

## Assignment -4

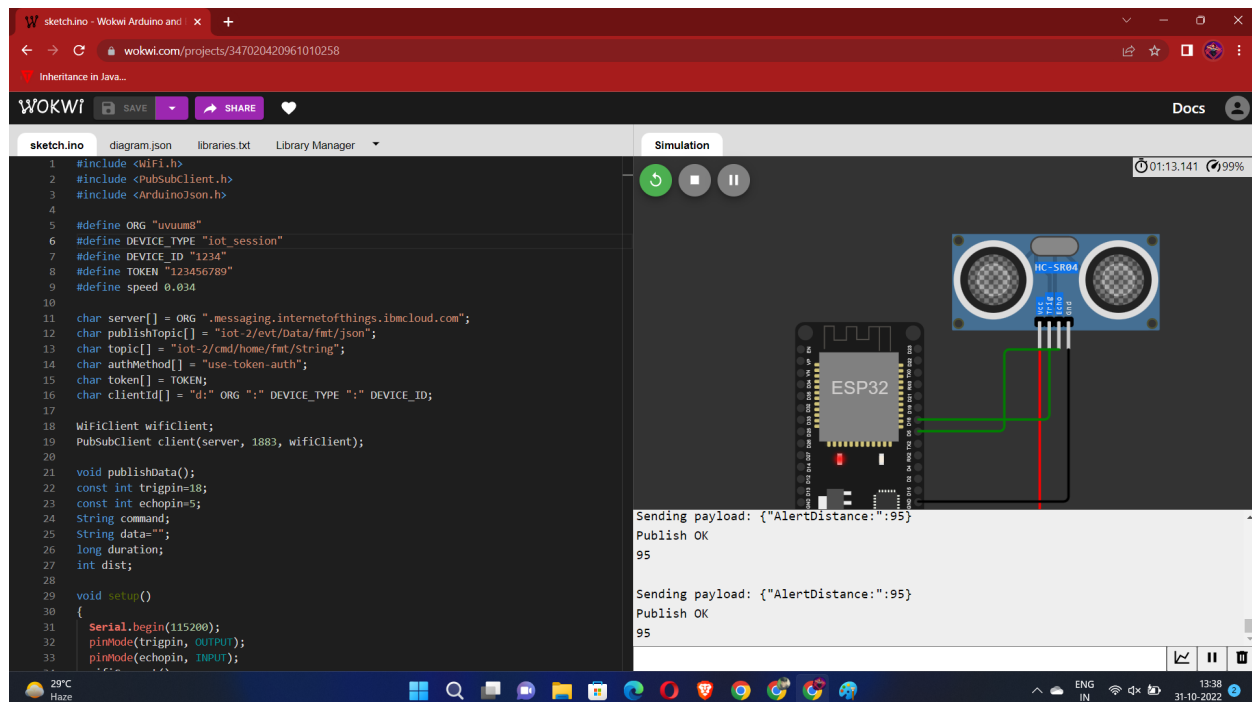
Assignment Date	29 October 2022
Student Name	M Maniesh
Student Roll Number	722819104074
Maximum Marks	2 Marks

### 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/347020420961010258>



Code :

```
#include <WiFi.h>
#include <PubSubClient.h>
#include <ArduinoJson.h>
#define ORG "uvuum8"
#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");
}
}
}
}

```

The screenshot displays the IBM Watson IoT Platform interface. At the top, the header shows the user's name 'manish.m2019cse@sece.ac.in' and ID 'uvuum8'. The main navigation bar includes 'Browse', 'Action', 'Device Types', and 'Interfaces'. A search bar for 'Search by Device ID' is present, along with a 'Device Simulator' toggle and an 'Add Device' button.

The central part of the interface shows a list of devices. The selected device has the following details:

Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location
1234	Connected	iot_session	Device	Oct 31, 2022 1:27 PM	

Below the device list, the 'Recent Events' tab is active, showing a table of events:

Event	Value	Format	Last Received
Data	{"AlertDistance":56}	json	a few seconds ago
Data	{"AlertDistance":56}	json	a few seconds ago
Data	{"AlertDistance":89}	json	a few seconds ago
Data	{"AlertDistance":56}	json	a few seconds ago
Data	{"AlertDistance":56}	json	a few seconds ago