

SPRINT 1

Team ID	PNT2022TMID30738
Project Title	Hazardous Area Monitoring for Industrial Plant Powered By IOT

Creating a Code for connecting Sensor and Arduino:

```
#include <stdio.h> //LCD I2C library:
#include <LiquidCrystal_I2C.h> //DHT22 sensor library:
#include <DHT.h>

//LCD I2C address 0x27, 20 column and 4 rows!
LiquidCrystal_I2C lcd(0x27, 16, 2);

//Constants:
#define DHTPIN 2
//what pin we're connected to
#define DHTTYPE DHT22
//DHT 22 (AM2302)
DHT dht(DHTPIN, DHTTYPE);
//Initialize DHT sensor for normal 16mhz Arduino

//Variables:
int chk;
float H; //Humidity value
float T; //Temperature value
int buzzer = 12;

void setup(){
//Initialize
LCD, DHT22 sensor and buzzer:
lcd.init();
lcd.backlight();
//Serial Communication is starting with 9600 of baudrate speed
Serial.begin(115200);
dht.begin();
pinMode(13, OUTPUT);
pinMode(buzzer, OUTPUT);
//Print some text in Serial Monitor
Serial.println("DHT22 sensor with Arduino Uno R3!");
pinMode(9, OUTPUT);
pinMode(10, OUTPUT);
pinMode(11, OUTPUT);
```

```

}

void loop()
{
    delay(2000);
    //Read data and store it to variables
    hum and temp H = dht.readHumidity();
    T = dht.readTemperature();

    //Print temp and humidity values to serial monitor
    Serial.print("Humidity: ");
    Serial.print(H);
    Serial.println(" %; ");
    Serial.print("Temperature: ");
    Serial.print(T);
    Serial.println(" Celsius.\n");

    /*If humidity is higher than 70% & temperature is higher than 30 degrees
    Celsius then it will show on LCD „Too warm!
    Cool down!“*/
    if(H >= 70.00 && T >= 30.00)
    {
        digitalWrite(9,HIGH digitalWrite(10,LOW);
        digitalWrite(11,LOW)
        lcd.println(" Too warm! ");
        lcd.setCursor(0, 1);
        lcd.println(" Cool down! ");
        lcd.setCursor(0, 0);
        digitalWrite(buzzer, 1);
        tone(buzzer, 900, 100);
        delay(400);
        digitalWrite(buzzer, 0);
        tone(buzzer,900,100);
        delay(400);
        digitalWrite(buzzer, 1);
        tone(buzzer,900,100);
        delay(400);
        digitalWrite(buzzer, 0);
        tone(buzzer,900,100);
        delay(400);
    }else{
        /*If humidity is lower than 70% & temperature is lower than 30 degrees
        Celsius then it will show on LCD „Temp. & hum. are in normal limits“*/
        digitalWrite(9, LOW);
        digitalWrite(10, LOW);
        digitalWrite(11, HIGH);
        lcd.println("Temp. & hum. are");
        lcd.setCursor(0, 1);
        lcd.println("in normal limits");
        lcd.setCursor(0, 0);
        digitalWrite(buzzer, 0);
    }
}

