Sprint 3: Frontend Integration and User Interaction

1. System Overview

The WeatherSensor AI aims to provide users with real-time weather information enhanced by natural-language summaries generated through a large language model.

2. Functional Requirements

User Story: As a user, I want the application to retrieve real-time weather data, handle errors smoothly, and generate a clear, natural-language summary so I can quickly understand current weather conditions without reading raw data.

3.1 - Integrate Chat UI with Gemini –

- FR 3.1.1: Connect Gemini API output to the chat input/output window.
- FR 3.1.2: Display model responses as chat bubbles in the UI.
- FR 3.1.3: Allow the user to type questions and receive summaries in real time.

Progress Summary:

3.2 - Connect UI to Weather API –

- FR 3.2.1: Fetch and show current temperature, humidity, and wind speed from the weather API.
- FR 3.2.2: Display matching weather icons for conditions (e.g., sun, rain, clouds).
- FR 3.2.3: Ensure data updates automatically when a new location is searched.

Progress Summary:

3.3 - Implement Location Search –

- FR 3.3.1: Add a search bar for city name input.
- FR 3.3.2: Add a “Use My Location” button that detects GPS coordinates.
- FR 3.3.3: Fetch and display weather data for the selected location.

Progress Summary:

3.4 - Add Unit Switching (Celsius <-> Fahrenheit) –

- FR 3.4.1: Add a toggle button to switch between C and F.
- FR 3.4.2: Convert temperature values correctly when toggled.
- FR 3.4.3: Update the UI instantly to reflect the selected unit.

Progress Summary:

3.5 - Create Loading and Error States with UI –

- FR 3.5.1: Show a loading animation while fetching data or waiting for Gemini.
- FR 3.5.2: Display clear and precise error messages if data fails to load or input is invalid.
- FR 3.5.3: Provide a “Try Again” button after an error.

Progress Summary:

3.6 - Verify Correctness of Location Weather\Unit Conversion with Test Cases –

- FR 3.6.1: Test search results for multiple cities and GPS locations.
- FR 3.6.2: Test “Use My Location” Button.
- FR 3.6.3: Verify temperature conversion between C and F for accuracy.
- FR 3.6.4: Check that UI updates correctly after each new query or toggle.

Progress Summary:

3.7 - Design and Integrate Chat UI Component –

- FR 3.7.1: Design a simple and clean chat window with user and bot bubbles.
- FR 3.7.2: Match the color scheme and style of the current website.
- FR 3.7.3: Ensure the chat section fits smoothly into the main layout and resizes for mobile devices.

Progress Summary: