WOKWI SIMULATION OUTPUT

DATE	**19 NOVEMBER 2022**
TEAM ID	**PNT2022TMID11818**
PROJECT TITLE	**INDUSTRY-SPECIFIC INTELLIGENT FIRE MANAGEMENT SYSTEM**

Source Code :

```
#include <WiFi.h>//library for wifi
#include <PubSubClient.h>//library for MQtt
#include "DHT.h"// Library for dht11
#define DHTPIN 15     // what pin we're connected to
#define DHTTYPE DHT22   // define type of sensor DHT 11
#define LED 2
#define BUZZER 4
#define EXFAN1 13
#define EXFAN2 14
#define SPRKLR 12
#include <Wire.h>
#include <LiquidCrystal_I2C.h>

LiquidCrystal_I2C LCD = LiquidCrystal_I2C(0x27, 20, 4);

DHT dht (DHTPIN, DHTTYPE);// creating the instance by passing pin and
typr of dht connected

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

//-------credentials of IBM Accounts------

#define ORG "0bm892"//IBM ORGANITION ID
#define DEVICE_TYPE "ESP32_Controller"//Device type mentioned in ibm
watson IOT Platform
#define DEVICE_ID "Sensor"//Device ID mentioned in ibm watson IOT
Platform
#define TOKEN "1234567890"     //Token String
data3;
float h, t, s,f,fan1=0,fan2=0,spr=0;
//-------- Customise the above values
--------
```

```
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";//
Server Name
char publishTopic[] = "iot-2/evt/Data/fmt/json";// topic name and
type of event perform and format in which data to be send char
subscribetopic[] = "iot-2/cmd/command/fmt/String";// cmd
REPRESENT command type AND COMMAND IS TEST OF FORMAT STRING char
authMethod[] = "use-token-auth";// authentication method
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;//client id

//-------------------------------------------
WiFiClient wifiClient; // creating the instance for wificlient
PubSubClient client(server, 1883, callback ,wifiClient); //calling
the predefined client id by passing parameter like server id,portand
wificredential


void setup()// configureing the ESP32
{
  Serial.begin(115200);
dht.begin();
pinMode(LED,OUTPUT);
pinMode(BUZZER,OUTPUT);
pinMode(EXFAN1,OUTPUT);
pinMode(EXFAN2,OUTPUT);
digitalWrite(LED,LOW);
digitalWrite(BUZZER,LOW);
digitalWrite(EXFAN1,LOW);
digitalWrite(EXFAN2,LOW);
pinMode(SPRKLR,OUTPUT);
digitalWrite(SPRKLR,LOW);
delay(10);
Serial.println();
wificonnect();
mqttconnect();   LCD.init();
  LCD.backlight();
  LCD.setCursor(0, 0);
  LCD.print("Connecting to ");
  LCD.setCursor(0, 1);
LCD.print("WiFi ");
delay(1000);   LCD.clear();
}

void loop()// Recursive Function
{
    LCD.setCursor(0,2);
    LCD.print("Smoke: ");
```

