

ASSIGNMENT 4

WOKWI PROGRAM

ASSIGNMENT DATE	23 OCTOBER 2022
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MAXIMUM NUMBER	2 MARKS
TEAM ID	PNT2022TMID36201

CODE :

```
#include <WiFi.h>

#include < PubSubClient.h >

void callback(char* subscribetopic,byte* payload, unsigned int payloadLength);

#define ORG "r1n13"

#define DEVICE_TYPE "SathyaPriya"

#define DEVICE_ID "2609"

#define TOKEN "i5QqQIPGeqAES5iqgy"

String data3;


char server[]= ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[]="iot-2/evt/SathyaPriya/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(2000);
}

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="";  
}
```

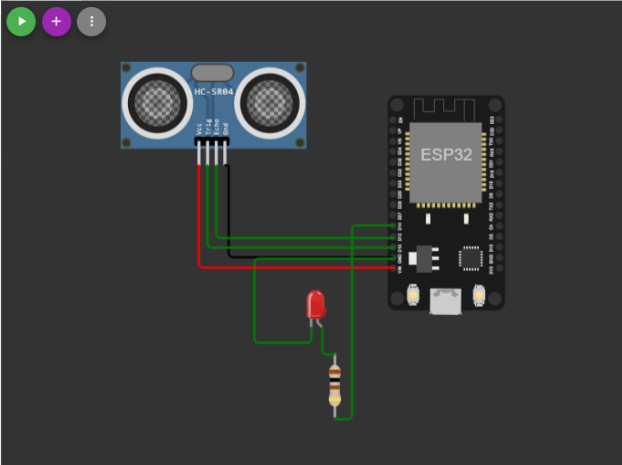
OUTPUT :

WOKWI

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 "rlnl13"
5 #define DEVICE_TYPE "SathyaPriya"
6 #define DEVICE_ID "2609"
7 #define TOKEN "ISQQIPGeqAESS1qgy"
8 String data;
9
10 char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
11 char publishTopic[] = "iot-2/evt/sathyaPriya/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   wificlient.connect();
31   mqttconnect();
32 }
33
34 float readDistanceCM() {
35   digitalWrite(TRIG_PIN, LOW);
36   delayMicroseconds(2);
37   digitalWrite(TRIG_PIN, HIGH);
38   delayMicroseconds(10);
39   digitalWrite(TRIG_PIN, LOW);
40   int duration = pulseIn(ECHO_PIN, HIGH);
41 }
```

Simulation



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

Connecting to..
WIFI CONNECTED
IP address:
10.10.0.2
Reconnecting to rlnl13.messaging.internetofthings.ibmcloud.com
iot-2/cmd/test/fmt/String
subscribe to cmd ok

Measured distance: 83.00
Sending payload: {"ALERT":83.00}
publish ok
Measured distance: 165.00
Sending payload: {"distance":165.00}
publish ok
Measured distance: 48.00
Sending payload: {"ALERT":48.00}
publish ok
Measured distance: 121.00
Sending payload: {"distance":121.00}
publish ok
Measured distance: 59.00
Sending payload: {"ALERT":59.00}
publish ok
Measured distance: 131.00
Sending payload: {"distance":131.00}
publish ok
Measured distance: 75.00
Sending payload: {"ALERT":75.00}
publish ok

IBM CLOUD OUTPUT :

IBM Watson IoT Platform

110519106021@smartinternz.com
ID: r1n13

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Device Drilldown - 2609

Recent Events

The recent events listed show the live stream of data that is coming and going from this device.

Event	Value	Format	Last Received
SathyaPriya	{"ALERT":56}	json	a few seconds ago
SathyaPriya	{"ALERT":20}	json	a few seconds ago
SathyaPriya	{"distance":164}	json	a few seconds ago
SathyaPriya	{"distance":162}	json	a few seconds ago
SathyaPriya	{"ALERT":96}	json	a few seconds ago

0 Simulations running

IBM Watson IoT Platform

110519106021@smartinternz.com
ID: r1n13

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Device Drilldown - 2609

Connection Information

Recent Events

State

Device Information

Metadata

Diagnostics

Connection Logs

Device Actions

Connection Information

Basic connection information about this device.

Device ID	2609
Device Type	SathyaPriya
Date Added	Nov 5, 2022 2:56 PM
Added By	110519106021@smartinternz.com
Connection Status	Disconnected
	Last Connected: Nov 8, 2022 2:11 PM
	Client Address: 216.246.119.62 Insecure
	Duration: a few seconds
	Data Transferred: 1.0 KB

Recent Events

0 Simulations running

