Assignment -4

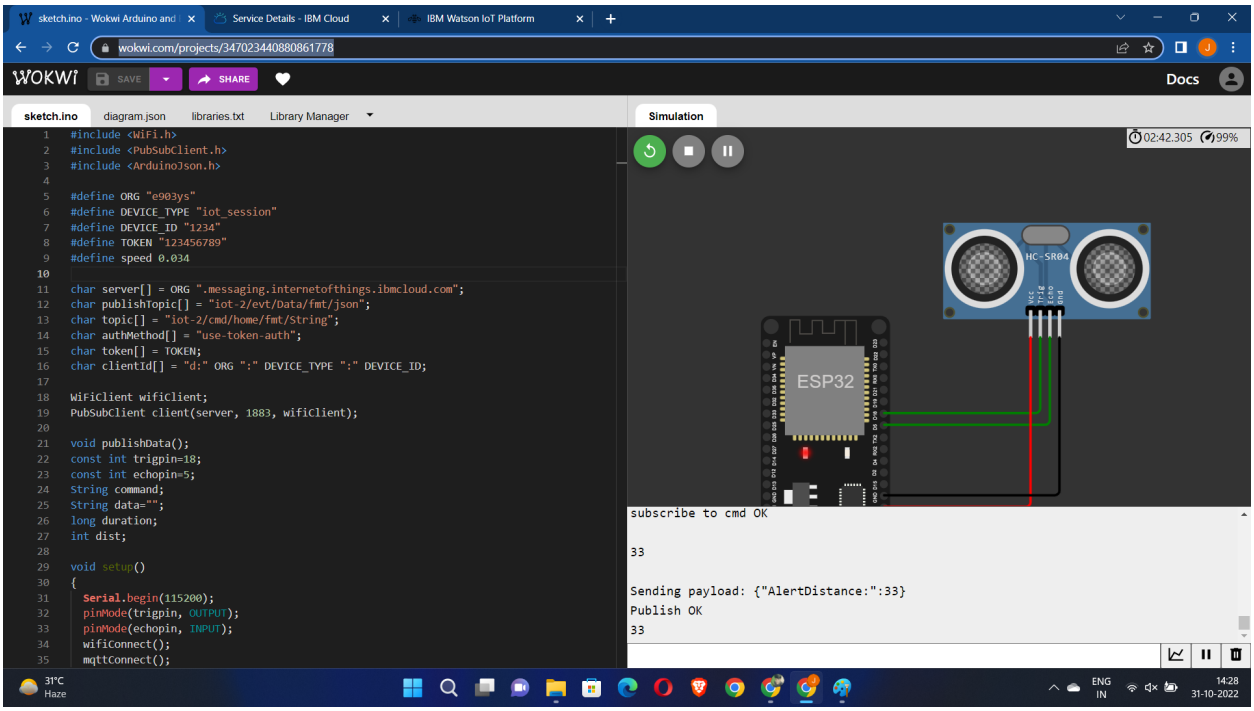
Assignment Date	29 October 2022
Student Name	P Jayavardhan
Student Roll Number	722819104050
Maximum Marks	2 Marks

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.

