

Sprint 1

Team ID	PNT2022TMID48099
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);

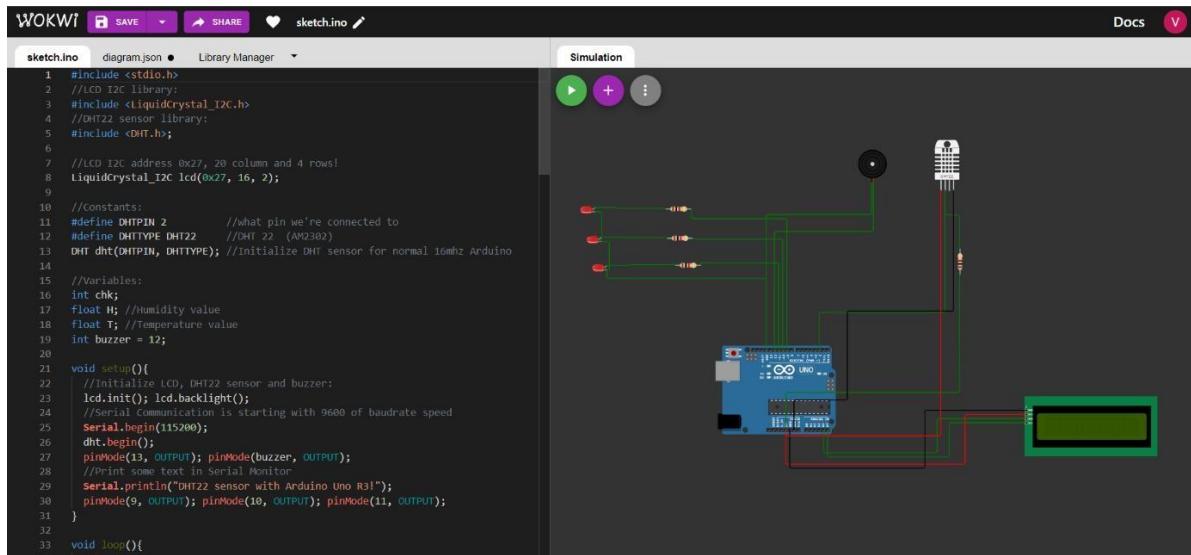
delay(400);

}

}

```

OUTPUT:



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```

26 dht.begin();
27 pinMode(13, OUTPUT); digitalWrite(buzzer, OUTPUT);
28 //Print some text in Serial Monitor
29 Serial.print("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

Editing DHT22

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

```

Simulation

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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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

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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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

Editing DHT22

Temperature: 73.1°C
Humidity: 95.0%

Humidity: 95.00 %
Temperature: 73.10 Celsius.

Humidity: 95.00 %
Temperature: 73.10 Celsius.