Front-End UI/UX Mini Project

Project Submission Template

1. Title Page

- **Project Title**: "Weather Dashboard Web Application"
- **Submitted By**:

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- **Course**: *UI/UX Design Fundamentals*
- **Instructor Name**: *Dhiraj*
- **Institution**: *Christ University*
- **Date of Submission**: *26/09/2025*

2. Abstract

This project is a responsive weather dashboard web application that fetches real-time weather data using the OpenWeather API. The application allows users to search cities, view current weather, and access a 5-day forecast. It adapts its background dynamically based on temperature and weather conditions, provides search history, and supports both Celsius and Fahrenheit units. Technologies used include HTML, CSS, Bootstrap, jQuery, and JavaScript.

3. Objectives

Project Goals

- Design a user-friendly weather dashboard interface that allows users to search for a city and view current weather and a 5-day forecast.
- Develop a fully responsive layout using HTML5, CSS3, Bootstrap, and jQuery, ensuring optimal display on desktop, tablet, and mobile devices.
- Implement semantic HTML5 elements (<header>, <section>, , <footer>) for better readability and maintainability.
- Apply CSS styling for visual consistency, including gradient backgrounds based on weather conditions, typography, card shadows, and hover effects for forecast cards.
- Ensure accessibility by using proper color contrasts, readable fonts, alt text for images/icons, and intuitive keyboard-friendly navigation**.**

4. Scope of the Project

This project focuses on the front-end development of a dynamic weather dashboard. Users can input a city name and view real-time weather information along with a 5-day forecast. The project emphasizes responsive design, smooth interactivity, and local storage features.

- Fetches current weather and 5-day forecast dynamically using OpenWeatherMap API.
- Includes unit toggle (Celsius/°F) and maintains user preference using localStorage.
- Stores and displays up to 5 recent searches with clickable buttons for easy access.
- Fully responsive design using Bootstrap Grid and media queries for all devices.
- Built entirely with HTML5, CSS3, Bootstrap, and jQuery; no backend required**.**

5. Tools & Technologies Used

Tool/Technology	Purpose
HTML5	Structure and content of the app
CSS3 & Bootstrap	Styling, layout, and responsive design
JavaScript (ES6) & jQuery	Functionality, API calls, DOM manipulation
OpenWeather API	Real-time weather data source
LocalStorage	Persistence of user preferences and search history
VS Code / Chrome Dev Tools	Development, testing, and debugging

6. HTML Structure Overview

- Semantic and organized HTML5 structure with wrappers, <header> for title, and <section> for main content.
- Main sections include:
    - Search Bar & Unit Toggle: Input field, search button, and °C/°F toggle buttons.
    - Search History: Buttons showing recent city searches.
    - Current Weather: Displays city name, date, temperature, humidity, wind speed, weather description, and icon.
    - 5-Day Forecast: Responsive cards showing daily temperature, description, and icon.
- Clean structure ensures easy maintenance, scalability, and accessibility.

7. CSS Styling Strategy

- External stylesheet embedded in <style> for custom styling (weather-card and forecast-card).
- Key styling techniques:
    - Gradient backgrounds for body and cards based on temperature and weather condition.
    - Flexbox for search bar layout and responsive search history buttons.

- Bootstrap Grid for arranging forecast cards across screen sizes.
- Box shadows, rounded corners, hover effects, and smooth transitions for cards.
- Media queries and Bootstrap classes for fully responsive and mobile-friendly design.
- Text color dynamically adjusted for readability over gradient backgrounds.

8. Key Features

Feature	Description
Dynamic Background	Background adapts based on weather & temperature
Current Weather	Displays temperature, humidity, wind speed, and conditions
Forecast Cards	5-day forecast with gradient-styled weather cards
Search History	Stores recent searches and provides quick buttons

9. Challenges Faced & Solutions

Challenge	Solution
Dynamic styling conflicts	Created fallback logic where temperature decides unless weather is extreme
Maintaining search history	Used LocalStorage to persist and render recent searches dynamically
Ensuring mobile responsiveness	Bootstrap grid system and media queries ensured smooth scaling

