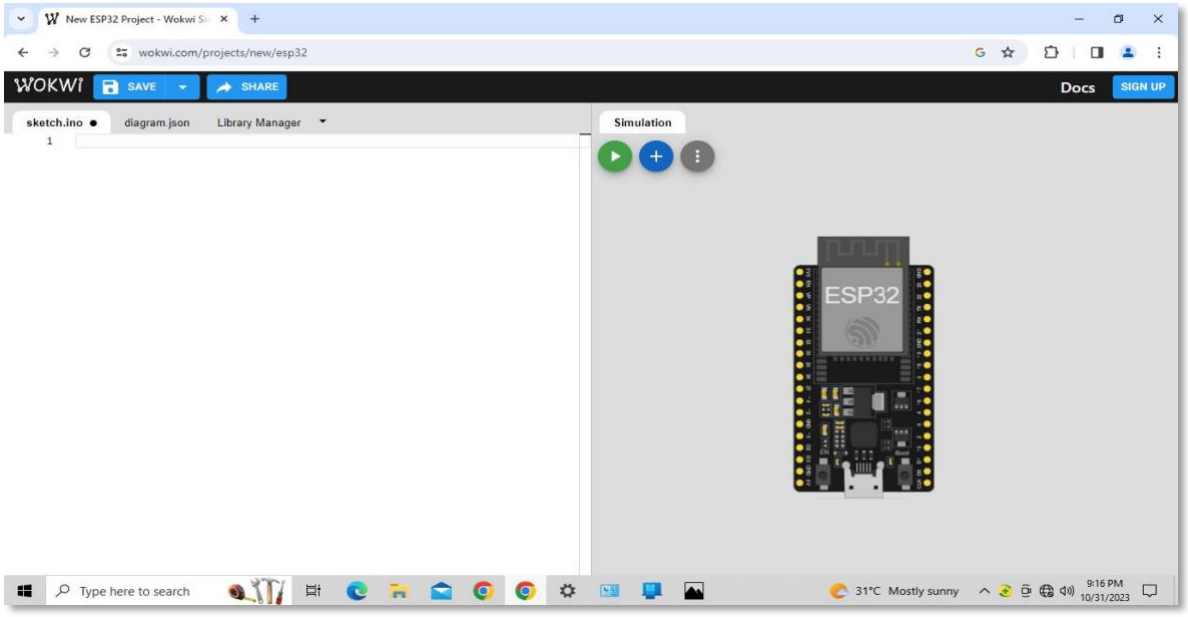
Air Quality Monitoring

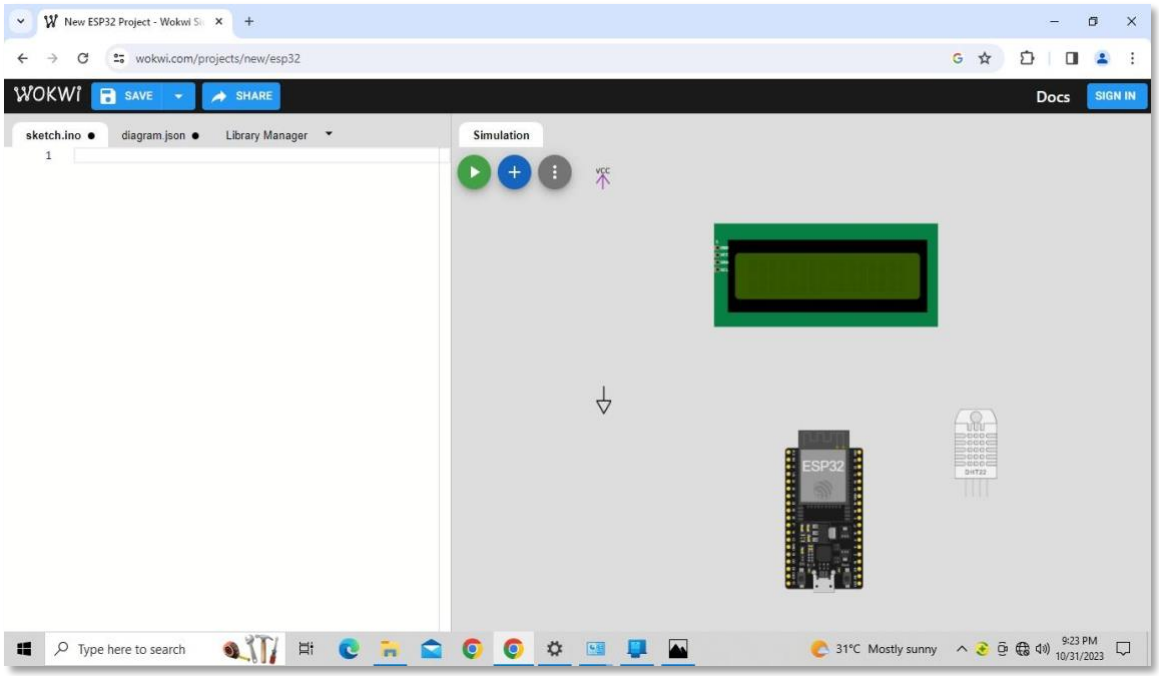
{Development}

This is an ESP32 NodeMCU-based Air Quality monitoring to check particulate matter (PM), humidity, temperature, altitude and pressure levels. Various environmental conditions of the place are tested and displayed on the TFT display as well as on ThingSpeak IoT (Internet of Things) platform.ESP32 is a single 2.4 GHz Wi-Fi-and-Bluetooth combo chip designed with the TSMC low-power 40 nm technology.



