LAPORAN PRAKTIKUM MINGGU KE-13

Smart Device Configuration

INTERNET OF THINGS

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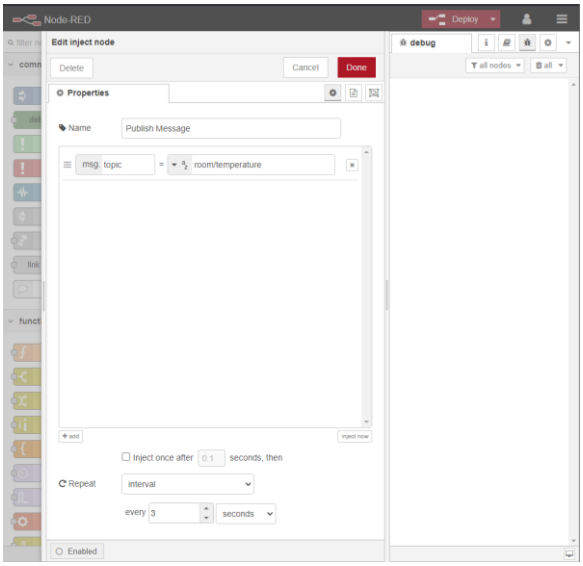
LAPORAN

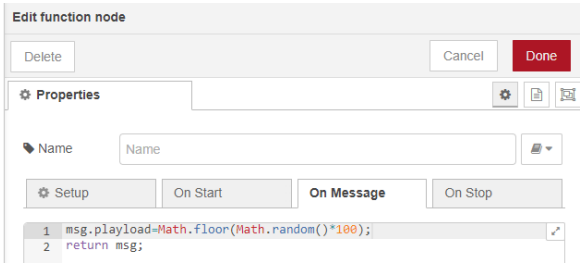
A. PRAKTIKUM

First step:

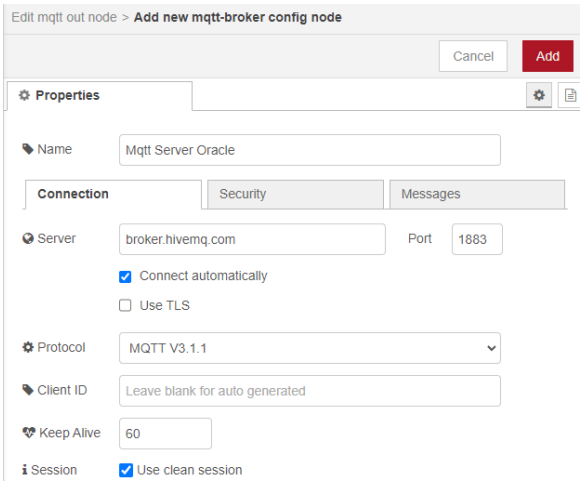
Create an inject node in the flowsheet as the following:

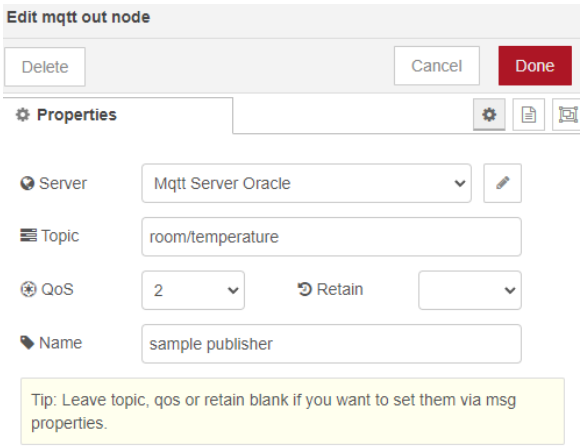


Next is to create a new function:

