

Assignment -4

Assignment Date	30 oct2022
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Student Roll Number	2127190701131
Maximum Marks	2 Marks

Question-1:

Write code and connections in wokwi for the ultrasonic sensor. Whenever the distance is less than 100 cms send an "alert" to the IBM cloud and display in the device recent events. Upload document with wokwi share link and images of IBM cloud

Program:

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

WiFiClient wifiClient;

#define ORG "0hyrvn"
#define DEVICE_TYPE "dev"
#define DEVICE_ID "811"
#define TOKEN "?P1Z2jV4J*V3YnA)Px"
#define speed 0.034
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/abcd_1/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);
void publishData();

const int trigpin=5;
const int echopin=18;
String command;
String data="";
String lat="14.167589";
String lon="80.248510";
String name="point2";
String icon="";

long duration;
int dist;

void setup()
```

```

{
    Serial.begin(115200);
    pinMode(trigpin, OUTPUT);
    pinMode(echopin, INPUT);
    wifiConnect();
    mqttConnect();
}

void loop() {

    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(1000);
        }
        initManagedDevice();
        Serial.println();
    }
}

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

void publishData()
{

```

```

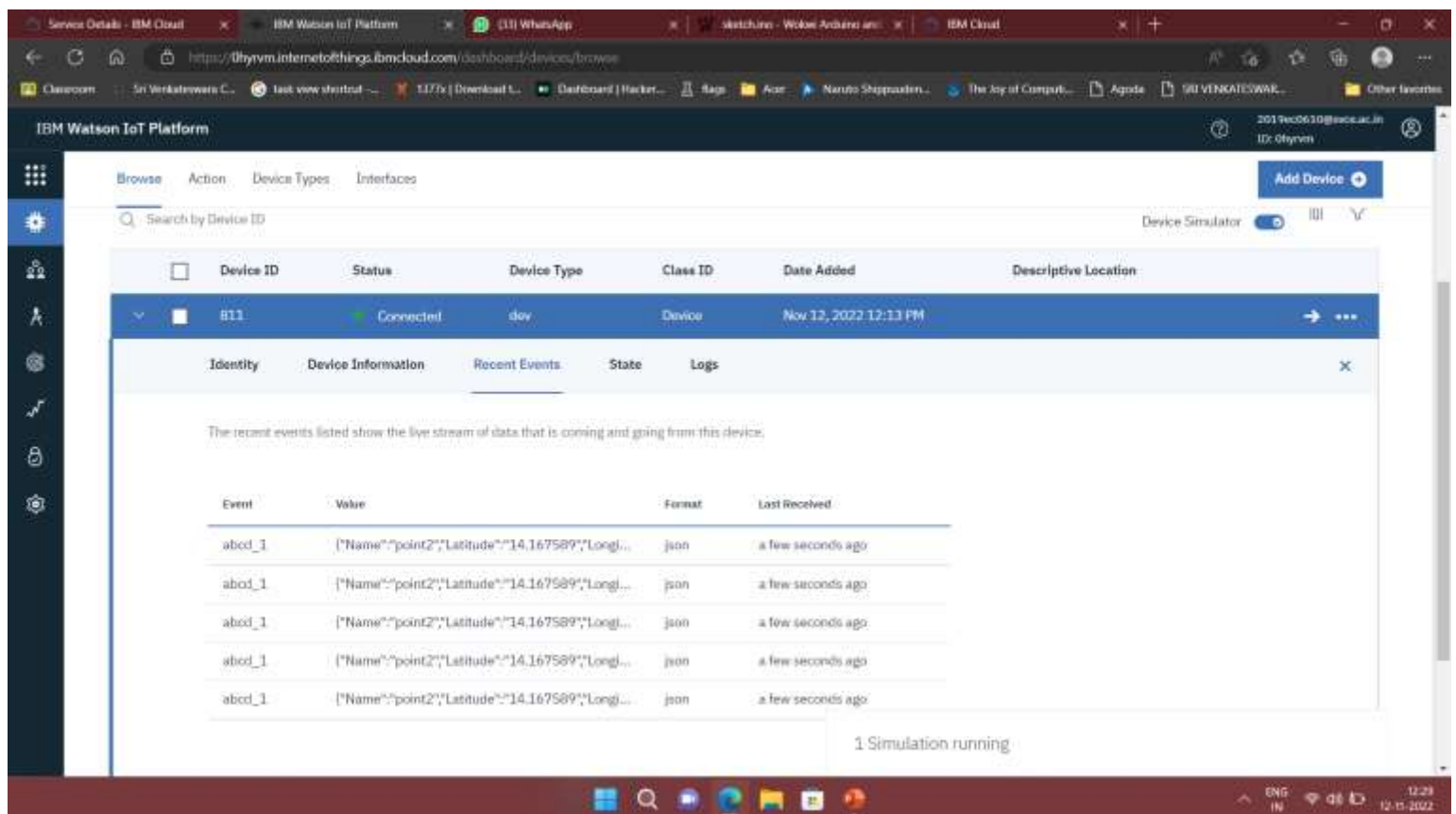
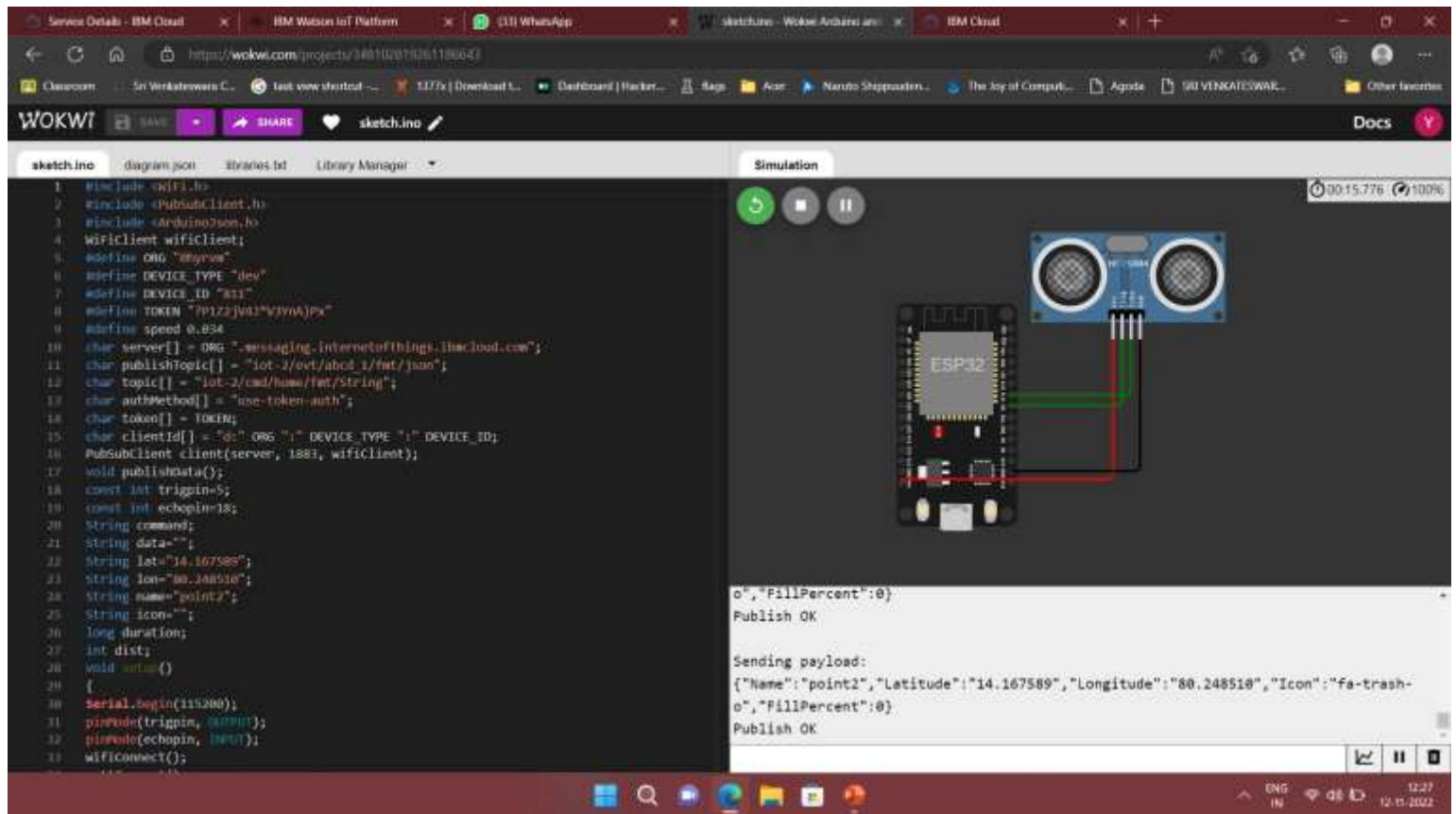
digitalWrite(trigpin,LOW);
digitalWrite(trigpin,HIGH);
delayMicroseconds(10);
digitalWrite(trigpin,LOW);
duration=pulseIn(echopin,HIGH);
dist=duration*speed/2;