```

```

/*If either humidity is lower than 70%, but temperature is higher than 30
degrees Celsius, then it will show on LCD „Be ware! Temp. too high” or
humidity is higher than 70%, but temperature is lower than 30 degrees Celsius,
then it will show on
LCD „Be ware! Hum. too high”*/
if(H < 70.00 && T >= 30.00)
{
    digitalWrite(9, LOW);
    digitalWrite(10, HIGH);
    digitalWrite(11, LOW);
    lcd.println("Be ware!");
    lcd.setCursor(0, 1);
    lcd.println("Temp. too high! ");
    lcd.setCursor(0, 0);
    digitalWrite(buzzer, 1);
    tone(buzzer,400,400);
    delay(400);
    digitalWrite(buzzer, 0);
    tone(buzzer, 400, 400);
    delay(400);
}
if(H >= 70.00 && T < 30.00) #include <stdio.h> //LCD I2C library:

#include <LiquidCrystal_I2C.h> //DHT22 sensor library:
#include <DHT.h>

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LiquidCrystal_I2C lcd(0x27, 16, 2);

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    //Print temp and humidity values to serial monitor
    Serial.print("Humidity: ");
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    Serial.println(" %; ");
    Serial.print("Temperature: ");
    Serial.print(T);
    Serial.println(" Celsius.\n");

    /*If humidity is higher than 70% & temperature is higher than 30 degrees
    Celsius then it will show on LCD „Too warm!
    Cool down!“*/
    if(H >= 70.00 && T >= 30.00)
    {
        digitalWrite(9,HIGH digitalWrite(10,LOW);
        digitalWrite(11,LOW)
        lcd.println(" Too warm! ");
        lcd.setCursor(0, 1);
        lcd.println(" Cool down! ");
        lcd.setCursor(0, 0);
        digitalWrite(buzzer, 1);
        tone(buzzer, 900, 100);
        delay(400);
        digitalWrite(buzzer, 0);
        tone(buzzer,900,100);
        delay(400);
        digitalWrite(buzzer, 1);
        tone(buzzer,900,100);
        delay(400);
        digitalWrite(buzzer, 0);
        tone(buzzer,900,100);
        delay(400);
    }else{
        /*If humidity is lower than 70% & temperature is lower than 30 degrees

```

```

Celsius then it will show on LCD „Temp. & hum. are in normal limits”*/
    digitalWrite(9, LOW);
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    digitalWrite(11, HIGH);
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    lcd.setCursor(0, 1);
    lcd.println("in normal limits");
    lcd.setCursor(0, 0);
    digitalWrite(buzzer, 0);
}

/*If either humidity is lower than 70%, but temperature is higher than 30
degrees Celsius, then it will show on LCD „Be ware! Temp. too high” or
humidity is higher than 70%, but temperature is lower than 30 degrees Celsius,
then it will show on
LCD „Be ware! Hum. too high”*/
if(H < 70.00 && T >= 30.00)
{
    digitalWrite(9, LOW);
    digitalWrite(10, HIGH);
    digitalWrite(11, LOW);
    lcd.println("Be ware!");
    lcd.setCursor(0, 1);
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    digitalWrite(buzzer, 1);
    tone(buzzer, 400, 400);
    delay(400);
    digitalWrite(buzzer, 0);
    tone(buzzer, 400, 400);
    delay(400);
}
if(H >= 70.00 && T < 30.00)
{
    digitalWrite(9, LOW);
    digitalWrite(10, HIGH);
    digitalWrite(11, LOW);
    lcd.println("Be ware!");
    lcd.setCursor(0, 1);
    lcd.println("Hum. too high! ");
    lcd.setCursor(0, 0);
    digitalWrite(buzzer, 1);
    tone(buzzer, 400, 400);
    delay(400);
    digitalWrite(buzzer, 0);
    tone(buzzer, 400, 400);
    delay(400);
}
}
{

```

```

digitalWrite(9, LOW);
digitalWrite(10, HIGH);
digitalWrite(11, LOW);
lcd.println("Be ware!");
lcd.setCursor(0, 1);
lcd.println("Hum. too high! ");
lcd.setCursor(0, 0);
digitalWrite(buzzer, 1);
tone(buzzer, 400, 400);
delay(400);
digitalWrite(buzzer, 0);
tone(buzzer, 400, 400);
delay(400);
}
}

```

Output:

