

ASSIGNMENT-4

Assignment Date	24 Oct 2022
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Project Name	Smart Farmer-IoT Enabled Smart Farming Application

Question:

1. Write Code and connections in wokwi for ultrasonic sensor. whatever distance is less than 100 cms send "Alert" to ibm cloud and display in device recent events

Code:

```
#include <WiFi.h> //library for wifi
#include <PubSubClient.h> //library for MQTT
WiFiClient wifiClient;
String data3;
#define ORG "blcms6"
#define DEVICE_TYPE "sk"
#define DEVICE_ID "0044"
#define TOKEN "00000000"
#define speed 0.034 #define led 14 char server[] = ORG
".messaging.internetofthings.ibmcloud.com"; char publishTopic[]
= "iot-2/evt/sk/fmt/json"; char topic[] = "iot-
2/cmd/status/fmt/String"; char authMethod[] = "use-token-
auth"; char token[] = TOKEN;

char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
PubSubClient client(server, 1883, wifiClient);
```

```
const int trigpin=19; const
int echopin=18; String
command;
String data="";
```

```
long duration; float
dist;
```

```
void setup()
{
    Serial.begin(115200);
    pinMode(led, OUTPUT);
    pinMode(trigpin, OUTPUT);
    pinMode(echopin, INPUT);
    wifiConnect();  mqttConnect();
}
```

```
void loop() {  bool isNearby
= dist < 100;
digitalWrite(led, isNearby);
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(500);  
        }  
        initManagedDevice();  
        Serial.println();  
    }  
}
```

```
void initManagedDevice() { if  
    (client.subscribe(topic)) {  
        // Serial.println(client.subscribe(topic));  
        Serial.println("IBM 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){
        String payload = "{\"Alert Distance\":\"";
        payload += dist;    payload += "}";

        Serial.print("\n");
        Serial.print("Sending payload: ");    Serial.println(payload);    if
(client.publish(publishTopic, (char*) payload.c_str())) {
            Serial.println("Publish OK");
        }
    }

    if(dist>100){
        String payload = "{\"Distance\":\"";
        payload += dist;    payload += "}";

        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");  
}  
  
}  
  
}
```





