## **Aim:**

## **Explore the features of ES6 like arrow functions, callbacks, promises, async/await. Implement an application for reading the weather information from openweathermap.org and display the information in the form of a graph on the web page.**

## **Solution :**

## **First, install the required npm packages:**

npm install express axios

npm install express --save

### **Create a file named server.js for the backend:**

### **server.js**

// server.js

const express = require('express');

const axios = require('axios');

const path = require('path');

const app = express();

const port = 3000;

// Serve static files

app.use(express.static(path.join(\_\_dirname, 'public')));

// API route to fetch weather data

app.get('/weather/:city', async (req, res) => {

  const { city } = req.params;

  try {

    const apiKey = '84b545b474472e158267e5dc4145df78'; // Replace with your OpenWeatherMap API key

    const response = await axios.get(`https://api.openweathermap.org/data/2.5/weather?q=${city}&appid=${apiKey}&units=metric`);

    const temperature = response.data.main.temp;

    const humidity = response.data.main.humidity;

    const pressure = response.data.main.pressure;

    res.json({ temperature, humidity, pressure });

  } catch (error) {

    console.error('Error fetching weather data:', error);

    res.status(500).json({ error: 'Internal Server Error' });

  }

});

// Start server

app.listen(port, () => {

  console.log(`Server listening at http://localhost:${port}`);

});

### **Create a folder named public and create an index.html file for the frontend:**

### **index.html**

<!DOCTYPE html>

<html lang="en">

<head>

<meta charset="UTF-8">

<meta name="viewport" content="width=device-width, initial-scale=1.0">

<title>Weather Dashboard</title>

<script src="https://cdn.jsdelivr.net/npm/chart.js"></script>

<style>

body {

font-family: Arial, sans-serif;

text-align: center;

}

#weather-info {

margin-top: 20px;

}

canvas {

margin-top: 30px;

}

</style>

</head>

<body>

<h1>Weather Dashboard</h1>

<input type="text" id="city" placeholder="Enter city name" />

<button id="fetchWeather">Get Weather</button>

<div id="weather-info">

<p><strong>Temperature:</strong> <span id="temperature"></span>°C</p>

<p><strong>Humidity:</strong> <span id="humidity"></span>%</p>

<p><strong>Pressure:</strong> <span id="pressure"></span> hPa</p>

</div>

<canvas id="weatherChart" width="400" height="200"></canvas>

<script>

const fetchWeatherBtn = document.getElementById('fetchWeather');

const cityInput = document.getElementById('city');

const temperatureEl = document.getElementById('temperature');

const humidityEl = document.getElementById('humidity');

const pressureEl = document.getElementById('pressure');

const weatherChartCanvas = document.getElementById('weatherChart').getContext('2d');

const getWeather = async (city) => {

try {

const response = await fetch(`/weather/${city}`);

const data = await response.json();

// Update DOM with weather info

temperatureEl.textContent = data.temperature;

humidityEl.textContent = data.humidity;

pressureEl.textContent = data.pressure;

// Prepare data for graph

const weatherData = {

labels: ['Temperature', 'Humidity', 'Pressure'],

datasets: [{

label: 'Weather Data',

data: [data.temperature, data.humidity, data.pressure],

backgroundColor: ['rgba(255, 99, 132, 0.2)', 'rgba(54, 162, 235, 0.2)', 'rgba(255, 159, 64, 0.2)'],

borderColor: ['rgba(255, 99, 132, 1)', 'rgba(54, 162, 235, 1)', 'rgba(255, 159, 64, 1)'],

borderWidth: 1

}]

};

// Create the chart

new Chart(weatherChartCanvas, {

type: 'bar',

data: weatherData,

options: {

scales: {

y: {

beginAtZero: true

}

}

}

});

} catch (error) {

console.error('Error:', error);

}

};

// Event listener for fetching weather data

fetchWeatherBtn.addEventListener('click', () => {

const city = cityInput.value.trim();

if (city) {

getWeather(city);

} else {

alert('Please enter a city name.');

}

});