link- https://wokwi.com/projects/347023440880861778



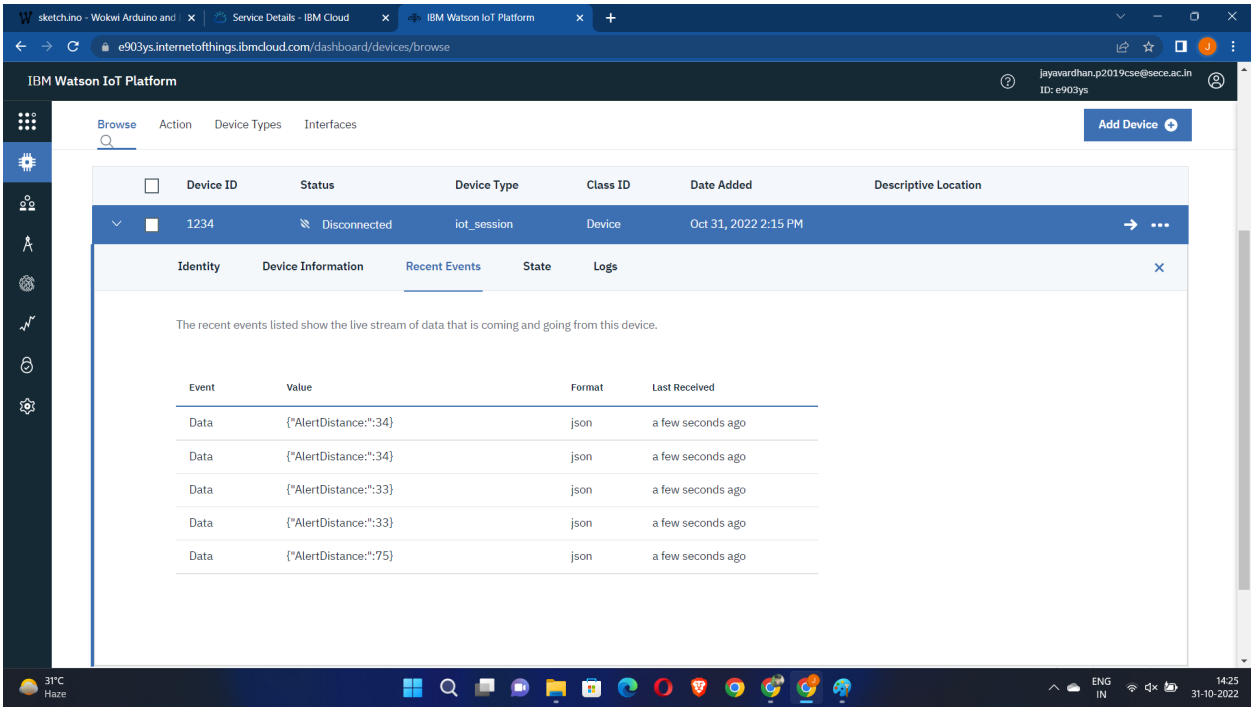
Code :

```
#include <WiFi.h>
#include <PubSubClient.h>
#include <ArduinoJson.h>
#define ORG "e903ys"
#define DEVICE_TYPE "iot_session"
#define DEVICE_ID "1234"
#define TOKEN "123456789"
#define speed 0.034
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/Data/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;
WiFiClient wifiClient;
PubSubClient client(server, 1883, wifiClient);
void publishData();
const int trigpin=18;
const int echopin=5;
String command;
String data="";
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;
  Serial.println(dist);
  if(dist<100){
    DynamicJsonDocument doc(1024);
    String payload;
    doc["AlertDistance:"]=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");
```

```
    }
  }
}
```


sketch.ino - Wokwi Arduino and
Service Details - IBM Cloud
IBM Watson IoT Platform
e903ys.internetofthings.ibmcloud.com/dashboard/devices/browse
IBM Watson IoT Platform
jayavardhan.p2019cse@sece.ac.in
ID: e903ys
Browse
Action
Device Types
Interfaces
Add Device
Device ID
Status
Device Type
Class ID
Date Added
Descriptive Location
1234
Disconnected
iot_session
Device
Oct 31, 2022 2:15 PM
Identity
Device Information
Recent Events
State
Logs
The recent events listed show the live stream of data that is coming and going from this device.
Event
Value
Format
Last Received
Data
{"AlertDistance:":34}
json
a few seconds ago
Data
{"AlertDistance:":34}
json
a few seconds ago
Data
{"AlertDistance:":33}
json
a few seconds ago
Data
{"AlertDistance:":33}
json
a few seconds ago
Data
{"AlertDistance:":75}
json
a few seconds ago
31°C
Haze
ENG
IN
14:25
31-10-2022