Software Requirement Specification (SRS)
React Weather Dashboard

1. Introduction

The React Weather Dashboard is a feature-rich weather application that provides real-time weather updates, multi-day forecasts, saved locations, and smooth UI interactions. This SRS outlines the requirements, system behavior, architecture, and performance expectations for the application.

1.1 Purpose

The purpose of this SRS is to clearly define all functional, non-functional, and design specifications for the React Weather Dashboard to ensure consistency in development and future feature enhancements.

1.2 Scope

The React Weather Dashboard is designed to allow users to search and view live weather conditions for any global city while offering an intuitive and responsive interface. The system enables users to see temperature, humidity, wind speed, visibility, cloudiness, and forecast details in a streamlined dashboard. It also supports saving locations for quick access and includes animated UI components for an enhanced user experience. Built using React, the system consumes data from the OpenWeatherMap API and ensures fast performance, device responsiveness, and a user-friendly design suitable for personal and professional use.

2. Overall Description

The system is developed as a modular React Single Page Application (SPA) focusing on speed, efficiency, and clean UI architecture.

Core modules include:

• Weather API Engine

• Forecast Rendering Module

• UI Animation Layer

• Saved Locations Manager

• Search Function Processor

• Theme & Layout Manager

2.1 Product Perspective

The application enhances a traditional weather interface with modern styling, smooth animations, and clear data presentation. It runs fully on the client side and integrates with the OpenWeatherMap API to retrieve real-time weather information.

3. Functional Requirements

FR1 – City Search

FR2 – Real-Time Weather Display

FR3 – Hourly & Multi-Day Forecast

FR4 – Saved Locations

FR5 – Sidebar Navigation

FR6 – Light/Dark Theme Switching

FR7 – Error Handling

FR8 – Weather-Based Animations

FR9 – Fast Performance Optimization

4. Non-Functional Requirements

NFR1 – UI response time under 120ms

NFR2 – Application load time under 2.5 seconds

NFR3 – Secure HTTPS API communication

NFR4 – Graceful error and retry handling

NFR5 – Accessible color contrast and readability

NFR6 – Able to handle frequent API calls

5. System Architecture

Component-driven architecture:

• SearchBar

• WeatherCard

• ForecastTabs

• SavedLocations Panel

• Theme Manager

• Animation Layer

6. Technologies Used

• React.js

• Tailwind CSS

• Axios

• OpenWeatherMap API

• Node.js (development)

• Visual Studio Code (development environment)

7. System Features

• Search bar with smart input

• Real-time weather dashboard

• Animated background effects

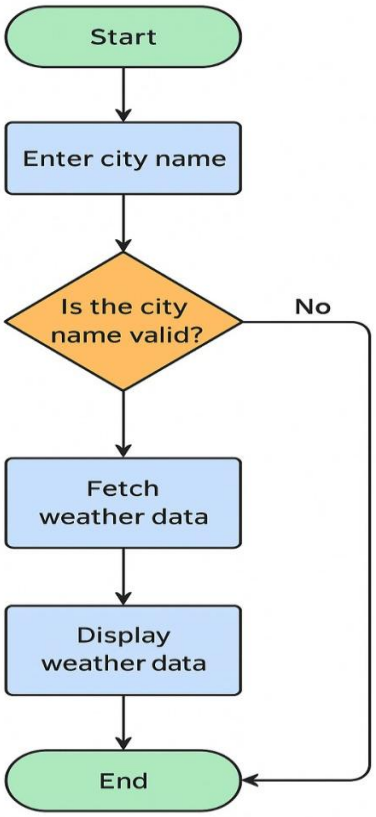
• Multi-day forecast

• Saved locations functionality

• Responsive layout for all devices

• Smooth transitions and modern UI components

8. Data Flow



9. Future Scope

• Voice weather queries

• Machine-learning-based forecasting

• Radar/satellite map integration

• Offline weather caching

• Wearable device compatibility

10. Conclusion

The React Weather Dashboard provides a simple and effective interface for accessing real-time weather information. With a clean architecture, responsive UI, and efficient API integration, the system offers a solid foundation for beginners learning React. The structured design ensures easy scalability and opens opportunities for future enhancements.