Weather Dashboard Project: WeatherVista (天气景观 - Tiānqì jǐngguān)

Stay Ahead of the Weather: Your Personalised Forecast at a Glance

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Project Overview

The Weather Dashboard project is designed to create a web application that displays current weather conditions and temperature trends for a chosen location. This application will use the OpenWeatherMap API to fetch real-time weather data, ensuring users have access to up-to-date information presented in an easy-to-understand format. This project aims to create a web-based application that provides users with current weather conditions and temperature trends for a selected location, utilising the OpenWeatherMap API to fetch weather data and display it in a user-friendly format.

Project Objectives

The main goals of the Weather Dashboard project are to design and develop a dashboard that:

1. **Displays Current Weather Conditions**: Shows the temperature, humidity, wind speed, and cloud cover for the selected location.
2. **Provides Temperature Trends**: Displays temperature trends for the current day and the next five days.
3. **Offers a 3 and 5-Day Forecast**: Includes date, time, and a brief weather description for the upcoming five days.
4. **Location Selection**: Allows users to choose a location from a list of cities or enter a custom location.
5. **Unit Switching**: Provides options to switch between Celsius and Fahrenheit units.
6. **Error Handling**: Manages API errors by displaying a relevant message if the API request fails.

Target Audience

The Weather Dashboard is intended for anyone who wants to stay informed about the weather in their area, including:

- **Commuters**: Individuals planning their daily routes based on weather conditions.
- **Outdoor Enthusiasts**: People organising outdoor activities depending on the weather forecast.
- **Travelers**: Individuals needing to know what weather to expect at their destination.
- **Homeowners**: Residents wanting to stay aware of local weather conditions.

Technical Requirements

To build the Weather Dashboard, the project will use the following technical requirements:

- **Programming Language**: Python
- **GUI Framework**: Tkinter (Tk)
- **API Integration**: OpenWeatherMap API

Deliverables

The project will produce:

- **Fully Functional Weather Dashboard**: A web application that meets both functional and non-functional requirements.
- **Written Report**: Documentation detailing the design and implementation decisions made during the project.
- **Presentation**: A summary presentation highlighting the project and its outcomes.

Breaking Down the Project into Steps

1. **Understand the Objectives**: Clearly define what the weather dashboard needs to accomplish.
2. **Identify Key Functionalities**: List out the main features the application should have (e.g., displaying weather conditions, providing forecasts, location selection, unit switching, error handling).
3. **Determine the Technical Requirements**: Choose the appropriate programming language, GUI framework, and API.
4. **Define the Target Audience**: Understand who will be using the application and tailor the functionalities to meet their needs.

5. **Plan Deliverables**: Outline what needs to be delivered by the end of the project (functional dashboard, report, presentation).
6. **Set a Timeline**: Establish a timeline with milestones to ensure steady progress.

By following these steps, you can break down the Weather Dashboard project into manageable tasks, ensuring you cover all necessary functionalities and deliver a complete and functional application.