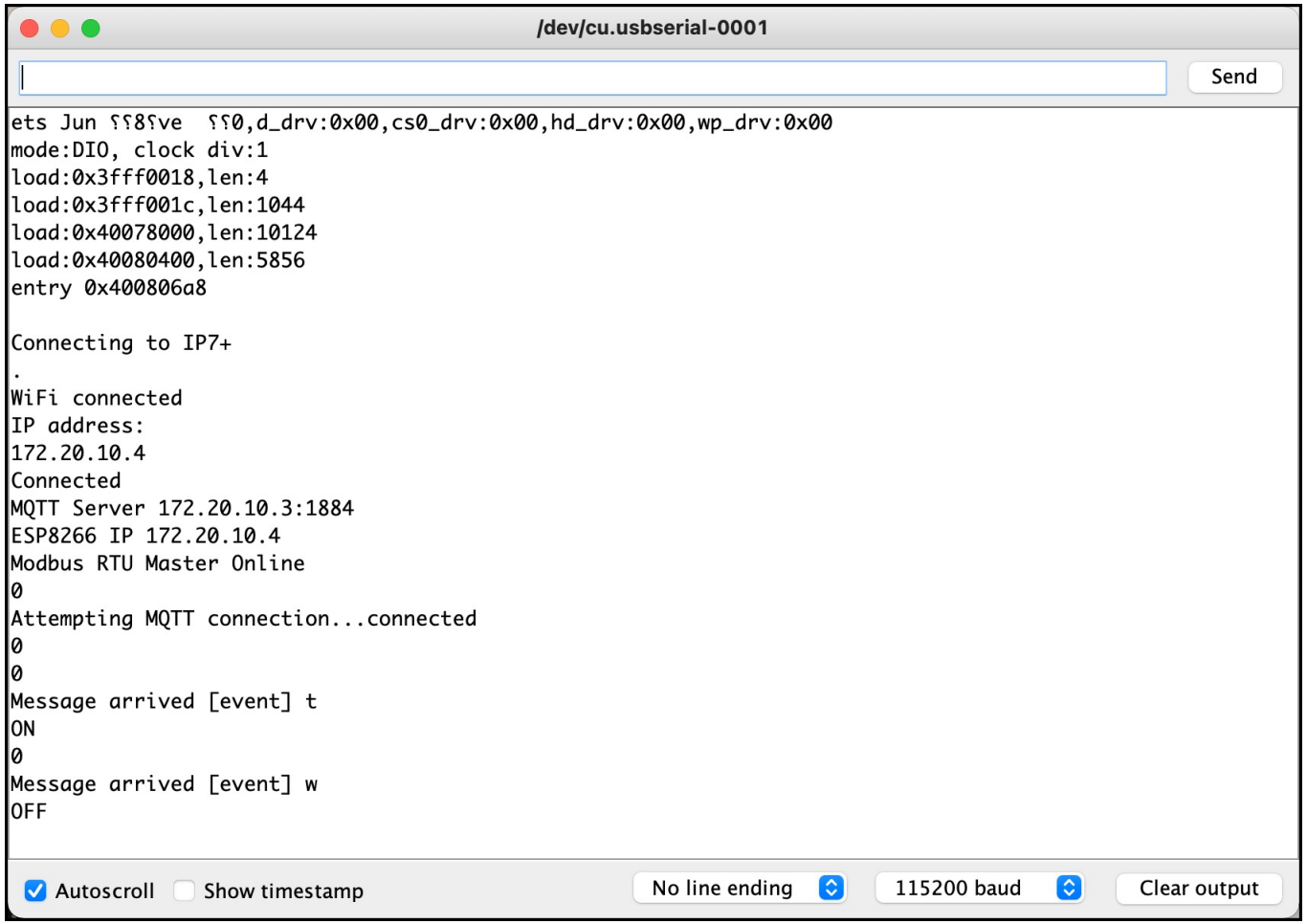
iii. Arduino Code Walkthrough

```
75 void callback(char* topic, byte* payload, unsigned int length) {
76   //Serial.println("Callback"); // Flag
77   /* To display message sent from broker */
78   Serial.print("Message arrived [");
79   Serial.print(topic);
80   Serial.print("] ");
81
82   for (int i = 0; i < length; i++) {
83     Serial.print((char)payload[i]);
84   }
85   /* ---------------------------------- */
86
87   /* This section is for controlling output: LED, servo etc */
88   Serial.println();
89   if ((char)payload[0] == 't') {
90     Serial.println("ON");
91     digitalWrite(LED_BUILTIN, HIGH);
92   } else {
93      Serial.println("OFF");
94     digitalWrite(LED_BUILTIN, LOW);
95   }
96
97  /* ---------------------------------- */
98 }
```