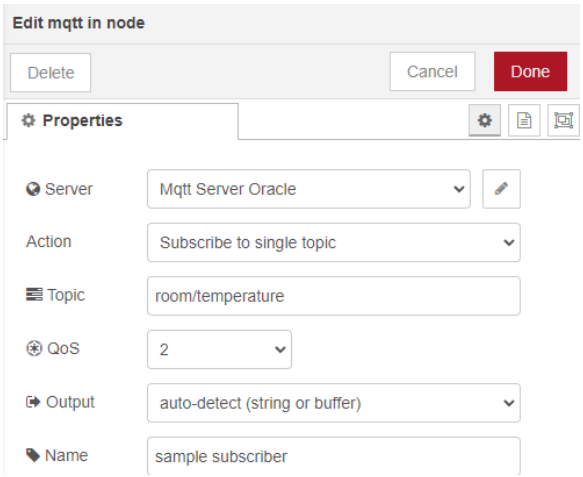


And then create a MQTT protocol out node with the following configuration:

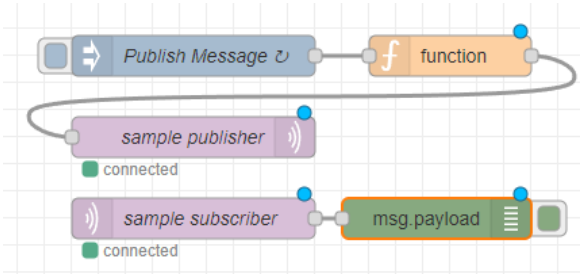




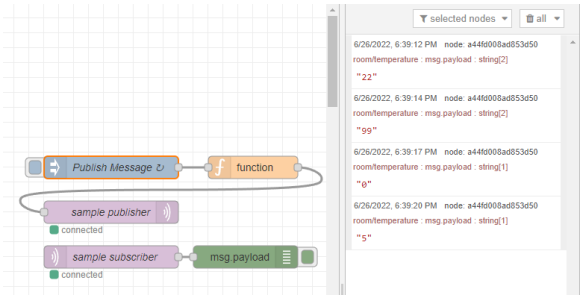
Create a MQTT protocol in node:



Connect nodes:



Results:



Question

- On the inject node, in the Repeat property with an interval value. What is its function?

The function is to repat the request every 3 seconds.

- What is the line of code msg.payload=Math.floor(Math.random()*100);?

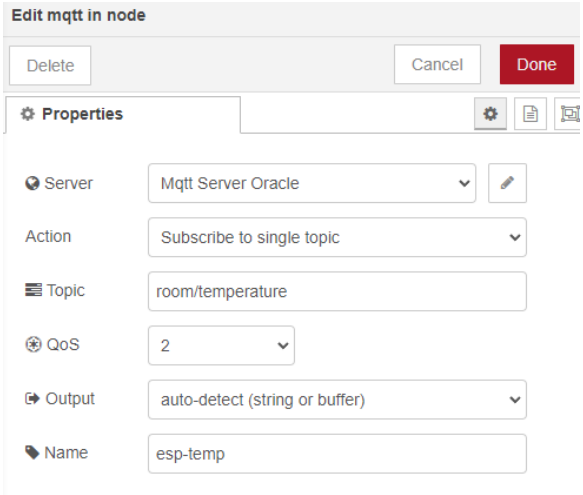
  To produce random integer numbers.

- The node part is mqtt out, what is the Qos function with a value of 2?

  (QoS) in MQTT messaging is an agreement between sender and receiver on the guarantee of delivering a message. There are three levels of QoS: 0 - at most once. 1 - at least once. 2 - exactly once

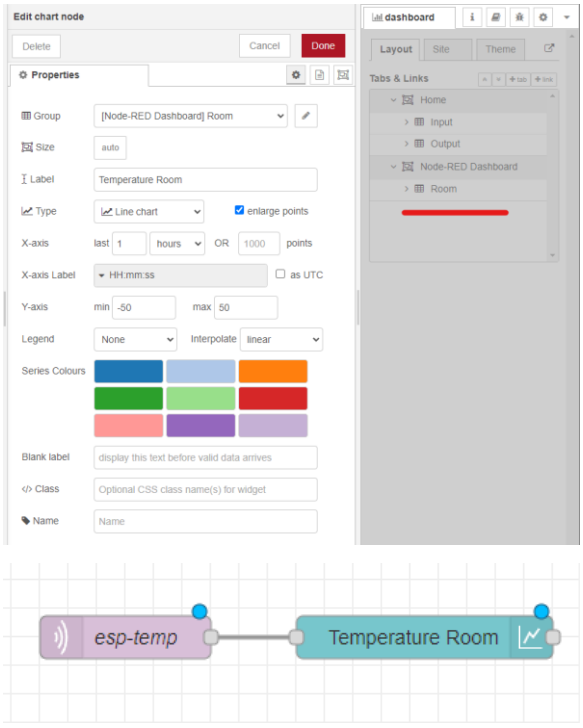
  Next practicum is to connect to a smart device:

  Create a new MQQT protocol in node in a new flow with the following configuration:



Create a new tab named node-red dashboard that has a group with the Room name.

