

## ASSIGNMENT 4

<b>DATE</b>	<b>10/10/2022</b>
<b>TEAM ID</b>	<b>PNT2022TMID43222</b>
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<b>MAXIMUM MARKS</b>	<b>2 MARKS</b>

### CODE:

```
#include <WiFi.h>
#include
<PubSubClient.h>

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

//-----credentials of IBM Accounts-----
#define ORG "kotoq5"//IBM ORGANITION ID
#define DEVICE_TYPE "ESP32"//Device type mentioned in ibm watson IOT Platform
#define DEVICE_ID "12345"//Device ID mentioned in ibm watson IOT Platform
#define TOKEN "12345678" //Token

String data3;

char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/Data/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);
const int trigPin = 5;
```

```
const int echoPin = 18;
#define SOUND_SPEED
0.034long duration;
float distance

void setup()
{ Serial.begin(115200);
pinMode(trigPin,
OUTPUT);pinMode(echoPin,
INPUT);wificonnect();
mqttconnect();
}
void loop()
{
digitalWrite(trigPin, LOW);
delayMicroseconds(2);
digitalWrite(trigPin, HIGH);
delayMicroseconds(10);
digitalWrite(trigPin, LOW);
duration = pulseIn(echoPin, HIGH);
distance = duration * SOUND_SPEED/2;
Serial.print("Distance (cm): ");
Serial.println(distance);
if(distance<100){
Serial.println("ALERT!!");
delay(1000);
PublishData(distance);
delay(1000);
if (!client.loop())
{mqttconnect();
}
}
delay(1000);
}
```

```

void PublishData(float dist)
{mqttconnect();
String payload =
"{\"Distance\":"; payload += dist;
payload += ", \"ALERT!!\": \"\" \"Distance less than 100cms\"";
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 client to
");Serial.println(server);
while (!client.connect(clientId, authMethod, token))
{Serial.print(".");
delay(500);
}
}

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++)
{
//Serial.print((char)payload[i]);
data3 += (char)payload[i];
}
Serial.println("data: "+ data3);

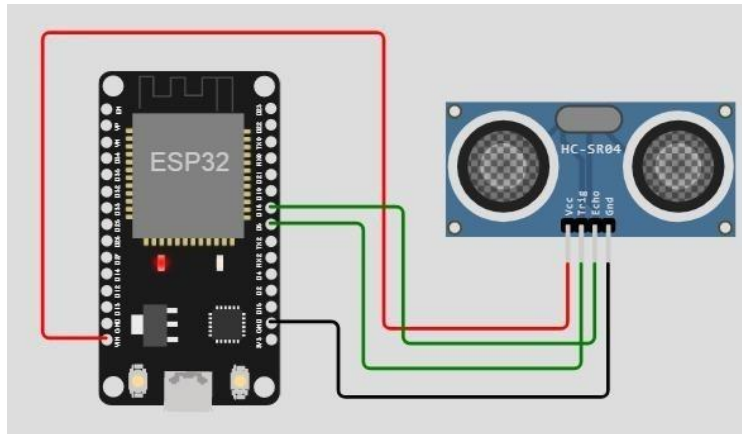
data3="";
}

```

**Diagram.json:**

```
{
  "version": 1,
  "author": "Rithick Kumar ",
  "editor": "wokwi", "parts":
  [
    { "type": "wokwi-esp32-devkit-v1", "id": "esp", "top": -4.67, "left": -114.67, "attrs": {} },
    { "type": "wokwi-hc-sr04", "id": "ultrasonic1", "top": 15.96, "left": 89.17, "attrs": {} }
  ],
  "connections": [
    [ "esp:TX0", "$serialMonitor:RX", "", [] ],
    [ "esp:RX0", "$serialMonitor:TX", "", [] ],[
    "esp:VIN",
    "ultrasonic1:VCC","red",
    [ "h-37.16", "v-178.79", "h200", "v173.33", "h100.67" ]
  ],
    [ "esp:GND.1", "ultrasonic1:GND", "black", [ "h39.87", "v44.04", "h170" ] ],
    [ "esp:D5", "ultrasonic1:TRIG", "green", [ "h54.54", "v85.07", "h130.67" ] ],
    [ "esp:D18", "ultrasonic1:ECHO", "green", [ "h77.87", "v80.01", "h110" ] ]
  ]
}
```