iii. Arduino Code Walkthrough

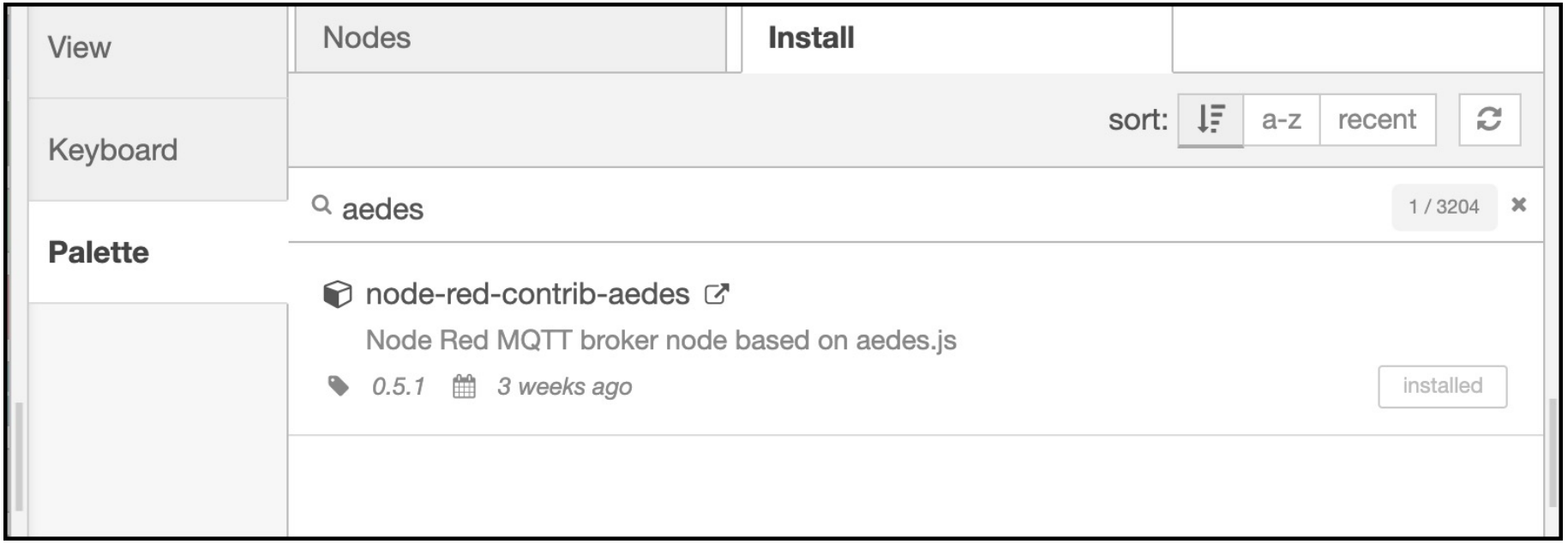
```
 99 void reconnect() {
100
101  // Loop until we're reconnected
102   while (!client.connected()) {
103     Serial.print("Attempting MQTT connection...");
104  // Attempt to connect
105     if (client.connect("ESP32Client")) {
106         Serial.println("Broker connected to ESP32");
107         client.subscribe("event"); // Topic at ESP32
108     } else {
109         Serial.print("failed, rc=");
110         Serial.print(client.state());
111         Serial.println(" try again in 5 seconds");
112         // Wait 5 seconds before retrying
113         delay(5000);
114     }
115   }
116 }
```

