

ASSIGNMENT-4

Date	21 october 2022
Student Name	P.A.Bhoomika
Student Roll Number	110519106001
Maximum Marks	2 Marks

CODEING:

```
#include <WiFi.h>
#include <PubSubClient.h>
void callback(char* subscribetopic,byte* payload, unsigned int
payloadLength);
#define ORG "jfe9dc"
#define DEVICE_TYPE "bhoomika24"
#define DEVICE_ID "6001"
#define TOKEN "0hx)_c(*RoUyNZfqsT"
String data3;

char server[]= ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[]="iot-2/evt/bhoomika24/fmt/json";
char subscribeTopic[]="iot-2/cmd/test/fmt/String";
char authMethod[]="use-token-auth";
char token[]=TOKEN;
char clientID[]="d:ORG:DEVICE_TYPE:DEVICE_ID;

WiFiClient wifiClient;
PubSubClient client(server,1883,callback,wifiClient);

#define ECHO_PIN 12
#define TRIG_PIN 13
#define led 14

void setup() {
    // put your setup code here, to run once:
    Serial.begin(115200);
    pinMode(led, OUTPUT);
    pinMode(TRIG_PIN, OUTPUT);
    pinMode(ECHO_PIN, INPUT);
    wificonnect();
    mqttconnect();
}
float readDistanceCM() {
    digitalWrite(TRIG_PIN, LOW);
    delayMicroseconds(2);
    digitalWrite(TRIG_PIN, HIGH);
    delayMicroseconds(10);
```

```

    digitalWrite(TRIG_PIN, LOW);
    int duration=random(1,200);
    //Serial.println(duration);
    //duration = pulseIn(ECHO_PIN, HIGH);
    return duration ;
    //Serial.println(duration);
}

void loop() {
    float distance = readDistanceCM();
    //Serial.println(distance);

    bool isNearby = distance < 100;
    digitalWrite(led, isNearby);

    Serial.print("Measured distance: ");
    Serial.println(distance);
    if(distance<100){
        PublishData2(distance);
    }
    else{
        PublishData1(distance);

    }
    //PublishData(distance);
    delay(1000);
    if(!client.loop()){
        mqttconnect();
    }

    //delay(200);
}

void PublishData1(float dist){
    mqttconnect();
    String payload= "{"distance\":";
    payload += dist;
    payload+="}";

    Serial.print("Sending payload:");
    Serial.println(payload);

    if(client.publish(publishTopic,(char*)payload.c_str())){
        Serial.println("publish ok");
    }
    else{
        Serial.println("publish failed");
    }
}

void PublishData2(float dist){

```

```

mqttconnect();
String payload= "{\"ALERT\":";
payload += dist;
payload+="}";

Serial.print("Sending payload:");
Serial.println(payload);

if(client.publish(publishTopic,(char*)payload.c_str())){
    Serial.println("publish ok");
}
else{
    Serial.println("publish failed");
}
}

void mqttconnect(){
    if(!client.connected()){
        Serial.print("Reconnecting to");
        Serial.println(server);
        while(!!!client.connect(clientID, authMethod, token)){
            Serial.print(".");
            delay(500);
        }
        initManagedDevice();
        Serial.println();
    }
}

void wificonnect(){
    Serial.println();
    Serial.print("Connecting to");

    WiFi.begin("Wokwi-GUEST","",6);
    while(WiFi.status()!=WL_CONNECTED){
        delay(500);
        Serial.print(".");
    }
    Serial.println("");
    Serial.println("WIFI CONNECTED");
    Serial.println("IP address:");
    Serial.println(WiFi.localIP());
}

void initManagedDevice(){
    if(client.subscribe(subscribeTopic)){
        Serial.println((subscribeTopic));
        Serial.println("subscribe to cmd ok");
    }
    else{
        Serial.println("subscribe to cmd failed");
    }
}

```

```
}
```

```
void callback(char* subscribeTopic, byte* payload, unsigned int
payloadLength){
  Serial.print("callback invoked for topic:");
  Serial.println(subscribeTopic);
  for(int i=0; i<payloadLength; i++){
    data3 += (char)payload[i];
  }
  Serial.println("data:" + data3);
  if(data3=="lighton"){
    Serial.println(data3);
    digitalWrite(led,HIGH);
  }else{
    Serial.println(data3);
    digitalWrite(led,LOW);
  }
  data3="";
}
```

OUTPUT:

