Assignment -4

Assignment Date	19 October 2022
Student Name	BHARATH RAJ
Student Roll Number	737819ECR020
Maximum Marks	2 Marks

Question-1:

Write code and connections in wokwi for ultrasonic sensor.

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

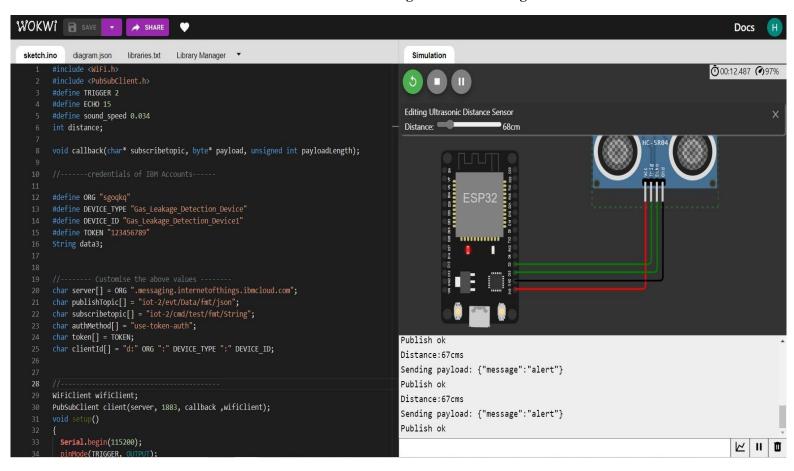
Wokwi Project Link: https://wokwi.com/projects/346235279031403092

```
#include <WiFi.h>
#include <PubSubClient.h>
#define TRIGGER 2
#define ECHO 15
#define sound_speed 0.034
int distance;
void callback(char* subscribetopic, byte* payload, unsigned int
payloadLength);
//----credentials of IBM Accounts-----
#define ORG "sgoqkq"
#define DEVICE_TYPE "Gas_Leakage_Detection_Device"
#define DEVICE_ID "Gas_Leakage_Detection_Device1"
#define TOKEN "123456789"
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);
void setup()
  Serial.begin(115200);
  pinMode(TRIGGER, OUTPUT);
  pinMode(ECHO, INPUT);
  delay(10);
  Serial.println();
  wificonnect();
  mqttconnect();
```

```
void loop()
  digitalWrite(TRIGGER, HIGH);
  delayMicroseconds(10);
  digitalWrite(TRIGGER, LOW);
  int duration=pulseIn(ECHO,HIGH);
  distance=(duration*sound speed)/2;
  Serial.print("Distance:");
  Serial.print(distance); Serial.println("cms");
  if(distance<100){
     PublishData(distance);
  delay(1000);
  if (!client.loop())
     { mqttconnect();
*....retrieving to
void PublishData(int d)
  { mqttconnect();
  String payload = "{\"message\":\"alert\"}";
  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");
     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++) { data 3 +=
     (char)payload[i];
  Serial.println("data: "+ data3);
data3="";
```

Wokwi Platform Coding and Circuit Design



IBM IoT Platform Device Recent Events