iii. Arduino Code Walkthrough



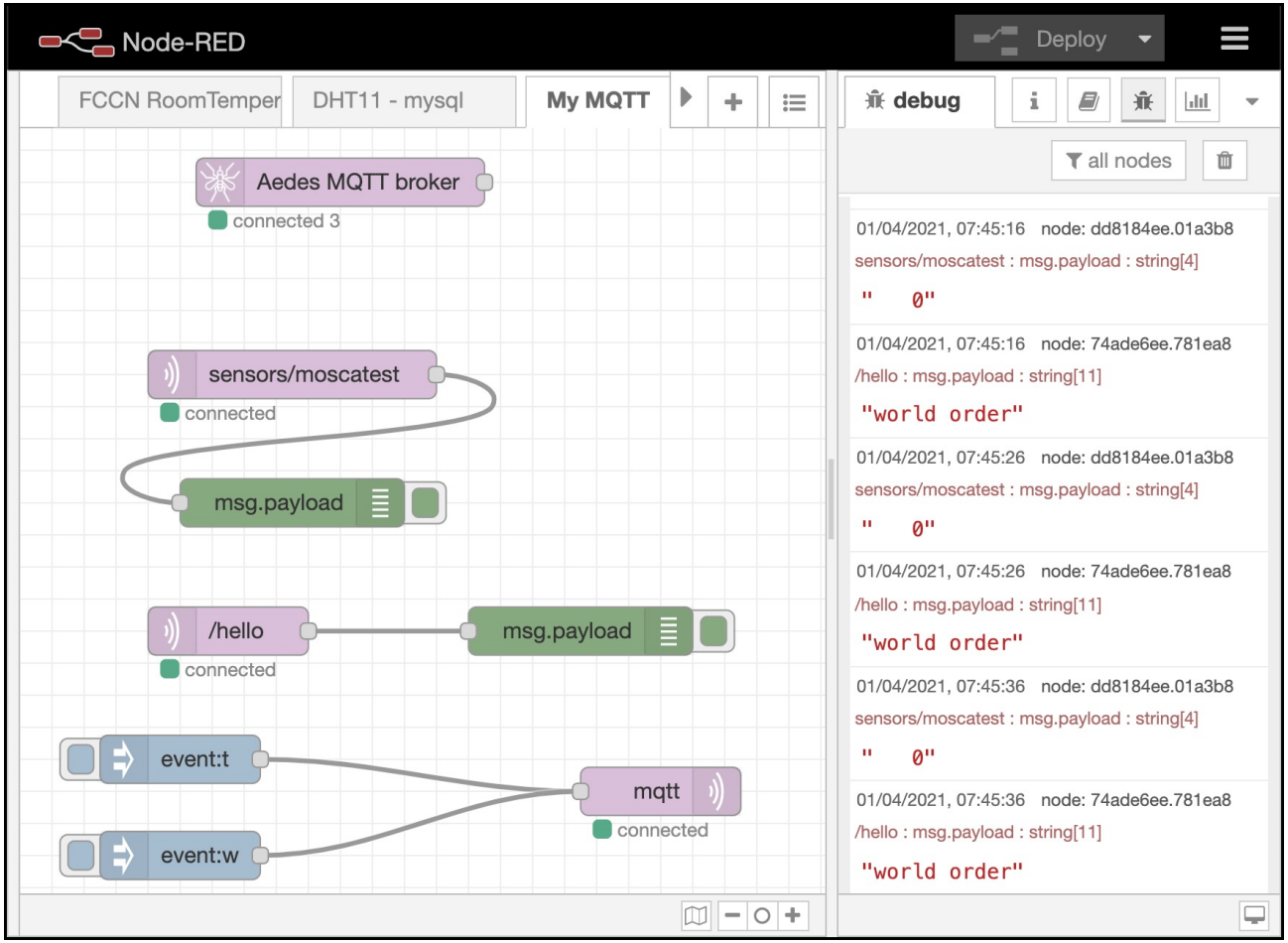
C. NodeRED SECTION

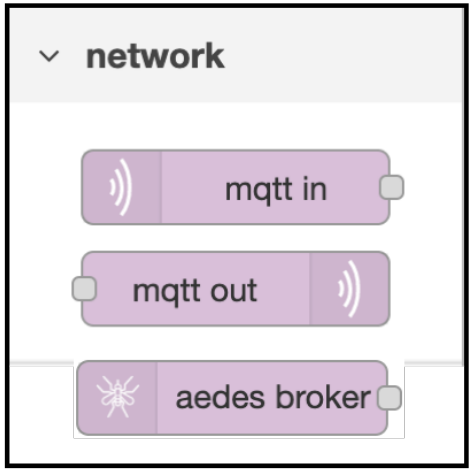
