

ASSIGNMENT 4

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TEAM ID	PNT2022TMID15161
PROJECT NAME	Industry-Specific Intelligent fire management system

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

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

WiFiClient wifiClient;

String data3;

#define ORG "c0mbt9"

#define DEVICE_TYPE "Node"

#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/shanmugam_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 += "\"}";

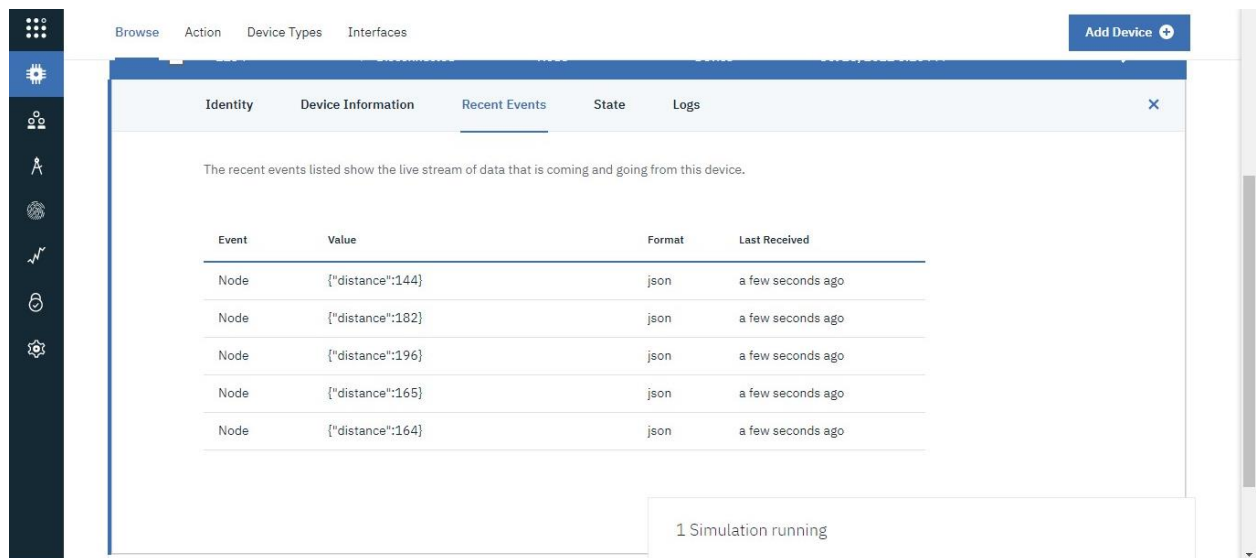
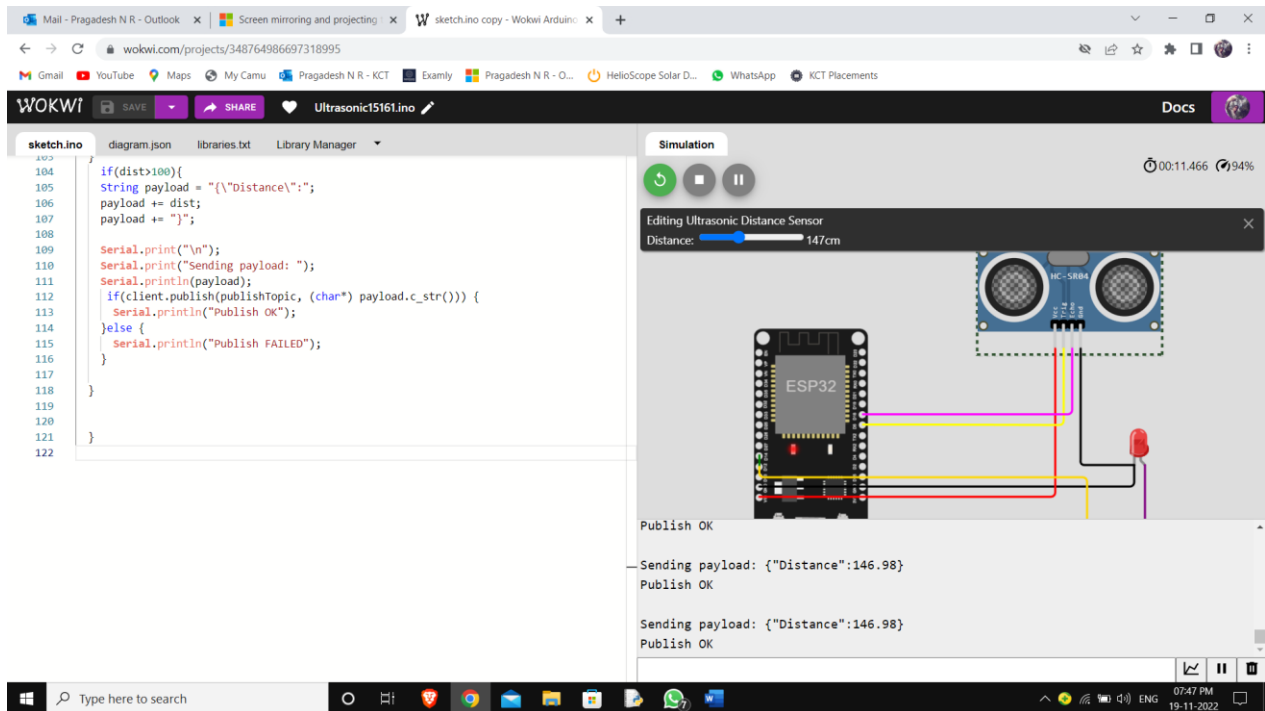
    Serial.print("\n");
    Serial.print("Sending payload: ");
    Serial.println(payload);
    if(client.publish(publishTopic, (char*) payload.c_str())) {
        Serial.println("Publish OK");
    }else {
        Serial.println("Publish FAILED");
    }