Create a chart node with the following configuration:



CODE the project:

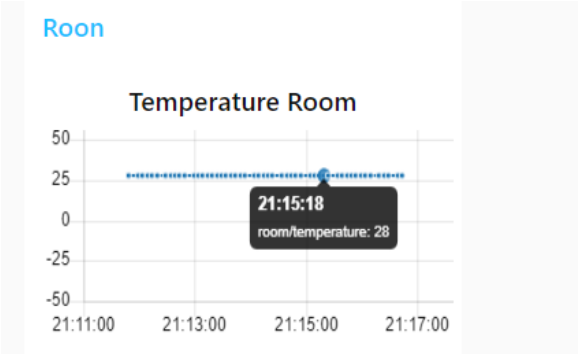
```
#include <Arduino.h>
#include <ESP8266WiFi.h>
#include <PubSubClient.h>
#include <SimpleDHT.h>

const char *ssid = "WI-FI name";
const char *password = "PASSWORD";
const char *mqtt_server = "broker.hivemq.com";

WiFiClient espClient;
PubSubClient client(espClient);

SimpleDHT11 dht11(D7);

long now = millis();
long lastMeasure = 0;
String macAddr = "";

void setup_wifi()
{
  delay(10);
  Serial.println();
  Serial.print("Connecting to ");
  Serial.println(ssid);
  WiFi.begin(ssid, password);
  while (WiFi.status() != WL_CONNECTED)
  {
    delay(500);
    Serial.print(".");
  }
  Serial.println("");
  Serial.print("WiFi connected - ESP IP address: ");
  Serial.println(WiFi.localIP());
  macAddr = WiFi.macAddress();
  Serial.println(macAddr);
}

void reconnect()
{
  while (!client.connected())
  {
    Serial.print("Attempting MQTT connection...");
    if (client.connect(macAddr.c_str()))
    {
      Serial.println("connected");
    }
    else
```

```
    {
      Serial.print("failed, rc=");
      Serial.print(client.state());
      Serial.println(" try again in 5 seconds");
      delay(5000);
    }
  }
}

void setup()
{
  Serial.begin(9600);
  Serial.println("MQTT Node-RED");
  setup_wifi();
  client.setServer(mqtt_server, 1883);
}

void loop()
{
  if (!client.connected())
  {
    reconnect();
  }
  if (!client.loop())
  {
    client.connect(macAddr.c_str());
  }
  now = millis();
  if (now - lastMeasure > 5000)
  {
    lastMeasure = now;
    int err = SimpleDHTErrSuccess;

    byte temperature = 0;
    byte humidity = 0;
    if ((err = dht11.read(&temperature, &humidity, NULL)) !=
SimpleDHTErrSuccess)
    {
      Serial.print("Reading DHT11 failed, err=");
      Serial.println(err);
      delay(1000);
      return;
    }
    static char temperatureTemp[7];
    dtostrf(temperature, 4, 2, temperatureTemp);
    Serial.println(temperatureTemp);

    client.publish("room/temperature", temperatureTemp);
```

```
  }
}
```

RESULS:

```
MQTT Node-RED

Connecting to P.TRIS
.................
WiFi connected - ESP IP address: 192.168.100.70
44:17:93:20:03:CC
Attempting MQTT connection...connected
28.00
28.00
28.00
28.00
```



Question

- Modify the program in ESP8266 above so that you can subscribe with the topic room/lamp?
- Add the code above so that you can publish the humidity value with the topic room/humadity?
- Add a node chart so that it can display humidity values, the node chart is still in one group, namely Room on the Node-RED dashboard.