i. Install *Aedes* Palette



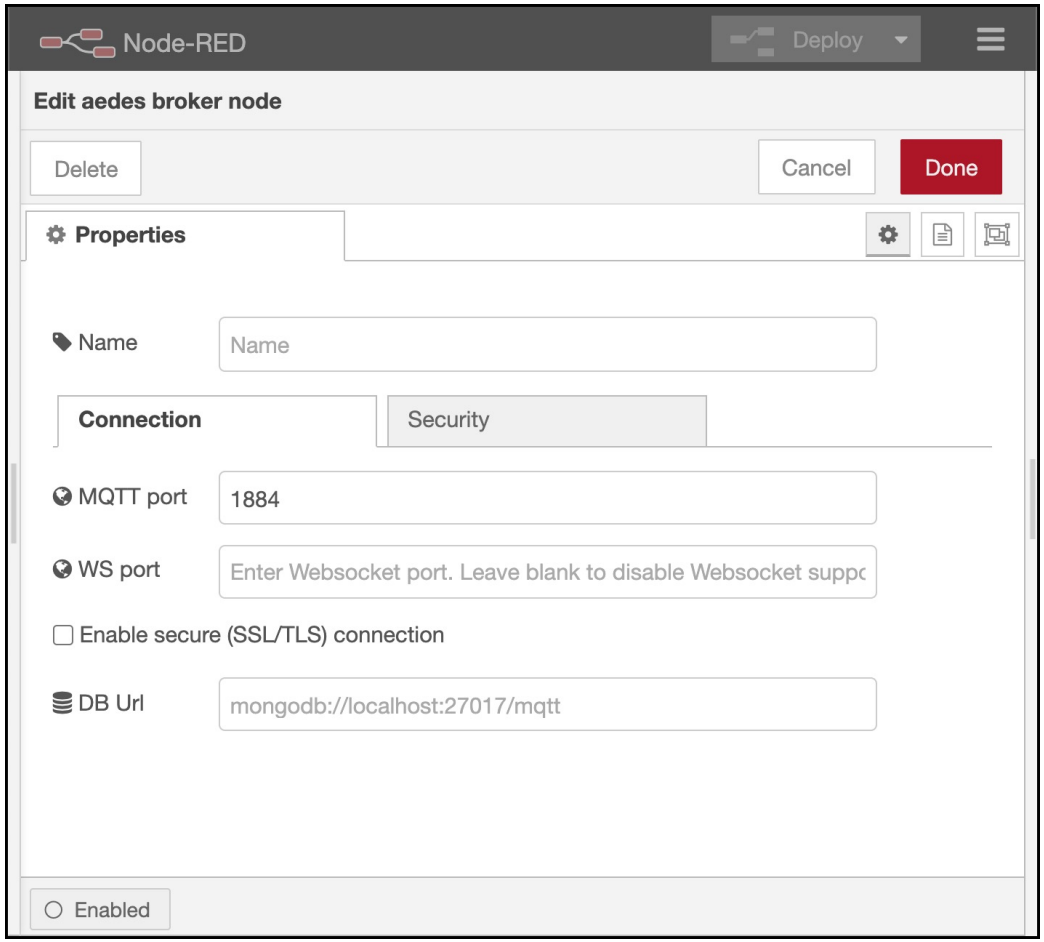
https://www.arduino.cc/reference/en/libraries/pubsubclient/