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sketch.ino diagram.json Library Manager

```

1 #include <stdio.h>
2 //LCD I2C library:
3 #include <liquidcrystal_i2c.h>
4 //DHT22 sensor library:
5 #include <DHT.h>;
6
7 //LCD I2C address 0x27, 20 column and 4 rows!
8 LiquidCrystal_I2C lcd(0x27, 16, 2);
9
10 //Constants:
11 #define DHTPIN 2 //what pin we're connected to
12 #define DHTTYPE DHT22 //DHT 22 (AM2302)
13 DHT dht(DHTPIN, DHTTYPE); //Initialize DHT sensor for normal 16mhz Arduino
14
15 //Variables:
16 int chk;
17 float H; //Humidity value
18 float T; //Temperature value
19 int buzzer = 12;
20
21 void setup(){
22 //Initialize LCD, DHT22 sensor and buzzer:
23 lcd.init(); lcd.backlight();
24 //Serial Communication is starting with 9600 of baudrate speed
25 Serial.begin(115200);
26 dht.begin();
27 pinMode(13, OUTPUT); pinMode(buzzer, OUTPUT);
28 //Print some text in Serial Monitor
29 Serial.println("DHT22 sensor with Arduino Uno R3!");
30 pinMode(9, OUTPUT); pinMode(10, OUTPUT); pinMode(11, OUTPUT);
31 }
32
33 void loop(){

```

Simulation

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Library Manager

```

26 dht.begin();
27 pinMode(13, OUTPUT); pinMode(buzzer, OUTPUT);
28 //Print some text in Serial Monitor
29 Serial.println("DHT22 sensor with Arduino Uno R3!");
30 pinMode(9, OUTPUT); pinMode(10, OUTPUT); pinMode(11, OUTPUT);
31 }
32
33 void loop(){
34   delay(2000);
35   //Read data and store it to variables hum and temp
36   H = dht.readHumidity();
37   T = dht.readTemperature();
38
39   //Print temp and humidity values to serial monitor
40   Serial.print("Humidity: ");
41   Serial.print(H);
42   Serial.println(" %");
43   Serial.print("Temperature: ");
44   Serial.print(T);
45   Serial.println(" celsius.\n");
46
47   //If humidity is higher than 70% &
48   //temperature is higher than 30 degrees Celsius
49   //then it will show on LCD "Too warm! Cool down!"
50   if(H >= 70.00 && T >= 30.00){
51     digitalWrite(9, HIGH);
52     digitalWrite(10, LOW);
53     digitalWrite(11, LOW);
54
55     lcd.println(" Too warm! ");
56     lcd.setCursor(0, 1);
57     lcd.println(" cool down! ");
58     lcd.setCursor(0, 0);

```

Simulation

00:29.104 100%

Editing DHT22

Pause

Temperature: -27.2°C

Humidity: 10.5%

Humidity: 10.50 %;
Temperature: -27.20 Celsius.

Humidity: 10.50 %;
Temperature: -27.20 Celsius.

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Library Manager

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15 //Variables:
16 int chk;
17 float H; //Humidity value
18 float T; //Temperature value
19 int buzzer = 12;
20
21 void setup(){
22   //Initialize LCD, DHT22 sensor and buzzer:
23   lcd.init(); lcd.backlight();
24   //Serial Communication is starting with 9600 of baudrate speed
25   Serial.begin(115200);
26   dht.begin();
27   pinMode(13, OUTPUT); pinMode(buzzer, OUTPUT);
28   //Print some text in Serial Monitor
29   Serial.println("DHT22 sensor with Arduino Uno R3!");
30   pinMode(9, OUTPUT); pinMode(10, OUTPUT); pinMode(11, OUTPUT);
31 }
32
33 void loop(){

```

Simulation

00:34.693 98%

Editing DHT22

Pause

Temperature: 69.7°C

Humidity: 40.0%

Humidity: 40.00 %;
Temperature: 69.70 Celsius.

Humidity: 40.00 %;
Temperature: 69.70 Celsius.

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Library Manager

```

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28   //Print some text in Serial Monitor
29   Serial.println("DHT22 sensor with Arduino Uno R3!");
30   pinMode(9, OUTPUT); pinMode(10, OUTPUT); pinMode(11, OUTPUT);
31 }
32
33 void loop(){

```

Simulation

01:36.965 98%

Editing DHT22

Pause

Temperature: 23.6°C

Humidity: 95.0%

Humidity: 95.00 %;
Temperature: -23.80 Celsius.

Humidity: 95.00 %;
Temperature: -23.80 Celsius.

