Assignment -4

Assignment Date	15 Nov 2022
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Maximum Marks	2 Marks

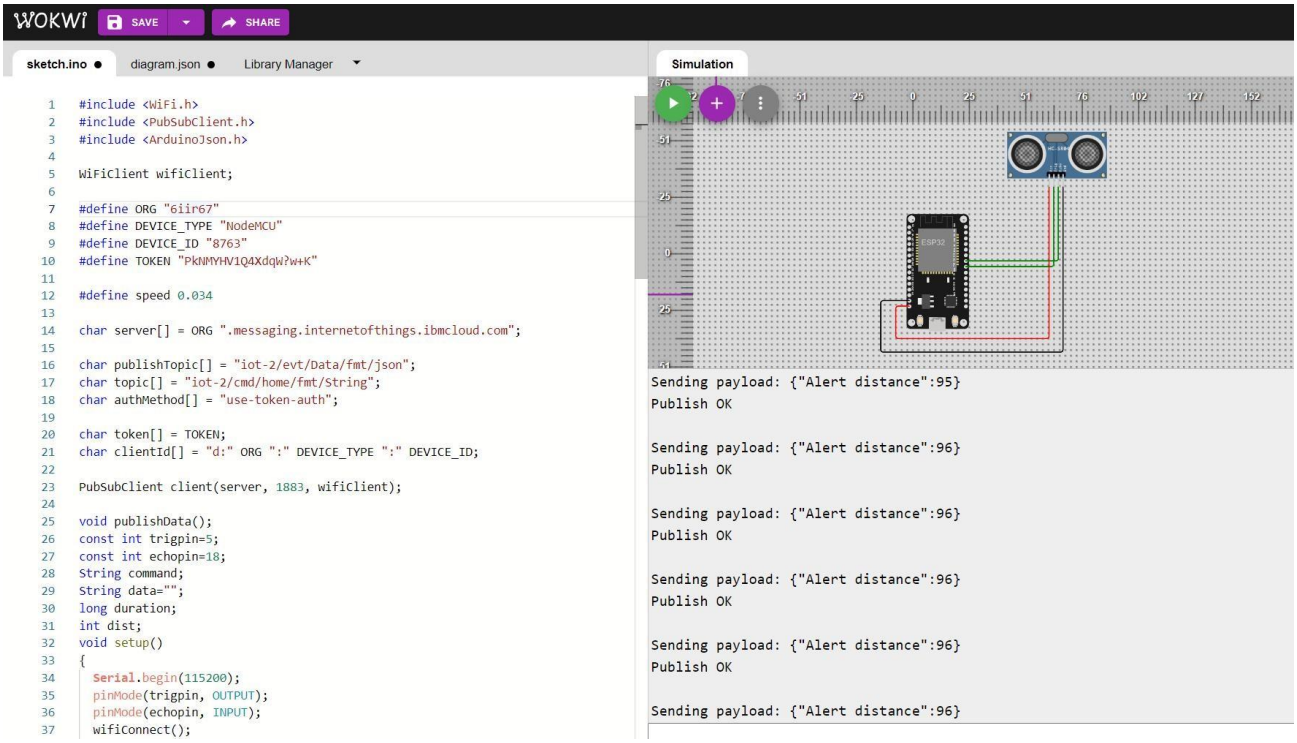
Question-1:

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/348372276973929044