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Project Title

: Environmental Monitoring

Phase-4

: Development part 2

# ABSTRACT

Develop an IOT Based Environmental Monitoring System, it can monitor the public Parks by using the Wi-Fi Technology. Internet of Things provide support for huge and accurate amount of data regarding the Environment. In this IOT project, we can monitor the temperature and humidity level from anywhere through computer or mobile.

This project is based on the wireless sensor networks for collecting information about Environment.

## **Procedure steps for find the temperature and humidity**

To find temperature and humidity using an *ESP32* on the *Wokwi* platform, you can simulate the *DHT22* sensor along with the *ESP32*. Here's a step-by-step guide:

# Step-1: Go to Wokwi simulation platform

## Step-2: Create a New Project:

Click the "New Project" button to create a new project

## Step-3: Select the ESP32:

- In the "Select a board" section, type "ESP32" in the search bar and choose an ESP32 board model (e.g., ESP32 Dev Module)

## Step 4: Add the DHT22 Sensor:

- In the components panel on the left, search for "DHT22" or "DHT11."
- Drag and drop the DHT22 component onto the breadboard area.

## Step 5: Connect the Components:

- Connect the DHT22 sensor to the ESP32 as per your wiring instructions. You can click on the components to connect wires.
  - Connect the sensor's VCC and GND pins to the ESP32's 3.3V and GND, respectively.
  - Connect the sensor's data pin to a GPIO pin on the ESP32 (e.g., GPIO 4).
- Ensure the connections match your real-world wiring.

## Step 6: Write the Arduino Code:

- Click on the ESP32 component to open the code editor.
- Write the Arduino code to read temperature and humidity from the DHT 22 sensor. Here's an example:

### cppCopy code

```
#include <DHT.h>

#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(115200);
  dht.begin();
}

void loop() {
  delay(2000); // Delay between readings
  float temperature = dht.readTemperature(); // Read temperature in Celsius
  float humidity = dht.readHumidity(); // Read humidity
  if (isnan(temperature) || isnan(humidity)) {
    Serial.println("Failed to read from DHT sensor!");
  } else {
    Serial.print("Temperature: ");
    Serial.print(temperature);
    Serial.println(" °C");
    Serial.print("Humidity: ");
    Serial.print(humidity);
    Serial.println(" %");
  }
}
```

## Step 7: Run the Simulation:

- Click the "Run Simulation" button to start the simulation.
- The ESP32 code will run, and you'll see the temperature and humidity values printed in the Wokwi Serial Monitor.

By following these steps, you can simulate an ESP32 and a DHT22 sensor on the Wokwi platform to read temperature and humidity values

*We are create a platform that displays  
real-time environmental data*

## Javascript code:

```
const apiKey = 'YOUR_OPENWEATHERMAP_API_KEY'; // Replace with your
API key
const city = 'YOUR_CITY_NAME';
// Replace with your city name
const temperatureElement = document.getElementById('temperature');
const humidityElement = document.getElementById('humidity');

function fetchData() {
  fetch(`https://api.openweathermap.org/data/2.5/weather?q=${city}&appid=${apiKey}&units=metric`)
    .then(response => response.json())
    .then(data => {
      const temperature = data.main.temp;
      const humidity = data.main.humidity;
      temperatureElement.textContent = temperature + "°C";
      humidityElement.textContent = humidity + "%";
      setTimeout(fetchData, 60000);
      // Refresh data every 60 seconds (adjust as needed)
    })
    .catch(error => {
      console.error('Error fetching data:', error);
      setTimeout(fetchData, 60000);
      // Retry after a minute in case of an error
    });
}

fetchData();
```