Assignment -4

Assignment Date	31 October 2022
Student Name	Mathu Shree P
Student Roll Number	711320EC063
Maximum Marks	2 Marks

Question-1:

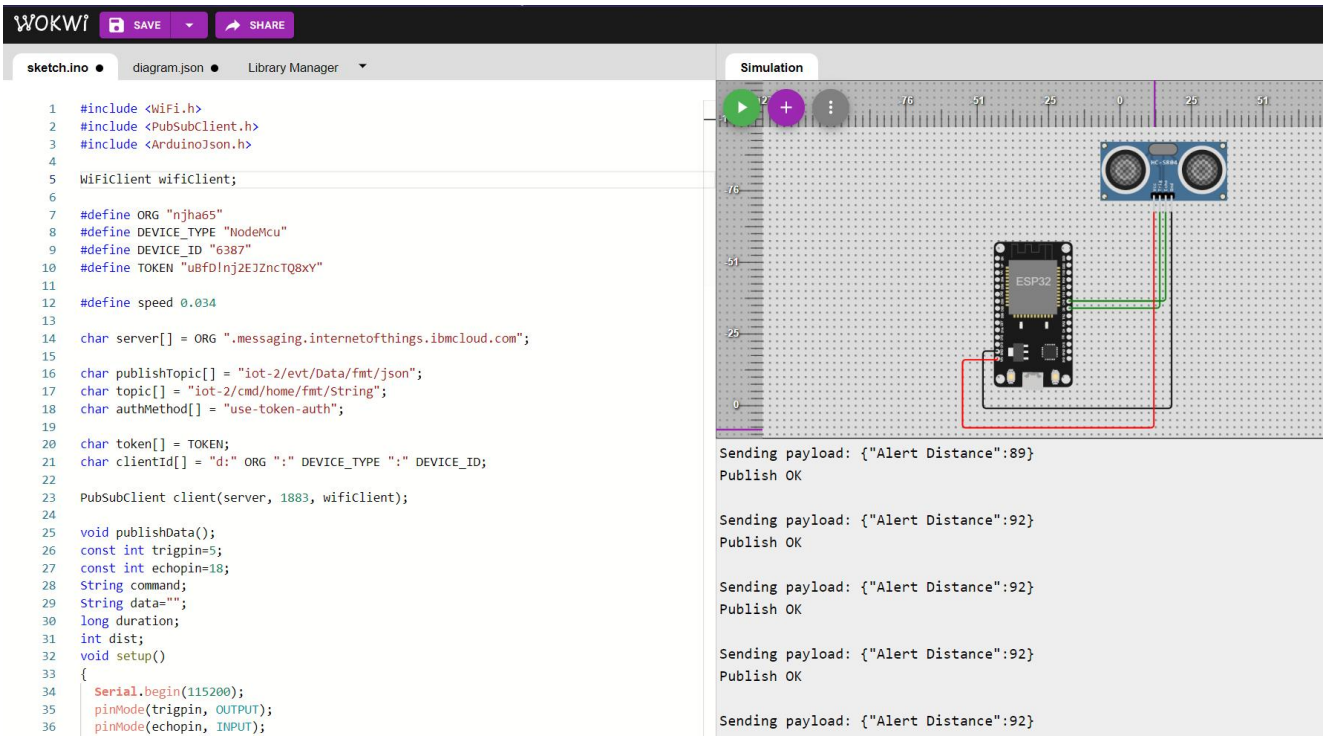
Write code and connections in wokwi for the ultrasonic sensor.
Whenever the distance is less than 100 cms send an "alert" to the IBM cloud and display in the device recent events.
Upload document with wokwi share link and images of IBM cloud

Solution :

```
#include <WiFi.h>
#include <PubSubClient.h>
#include <ArduinoJson.h>

WiFiClient wifiClient;

#define ORG "njha65"
#define DEVICE_TYPE "NodeMcu"
#define DEVICE_ID "6387"
#define TOKEN "uBfD!nj2EJZncTQ8xY"

#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;

PubSubClient client(server, 1883, wifiClient);

void publishData();
const int trigpin=5;
const int echopin=18;
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;
  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");
    }
  }
}
```

WOWKI SHARE LINK : https://wokwi.com/projects/347052228921524818

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