

PROJECT DEVELOPMENT PHASE
DELIVERY OF SPRINT-4

Team ID	PNT2022TMID14349
Project Name	Industry- Specific Intelligent Fire Management System

CODE:

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

#define temp_pin 15

void callback(char* subscribetopic,byte* payload, unsigned int payloadLength);

#define ORG "he8juu"
#define DEVICE_TYPE "abcd"
#define DEVICE_ID "12"
#define TOKEN "12345678"
String data3;

char server[]= ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[]="iot-2/evt/Data/fmt/json";
char subscribeTopic[]="iot-2/cmd/test/fmt/String";
char authMethod[]="use-token-auth";
char token[]=TOKEN;
char clientID[]="d:"ORG":DEVICE_TYPE":DEVICE_ID;

WiFiClient wifiClient;
PubSubClient client(server,1883,callback,wifiClient);


// should match the Beta Coefficient of the thermistor

void setup() {
  Serial.begin(9600);
  analogReadResolution(10);
  pinMode(32,INPUT);
  pinMode(14,OUTPUT);

  wificonnect();
  mqttconnect();
}
```

```

}
void loop() {
    const float BETA = 3950; // should match the Beta Coefficient of the
    thermistor
    int analogValue = analogRead(A4);
    float temp = 1 / (log(1 / (1023. / analogValue - 1)) / BETA + 1.0 / 298.15) -
    273.15;
    //float temp = 1 / (log(1 / (1023. / analogValue - 1)) / BETA + 1.0 /
    298.15) - 273.15;
    Serial.print("Temperature: ");
    Serial.print(temperature);
    Serial.println(" °C");
    if(temp>=35){
        PublishData2(temp);
        digitalWrite(14, HIGH);
    }else{
        digitalWrite(14, LOW);
        PublishData1(temperature);
    }
}
delay(1000);
if(!client.loop()){
    mqttconnect();
}

//delay(2000);
}
void PublishData1(float temperature){
    mqttconnect();
    String payload= "{\"temperature\":\"";
    payload += tem;
    payload+="}";

    Serial.print("Sending payload:");
    Serial.println(payload);

    if(client.publish(publishTopic,(char*)payload.c_str())){
        Serial.println("publish ok");
    } else{
        Serial.println("publish failed");
    }
}
}
void PublishData2(float tem){
    mqttconnect();
    String payload= "{\"ALERT\":\"";
    payload += tem;
    payload+="}";

```

```

Serial.print("Sending payload:");
Serial.println(payload);

if(client.publish(publishTopic,(char*)payload.c_str())){
    Serial.println("publish ok");
} else{
    Serial.println("publish failed");
}
}

void mqttconnect(){
    if(!client.connected()){
        Serial.print("Reconnecting to");
        Serial.println(server);
        while(!!!client.connect(clientID, authMethod, token)){
            Serial.print(".");
            delay(500);
        }
        initManagedDevice();
        Serial.println();
    }
}

void wificonnect(){
    Serial.println();
    Serial.print("Connecting to");

    WiFi.begin("Wokwi-GUEST","",6);
    while(WiFi.status() != WL_CONNECTED){
        delay(500);
        Serial.print(".");
    }
    Serial.println("");
    Serial.println("WIFI CONNECTED");
    Serial.println("IP address:");
    Serial.println(WiFi.localIP());
}

void initManagedDevice(){
    if(client.subscribe(subscribeTopic)){
        Serial.println((subscribeTopic));
        Serial.println("subscribe to cmd ok");
    }else{
        Serial.println("subscribe to cmd failed");
    }
}

void callback(char* subscribeTopic, byte* payload, unsigned int
payloadLength){

```

```

Serial.print("callback invoked for topic:");
Serial.println(subscribeTopic);
for(int i=0; i<payloadLength; i++){
    data3 += (char)payload[i];
}
Serial.println("data:" + data3);
if(data3=="lighton"){
    Serial.println(data3);
    digitalWrite(14,HIGH);
}else{
    Serial.println(data3);
    digitalWrite(14,LOW);
}
data3="";
}

```

OUTPUT:

