

TEAMID:PNT2022TMID12767

PROJECTTITLE: Industry-SpecificIntelligentFireManagementSystem

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CODE:

```
#include<WiFi.h>includ
e<PubSubClient.h>WiFi
Client
wifiClient;Stringdata3;
#defineORG"sg5c1o"
#define DEVICE_TYPE
"assignment4"#defineDEVICE_ID"4"
#defineTOKEN"90785634"
#define speed 0.034
#define led14
char server[]= ORG
".messaging.internetofthings.ibmcloud.com";charpublishTo
pic[]="iot-2/evt/event2/fmt/json";
char topic[]="iot-
2/cmd/home/fmt/String";charauthMet
hod[]="use-token-auth";
chartoken[]=TOKEN;
charclientId[]="d:"ORG":"DEVICE_TYPE ":"DEVICE_ID;
PubSubClient client(server,1883,
wifiClient);const inttrigpin=5;
const int
echopin=18;String
command;Stringdat
a="";
longduration;
floatdist;voi
d setup()
{
```

```
Serial.begin(115200);pi  
nMode(led,OUTPUT);
```

```

pinMode(trigpin,OUTPUT);
pinMode(echopin,INPUT);
wifiConnect();mqttConnec
t();
}
voidloop(){
bool isNearby = dist
<100;digitalWrite(led,isN
earby);publishData();
delay(500);if(!cl
ient.loop()){mqt
tConnect();
}
}
voidwifiConnect(){
Serial.print("Connecting to
");Serial.print("Wifi");WiFi.begin("Wokwi-
GUEST","",6);while(WiFi.status()!=
WL_CONNECTED){delay(500);
Serial.print(".");
}
Serial.print("WiFiconnected,IPAddress:");Serial.println(WiFi.localIP());
}
void
mqttConnect(){if(!client.
connected()){
Serial.print("Reconnecting MQTT client to
");Serial.println(server);while(!client.connect(clientId,authMeth
od, token)){Serial.print(".");
delay(500);
}
initManagedDevice();
Serial.println();
}
}

```

```

void initManagedDevice()
{
    if(client.subscribe(topic)
    ){
        //Serial.println(client.subscribe(topic));
        Serial.println("IBMsubscribetocmdOK");
    }else{
        Serial.println("subscribetocmdFAILED");
    }
}

void publishData()
{
    digitalWrite(trigpin,LOW);digital
    Write(trigpin,HIGH);delayMicros
    econds(10);digitalWrite(trigpin,L
    OW);duration=pulseIn(echopin,H
    IGH);dist=duration*speed/2;if(di
    st<100){
        String payload = "{\"Alert!!
        Alert!!Distance\":";payload+=dist;
        payload+="}";

        Serial.print("\n");Serial.print("S
        endingpayload:");Serial.println(
        payload);
        if(client.publish(publishTopic,(char*)payload.c_str())){
            Serial.println("PublishOK");
        }

    }

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

```

```

Serial.print("\n");Serial.print("S
endingpayload:");Serial.println(
payload);
if(client.publish(publishTopic,(char*)payload.c_str())){
Serial.println("PublishOK");
}else{
Serial.println("PublishFAILED");
}
}
}
}

```

CIRCUIT:

The screenshot displays the Wokwi online IDE interface. On the left, the 'sketch.ino' file contains the following code:

```

1  #include<WiFi.h>
2  #include<PubSubClient.h>
3  WiFiClient wifiClient;
4  String data3;
5  #define ORG "sg5c1o"
6  #define DEVICE_TYPE "assignment4"
7  #define DEVICE_ID "4"
8  #define TOKEN "90785634"
9  #define speed 0.034
10 #define led 14
11 char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
12 char publishTopic[] = "iot-2/evt/event2/fmt/json";
13 char topic[] = "iot-2/cmd/home/fmt/String";
14 char authMethod[] = "use-token-auth";
15 char token[] = TOKEN;
16 char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
17 PubSubClient client(server,1883, wifiClient);
18
19
20 const int trigpin=5;
21 const int echopin=18;
22 String command;
23 String data="";
24
25 long duration;
26 float dist;
27
28
29 void setup()

```

On the right, the 'Simulation' window shows a circuit diagram of an ESP32 microcontroller connected to a DHT22 digital temperature and humidity sensor. The console log at the bottom of the simulation window shows the following output:

```

Connecting to Wifi..WiFi connected, IP address: 10.10.0.2
Reconnecting MQTT client to
sg5c1o.messaging.internetofthings.ibmcloud.com

```