**README Structure for Weather Dashboard with Chatbot Integration**

**Project Title:**

**Weather Dashboard with Chatbot Integration using OpenWeather API**

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**1. Project Overview:**

The **Weather Dashboard with Chatbot Integration** is a responsive web application that provides users with real-time weather data and a 5-day forecast using the OpenWeather API. It also features a chatbot powered by the Gemini API, which can respond to both general and weather-related queries. The dashboard includes weather visualization through charts powered by Chart.js and offers a user-friendly interface for enhanced user experience.

**2. Features:**

* **Weather Information**: Displays current weather data (temperature, humidity, wind speed, and weather conditions) based on user input.
* **Dynamic Backgrounds**: The weather widget's background changes according to the current weather conditions.
* **5-Day Forecast**: Includes a forecast with temperature changes, weather conditions, and chart representations.
* **Chart.js Integration**:
  + Vertical Bar Chart for the next 5 days’ temperatures.
  + Doughnut Chart for the percentage of different weather conditions over the 5-day period.
  + Line Chart for visualizing temperature changes over 5 days.
  + Animations (delay and drop effects) are applied to the charts.
* **Table with Pagination**: Displays a detailed 5-day weather forecast, with pagination after 10 entries.
* **Chatbot Integration**: Answers both general queries and weather-related questions using the Gemini API.
* **Responsive Design**: Ensures usability on various screen sizes.

**3. Technologies Used:**

* **Frontend**: HTML, CSS (for styling), JavaScript (vanilla or jQuery)
* **APIs**:
  + OpenWeather API for weather data.
  + Gemini API for chatbot responses.
* **Data Visualization**: Chart.js for visualizing weather data.

**4. Setup and Installation:**

**Prerequisites:**

* Install [Node.js](https://nodejs.org/) (optional, if using npm packages)
* Clone or download the project files from the repository.

**Steps:**

1. Clone the repository:

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git clone https://github.com/your-username/weather-dashboard.git

1. Open the project folder in your text editor (e.g., VS Code).
2. Replace YOUR\_API\_KEY in the weather.js file with your OpenWeather and Gemini API keys.
3. Run the project by opening index.html in your browser.

**Optional:**

* Deploy the project using GitHub Pages or another hosting service.

**5. How to Use:**

1. **Enter a City Name** in the search box and click "Get Weather".
2. View the current weather details, 5-day forecast, and corresponding charts.
3. Interact with the chatbot by typing either weather-related or general questions.
4. The table shows a detailed 5-day forecast, with pagination available after the first 10 entries.

**6. API Information:**

* **OpenWeather API**:
  + Used for fetching current and 5-day forecast weather data.
  + Required endpoints:
    - Current weather: https://api.openweathermap.org/data/2.5/weather?q={city\_name}&appid={API\_KEY}&units=metric
    - 5-day forecast: https://api.openweathermap.org/data/2.5/forecast?q={city\_name}&appid={API\_KEY}&units=metric
* **Gemini API**:
  + Handles chatbot responses for both weather-related and general questions.
  + Required endpoint: Refer to [Gemini API documentation](https://ai.google.dev/aistudio).

**7. Project Structure:**

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├── index.html # Main HTML file

├── styles.css # CSS for styling the layout

├── weather.js # JavaScript file for OpenWeather API integration

├── chatbot.js # JavaScript file for Gemini API integration

└── charts.js # JavaScript file for Chart.js visualizations

**8. Error Handling:**

* Invalid city names or API failures trigger user-friendly error messages, such as “City not found” or “API limit reached.”
* Input validation and API error handling ensure a smooth user experience.

**9. Additional Features:**

* **Unit Conversion**: Toggle between Celsius and Fahrenheit for temperature display.
* **Geolocation Support**: Automatically detect and display weather for the user’s current location using browser geolocation.
* **Loading Spinner**: A spinner or progress bar is shown while waiting for the API responses.
* **CSS Animations**: Weather icons and data dynamically appear with fade-in animations for improved user experience.

**10. Known Issues:**

* Occasionally, API requests may fail due to reaching the request limit. In such cases, a retry mechanism or delay between requests can be implemented.

**11. Future Improvements:**

* **Dark Mode Support**: Add a toggle option for dark mode.
* **More Detailed Weather Data**: Include additional weather metrics, such as air quality index (AQI) and UV index.
* **Advanced Filters**: Implement more sophisticated filtering options for the weather data.

**12. Credits:**

* **APIs**: OpenWeather API, Gemini API
* **Libraries**: Chart.js for data visualization
* **Icons and Assets**: Weather icons sourced from the OpenWeather API responses.