LAB REPORT

IRE 212 : IoT Architecture and Technologies Sessional

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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:

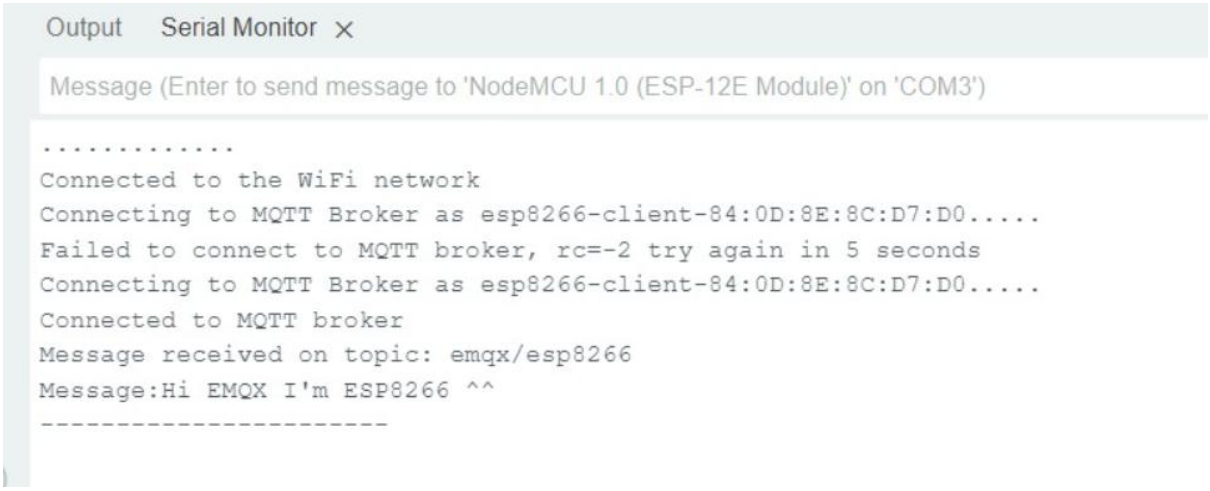

Fig 1.2: Output on simulator.