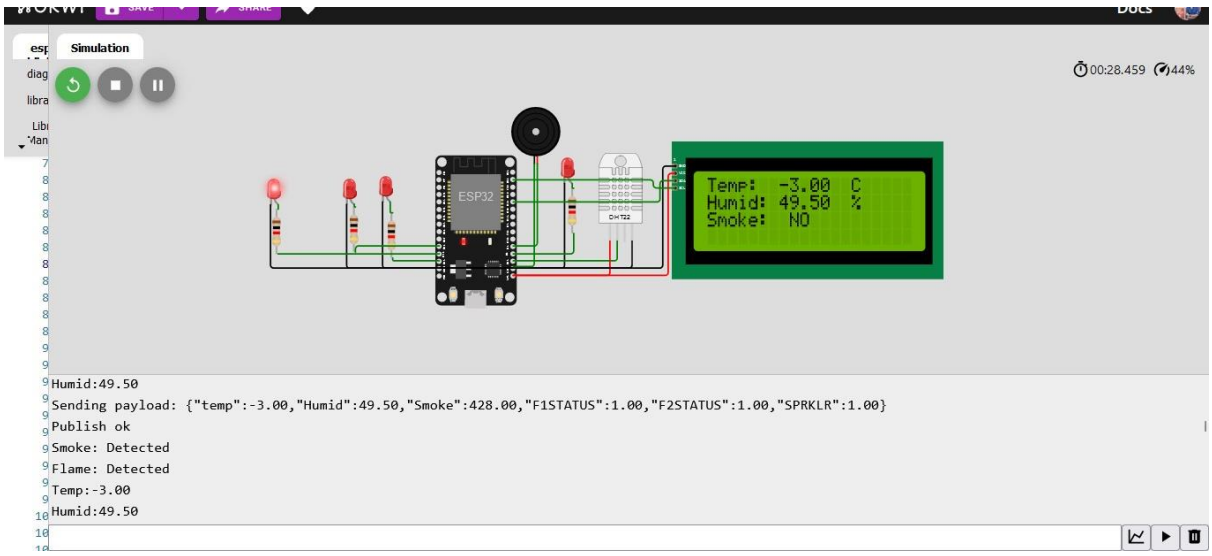
```
    LCD.setCursor(0, 0);
    LCD.print("Temp: ");
    LCD.setCursor(14, 0);
    LCD.print("C");
    LCD.setCursor(0, 1);
    LCD.print("Humid: ");
    LCD.setCursor(14, 1);
LCD.print("%");   h =
dht.readHumidity();   t =
dht.readTemperature();   s =
random(0,900);   f =
random(0,255);   if (s>400)
  {
    Serial.print("Smoke: ");
Serial.println("Detected");
digitalWrite(BUZZER,HIGH);
     LCD.setCursor(7, 2);
    LCD.print("YES");
    LCD.setCursor(0, 3);
LCD.print("WARNING!FIREACCIDENT");
digitalWrite(EXFAN1,HIGH);
digitalWrite(EXFAN2,HIGH);
fan1=1;       fan2=1;
  }

else{
      Serial.print("Smoke: ");
Serial.println("Not Detected");
digitalWrite(BUZZER,LOW);
      LCD.setCursor(7, 2);
     LCD.print(" NO");
     LCD.setCursor(0, 3);
LCD.print("                    ");
digitalWrite(EXFAN1,LOW);
digitalWrite(EXFAN2,LOW);      fan1=0;
fan2=0;
  }

if(f>80)
  {
      Serial.print("Flame: ");
Serial.println("Detected");
spr=1;
digitalWrite(SPRKLR,HIGH);
  }
```

