

Assignment-4

AssignmentDate	8 November 2022
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StudentRoll Number	211719106031
Maximum Marks	2Marks

Question-1:

Write code and connections in Wokwi for the ultrasonic sensor.

Whenever the distance is less than 100 cm, send an "alert" to the IBM Cloud and display in the device's events.

Upload document with Wokwi's share link and images of IBM Cloud

Solution:

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

WiFiClient wifiClient;

#define ORG "nhpwjc"
#define DEVICE_TYPE "raspberrypi"
#define DEVICE_ID "12345"
#define TOKEN "123456789"
#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 ec
hopin = 18; String comma
nd; String data = "";

long
duration; int
dist;

void setup()
{
    Serial.begin(115200); pin
    Mode(trigPin, OUTPUT); pin
    Mode(echoPin,
    INPUT); wifiConnect(); mq
    tConnect();
}

void loop(){

publishData(); delay(500);
```

```

    if(!client.loop()){m
        qttConnect();
    }
}

voidwifiConnect(){
    Serial.print("Connectingto");Serial.print("Wifi");Wi
    Fi.begin("Wokwi-GUEST", "",6);
    while(WiFi.status()!=WL_CONNECTED){del
        ay(500);
        Serial.print(".");
    }
    Serial.print("WiFiconnected,IPaddress:");Serial.println(WiFi.localIP());
}

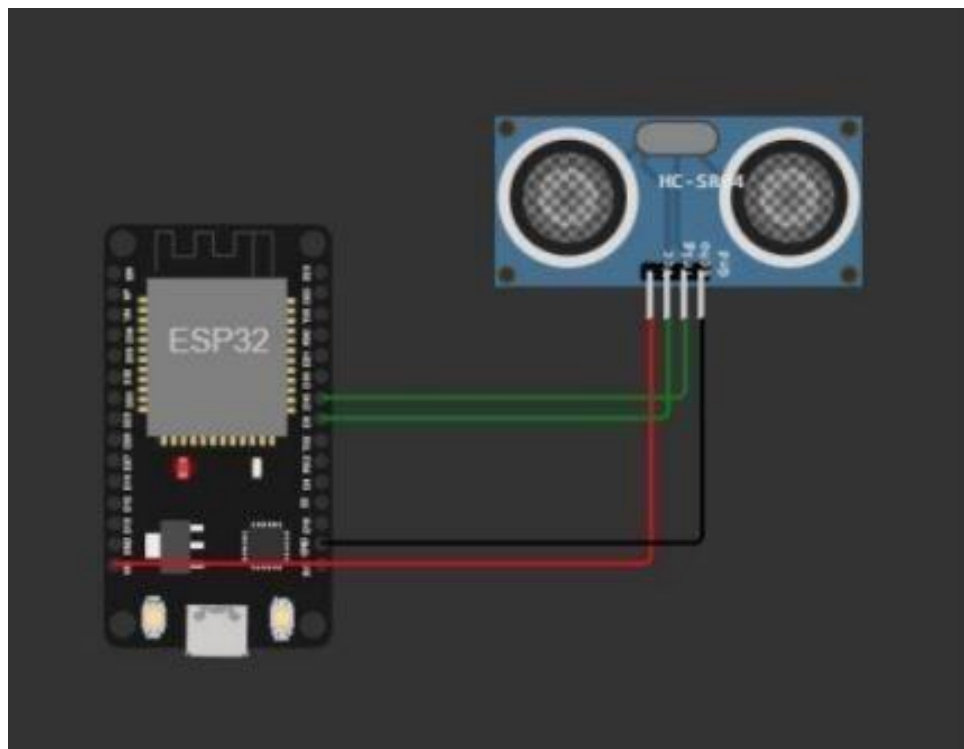
voidmqttConnect(){
    if(!client.connected()){
        Serial.print("Reconnecting MQTT client to ");
        Serial.println(server);while(!client.connect(clientId,
        authMethod,token)){
            Serial.print(".");
            delay(1000);
        }
        initManagedDevice();
        Serial.println();
    }
}

voidinitManagedDevice(){
    if (client.subscribe(topic))
        {Serial.println(client.subscribe(topic));Serial.println("su
        bscribeto cmdOK");
    }else{
        Serial.println("subscribetocmdFAILED");
    }
}

voidpublishData()
{
    digitalWrite(trigpin,LOW);digitalWrite(tr
    igpin,HIGH);delayMicroseconds(10);digital
    Write(trigpin,LOW);duration=pulseIn(echop
    in,HIGH);dist=duration*speed/2;

    if(dist<100){DynamicJsonDocume
        ntdoc(1024);Stringpayload;do
        c["AlertDistance:"]=dist;ser
        ializeJson(doc,
        payload);delay(3000);Serial.
        print("\n");
        Serial.print("Sendingpayload:");
        Serial.println(payload);
        if(client.publish(publishTopic,(char*)payload.c_str())){
            Serial.println("PublishOK");
        }else{
            Serial.println("PublishFAILED");
        }
    }
}
}

```



```
Sending payload: {"Alert distance":93.99}
Publish OK

Sending payload: {"Alert distance":93.96}
Publish OK

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```

Device Simulator

Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location	Added By	Device Class	Firmware Version
12345	Connected	NodeMCU	Device	Oct 17, 2022 2:36 PM	111739106009@userfritterz.com			

Identity	Device Information	Recent Events	State	Logs
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The recent events listed show the live stream of data that is coming and going from this device.

Event	Value	Format	Last Received
Data	("Alert distance":93.96)	json	a few seconds ago
Data	("Alert distance":93.96)	json	a few seconds ago
Data	("Alert distance":93.96)	json	a few seconds ago
Data	("Alert distance":93.96)	json	a few seconds ago
Data	("Alert distance":93.96)	json	a few seconds ago

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