10. Outcome

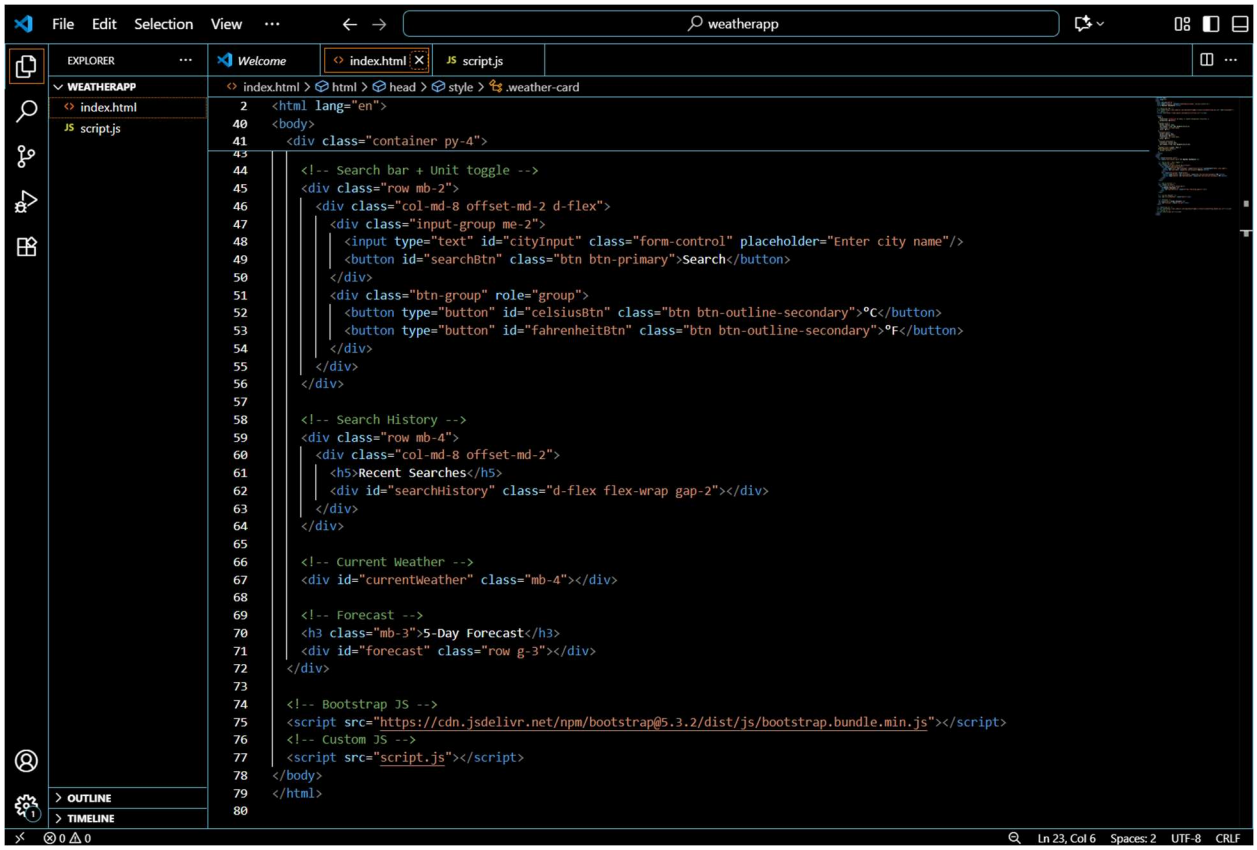
- Successfully developed an interactive weather dashboard that fetches live data, adapts visuals dynamically, and maintains user preferences. This project enhanced practical skills in API integration, responsive design, and client-side storage.
- All key components function as intended using just HTML and CSS
- Learned about layout responsiveness and UI hierarchy in depth