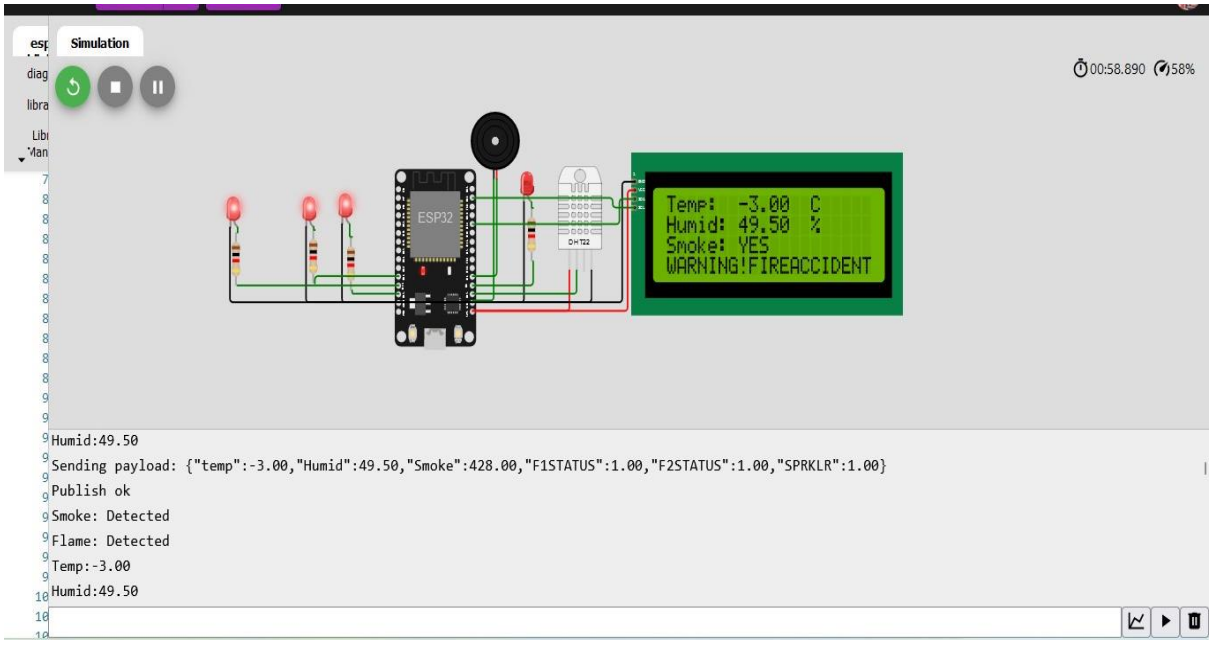
```
else
{
      Serial.print("Flame: ");
Serial.println("nOT Detected");       spr=0;
      digitalWrite(SPRKLR,LOW);
  }
  Serial.print("Temp:");
  Serial.println(t);
  LCD.setCursor(7, 0);
  LCD.print(t);
  Serial.print("Humid:");
  Serial.println(h);
  LCD.setCursor(7, 1);
  LCD.print(h);

  PublishData(t, h, s,fan1,fan2,spr);
delay(1000);   if (!client.loop()) {
mqttconnect();
  }
}



/*.....................................retrieving to
Cloud.............................*/

void PublishData(float temp, float humid, float smoke,float
fan1,float fan2,float spr) {
  mqttconnect();//function call for connecting to ibm
  /*
     creating the String in in form JSon to update the data to ibm
cloud
  */
  String payload = "{\"temp\":";
payload += temp;   payload +=
"," "\"Humid\":";   payload +=
humid;   payload += ","
"\"Smoke\":";   payload +=
smoke;
   payload += "," "\"F1STATUS\":";
payload += fan1;
   payload += "," "\"F2STATUS\":";
payload += fan2;
     payload += "," "\"SPRKLR\":";
  payload += spr; payload += "}";
```

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


  if (client.publish(publishTopic, (char*) payload.c_str())) {
Serial.println("Publish ok");// if it sucessfully upload data on the
cloud then it will print publish ok in Serial monitor or else it will
print publish failed
  } else {
    Serial.println("Publish failed");
  }

}


void mqttconnect() {   if
(!client.connected()) {
    Serial.print("Reconnecting client to ");
Serial.println(server);
    while (!!!client.connect(clientId, authMethod, token)) {
      Serial.print(".");
delay(500);
    }
     initManagedDevice();
     Serial.println();
  }
}
void wificonnect() //function defination for wificonnect
{
  Serial.println();
  Serial.print("Connecting to ");

  WiFi.begin("Wokwi-GUEST", "", 6);//passing the wifi credentials to
establish the connection
  while (WiFi.status() != WL_CONNECTED) {
    delay(500);
Serial.print(".");
  }
  Serial.println("");
  Serial.println("WiFi connected");
  LCD.setCursor(0, 0);
  LCD.print("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++) {
//Serial.print((char)payload[i]);     data3
+= (char)payload[i];
  }
  Serial.println("data: "+ data3);
if(data3=="lighton")
  {
Serial.println(data3);
digitalWrite(LED,HIGH);
  }
else
  {
Serial.println(data3);
digitalWrite(LED,LOW);
  } data3="";

}
```

OUTPUT :


Simulation
00:28.459
44%
ESP32
Temp: -3.00 C
Humid: 49.50 %
Smoke: NO
Humid:49.50
Sending payload: {"temp":-3.00,"Humid":49.50,"Smoke":428.00,"F1STATUS":1.00,"F2STATUS":1.00,"SPRKLR":1.00}
Publish ok
Smoke: Detected
Flame: Detected
Temp:-3.00
Humid:49.50


Simulation
00:58.890
58%
ESP32
Temp: -3.00 C
Humid: 49.50 %
Smoke: YES
WARNING!FIREACCIDENT
Humid:49.50
Sending payload: {"temp":-3.00,"Humid":49.50,"Smoke":428.00,"F1STATUS":1.00,"F2STATUS":1.00,"SPRKLR":1.00}
Publish ok
Smoke: Detected
Flame: Detected
Temp:-3.00
Humid:49.50