

ASSINGNMENT-IV

DISTANCE DETECTION USING ULTRASONIC SENSOR

Team Id	PNT2022TMID17322
Assignment date	29 Oct 2022
Project Name	Hazardous area monitoring for industrial plant powered by IOT
Maximum Marks	2 Marks

Question-1:

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.

CODE:

```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG "co65hn"
#define DEVICE_TYPE "ManiMD"
#define DEVICE_ID "manimd07"
#define TOKEN "0708012359"
#define speed 0.034 #define led 14 char server[] = ORG
".messaging.internetofthings.ibmcloud.com"; char publishTopic[]
= "iot-2/evt/manimd/fmt/json"; char topic[] = "iot-
2/cmd/led/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);
    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
        += "}";
    }
}

```

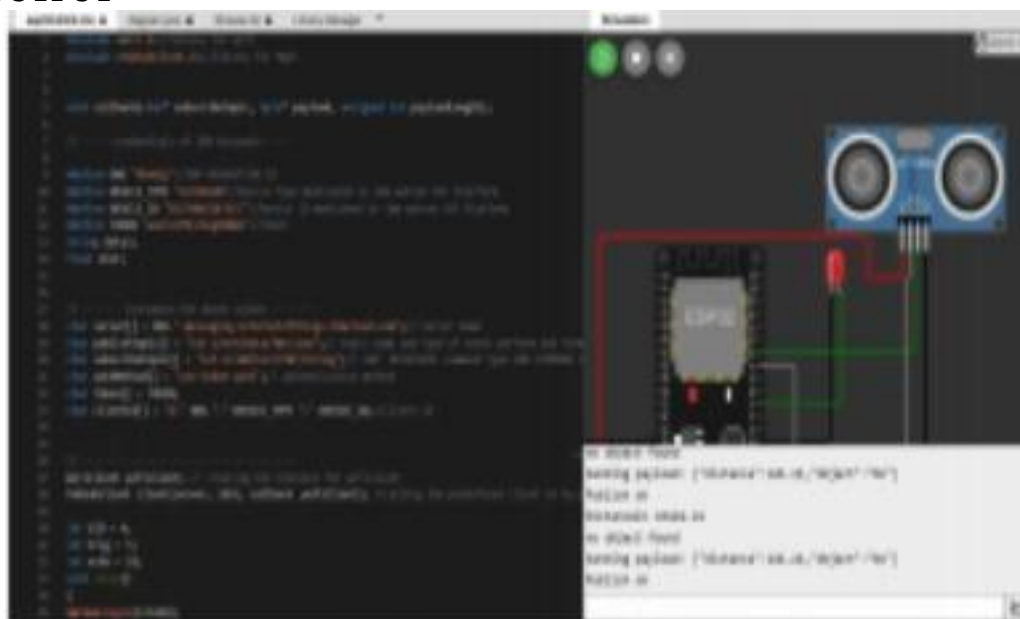
```

    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



when object is near to the ultrasonic sensor

