

Sprint 1

Team ID	PNT2022TMID01194
Project Name	Hazardous Area Monitoring for Industrial Plant powered by IoT

Creating A Code for Connecting Sensor and Arduino:

Code:

```
#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){
```

```
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);

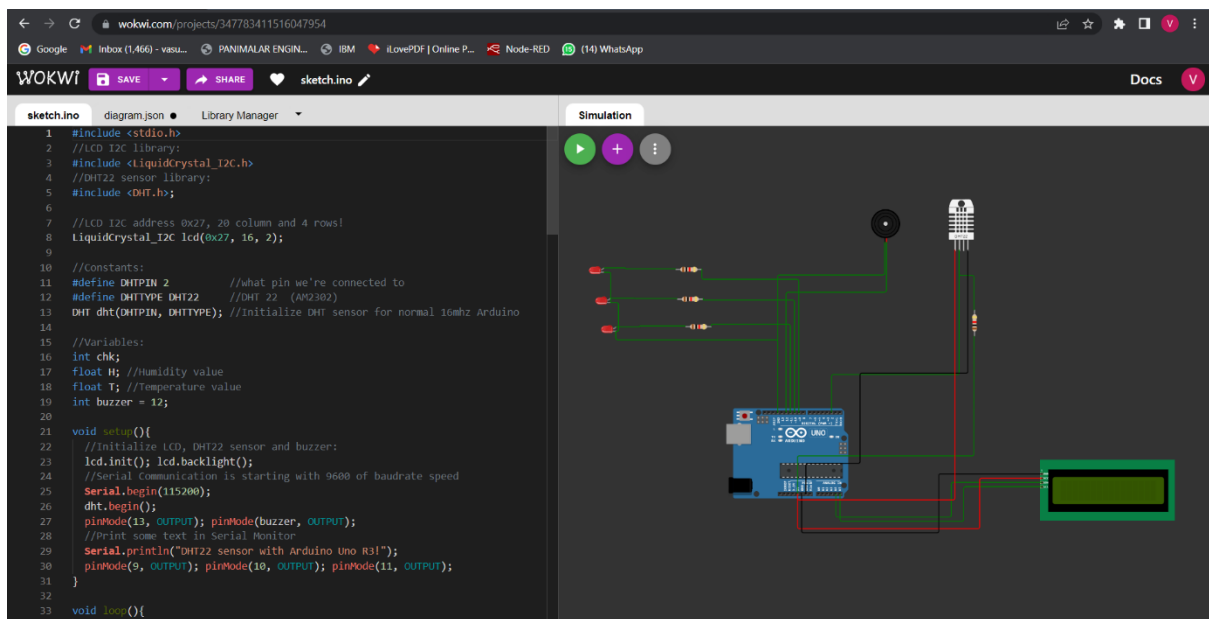
delay(400);

}

}

```

OUTPUT:



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```

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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```

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

00:34.693 98%

Editing DHT22

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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```

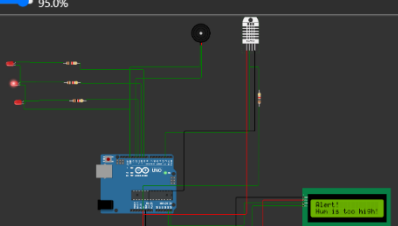
Simulation

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Editing DHT22

Temperature: -23.8°C

Humidity: 95.0%



Humidity: 95.00 %;
Temperature: -23.80 Celsius.

Humidity: 95.00 %;
Temperature: -23.80 Celsius.

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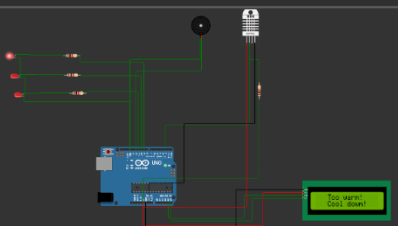
Simulation

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Editing DHT22

Temperature: 73.1°C

Humidity: 95.0%



Humidity: 95.00 %;
Temperature: 73.10 Celsius.

Humidity: 95.00 %;
Temperature: 73.10 Celsius.