ii. Setup Workspace

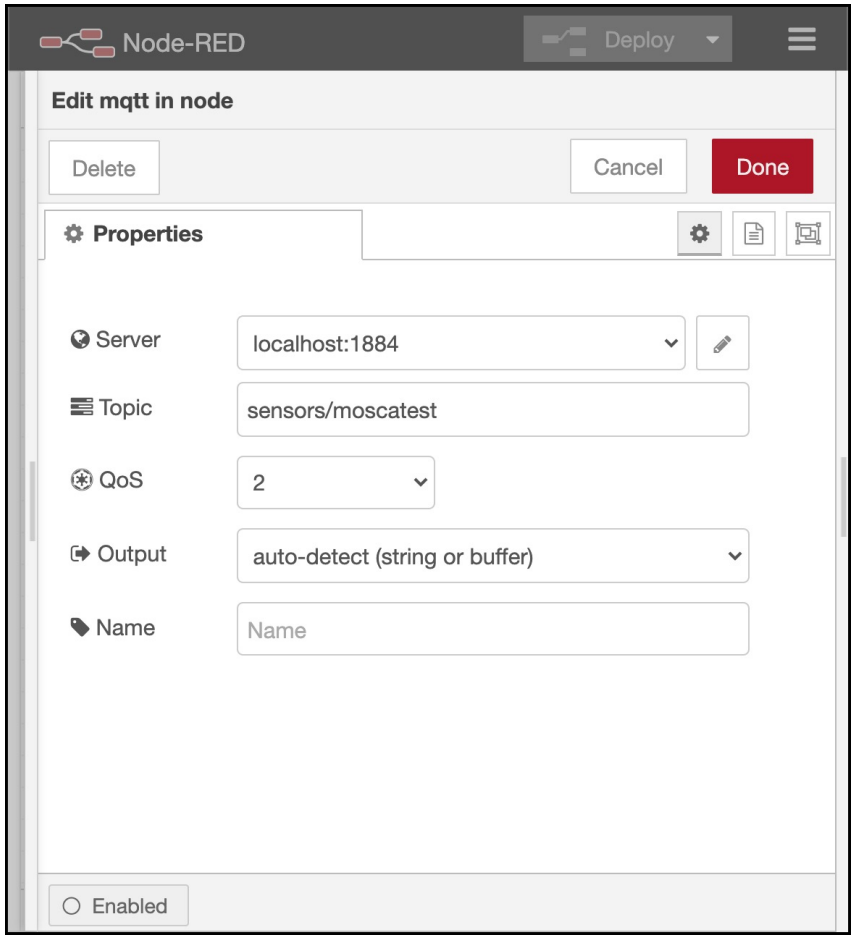


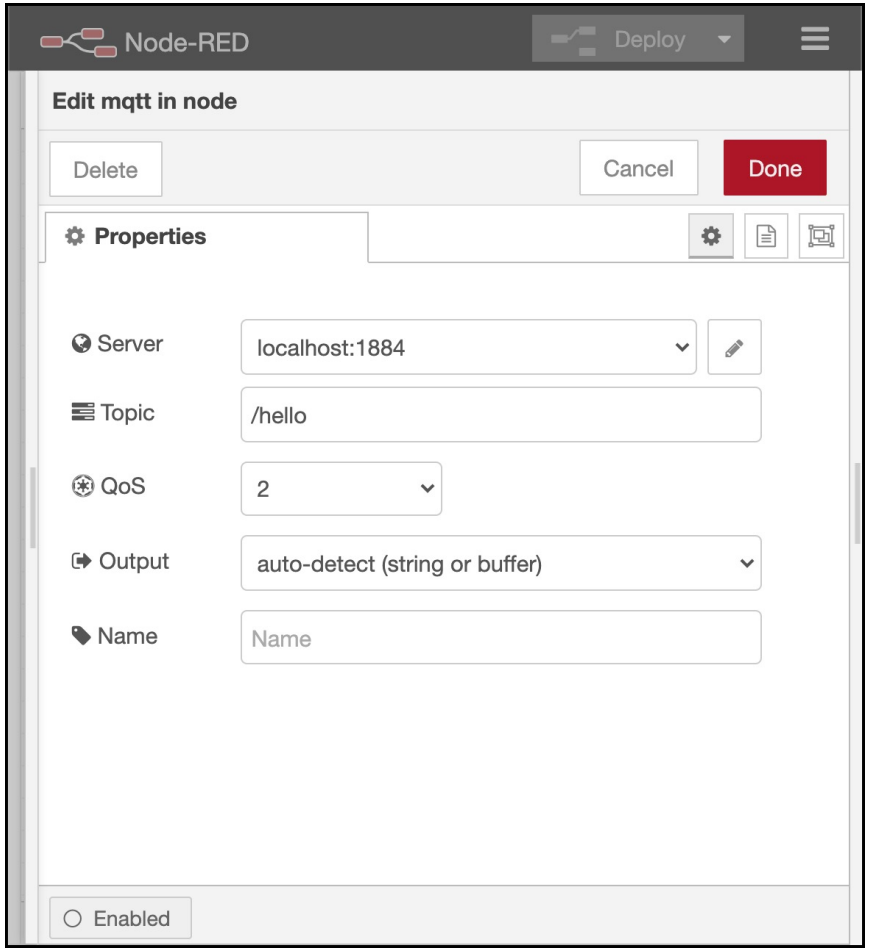


iii. Edit Aedes Broker Properties

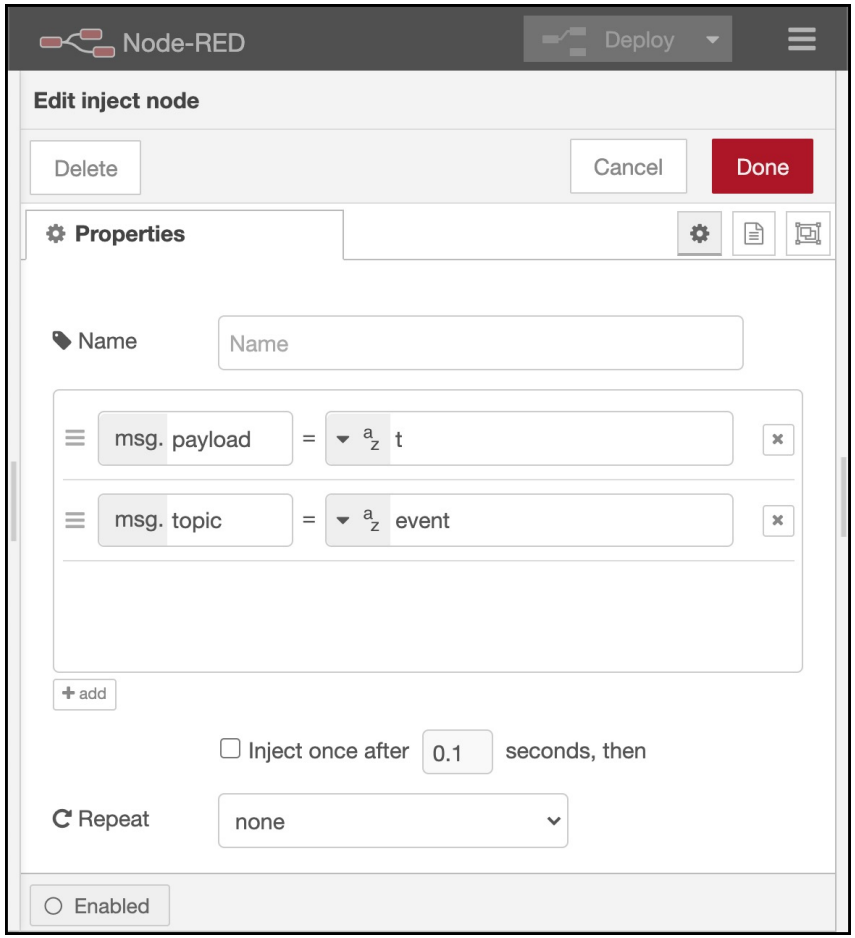


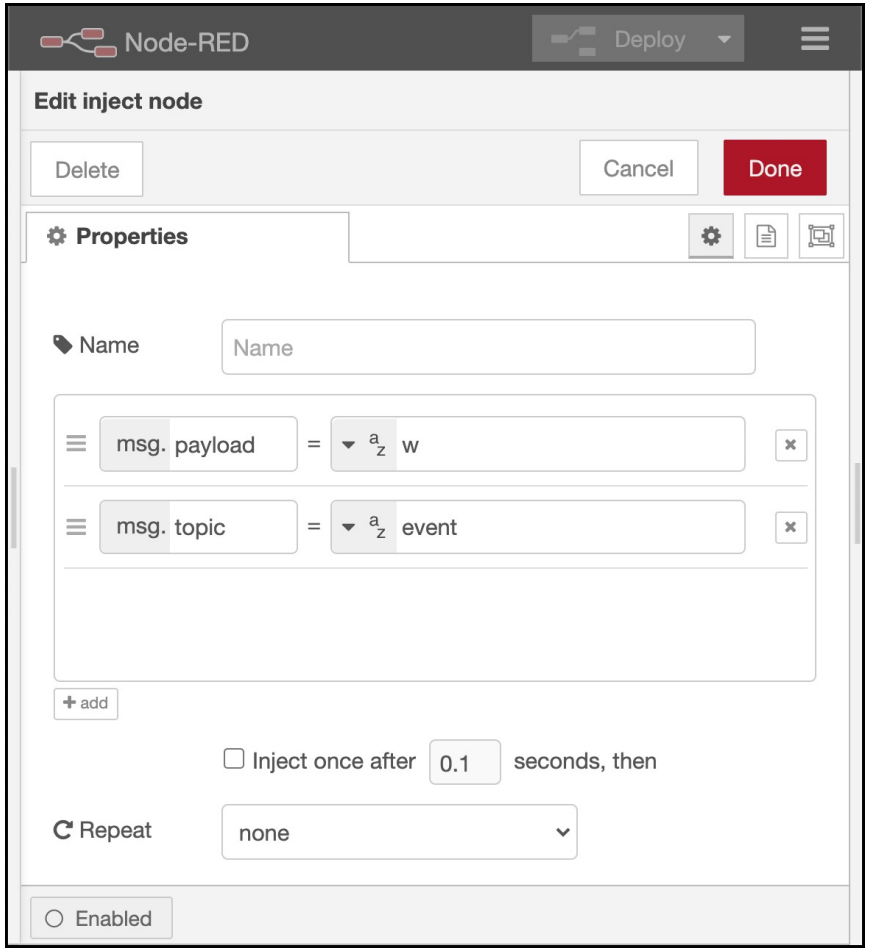
iv. Edit 2 x MQTT In Nodes Properties



