

Assignment-4

AssignmentDate	8 November 2022
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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 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());
}

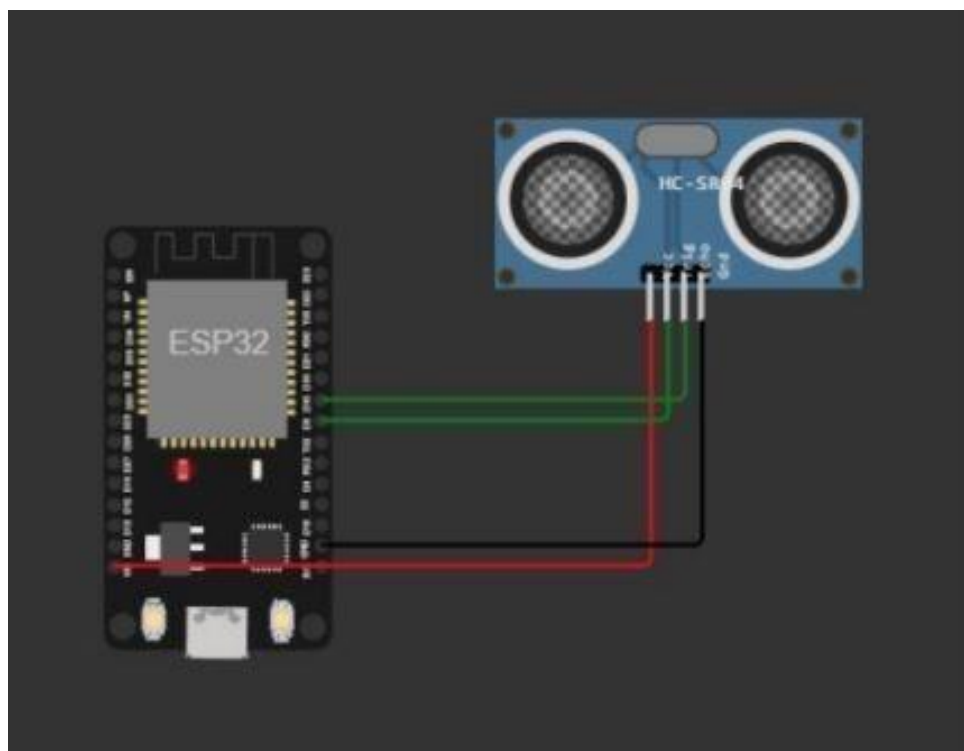
voidmqttConnect(){
    if(!client.connected()){
        Serial.print("Reconnecting MQTT client to ");
        Serial.println(server);while(!client.connect(clientId,
        authMethod,token)){
            Serial.print(".");
            delay(1000);
        }
        initManagedDevice();
        Serial.println();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

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");
        }
    }
}
}

```



```
01:38.369 100%  
Sending payload: {"Alert distance":93.99}  
Publish OK  
  
Sending payload: {"Alert distance":93.96}  
Publish OK  
  
Sending payload: {"Alert distance":93.96}  
Publish OK  
  
Sending payload: {"Alert distance":93.96}  
Publish OK  
  
Sending payload: {"Alert distance":93.96}  
Publish OK  
  
Sending payload: {"Alert distance":93.96}  
Publish OK
```

IBM Watson IoT Platform

111719106079@marfatercz.com

87:nhapq:

Browse

Action

Device Types

Interfaces

Add Device

This table shows a summary of all devices that have been added. It can be filtered, organized, and searched on using different criteria. To get started, you can add devices by using the Add Device button, or by using API.

Search by Device ID

Device Simulator

Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location	Added By	Device Class	Firmware Version
12345	Connected	NucleoMCU	Device	Oct 17, 2022 2:36 PM		111719106079@marfatercz.com		

Identity

Device Information

Recent Events

State

Logs

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

Items per page 100

1 of 1 page