Assignment -4

Assignment Date	24 October 2022
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Question :

Write code and connections in wokwi for ultrasonic sensors. That whenever distance is less than
100 cms send "alert" to ibm cloud and display in device recent events.
Upload document with wokwi share link and images

Code:
```cpp
#include <WiFi.h>
#include <PubSubClient.h>
#include <ArduinoJson.h>

WiFiClient wifiClient;

#define ORG "6dsk4v"
#define DEVICE_TYPE "raspberrypi"
#define DEVICE_ID "12345"
#define TOKEN "12345678"
#define speed 0.034

char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/raspberrypi_2/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="";
String lat="14.167589";
String lon="80.248510";
String name="point2";
String icon="";

long duration;
int dist;

void setup()
```

```cpp
{
  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");
  }
```

```cpp
}
void publishData()
{
  digitalWrite(trigpin,LOW);
  digitalWrite(trigpin,HIGH);
  delayMicroseconds(10);
  digitalWrite(trigpin,LOW);
  duration=pulseIn(echopin,HIGH);
  dist=duration*speed/2;

  if(dist<100){
    dist=100-dist;
    icon="fa-trash";
  }else{
    dist=0;
    icon="fa-trash-o";
  }
  DynamicJsonDocument doc(1024);
  String payload;
  doc["Name"]=name;
  doc["Latitude"]=lat;
  doc["Longitude"]=lon;
  doc["Icon"]=icon;
  doc["FillPercent"]=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");
  }
}
```
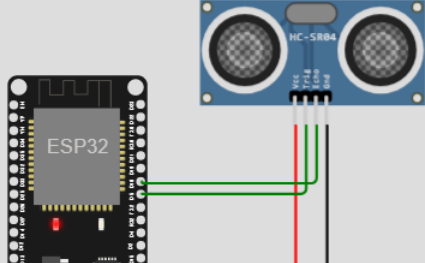
Wokwi link :

https://wokwi.com/projects/346748952854397524

WOKWI 💾 SAVE ▾ ➡ SHARE ♥ **Docs**

sketch.ino diagram.json libraries.txt Library Manager ▾

Simulation

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```
1   #include <WiFi.h>
2   #include <PubSubClient.h>
3   #include <ArduinoJson.h>
4
5   WiFiClient wifiClient;
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9   #define DEVICE_ID "12345"
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13  char server[] = ORG ".messaging.internetofthings.ibmcl
14  char publishTopic[] = "iot-2/evt/raspberrypi_2/fmt/jso
15  char topic[] = "iot-2/cmd/home/fmt/String";
16  char authMethod[] = "use-token-auth";
17  char token[] = TOKEN;
18  char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_
19  PubSubClient client(server, 1883, wifiClient);
20  void publishData();
21
22  const int trigpin=5;
23  const int echopin=18;
24  String command;
25  String data="";
26  String lat="14.167589";
27  String lon="80.248510";
28  String name="point2";
29  String icon="";
```



```
"80.248510","Icon":"fa-trash-o","FillPercent":0}
Publish OK


Sending payload:
{"Name":"point2","Latitude":"14.167589","Longitude":
"80.248510","Icon":"fa-trash-o","FillPercent":0}
Publish OK
```

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