if(dist<100){
    dist=100-dist;
    icon="fa-trash";
}else{
    dist=0;
    icon="fa-trash-o";
}
DynamicJsonDocument doc(1024);
String payload;
doc["Name"]=name;
doc["Latitude"]=lat;
doc["Longitude"]=lon;
doc["Icon"]=icon;
doc["FillPercent"]=dist;
serializeJson(doc, payload);
delay(3000);
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");
}
}

```

Wokwi Share link:- ["https://wokwi.com/projects/348102819261186643"](https://wokwi.com/projects/348102819261186643)

Output:



Service Details - IBM Cloud IBM Watson IoT Platform 0311 WhatsApp sketching - Webel Architects and IBM Cloud

https://0hyrvm.internetofthings.ibmcloud.com/dashboard/devices/browse

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IBM Watson IoT Platform

30E9w0610@wts.ac.in 30 Ehyrvm

Browse Action Device Types Interfaces

Search by Device ID

Device ID Status

811 Connect

Identity Device Information

The recent events listed show the last

Event Value

abcd_1 [{"Name": "point2",

abcd_1 [{"Name": "point2",

abcd_1 [{"Name": "point2",

abcd_1 [{"Name": "point2",

abcd_1 [{"Name": "point2",

abcd_1 [{"Name": "point2",

Event Payload

Event Name abcd_1

Time Received Nov 12, 2022 12:28 PM

```
1 {
2   "Name": "point2",
3   "Latitude": "14.167589",
4   "Longitude": "80.248518",
5   "Icon": "fa-trash-o",
6   "FillPercent": 8
7 }
```

1 Simulation running

Device Simulator

Descriptive Location

ENG IN 12:29 12-11-2022