```

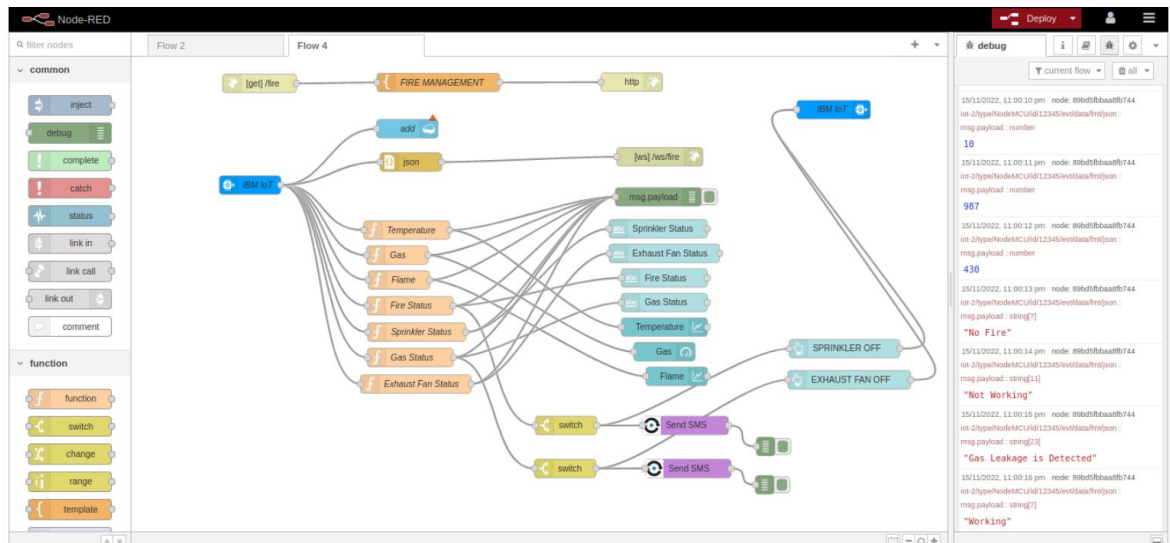
Publish OK
Publish OK
Publish OK
Publish OK
Publish OK
Publish OK
Publish OK
Publish OK

```

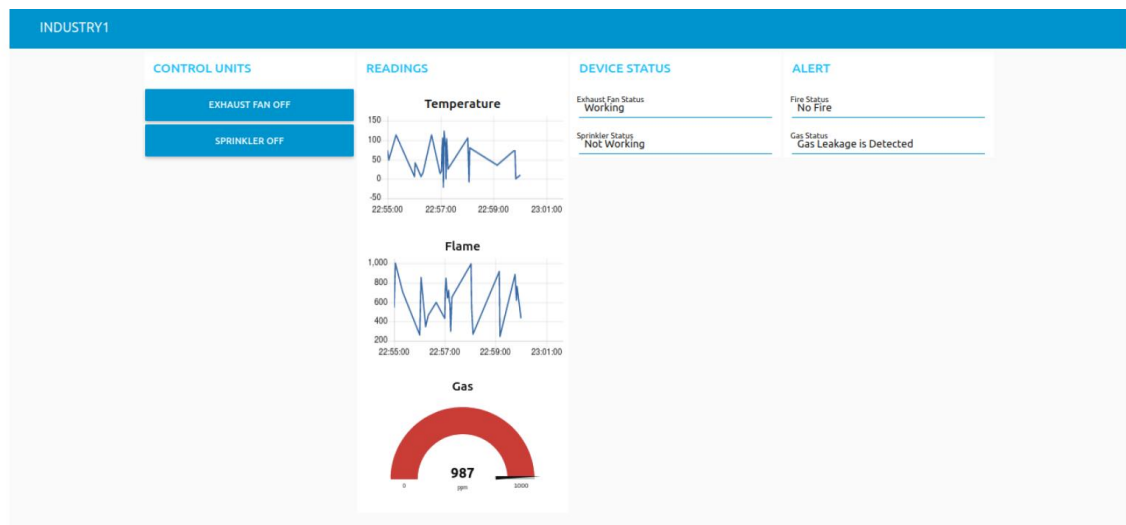
IBM CLOUD DATA:

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	{"gas":987,"temperature":10,"flame":430,"fire_s...	json	a few seconds ago		
print	{"Fire is Detected ":"SPRINKLER OFF"}	json	a few seconds ago		
print	{"Gas Leakage is Detected ":"EXHAUST FAN OFF"}	json	a few seconds ago		
data	{"gas":331,"temperature":0,"flame":757,"fire_sta...	json	a few seconds ago		

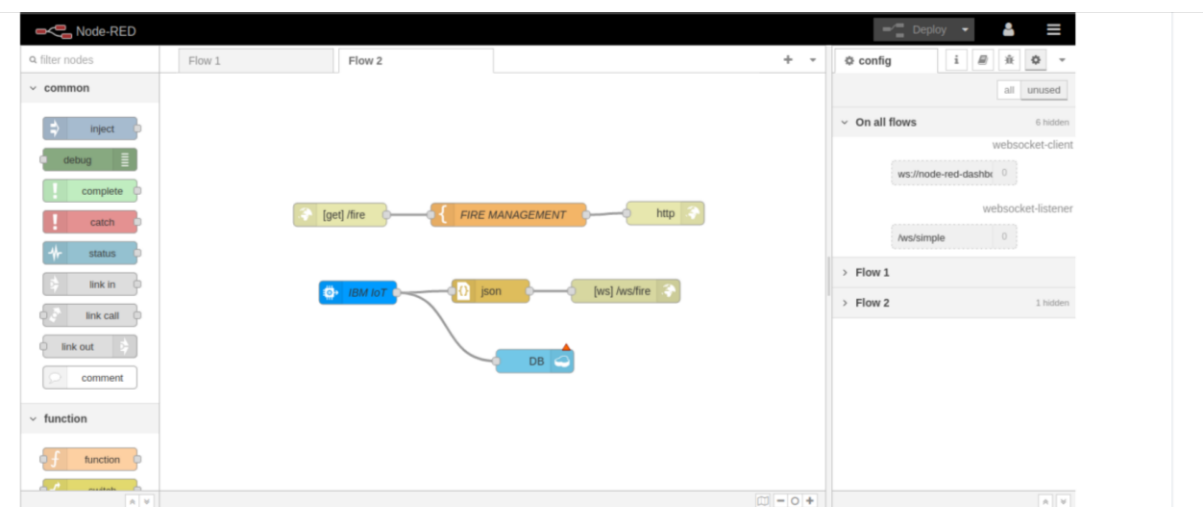
TRANSFERRING DATA FROM IBM WATSON INTO NODE-RED:



DASHBOARD OF NODE-RED:



TRANSFERRING DATA FROM NODE-RED INTO WEB PAGE USING WEB SOCKET:



RESULT :

