

## ASSIGNMENT4

### 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 "r1nl13"

#define DEVICE_TYPE "sabarivasan27"

#define DEVICE_ID "6016"

#define TOKEN "Z4sbS+ITfmaKWWn6uO"

String data3;


char server[]= ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[]="iot-2/evt/sabarivasan/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 :

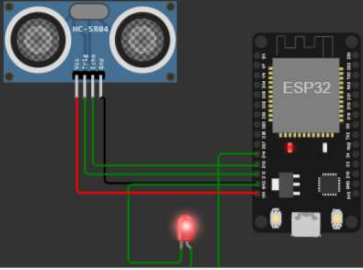
WOKWI SAVE SHARE sketch.ino copy Docs SIGN IN

sketch.ino diagram.json libraries.txt Library Manager

```
1 #include <WiFi.h>
2 #include <PubSubClient.h>
3 void callback(char* subscribetopic,byte* payload,unsigned int payloadLength)
4 #define ORG "3akctw"
5 #define DEVICE_TYPE "sabarivasan27"
6 #define DEVICE_ID "6016"
7 #define TOKEN "Z4sbS+lfmaKMw6u0"
8 String data3;
9
10 char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
11 char publishTopic[] = "iot-2/evt/sabarivasan27/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);
```

Simulation

00:22.218 99%



publish ok  
Measured distance: 150.00  
Sending payload:{"distance":150.00}  
publish ok  
Measured distance: 19.00  
Sending payload:{"ALERT":19.00}  
publish ok

Simulation

00:28.667 99%

Measured distance: 16.00  
Sending payload:{"ALERT":16.00}  
publish ok  
Measured distance: 181.00  
Sending payload:{"distance":181.00}  
publish ok  
Measured distance: 114.00  
Sending payload:{"distance":114.00}  
publish ok  
Measured distance: 192.00  
Sending payload:{"distance":192.00}  
publish ok  
Measured distance: 42.00  
Sending payload:{"ALERT":42.00}  
publish ok  
Measured distance: 175.00  
Sending payload:{"distance":175.00}  
publish ok  
Measured distance: 35.00  
Sending payload:{"ALERT":35.00}  
publish ok  
Measured distance: 64.00  
Sending payload:{"ALERT":64.00}  
publish ok



# IBM CLOUD OUTPUT :

The screenshot shows the IBM Watson IoT Platform interface. The browser address bar displays the URL: <https://3akctw.internetofthings.ibmcloud.com/dashboard/devices/drilldown/sabarivasan27:6016?returnTo=/devices/browse>. The page title is "Device Drilldown - 6016". The left sidebar contains a menu with options: Connection Information, Recent Events (selected), State, Device Information, Metadata, Diagnostics, Connection Logs, and Device Actions. The main content area shows the "Recent Events" section, which states: "The recent events listed show the live stream of data that is coming and going from this device." Below this is a table with the following data:

Event	Value	Format	Last Received
sabarivasan27	{"ALERT":75}	json	a few seconds ago
sabarivasan27	{"ALERT":40}	json	a few seconds ago
sabarivasan27	{"distance":165}	json	a few seconds ago
sabarivasan27	{"ALERT":12}	json	a few seconds ago
sabarivasan27	{"ALERT":94}	json	a few seconds ago

The screenshot shows the IBM Watson IoT Platform interface. The browser address bar displays the URL: <https://3akctw.internetofthings.ibmcloud.com/dashboard/devices/drilldown/sabarivasan27:6016?returnTo=/devices/browse>. The page title is "Device Drilldown - 6016". The left sidebar contains a menu with options: Connection Information (selected), Recent Events, State, Device Information, Metadata, Diagnostics, Connection Logs, and Device Actions. The main content area shows the "Connection Information" section, which states: "Basic connection information about this device." Below this is a table with the following data:

Field	Value
Device ID	6016
Device Type	sabarivasan27
Date Added	Nov 9, 2022 2:28 PM
Added By	110519106016@smartinternz.com
Connection Status	Disconnected
Last Connected	Nov 9, 2022 2:38 PM
Client Address	50.31.197.64 Insecure
Duration	2 minutes
Data Transferred	8.9 KB