}

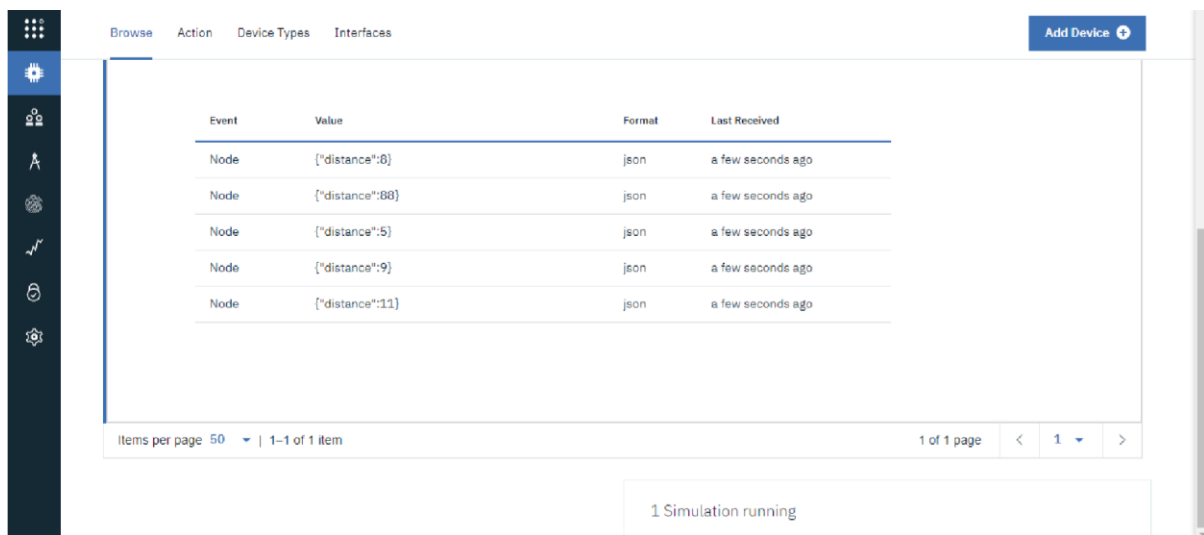
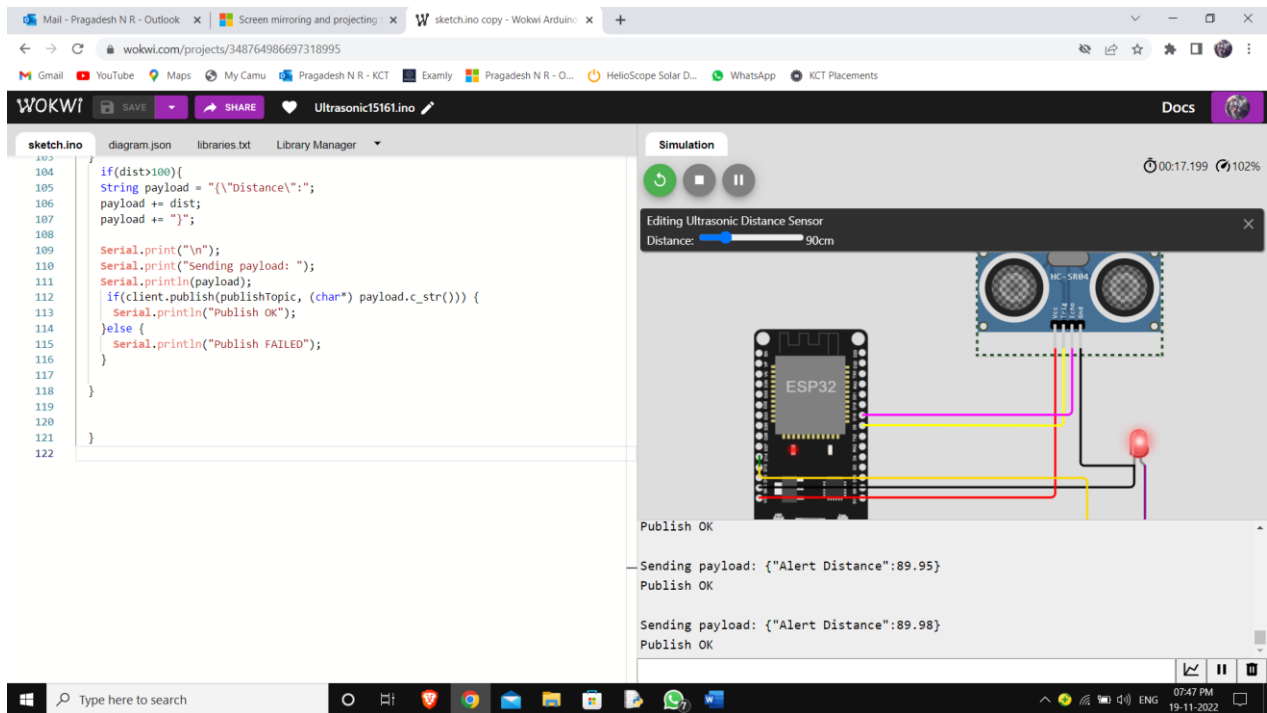
}
```

OUTPUT:

i) When distance greater than 100 cm



ii) When distance less than 100



WOKWI LINK -

<https://wokwi.com/projects/348764986697318995>