</script>

</body>

</html>

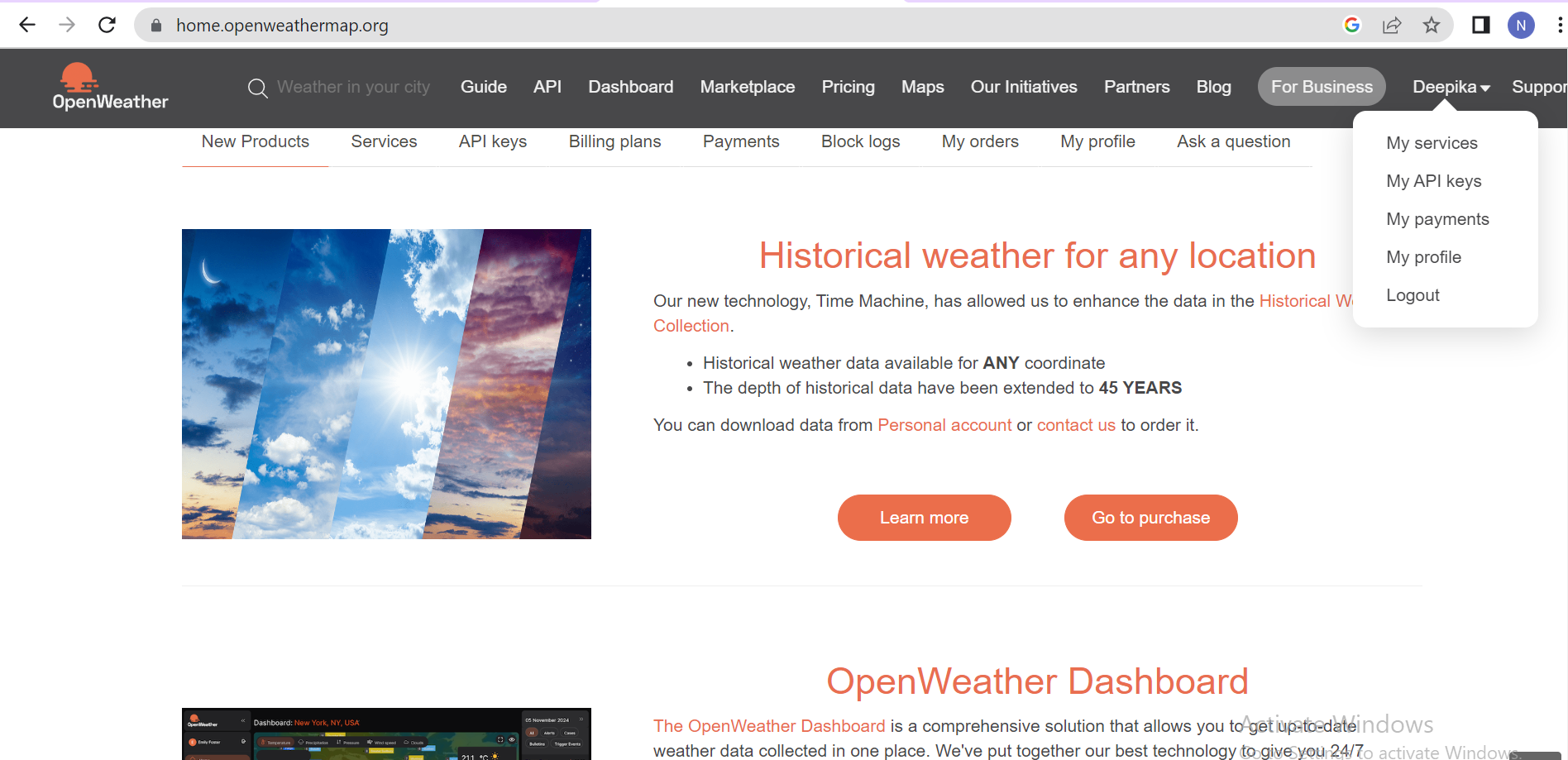
### **Now, you can run your Node.js server:**

