**Weather Forecast Application Development in JavaScript**

To complete the Weather Forecast Application Development project, we need to provide clear documentation. This includes:

* Writing comments within the codebase for better understanding.
* Creating a README.md file that provides setup instructions, usage guidelines, and other essential details.

**Step 1: Commenting the Code (2.5 marks)**

We'll add comments to explain the purpose of various functions, event listeners, and key sections in the JavaScript file.

**Example of Commenting Code:**

javascript

Copy code

// Function to fetch current weather data for a city

// Accepts a city name as a parameter and retrieves weather information from the OpenWeatherMap API

async function getWeatherData(city) {

const apiKey = 'your\_api\_key'; // Replace with your actual API key

const apiUrl = `https://api.openweathermap.org/data/2.5/weather?q=${city}&appid=${apiKey}&units=metric`;

try {

const response = await fetch(apiUrl); // Fetch data from API

const data = await response.json(); // Parse response as JSON

// Check if the API request was successful

if (response.ok) {

displayWeather(data); // Call function to display weather data

} else {

document.getElementById('weatherDetails').textContent = `Error: ${data.message}`; // Display error message

}

} catch (error) {

// Handle network or API failure

document.getElementById('weatherDetails').textContent = 'Failed to load weather data. Please check your network connection.';

console.error('Error fetching weather data:', error); // Log error for debugging

}

}

* **Function headers**: Explaining what the function does and what parameters it takes.
* **In-line comments**: For important steps in the code, such as handling errors, fetching data, or displaying results.

**Step 2: Creating the README.md File (2.5 marks)**

We’ll create a README.md file to provide an overview of the project, setup instructions, usage, and any other relevant details.

**README.md File Structure:**

markdown

# Weather Forecast Application

## Description

This is a simple and responsive weather forecast application developed using JavaScript, HTML, and Tailwind CSS. It allows users to search for weather forecasts by city or their current location, view current weather conditions, and get a 5-day extended forecast. The app uses the OpenWeatherMap API to retrieve weather data.

## Features

- Search for weather by city name

- Fetch weather for the current location

- View current temperature, wind speed, and humidity

- 5-day extended forecast

- Recently searched cities dropdown for easy access

- Input validation and error handling

## Setup Instructions

### Prerequisites

- You need to have \*\*Node.js\*\* and \*\*npm\*\* installed on your system.

- A free API key from [OpenWeatherMap](https://openweathermap.org/api) to retrieve weather data.

### Installation

1. Clone the repository:

```bash

git clone https://github.com/yourusername/weather-forecast-app.git

1. Navigate to the project directory:

bash

Copy code

cd weather-forecast-app

1. Install dependencies (if any):

bash

Copy code

npm install

1. Replace the placeholder your\_api\_key with your actual API key from OpenWeatherMap in the script.js file:

javascript

Copy code

const apiKey = 'your\_api\_key'; // Add your API key here

**Usage**

1. Open the index.html file in your browser.
2. Enter a city name or click the "Current Location" button to get the weather forecast.
3. View the current weather and 5-day forecast.
4. Recently searched cities will appear in a dropdown for easy access.

**Technologies Used**

* **JavaScript**
* **HTML**
* **Tailwind CSS**
* **OpenWeatherMap API**