## CIRCUIT DIAGRAM:



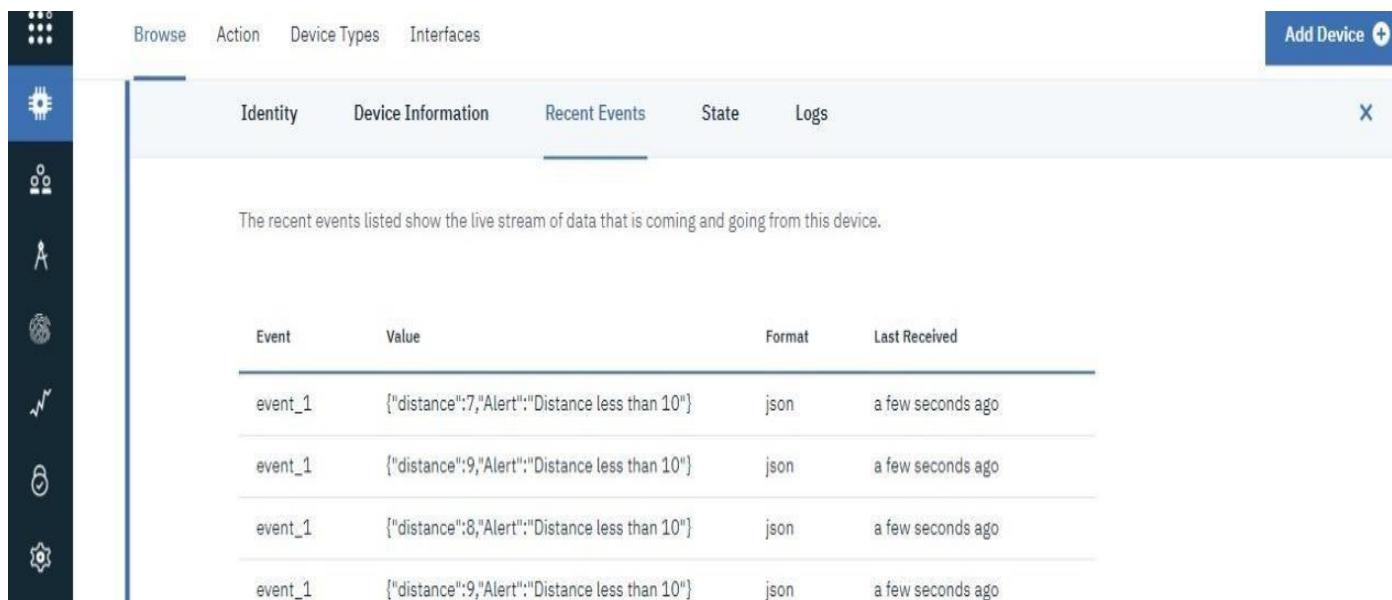
## Output:

Wokwi output:

```
Connecting to ....
WiFi connected
IP address:
10.10.0.2
Reconnecting client to ytluse.messaging.internetofthings.ibmcloud.com
iot-2/cmd/test/fmt/String
subscribe to cmd OK

Distance (cm): 399.92
Distance (cm): 399.96
Distance (cm): 399.94
Distance (cm): 399.98
Distance (cm): 399.94
Distance (cm): 399.92
Distance (cm): 399.94
```

## IBM cloud output:



The screenshot displays the IBM Cloud IoT Platform console. On the left is a dark sidebar with icons for various functions. The top navigation bar includes 'Browse', 'Action', 'Device Types', and 'Interfaces', along with an 'Add Device' button. The main content area is titled 'Recent Events' and contains a table of live data streams.

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

Event	Value	Format	Last Received
event_1	{"distance":7,"Alert":"Distance less than 10"}	json	a few seconds ago
event_1	{"distance":9,"Alert":"Distance less than 10"}	json	a few seconds ago
event_1	{"distance":8,"Alert":"Distance less than 10"}	json	a few seconds ago
event_1	{"distance":9,"Alert":"Distance less than 10"}	json	a few seconds ago

