ENVIRONMETAL MONITORING
(phase-4)

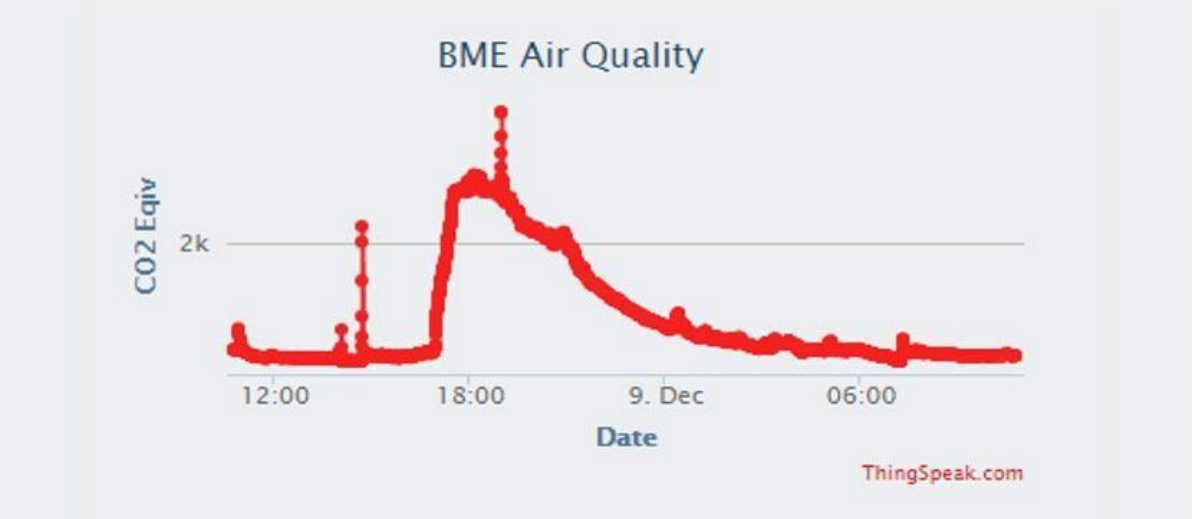
COMPONENTS:

- ESP32
- DHT22 Sensor
- LCD Display
- Connecting Wires

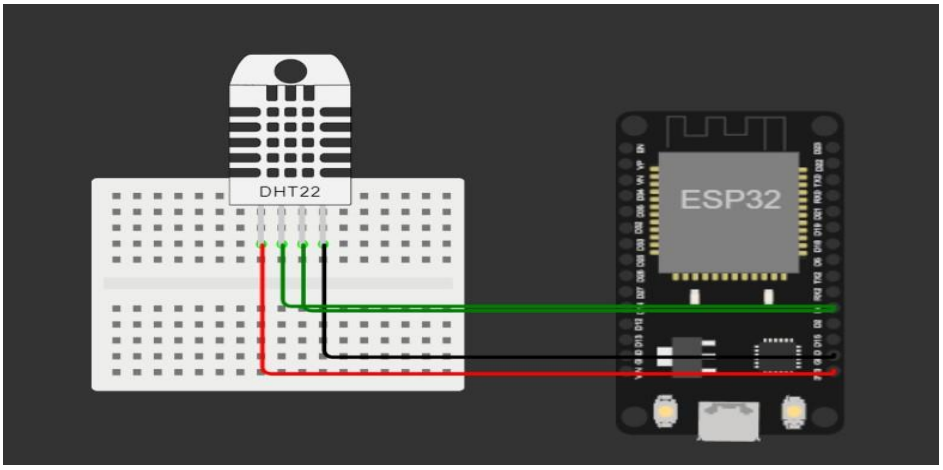
CONSTRUCTION OF THIS PROJECT :

- Select the suitable ESP32 board and the full size breadboard.
- To monitor the temperature and humidity level in public park we choose The DHT22 sensor continuously monitor the levels.
- To display the levels of both temperature and humidity in public park we choose the 16x2 LCD display and also we insert the Wi-Fi module to check the level from far away from the park.
- By connecting the DHT22 sensor and 16x2 LCD display we even monitor the temperature and humidity levels in offline while checking around the park.

Analyse of Environmental Monitoring Data in the Cloud:



SIMULATION:



Library Files:

- HT sensor library
- DHT22
- WiFi
- HttpClient
- PubSubClient
- Firebase ESP32 Client
- FireBase32

CODING:

```
include <WiFi.h>
#include <HTTPClient.h>
#include <DHT.h>

// WiFi credentials
const char* ssid = "Wokwi-GUEST";
const char* password = "";

// Beeceptor endpoint
const char* serverUrl = "https://smartenviron.free.beeceptor.com/smartenviron/";

 // DHT sensor configuration
 #define DHTPIN 4        // Define the GPIO pin to which the DHT22 is connected
 #define DHTTYPE DHT22  // Define the sensor type (DHT11 or DHT22)
 DHT dht(DHTPIN, DHTTYPE);

 void setup() {
```

```
  Serial.begin(9600);
  Serial.print("Connecting to WiFi");
  WiFi.begin("Wokwi-GUEST", "", 6);
  while (WiFi.status() != WL_CONNECTED) {
    delay(100);
    Serial.print(".");
  }
  Serial.println(" Connected!");

  // Initialize the DHT sensor
  dht.begin();
}

void loop() {
  // Read temperature and humidity
  float temperature = dht.readTemperature();
  float humidity = dht.readHumidity();

  if (!isnan(temperature) && !isnan(humidity)) {
    // Create an HTTP client
    HTTPClient http;

    // Send temperature and humidity data to Beeceptor as form parameters
    String postData = "temperature=" + String(temperature) + "&humidity=" + String(humidity);
    http.begin(serverUrl);
    http.addHeader("Content-Type", "application/x-www-form-urlencoded");
    int httpResponseCode = http.POST(postData);

    if (httpResponseCode > 0) {
      Serial.print("HTTP Response code: ");
      Serial.println(httpResponseCode);
      Serial.println("Data sent to Beeceptor.");
    } else {
      Serial.print("Error in HTTP request. HTTP Response code: ");
      Serial.println(httpResponseCode);
    }

    http.end();
  } else {
    Serial.println("Failed to read from DHT sensor!");
  }

  delay(60000); // Send data every 1 minute (adjust as needed)
}
```

Environmental Monitoring System Analysis:

Environmental Monitoring System like temperature, humidity, pressure, altitude, light intensity, air quality, co2 emission etc..,

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DEVELOPMENT PART-2

(PHASE-4)