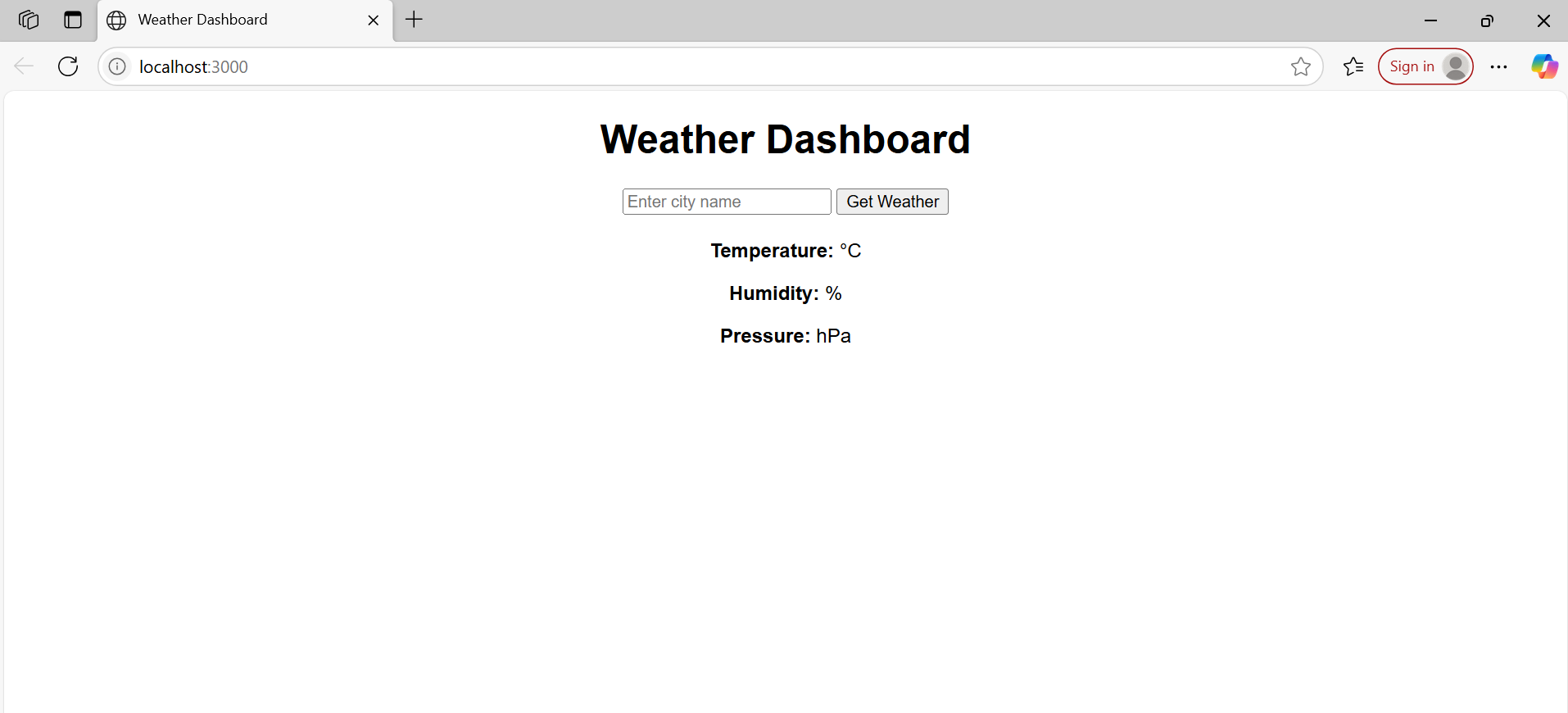
node server.js

### **Visit http://localhost:3000 in your web browser.**

## **Create an OpenWeatherMap Account and Generate API Key**

1. Visit the OpenWeatherMap website ****(https://openweathermap.org/)**** and click on ****"Sign Up"**** or ****"Log In"**** to create an account or log into your existing account.
2. Once logged in, navigate to your account dashboard.
3. From the dashboard, locate my API Keys section and click on ****"Create Key"**** or ****"API Keys"**** to generate a new API key.
4. Provide a name for your API key (e.g., "****WeatherApp****") and click on the ****"Generate"**** or ****"Create"**** button.
5. Your API key will be generated and displayed on the screen. Make sure to copy it as we will need it later.





OutPut:

