# Sprint 1

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

## 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:
```

```arduino
  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);

    }

}
```
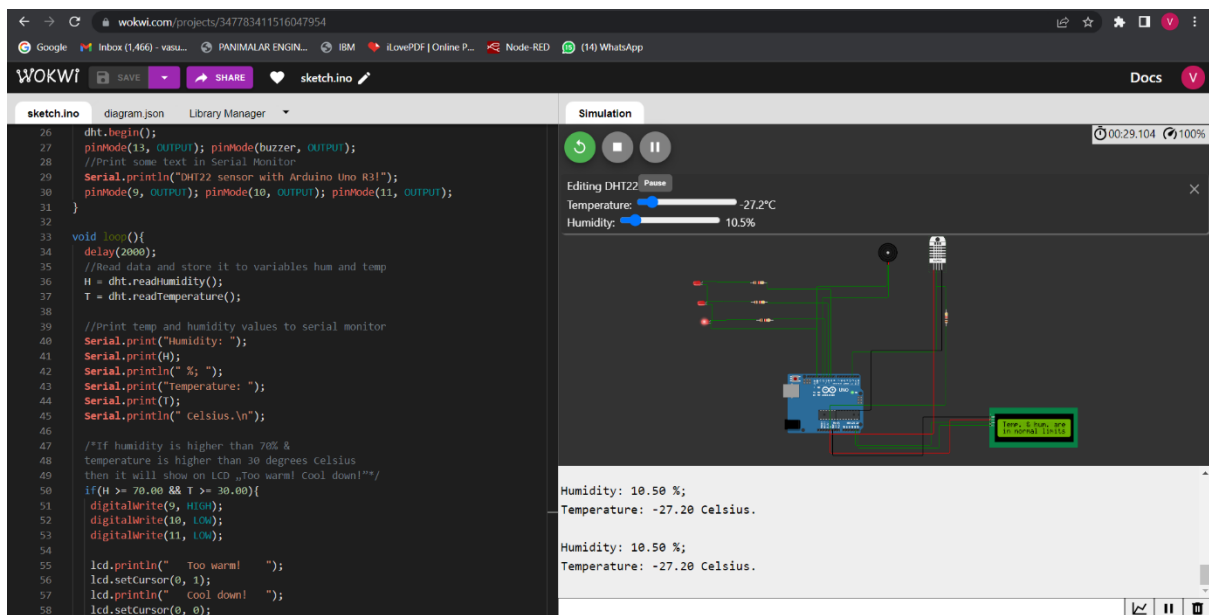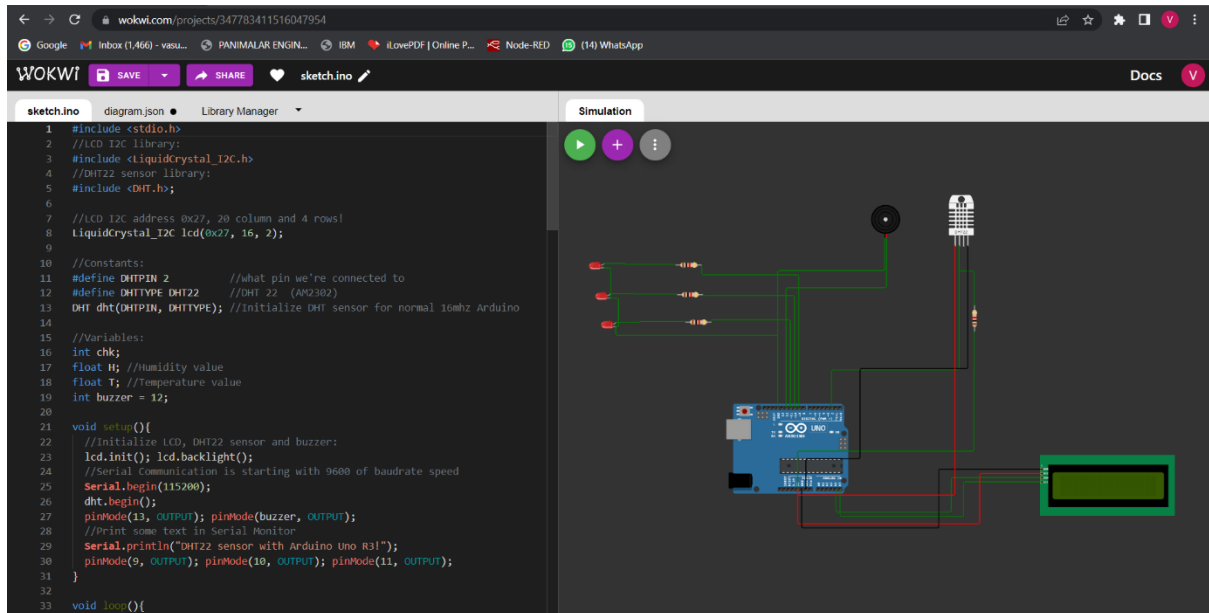
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sketch.ino   diagram.json   Library Manager

Simulation    00:34.693  98%

Editing DHT22
Temperature: ——————— 69.7°C
Humidity: ——— 40.0%

Alert!
Temp is too high

```
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(){
```
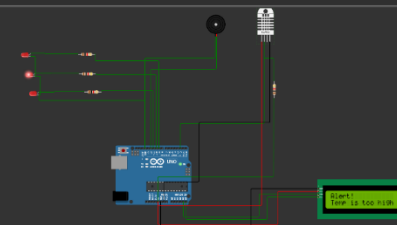
Humidity: 40.00 %;
Temperature: 69.70 Celsius.

Humidity: 40.00 %;
Temperature: 69.70 Celsius.

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sketch.ino   diagram.json   Library Manager

Simulation    01:36.995  98%

Editing DHT22
Temperature: — -23.8°C
Humidity: —————— 95.0%

Alert!
Hum is too high!

```
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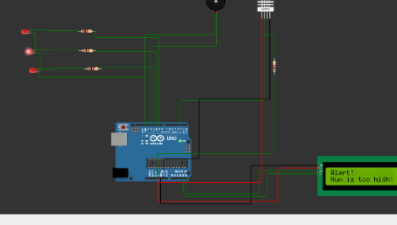
Humidity: 95.00 %;
Temperature: -23.80 Celsius.

Humidity: 95.00 %;
Temperature: -23.80 Celsius.

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sketch.ino   diagram.json ●   Library Manager ▾          | Simulation

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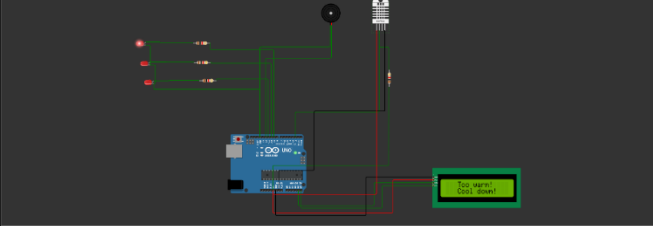
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Editing DHT22                                                              ✕
Temperature: ●————————  73.1°C
Humidity:    ————————●  95.0%

```
Humidity: 95.00 %;
Temperature: 73.10 Celsius.

Humidity: 95.00 %;
Temperature: 73.10 Celsius.
```