

# Weather Dashboard Project: WeatherVista (天气 - 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.