

Team ID	PNT2022TMID54463
Project Name	Industry Specific Intelligent Fire Management System

CODE:

```
#include <WiFi.h>
#include <PubSubClient.h>
#include <time.h> #include "DHTesp.h" #define temp_pin 15
void callback(char* subscribtopic,byte* payload, unsigned int payloadLength); #define ORG
"jesccj"
#define DEVICE_TYPE "ESP32_Controller"
#define DEVICE_ID "Trini"
#define TOKEN "*Vzh&EwwgbRpqohJd+"
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);

const int DHT_PIN = 15;

DHTesp dhtSensor;
bool exhaust_fan_on = false;
bool sprinkler_on = false;

float temperature = 0;
int gas = 0;
int flame = 0;
```

```

String flame_status = "";
String accident_status = "";
String sprinkler_status = "";

void setup() {  Serial.begin(99900);

wificonnect();
mqttconnect();

  dhtSensor.setup(DHT_PIN, DHTesp::DHT22);
}

void loop() {
  srand(time(0));

  //initial variable

  temperature = random(-20,125);  gas = random(0,1000);  int flamereading =
random(200,1024);
  flame = map(flamereading,0,1024,0,2);

  TempAndHumidity  data = dhtSensor.getTempAndHumidity();

  Serial.println("Temperature: " + String(data.temperature, 2) + "°C");
  Serial.println("Humidity: " + String(data.humidity, 1) + "%");
  Serial.println("---");  delay(1000);
  if(data.temperature<38){PublishData1(data.temperature);
    flame_status = "No Fire";
    Serial.println("Flame Status : "+flame_status);
  }
}

