ASSIGNMENT 4

DATE	**10/10/2022**
TEAM ID	**PNT2022TMID43222**
STUDENT NAME	**ARAVIND A**
STUDENT REGISTER NUMBER	**714519106002**
MAXIMUM MARKS	**2 MARKS**

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);
}
```

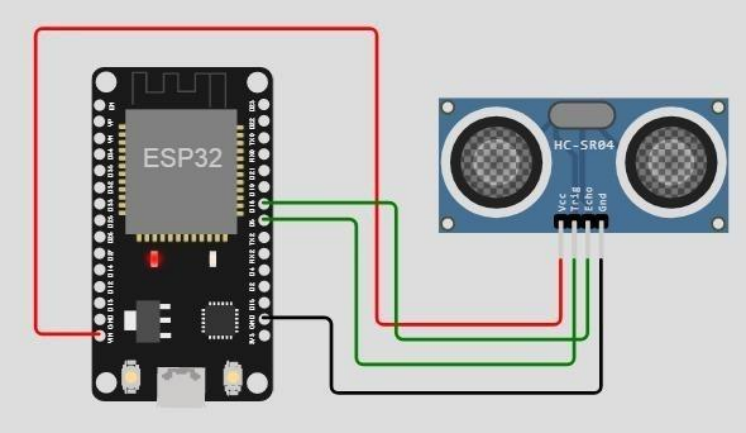
```
void PublishData(float dist)
{mqttconnect();
String payload =
"{\"Distance\":"; payload += dist;
payload += ",\"ALERT!!\":""\"Distance less than 100cms\"";
payload += "}";
Serial.print("Sending payload:
");Serial.println(payload);
if (client.publish(publishTopic, (char*) payload.c_str()))
{Serial.println("Publish 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: