

## ASSIGNMENT-4

### DISTANCE DETECTION USING ULTRASONIC SENSOR

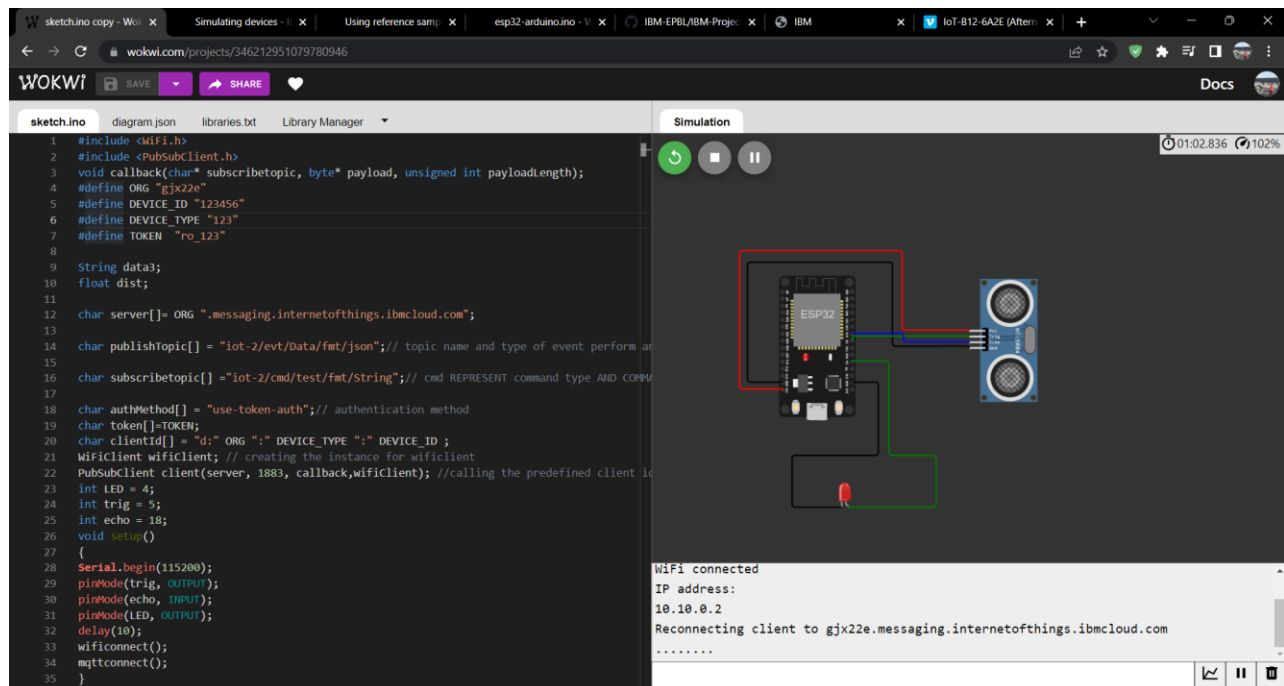
Date	22 October 2022
Team ID	PNT2022TMID11064
Name	Roshana S
Student Roll Number	811519106116
Maximum Marks	2 Marks

#### Question1:

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

#### WOKWI LINK:

<https://wokwi.com/projects/346212951079780946>



CODE:

```
#include <WiFi.h>
#include <PubSubClient.h>
void callback(char* subscribtopic, byte* payload, unsigned int payloadLength);
#define ORG "gjsx22e"
#define DEVICE_ID "123456"
#define DEVICE_TYPE "123"
#define TOKEN "ro_123"

String data3;
float dist;

char server[]= ORG ".messaging.internetofthings.ibmcloud.com";

char publishTopic[] = "iot-2/evt/Data/fmt/json";// topic name and type of event
perform and Format in which data to be send

char subscribtopic[] = "iot-2/cmd/test/fmt/String";// cmd REPRESENT command type
AND COMMAND IS TEST OF FORMAT STRING

char authMethod[] = "use-token-auth";// authentication method
char token[]=TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID ;
WiFiClient wifiClient; // creating the instance for wificlient
PubSubClient client(server, 1883, callback,wifiClient); //calling the predefined
client id by passing parameter like server
int LED = 4;
int trig = 5;
int echo = 18;
void setup()
{
  Serial.begin(115200);
  pinMode(trig, OUTPUT);
  pinMode(echo, INPUT);
  pinMode(LED, OUTPUT);
  delay(10);
  wificonnect();
  mqttconnect();
}
void loop()// Recursive Function
{
  digitalWrite(trig, LOW);
  digitalWrite(trig, HIGH);
  delayMicroseconds(10);
  digitalWrite(trig, LOW);
  float dur=pulseIn(echo, HIGH);
  float dist = (dur * 0.0343)/2;
  Serial.print ("Distancein cm");
  Serial.println(dist);
```

```

PublishData(dist);
delay(1000);
if (!client.loop())
{
    mqttconnect();
}
}

void PublishData(float dist) {
    mqttconnect();
    String object;
    if (dist <100)
    {
        digitalWrite(LED, HIGH);
        Serial.println("object is near");
        object = "Near";
    }
    else
    {
        digitalWrite(LED, LOW);
        Serial.println("no object found");
        object = "No";
    }
    String payload = "{\"distance\": ";
    payload += dist;
    payload += ", \"object\": \"";
    payload += object;
    payload += "\"}";
    Serial.print("Sending payload: ");
    Serial.println(payload);
    if (client.publish(publishTopic, (char*) payload.c_str()))
    {
        Serial.println("Publish ok");// if it sucessfully upload data on the cloud the
    } else {
        Serial.println("Publish failed");
    }
}

void mqttconnect() {
    if (!client.connected()) {
        Serial.print("Reconnecting client to ");
        Serial.println(server);
        while (!!!client.connect(clientId, authMethod, token)) {
            Serial.print(".");
            delay(500);
        }
        initManagedDevice();
        Serial.println();
    }
}

```

```

}

void wificonnect()
{
    Serial.println();
    Serial.print("Connecting to ");
    WiFi.begin("Wokwi-GUEST", "", 6); //passing the wifi credentials to establish the
    while (WiFi.status() != WL_CONNECTED) {
        delay(500);
        Serial.print(".");
    }
    Serial.println("");
    Serial.println("WiFi connected");
    Serial.println("IP address: ");
    Serial.println(WiFi.localIP());
}

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

void callback(char* subscribetopic, byte* payload, unsigned int payloadLength) {

    Serial.print("callback invoked for topic: ");
    Serial.println(subscribetopic);
    for (int i = 0; i < payloadLength; i++) {
        data3 += (char)payload[i];
    }
    data3="";
}

```

# OUTPUT

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Add Device

DISTANCEDETECT

Disconnected

ULTRASON

Device

Oct 20, 2022 9:46 AM

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	{"distance":79.66,"object":"Near"}	json	a few seconds ago
Data	{"distance":79.64,"object":"Near"}	json	a few seconds ago
Data	{"distance":79.66,"object":"Near"}	json	a few seconds ago
Data	{"distance":79.64,"object":"Near"}	json	a few seconds ago
Data	{"distance":79.66,"object":"Near"}	json	a few seconds ago

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