Requirements Document xD

WeatherNow Calendar Integration

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1 Author Information

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2 Project Overview

We will build **WeatherNow Calendar**, a React-based frontend application combining:

- Real-time and forecasted weather data (OpenWeatherMap API)
- Users schedule and free days (Google Calendar API)
- Activity recommendations based on weather and availability

Userssuch as travelers, commuters and outdoor enthusiastscan plan free-time activities by selecting a date in their calendar; the app then analyzes weather statistics for that day and suggests suitable indoor or outdoor options.

3 Key Features

Must-have

- Search by city name: display current weather (temp, wind, humidity, conditions, icon)
- 5-day forecast in 3-hour intervals
- Geolocation lookup: fetch weather for users current position
- Toggle units: Celsius / Fahrenheit
- Toggle theme: light / dark mode
- Interactive calendar: select any date
- On date selection: show weather data + activity suggestions
- Error handling: invalid city, permission denied, API failures
- Responsive UI: mobile and desktop
- Navigation: Home, Forecast, Calendar views (React Router)

Nice-to-have

- Store and recall recent city searches
- Sync and overlay multiple Google calendars
- Localization of weather descriptions (multi-language)
- Historical weather lookup (past dates)

- Push notifications for severe weather or upcoming free days

4 User Roles and Interactions

Primary role: General user **Interactions:**

- Enter or select a city view current weather and forecast
- Grant calendar access see free/busy days
- Click on a calendar date fetch and display weather + suggestions
- Toggle units and theme via buttons
- Navigate via header or menu to Home, Forecast, Calendar
- Receive toast/message on errors (e.g., City not found)

5 User Stories / Use Cases

1. As a user, I want to search for a city name so I can view its current weather.
2. As a user, I want to see a five-day forecast so I can plan upcoming days.
3. As a user, I want to grant calendar access so the app knows my free days.
4. As a user, I want to click a date in my calendar to get weather stats and activity suggestions for that day.
5. As a user, I want to toggle between řC and řF based on my preference.
6. As a user, I want dark mode at night to reduce eye strain.
7. As a user, I want to be notified if an API call fails or if I enter an invalid city.

6 Non-Functional Requirements

- **Usability:** Clear labels, consistent icons, minimal learning curve
- **Responsiveness:** Fluid layout with CSS Flexbox/Grid for all viewport sizes
- **Accessibility:** ARIA labels, sufficient color contrast, keyboard navigation
- **Performance:** Data fetch + render complete under 1.5 s on average networks
- **Security:** API keys stored in environment variables, HTTPS only
- **Maintainability:** Modular React components, clear folder structure, documented code
- **Scalability:** Design to add new APIs or features without major refactoring

7 Technology Assumptions

- **Frontend:** React.js, JavaScript (ES6+)
- **Styling:** CSS Modules or Tailwind CSS
- **Routing:** React Router DOM
- **APIs:**
  - OpenWeatherMap REST API for current weather, forecast, geocoding
  - Google Calendar API for users events and free/busy times
- **State Management:** React Context or Redux (optional)
- **Build / Deploy:** Docker container with Nginx serving static build

8 Project Constraints

- OpenWeatherMap free tier: max 60 calls/minute
- Google Calendar API quotas and OAuth consent screen requirements
- Requires explicit user consent for calendar and location access

- No user authentication beyond Google OAuth for calendar access
- Deadline for Requirements Document: April 30, 2025

9 Acknowledgement of AI Tools

This document was drafted and refined using GPT-4o based on an outline containing project information. The authors reviewed, revised, and enhanced the GPT-4o output with additional content and edited for clarity and style.