11. Future Enhancements

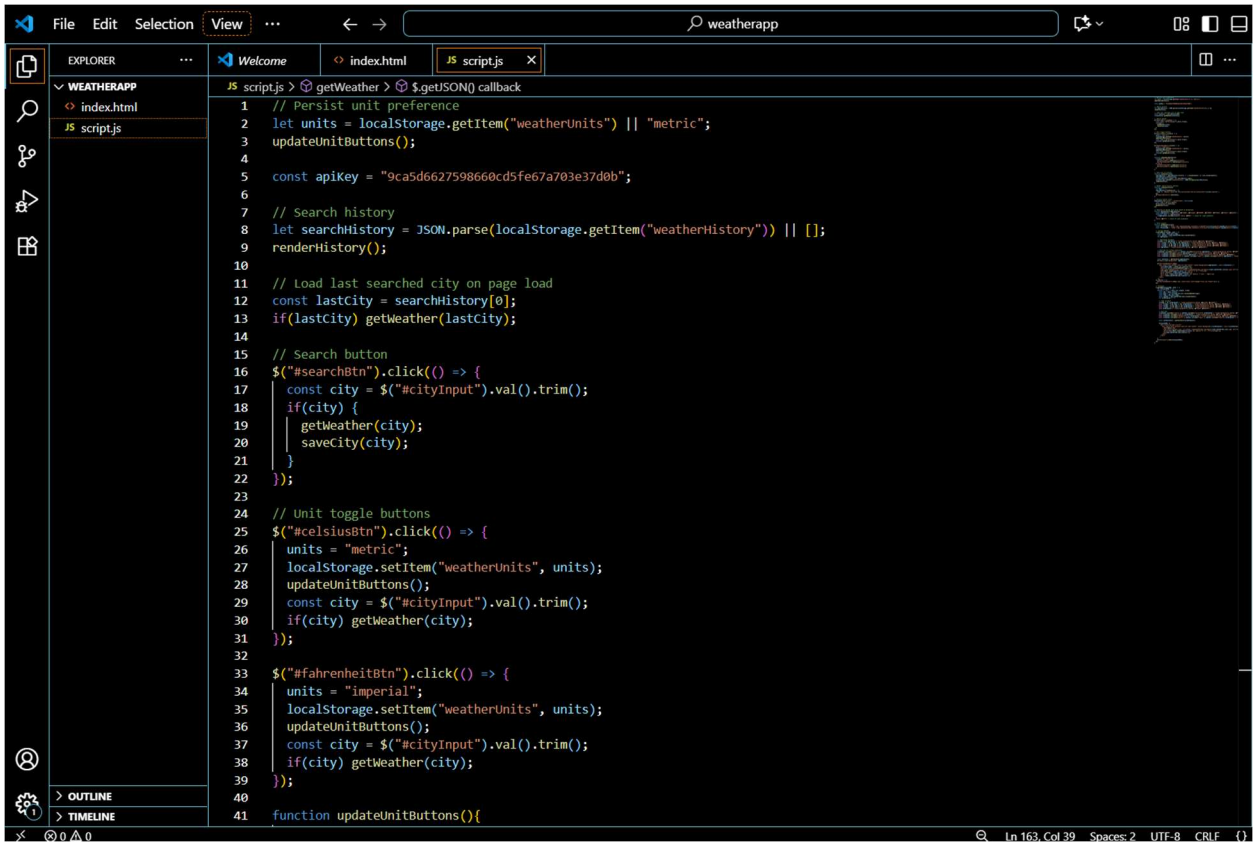
- Add Geolocation support to auto-detect user's city
- Provide extended hourly and weekly forecasts
- Integrate dark/light mode toggle
- Add graphical charts for temperature and humidity trends
- Integrate animations or transitions
- Backend integration for form submission
- Theme toggler (light/dark mode)