The DHT22 SENSOR is a digital temperature and humidity sensor that is commonly used in various applications, including weather stations, environmental monitoring, and home automation. It provides accurate readings of temperature and humidity, and it communicates via a single-wire digital interface. The sensor is easy to use, relatively affordable, and offers good performance for most projects. It's important to note that the DHT22 should be calibrated for critical applications, and it may require specific libraries or code to work with various microcontrollers and platforms.

The GND symbol, often called the ground symbol, is a fundamental component in electronic schematics. It represents the reference point for voltage and the return path for electrical currents within a circuit. Its standard depiction consists of a horizontal line with three downward-pointing lines extending from it, resembling an upside-down "T."The VCC symbol in electronic schematics signifies the positive power supply voltage, often the source of electrical energy for a circuit. It is commonly represented as a horizontal line with an upward-pointing triangle at the end.



ESP32 :

Connect your ESP32 to your computer for programming and power.

DHT22:

Connect the DHT:VCC to Esp:CLCK Pin.

Connect the DHT:SDA to Esp:D1 Pin.

Connect the DHT:GND to Esp:D0 Pin.

DISPLAY: {eg..,LCD 16×2(I2C)}:

Connect the display(VCC and GND) to its corresponding VCC and GND Symbols Pins.

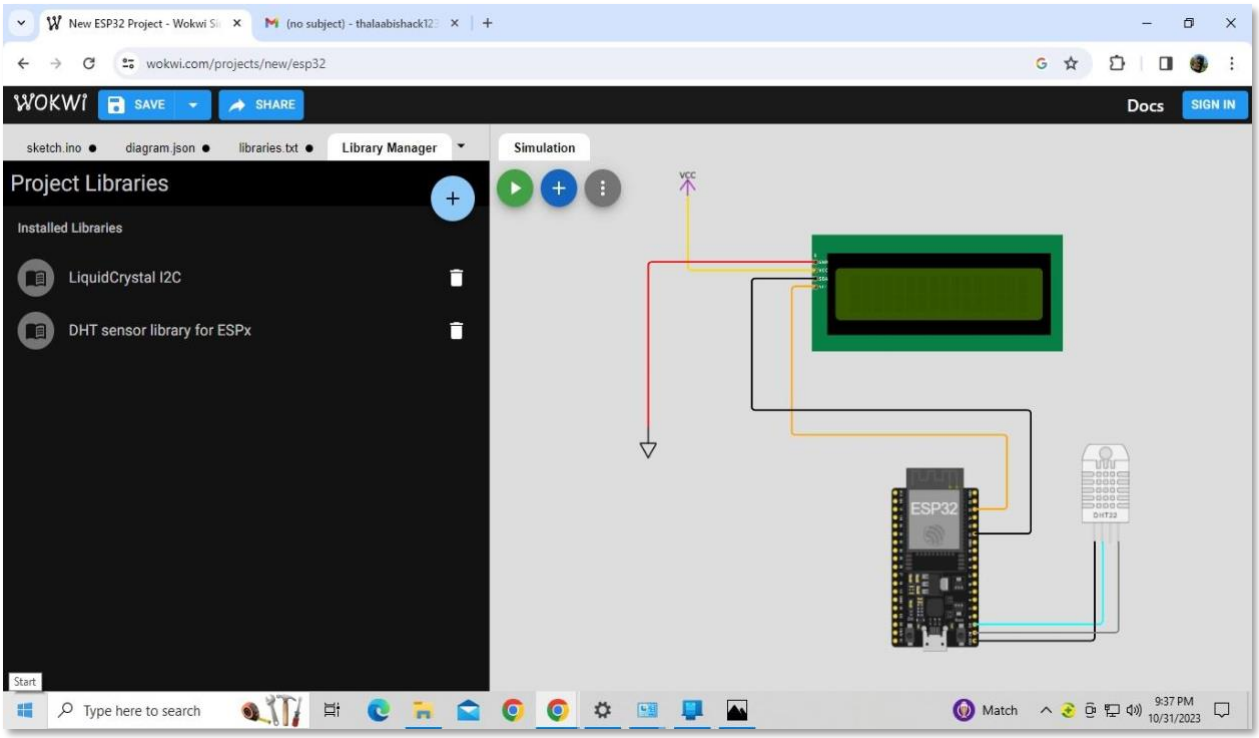
Connect the display(SDA) to the Esp:21 Pin.

Connect the display(SCL) to the Esp:22 Pin.

LIBRARIES:

Install the required libraries to run the program

- Δ LiquidCrysral I2C ,
- Δ FHT sensor library for ESPx .



Codes to stimulate:

```
#include "DHTesp.h"
#include <LiquidCrystal_I2C.h>
#define I2C_ADDR    0x27
#define LCD_COLUMNS 20
#define LCD_LINES   4
Const int DHT_PIN = 15;
DHTesp dhtSensor;
LiquidCrystal_I2C lcd(I2C_ADDR, LCD_COLUMNS, LCD_LINES);
Void setup() {
Serial.begin(115200);
dhtSensor.setup(DHT_PIN, DHTesp::DHT22);
lcd.init();
```

```
lcd.backlight();
}
Void loop(){
TempAndHumidity  data = dhtSensor.getTempAndHumidity();
Serial.println("Temp: " + String(data.temperature, 1) + "°C");
Serial.println("Humidity: " + String(data.humidity, 1) + "%");
Serial.println("---");
Lcd.setCursor(0, 0);
Lcd.print("  Temp: " + String(data.temperature, 1) + "\xDF"+"C  ");
Lcd.setCursor(0, 1);
Lcd.print(" Humidity: " + String(data.humidity, 1) + "% ");
Lcd.print("Wokwi Online IoT");
Delay(1000);
}
```