Less than 100cm-LED Glow

The screenshot displays the WOKWI simulation interface. On the left, the 'sketch.ino' file contains the following code:

```
1 #include <WiFi.h>
2 #include <PubSubClient.h>
3 void callback(char* subscribeTopic, byte* payload, unsigned int payloadLength);
4 #define ORG "jfe9dc"
5 #define DEVICE_TYPE "bhoomika24"
6 #define DEVICE_ID "6001"
7 #define TOKEN "0hx)_c(*RoLyNZfqsT"
8 String data3;
9
10 char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
11 char publishTopic[] = "iot-2/evt/bhoomika24/fmt/json";
12 char subscribeTopic[] = "iot-2/cmd/test/fmt/String";
13 char authMethod[] = "use-token-auth";
14 char token[] = TOKEN;
15 char clientId[] = "d:" + ORG + ":" + DEVICE_TYPE + ":" + DEVICE_ID;
16
17 WiFiClient wifiClient;
18 PubSubClient client(server, 1883, callback, wifiClient);
19
20 #define ECHO_PIN 12
21 #define TRIG_PIN 13
22 #define led 14
23
24 void setup() {
25   // put your setup code here, to run once:
26   Serial.begin(115200);
27   pinMode(led, OUTPUT);
28   pinMode(TRIG_PIN, OUTPUT);
29   pinMode(ECHO_PIN, INPUT);
30   wifiConnect();
31   mqttConnect();
32 }
```

On the right, the 'Simulation' window shows a visual representation of the circuit. Below the simulation, the console output displays the following sequence of events:

```
publish ok
Measured distance: 59.00
Sending payload:{"ALERT":59.00}
publish ok
Measured distance: 44.00
Sending payload:{"ALERT":44.00}
publish ok
```

```
Measured distance: 59.00
Sending payload:{"ALERT":59.00}
publish ok
Measured distance: 44.00
Sending payload:{"ALERT":44.00}
publish ok
```

More than 100cm-LED Doesn't Glow

WOKWI

SAVE

SHARE

sketch.ino copy

Docs

SIGN UP

sketch.ino

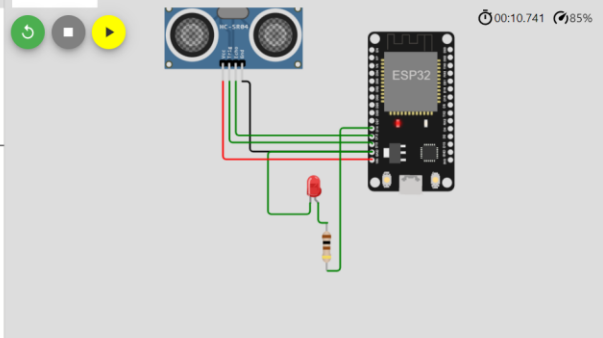
diagram.json

libraries.txt

Library Manager

```
1 #include <WiFi.h>
2 #include <PubSubClient.h>
3 void callback(char* topic,byte* payload,unsigned int payloadLength);
4 #define ORG "jfe9dc"
5 #define DEVICE_TYPE "bhoomika24"
6 #define DEVICE_ID "6001"
7 #define TOKEN "0hx_c(*RoUyNZfqsT"
8 String data3;
9
10 char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
11 char publishTopic[] = "iot-2/evt/bhoomika24/fmt/json";
12 char subscribeTopic[] = "iot-2/cmd/test/fmt/String";
13 char authMethod[] = "use-token-auth";
14 char token[] = TOKEN;
15 char clientId[] = "d:"ORG":DEVICE_TYPE":DEVICE_ID;
16
17 WiFiClient wifiClient;
18 PubSubClient cClient(server,1883,callback,wifiClient);
19
20 #define ECHO_PIN 12
21 #define TRIG_PIN 13
22 #define led 14
23
24 void setup() {
25   // put your setup code here, to run once:
26   Serial.begin(115200);
27   pinMode(led, OUTPUT);
28   pinMode(TRIG_PIN, OUTPUT);
29   pinMode(ECHO_PIN, INPUT);
30   wifiConnect();
31   mqttconnect();
32   ...
33 }
```

Simulation



00:10.741 85%

Measured distance: 197.00
Sending payload:{"distance":197.00}
publish ok
Measured distance: 145.00
Sending payload:{"distance":145.00}
publish ok

```
Measured distance: 197.00
Sending payload:{"distance":197.00}
publish ok
Measured distance: 145.00
Sending payload:{"distance":145.00}
publish ok
```