12. Sample Code

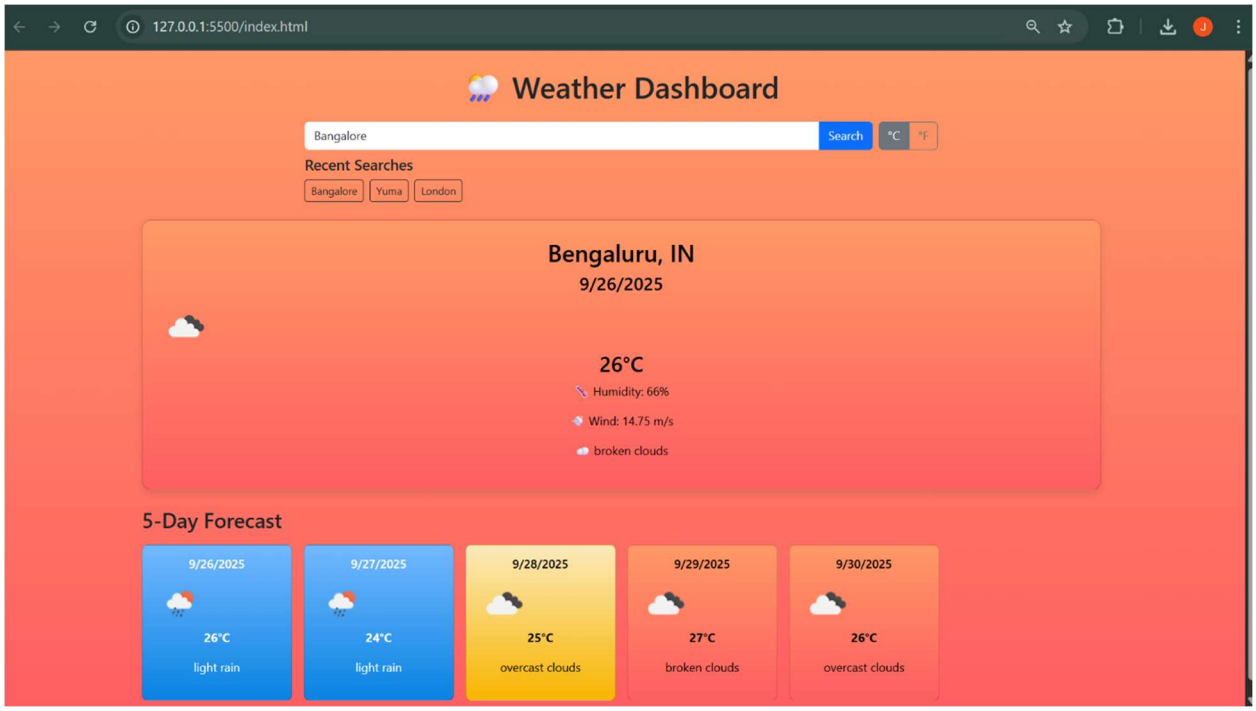
- **HTML CODE**

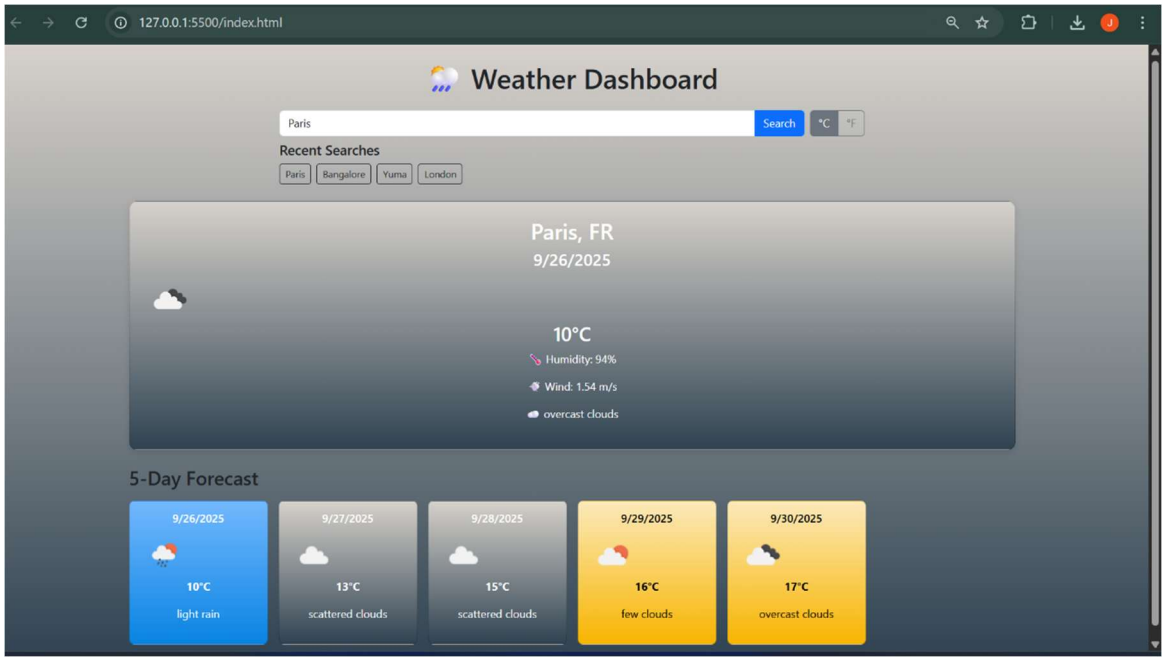


- **JS CODE**



13. Screenshots of Final Output





11. Conclusion

This project is a weather dashboard web application that demonstrates integration of APIs, dynamic UI design, and persistent user features. It strengthened my skills in front-end technologies, responsive layouts, and real-world application development.

Through this mini project, I strengthened my front-end development skills, particularly in structuring semantic HTML, applying CSS-based layouts with Flexbox and Grid, and implementing responsive. I also gained practical experience with visual styling techniques such as hover effects, transitions, and custom fonts. Overall, the project enhanced my understanding of user-focused design and the importance of visual storytelling in web development.

12. References

OpenWeather API: https://openweathermap.org/api
Bootstrap Documentation: https://getbootstrap.com/docs
jQuery Documentation: https://api.jquery.com
JavaScript MDN Docs: https://developer.mozilla.org/en-US/docs/Web/JavaScript