```

```
else{ PublishData2(data.temperature);    flame_status = "Fire is Detected";
    Serial.println("Flame Status : "+flame_status);

}

if(data.humidity<30){
    Serial.println("Gas Status : Gas leakage Detected");
}

else{
    exhaust_fan_on = false;
    Serial.println("Gas Status : No Gas leakage Detected");
}

//send the sprinkler status    if(data.temperature<38){
    sprinkler_status = " not working";
    Serial.println("Sprinkler Status : "+sprinkler_status);
}

else{
    sprinkler_status = " working";
    Serial.println("Sprinkler Status : "+sprinkler_status);
}

//toggle the fan according to gas

if(data.humidity<30){    exhaust_fan_on = true;
    Serial.println("Exhaust fan Status : Working");
}

else{
    exhaust_fan_on = false;
    Serial.println("Exhaust fan Status : Not Working");
}
```

```

Serial.println(""); Serial.println("");

Serial.println(" -----*****-----"); Serial.println("");
Serial.println(""); delay(1000); if(!client.loop()){
    mqttconnect();
}
} void PublishData1(float temp){ mqttconnect();
String payload= "{\"temp normal\"}"; 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 temperature){
    mqttconnect();

    String payload = "{\"temp\".";
payload += temperature;
payload += "\",\"ALERT!!\":\"temperature greater than 38\""; 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());
}

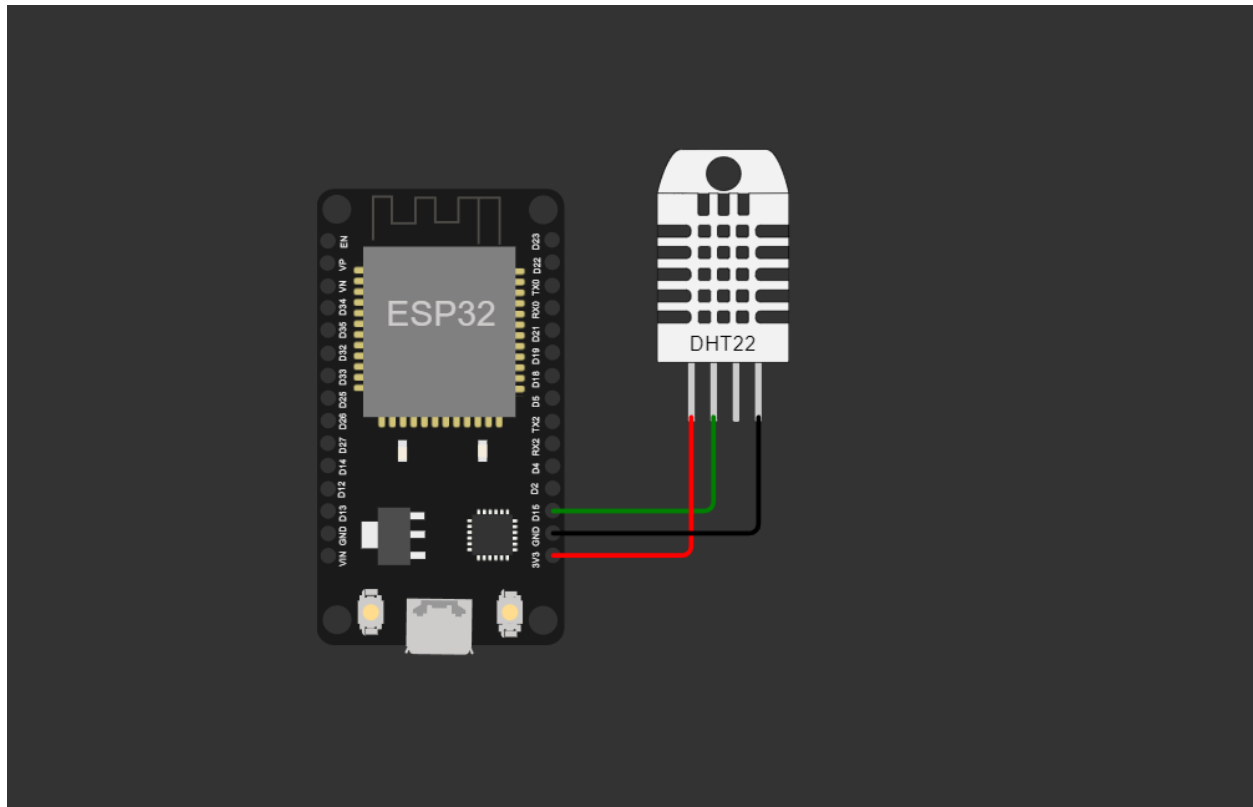
void initManagedDevice(){ if(client.subscribe(subscribeTopic)){
    Serial.println(subscribeTopic);
    Serial.println("subscribe to cmd ok");
}else{
    Serial.println("subscribe to cmd failed");
}
}

void callback(char* subscribeTopic, byte* payload, unsigned int payloadLength){
    Serial.print("callback invoked for topic:");

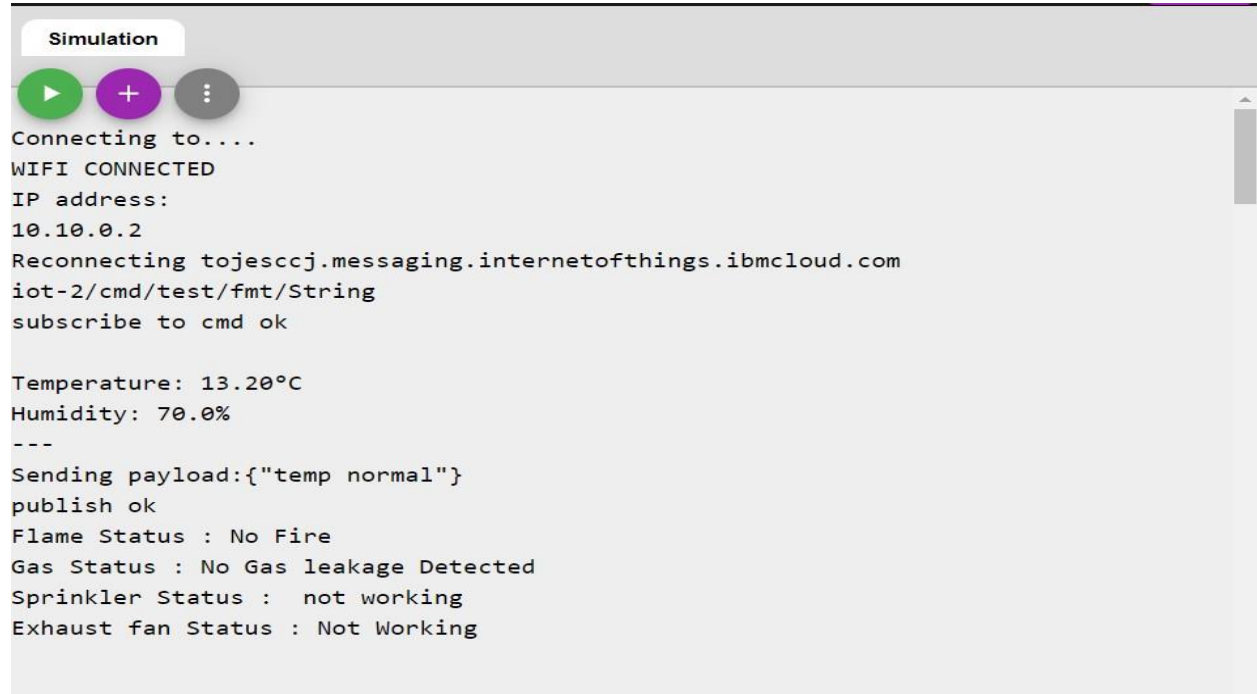
```

```
Serial.println(subscribeTopic); for(int i=0; i<payloadLength; i++){  
  data3 += (char)payload[i];  
}  
}
```

CIRCUIT



OUTPUT



```
Simulation
Connecting to....
WIFI CONNECTED
IP address:
10.10.0.2
Reconnecting tojesccj.messaging.internetofthings.ibmcloud.com
iot-2/cmd/test/fmt/String
subscribe to cmd ok

Temperature: 13.20°C
Humidity: 70.0%
---
Sending payload:{"temp normal"}
publish ok
Flame Status : No Fire
Gas Status : No Gas leakage Detected
Sprinkler Status : not working
Exhaust fan Status : Not Working
```