## Assignment - 4

| Assignment Date     | 17 October 2022 |
|---------------------|-----------------|
| Student Name        | Karthika A      |
| Student Roll Number | 49621911073     |
| 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

## CODE 1:

```
#include <WiFi.h>
#include < PubSubClient.h >
void callback(char* subscribetopic, byte* payload, unsigned int
payloadLength);
//-----credentials of IBM Accounts-----
#define ORG "92wmmv"//IBM ORGANITION ID
#define DEVICE TYPE "IOT DEV"//Device type mentioned in ibm watson IOT Platform
#define DEVICE ID "1911073"//Device ID mentioned in ibm watson IOT Platform
#define TOKEN "1911073abcdefgh" //Token
String data3;
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/Data/fmt/json";
char subscribetopic[] = "iot-2/cmd/test/fmt/String"; char
authMethod[] = "use-token-auth";
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE TYPE ":" DEVICE ID;
WiFiClient wifiClient;
PubSubClient client(server, 1883, callback, wifiClient); const
int trigPin = 5;
const int echoPin = 18;
#define SOUND SPEED 0.034
long duration;
float distance:
void setup() {
Serial.begin(115200);
pinMode(trigPin, OUTPUT):
pinMode(echoPin, INPUT);
wificonnect(); mqttconnect();
void loop()
digitalWrite(trigPin, LOW);
delayMicroseconds(2);
digitalWrite(trigPin, HIGH);
delayMicroseconds(10);
digitalWrite(trigPin, LOW); duration
= pulseIn(echoPin, HIGH);
distance = duration * SOUND SPEED/2;
```

```
Serial.print("Distance (cm): ");
Serial.println(distance);
if(distance<100)
Serial.println("ALERT!!");
delay(1000);
PublishData(distance);
delay(1000);
if (!client.loop()) {
mqttconnect();
}
delay(1000);
void PublishData(float dist) {
mqttconnect();
String payload = "{\"Distance\":";
payload += dist;
payload += ",\"ALERT!!\":""\"Distance less than 100cms\""; payload
+="}";
Serial.print("Sending payload: ");
Serial.println(payload);
if (client.publish(publishTopic, (char*) payload.c str())) {
Serial.println("Publish ok");
} 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);
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));
```

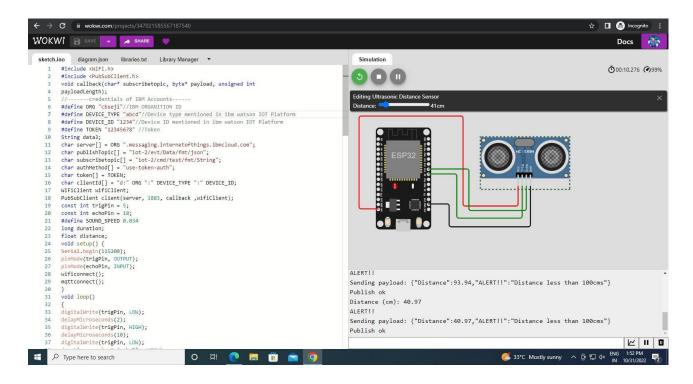
```
Serial.println("subscribe to cmd OK");
} else {
Serial.println("subscribe to cmd FAILED");
}

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++) {
//Serial.print((char)payload[i]);
data3 += (char)payload[i];
}
Serial.println("data: "+ data3);
data3="";
}</pre>
```

#### Wokwi Link:

https://wokwi.com/projects/347021585567187540

# **Output and Simulation:**



Whenever the distance is less than 100 cms send an "alert" to the IBM cloud and display in the device recent events.

