WEATHER FORECAST APP

Project: Weather Forecast App
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1. INTRODUCTION

This document provides detailed documentation for the Weather Forecast App developed as part of the internship requirements. The app is a modern, responsive, and user-friendly weather application implemented using HTML, CSS, and JavaScript. It allows users to search for any city worldwide and instantly view current weather conditions, a 5-day forecast, and an interactive map.

In addition to meeting all mandatory requirements, several bonus enhancements have been implemented to make the app more functional, visually appealing, and engaging.

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2. FEATURES IMPLEMENTED (AS PER REQUIREMENTS)

The following features were implemented to meet the internship requirements:

- Text input field for entering city or location.
- Submit button to trigger weather data retrieval.
- Display of current weather conditions including temperature (in Celsius), weather description (e.g., "Sunny," "Cloudy," "Rainy"), and weather icon.
- Responsive design using CSS and Bootstrap, optimized for desktops, tablets, and mobile devices.
- Error handling for invalid locations or API issues with informative messages.
- Integration with OpenWeatherMap API for real-time weather data.
- Clear and user-friendly layout with attention to accessibility and usability.
- Documentation and code comments explaining HTML, CSS, and JavaScript sections.

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3. ADDITIONAL ENHANCEMENTS (BONUS FEATURES)

Beyond the required features, the following improvements were added:

- Autocomplete city suggestions for faster search.
- Display of last searched city.
- Leaflet map integration with draggable pin to update location.
- Coordinate readout with copy-to-clipboard button.

- Hourly temperature chart using Chart.js.
- Weather icons and local time display.
- Offline fallback using cached data.
- Progressive Web App (PWA) support with service worker.
- Loading spinner and reset button for smoother UX.
- Accessible, keyboard-friendly controls.

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4. TECHNOLOGY STACK

- **HTML5** – Structure of the app and pages.
- **CSS3** – Styling, layout, responsiveness (with Bootstrap 5 integration).
- **JavaScript** – Interactivity, API calls, chart rendering, map logic, and error handling.
- **Bootstrap 5** – Responsive grid system and UI components.
- **Chart.js** – Hourly temperature chart.
- **Leaflet.js** – Map integration with OpenStreetMap tiles.
- **Font Awesome & Google Fonts** – Icons and custom typography.
- **Service Worker & Manifest** – PWA support and offline caching.

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5. SETUP AND INSTALLATION

To run the project locally, follow these steps:

1. Download or clone the project folder from GitHub.
2. Ensure the following files are present:
    - index.html
    - style.css
    - script.js
    - config.example.js
    - config.js (not shared publicly)
    - manifest.js
    - sw.js
    - img/ folder with weather icons
3. Copy config.example.js to config.js and paste your OpenWeatherMap API key.
4. Open index.html in a web browser.

5. Search for any city to view weather and forecast.
6. Drag the map pin to update location and weather.
7. If offline, the app shows the last successful weather data.

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6. HOW TO USE THE APP

1. Open index.html to access the homepage.
2. Enter a city name in the search field and click Submit.
3. View current weather details and 5-day forecast.
4. Use the map to drag the pin and update location.
5. Copy coordinates using the clipboard button.
6. View hourly temperature chart and weather icons.
7. If offline, cached weather data will be displayed.
8. Use the reset button to clear the last search.
9. Enjoy smooth transitions and responsive layout across all devices.

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7. CONCLUSION

This project demonstrates proficiency in web development using HTML, CSS, JavaScript, and Bootstrap. It fulfills the internship requirements while including enhancements like map integration, hourly charts, offline caching, and responsive design to create a more interactive and enjoyable user experience.

The project highlights the ability to follow specifications, implement real-world APIs, and deliver features beyond basic expectations. It serves as a professional portfolio piece that is ready to impress recruiters.

YOU CAN VIEW LIVE DEMO HERE:

https://tufaildafedar0-prog.github.io/Weather-app/
