LAB

REPORT

# IRE 212 : IoT Architecture and Technologies Sessional

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| PREPARED BY  Mehrin Farzana  ID: 2101013  Session: 2021-2022  Date: 11/09/2024 | SUPERVISED BY  Suman Saha  Lecturer  Department of IRE, BDU |

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**List of Problems**

1. Wireless Data Transmission using MQTT Protocol

**Problem No.:** 01

**Problem Statement:** Wireless Data Transmission using MQTT Protocol

**Code:**

#include <ESP8266WiFi.h>

#include <PubSubClient.h>

// WiFi settings

const char \*ssid = "Galaxy A20s4674"; // Replace with your WiFi name

const char \*password = "cegz3253"; // Replace with your WiFi

// MQTT Broker settings

const char \*mqtt\_broker = "broker.emqx.io"; // EMQX broker endpoint

const char \*mqtt\_topic = "emqx/esp8266"; // MQTT topic

const char \*mqtt\_username = "emqx"; // MQTT username for authentication

const char \*mqtt\_password = "public"; // MQTT password for authentication

const int mqtt\_port = 1883; // MQTT port (TCP)

WiFiClient espClient;

PubSubClient mqtt\_client(espClient);

void connectToWiFi();

void connectToMQTTBroker();

void mqttCallback(char \*topic, byte \*payload, unsigned int length);

void setup() {

Serial.begin(115200);

connectToWiFi();

mqtt\_client.setServer(mqtt\_broker, mqtt\_port);

mqtt\_client.setCallback(mqttCallback);

connectToMQTTBroker();

}

void connectToWiFi() {

WiFi.begin(ssid, password);

Serial.print("Connecting to WiFi");

while (WiFi.status() != WL\_CONNECTED) {

delay(500);

Serial.print(".");

}

Serial.println("\nConnected to the WiFi network");

}

void connectToMQTTBroker() {

while (!mqtt\_client.connected()) {

String client\_id = "esp8266-client-" + String(WiFi.macAddress());

Serial.printf("Connecting to MQTT Broker as %s.....\n",

client\_id.c\_str());

if (mqtt\_client.connect(client\_id.c\_str(), mqtt\_username,

mqtt\_password)) {

Serial.println("Connected to MQTT broker");

mqtt\_client.subscribe(mqtt\_topic);

// Publish message upon successful connection

mqtt\_client.publish(mqtt\_topic, "Hi EMQX I'm ESP8266 ^^");

} else {

Serial.print("Failed to connect to MQTT broker, rc=");

Serial.print(mqtt\_client.state());

Serial.println(" try again in 5 seconds");

delay(5000);

}

}

}

void mqttCallback(char \*topic, byte \*payload, unsigned int length) {

Serial.print("Message received on topic: ");

Serial.println(topic);

Serial.print("Message:");

for (unsigned int i = 0; i < length; i++) {

Serial.print((char) payload[i]);

}

Serial.println();

Serial.println("-----------------------");

}

void loop() {

if (!mqtt\_client.connected()) {

connectToMQTTBroker();

}

mqtt\_client.loop();

}

**Output:**

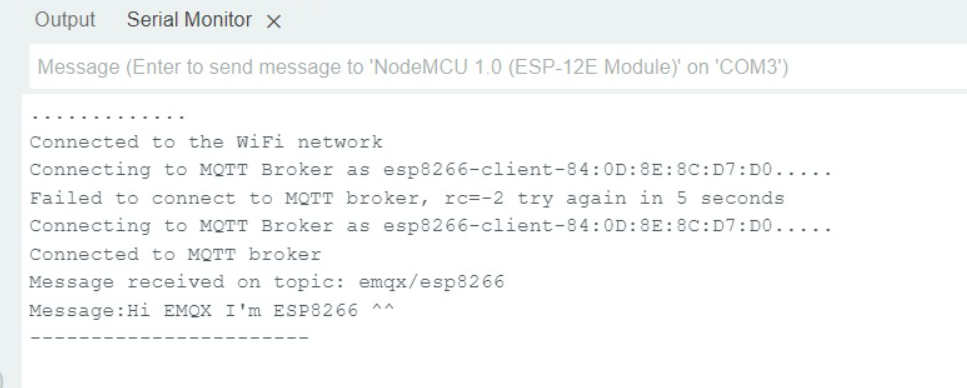
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Fig 1.2: Output on simulator.