

# Requirement Analysis Document

for

Fog Weather, Weather Web Application

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# Contents

## 1.Introduction

1.1 Overview.....	3
1.2 Assumptions and Dependencies.....	3

## 2. User Requirements.....4

## 3. Function Requirements.....6

## 4. Non-Functional Requirements.....7

## 5. Project Gantt Chart.....8

# 1.Introduction

## 1.1 Overview

The purpose of this web application is to provide users with a comprehensive and user-friendly platform for accessing current and forecasted weather information, historical weather data, and interactive weather maps.

## 1.2 Assumption and Dependencies

Weather API will be a dependency for the project as Fog Weather will pull weather data using this API. Requirements relating to the number of API calls are based on the assumption that constraints around the Weather API will not change.

## 2. User Requirements

- **Current Weather Display**  
The application shall display the current weather conditions, including temperature, humidity, wind speed, and weather description, on the homepage.
- **Forecast Display**  
The application shall provide a 5-day weather forecast for the user's selected location, including predicted daily high and low temperatures, weather conditions, and the chance of precipitation.
- **Location-Based Weather**  
The application shall automatically detect and display weather information for the user's current location upon accessing the homepage. Users shall also have the option to manually search for weather in specific cities, regions, or countries by entering the location name or coordinates.
- **Historical Weather Data**  
The application shall provide access to historical weather data for the past 30 days for the user's selected location. Users shall be able to specify the date range and view historical records, including daily high and low temperatures, precipitation, and weather conditions.
- **Interactive Maps**  
The application shall include interactive maps that allow users to visualize current weather patterns, satellite imagery, and radar information for their selected location. Users shall have the ability to zoom in and out, pan, and overlay different weather data on the maps.
- **Alerts and Notifications**  
The application shall display severe weather alerts or notifications based on the user's current location or subscribed areas. Users shall have the option to subscribe or unsubscribe from specific weather alerts and set their notification preferences, including email and push notifications.

- **Multiple Units and Formats**

The application shall support different units of measurement for temperature, wind speed, and rainfall, including options for Celsius/Fahrenheit, meters/feet, and millimeters/inches. Users shall have the ability to switch between metric and imperial systems in the application settings.

- **User Customization**

Users shall be able to customize their display preferences in the application settings. This includes the ability to choose between light and dark themes and select their preferred units of measurement for temperature, wind speed, and rainfall.

### 3.Functional Requirements

#### 1. Weather Data Retrieval

The system shall retrieve real-time weather data from the "Weather API" service when users access the homepage or request weather information for a specific location.

#### 2. Historical Data Retrieval

The system shall retrieve historical weather data for the past 30 days from the "Weather API" service upon user request, providing data for daily high and low temperatures, precipitation, and weather conditions.

#### 3. Map Integration

The system shall integrate interactive maps to visualize weather patterns, satellite imagery, and radar information for the user's selected location. Users shall have control over map functionalities, including zooming, panning, and data overlays.

#### 4. Notification Management

The system shall manage notifications by sending severe weather alerts to users based on their location or subscribed areas. Users shall be able to subscribe or unsubscribe from specific alerts and set notification preferences, including email and push notifications.

#### 5. Units and Format Conversion

The system shall provide unit and format conversion functionality, allowing users to switch between metric and imperial measurement systems for temperature, wind speed, and rainfall. The system shall also support conversions between Celsius/Fahrenheit, meters/feet, and millimeters/inches.

#### 6. Responsive Design

The application shall be responsive and optimized for various devices, including desktops, tablets, and mobile phones. It shall maintain consistent functionality and user experience across different screen sizes.

## 4.Non-Functional Requirements

### 1. Performance Optimization

The application shall load within 3 seconds of user request and shall minimize data retrieval times from the "Weather API" service. The system shall support up to 10,000 simultaneous users without significant performance degradation.

### 2. Cross-Browser Compatibility

The application shall be compatible with major web browsers, including Chrome, Firefox, Safari, and Edge, ensuring consistent functionality and appearance across these platforms.

### 3. Security Measures

The application shall implement HTTPS for secure data transmission and follow industry-standard security practices to protect user data. It shall encrypt user information and ensure secure communication with the "Weather API" service.

### 4. Availability and Reliability

The application shall maintain an uptime of at least 99.5%, with scheduled downtime for maintenance communicated to users in advance. It shall have automated backup and recovery procedures to ensure data reliability.

### 5. Account Types and Access Control

The application shall support two types of user accounts: free accounts and premium accounts. Free accounts shall provide basic access to weather information, while premium accounts shall offer enhanced features, including advanced weather data, ad-free experience, and priority access to severe weather alerts.