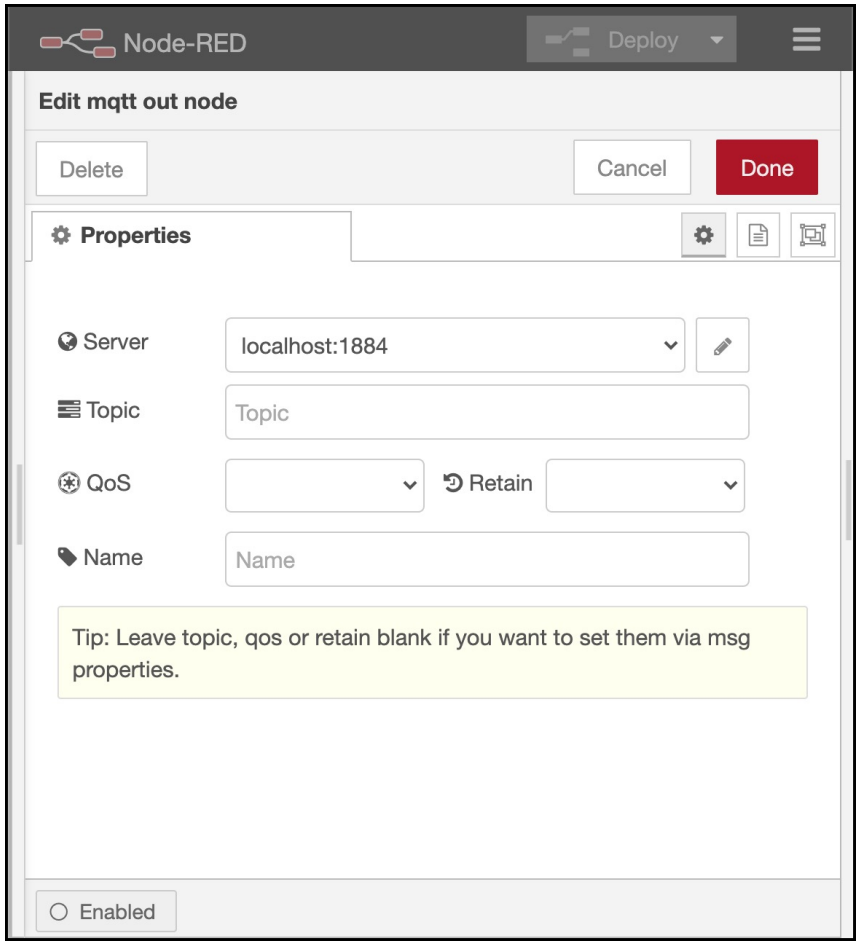


v. Edit 2 x Inject Nodes Properties





vi. Edit MQTT Out Node Properties



D. phpMyAdmin Section

d. phpMyAdmin

Database Name	datacenters_activities		
Table Name	room_dc230		
3 Columns			
NAME	TYPE	LENGTH	ADDITIONAL SETTING
id	INT	11	Index: **PRIMARY**
			A.I.: √ **A.I. = Auto Increment
logDateTime	DATETIME	NA	Default: **CURRENT_TIMESTAMP**
rackID	VARCHAR	255	NA
tempValue	Varchar	255	NA
humidValue	Varchar	255	NA
rackStatus	Varchar	255	NA

QnA

END