

# IBM

## ASSIGNMENT 4

**TEAM ID: PNT2022TMID05212**

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Write code and connections in wokwi for ultrasonic sensor. Whenever the distance is less than 100 cm, send "alert" to IBM cloud and display in device recent events.

**WOKWI LINK:** <https://wokwi.com/projects/346475242733961810>

### **CODE:**

```
#include <WiFi.h>

#include <PubSubClient.h>

WiFiClient wifiClient;

String data3;

#define ORG "x0fxss"

#define DEVICE_TYPE "Noder"

#define DEVICE_ID "1234"

#define TOKEN "987654321"

#define speed 0.034

#define led 14

char server[] = ORG ".messaging.internetofthings.ibmcloud.com";

char publishTopic[] = "iot-2/evt/Kaviya_assignment4/fmt/json";

char topic[] = "iot-2/cmd/home/fmt/String";

char authMethod[] = "use-token-auth";

char token[] = TOKEN;

char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;

PubSubClient client(server, 1883, wifiClient);
```

```
const int trigpin=5;

const int echopin=18;

String command;

String data="";

long duration;

float dist;

void setup()

{

Serial.begin(115200);

pinMode(led, OUTPUT);

pinMode(trigpin, OUTPUT);

pinMode(echopin, INPUT);

wifiConnect();

mqttConnect();

}

void loop() {

bool isNearby = dist < 100;

digitalWrite(led, isNearby);

publishData();

delay(500);

if (!client.loop()) {

mqttConnect();

}

}

void wifiConnect() {

Serial.print("Connecting to "); Serial.print("Wifi");

WiFi.begin("Wokwi-GUEST", "", 6);

while (WiFi.status() != WL_CONNECTED) {

delay(500);

Serial.print(".");

}

}
```

```

Serial.print("WiFi connected, IP address: "); Serial.println(WiFi.localIP());
}

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

void initManagedDevice() {
if (client.subscribe(topic)) {
// Serial.println(client.subscribe(topic));
Serial.println("IBM subscribe to cmd OK");
} else {
Serial.println("subscribe to cmd FAILED");
}
}

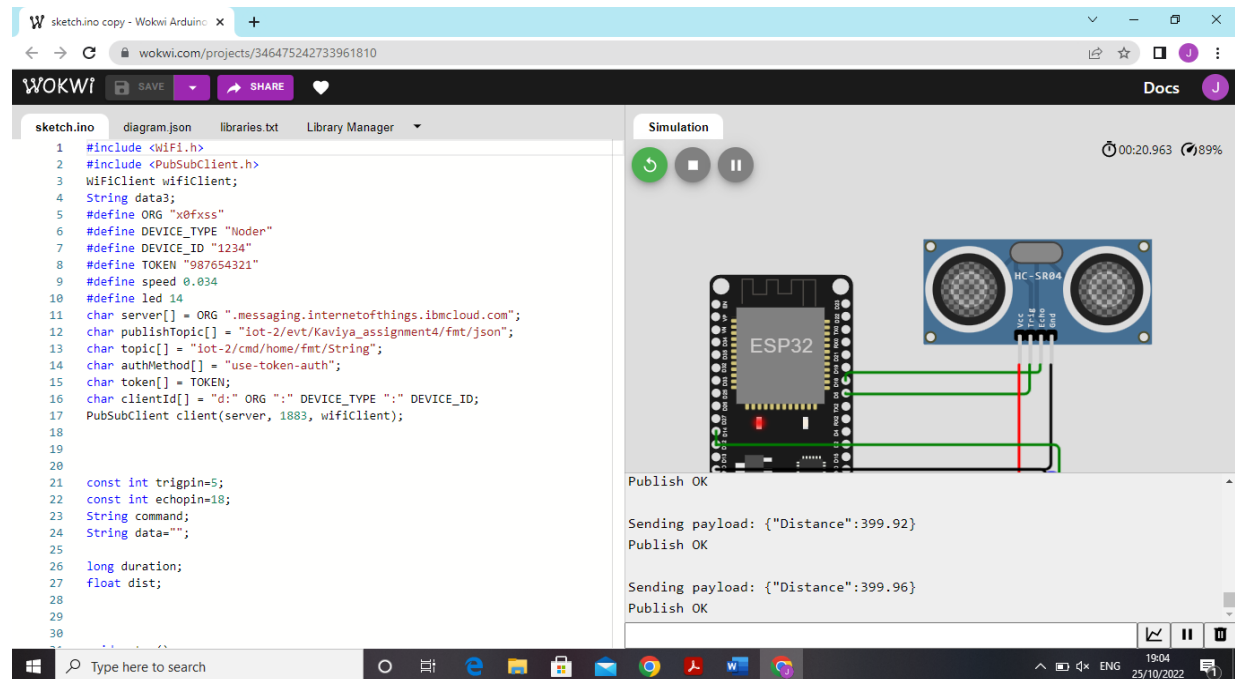
void publishData()
{
digitalWrite(trigpin,LOW);
digitalWrite(trigpin,HIGH);
delayMicroseconds(10);
digitalWrite(trigpin,LOW);
duration=pulseIn(echopin,HIGH);
dist=duration*speed/2;
if(dist<100){
String payload = "{\"Alert Distance\":";

