Mini Project Report: Weather API Application

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1. **Project Details**
    - **Title**: Weather API Application
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    - **Course**: B.Tech, Computer Science
    - **Section**: 3B

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2. **Table of Contents**

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3. **Introduction**
   This mini project aims to create a web application that provides real-time weather information using a Weather API. The application allows users to view current weather details for a specified location, including temperature, humidity,

and weather conditions, making it a practical tool for day-to-day weather updates.

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4. **Objectives**
    - Create an intuitive interface for viewing weather information.
    - Use a weather API to fetch real-time data and display it dynamically.
    - Ensure the application's responsiveness across different devices.

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5. **Tools & Technologies Used**
    - **Language**: HTML, CSS, JavaScript
    - **Framework**: None (Pure Frontend)
    - **API**: OpenWeatherMap API (or other preferred weather API)
    - **Database**: None (data retrieved dynamically via API)

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6. **Methodology**
    - **User Requirements**
        1. A user should be able to enter a city name and retrieve current weather data.
        2. The application should display relevant weather details such as temperature, humidity, and description of conditions.
    - **System Architecture**
        - **Frontend**: HTML/CSS for structure and style, JavaScript for interacting with the Weather API and displaying data.
        - **Backend**: No backend, as weather data is retrieved from an external API in real-time.

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7. **Features of the Application**
    - **Search Weather**: Users can enter a city name and retrieve current weather data for that location.
    - **Real-Time Data**: The application fetches data live from the Weather API.

- **Dynamic Display**: Weather details are updated on the interface immediately after data retrieval.

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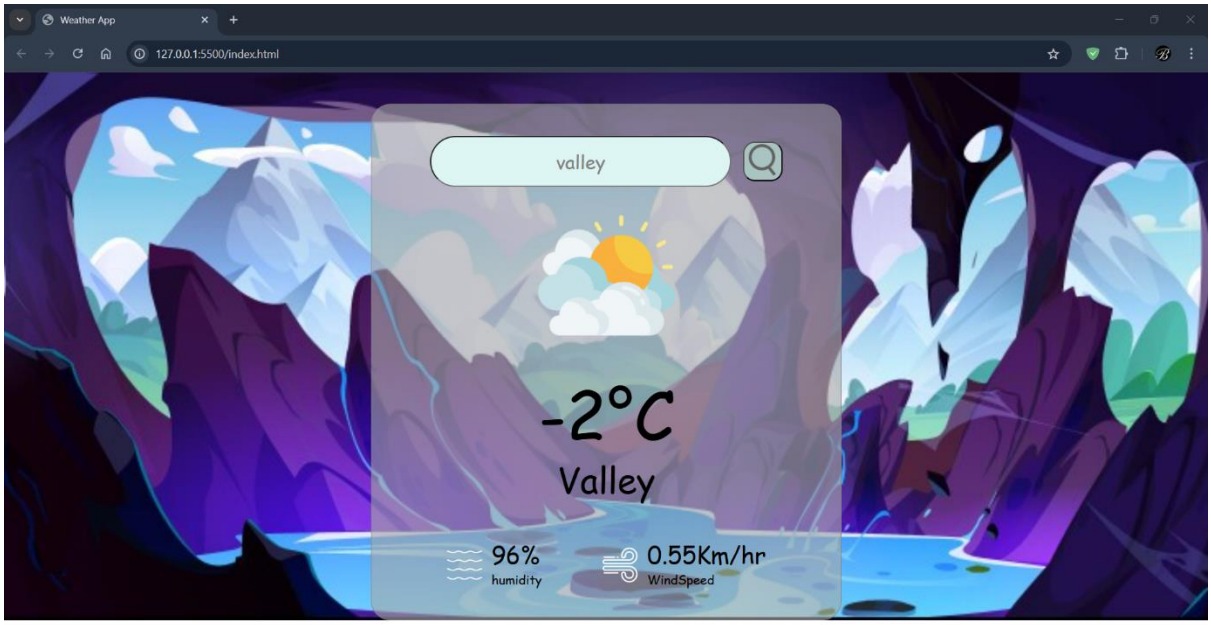
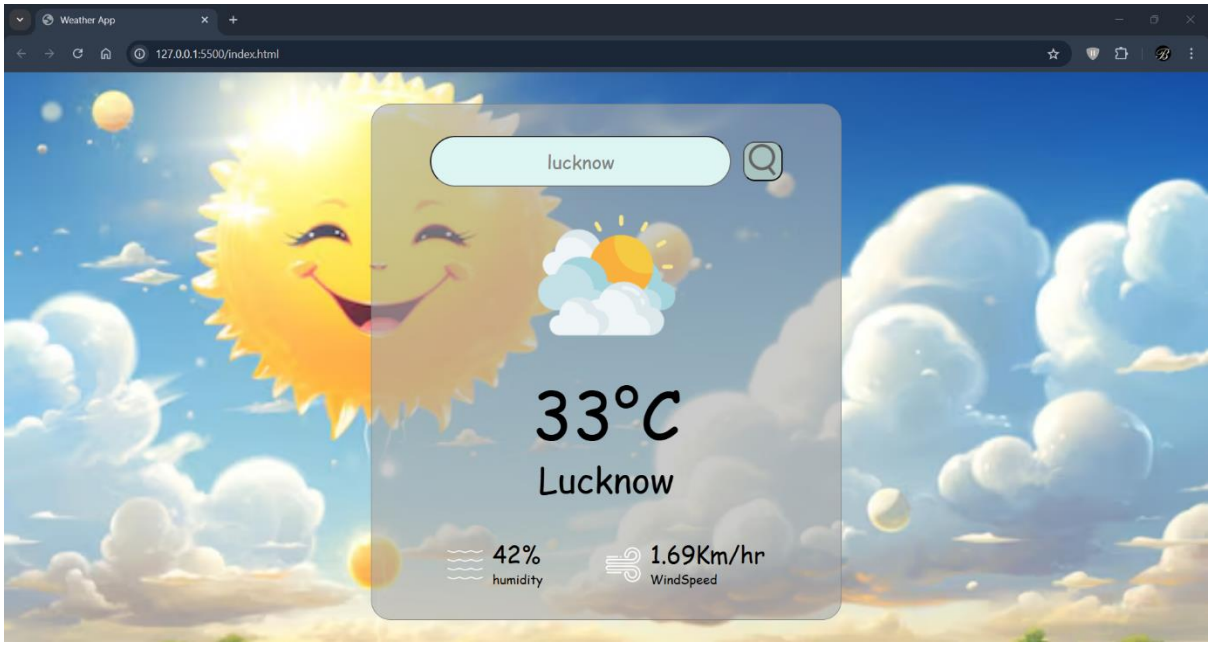
8. **Screenshots**





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9. **Testing**

   The application was tested across different browsers (Chrome, Firefox) and devices (desktop, mobile). It successfully retrieved and displayed accurate data from the API on all tested platforms.

10. **Conclusion**
    The Weather API project provided insights into web development fundamentals, including API integration, asynchronous data handling with JavaScript, and responsive design. This project demonstrated the ease of incorporating live data into a frontend-only application.

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11. **Future Scope**

- Add a feature to display weather forecasts for upcoming days.
- Implement search history or favorite locations for quicker access.
- Enhance the interface with charts or icons representing weather conditions visually.

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12. **References**

- W3Schools for HTML, CSS, and JavaScript documentation.
- OpenWeatherMap API Documentation for API usage details.
- Mozilla Developer Network (MDN) for JavaScript and API integration techniques.