```

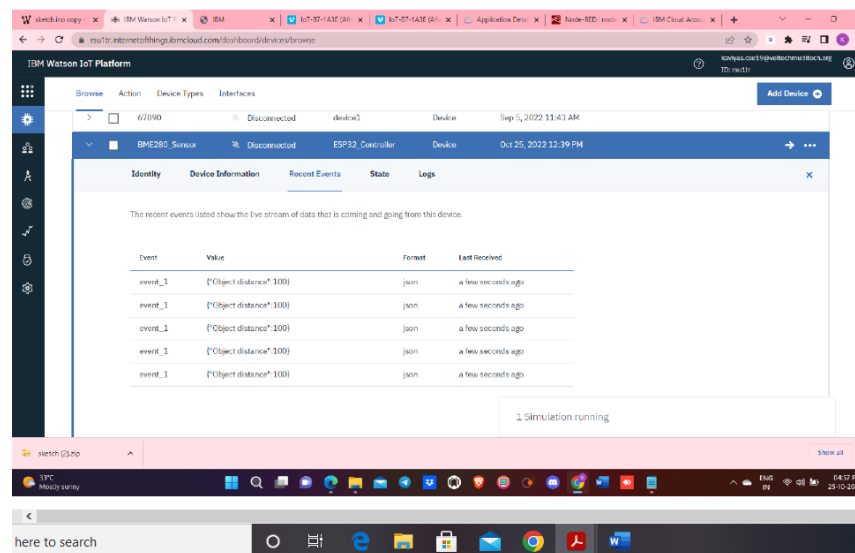
```
payload += dist;
payload += "}";
Serial.print("\n");
Serial.print("Sending payload: ");
Serial.println(payload);
if (client.publish(publishTopic, (char*) payload.c_str())) {
Serial.println("Publish OK");
}
}
if(dist>100){
String payload = "{\"Distance\":";
payload += dist;
payload += "}";
Serial.print("\n");
Serial.print("Sending payload: ");
Serial.println(payload);
if(client.publish(publishTopic, (char*) payload.c_str())) {
Serial.println("Publish OK");
}else {
Serial.println("Publish FAILED");
}
}
}
```

OUTPUT:

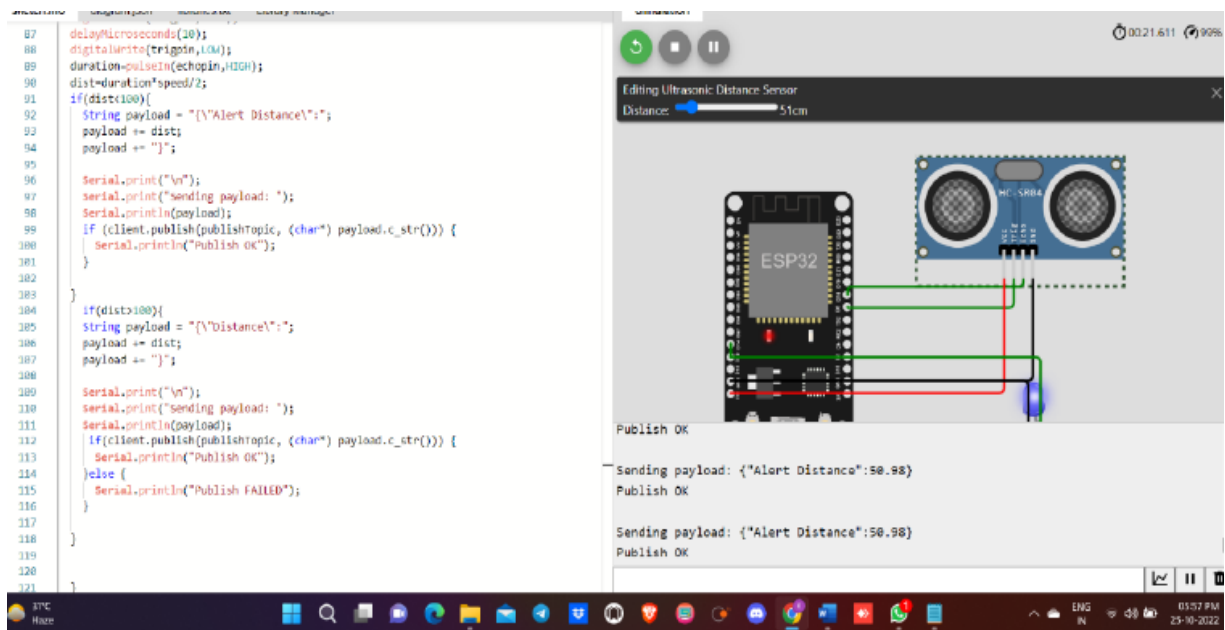
A) When distance greater than 100 ,



Recent events:



B) When distance less than 100 ,



Recent events:

