LIVE WEATHER WEB APPLICATION

A MINI-PROJECT REPORT

Submitted by

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BONAFIDE CERTIFICATE

Certified that this mini project **"LIVE WEATHER WEB APPLICATION"** is the bonafide work of **"BARATHRAJ V L (2116220701038) BHARATH B (220701041)"** who carried out the project work under my supervision.

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INTERNAL EXAMINER **EXTERNAL EXAMINER**

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ABSTRACT

Abstraction in the **Live Weather Web Application** plays a vital role in simplifying the user experience by concealing unnecessary implementation details and presenting only the essential features. The application offers an intuitive interface where users can log in, search for locations, and view real-time weather updates without needing to understand the technical complexities involved. For example, the integration with the weather API is abstracted, enabling seamless fetching and display of weather data without exposing raw API requests or responses. Similarly, the process of validating user credentials and securely storing them in local storage is hidden, ensuring a smooth and secure login/logout experience. React's component-based structure further enhances abstraction by modularizing functionalities such as the login form, weather display, and search bar, encapsulating their logic within individual components. This abstraction ensures that the **Live Weather Web Application** is user-friendly, efficient, and maintainable while effectively managing complex background operations.

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CHAPTER 1

1.1 INTRODUCTION

The **Live Weather Web Application** delivers real-time weather updates using React and a weather API. Users can log in, search for locations, and view weather details like temperature and humidity. The app stores user data securely in local storage for easy access. It combines modern web technologies to provide a simple, efficient tool for checking the weather.

1.2 SCOPE OF THE WORK

The **Live Weather Web Application** aims to provide users with real-time weather updates through a simple and intuitive interface. The scope of this project includes implementing a secure login system that stores user credentials in local storage, enabling users to access the application easily. The app integrates with a weather API to fetch current weather data based on user input, allowing users to search for weather information by location. Additionally, the application features a responsive design that ensures a seamless experience across various devices. While the focus is on delivering real-time weather updates, advanced features like weather forecasts and detailed analytics are beyond the scope of this project.

1.3 PROBLEM STATEMENT

Many weather applications are either too complex, lack real-time data, or don’t offer a user-friendly experience. Users often struggle with accessing accurate weather information quickly and efficiently. The **Live Weather Web Application** solves this by providing a simple, intuitive interface that delivers real-time weather updates based on location or search. With secure login and local data storage, it ensures a personalized, efficient experience without the complexity found in other apps.

1.4 AIM AND OBJECTIVES OF THE PROJECT

The aim of the **Live Weather Web Application** is to provide users with an easy-to-use, real-time platform that delivers accurate and up-to-date weather information for any location. The application is designed to ensure a seamless and intuitive user experience, allowing users to quickly retrieve weather data with minimal effort. The project aims to create a solution that caters to the growing need for accessible weather information while maintaining a high level of security, responsiveness, and personalization.

The objectives of the project include developing a user-friendly interface that allows users to easily view real-time weather updates, integrating a reliable weather API to fetch accurate data based on user input, and implementing a secure login system that stores user credentials and preferences in local storage for quick and convenient access. Additionally, the application aims to provide an efficient search functionality, enabling users to find weather information for any location. The project also focuses on ensuring the application is fully responsive, allowing it to function across different devices with consistent performance. Moreover, the application will store user data locally, providing a personalized experience by quickly accessing previous searches and preferences. Finally, the project will ensure that the application is optimized for speed and reliability, delivering weather data without delays, and offering a smooth and enjoyable experience for the users.

CHAPTER 2

SYSTEM SPECIFICATIONS

2.1 HARDWARE SPECIFICATIONS

- **Processor**: Pentium IV or higher
- **Memory Size (RAM)**: 128 GB (Minimum)
- **Hard Disk Drive (HDD)**: 40 GB (Minimum)
- **Display**: 1366x768 resolution or higher
- **Network**: Stable internet connection with at least 3 Mbps download speed (for client-side) and 10 Mbps (for server-side) to ensure fast data retrieval from the weather API.

These specifications will ensure that both the user and server environments can efficiently run the application with minimal latency and smooth performance.

2.2 SOFTWARE SPECIFICATIONS

- **Operating System**: Windows 7 or higher
- **Front-End**:
  - HTML
  - CSS
  - Bootstrap
  - JavaScript
- **Back-End**:
  - PHP
  - MySQL
- **Web Browser**: Google Chrome, Mozilla Firefox, Microsoft Edge, or Safari (latest versions)
- **Web Server**: Apache or Nginx
- **Database**: MySQL (for storing user data if applicable)
- **Development Tools**:
  - Visual Studio Code, Sublime Text, or Atom for coding
  - Git for version control
  - npm (Node Package Manager) for managing dependencies
- **API**: RESTful API (e.g., OpenWeatherMap API for weather data)

These software specifications ensure the application operates efficiently and is easy to develop, manage, and deploy.

CHAPTER 3

ARCHITECTURE DIAGRAM

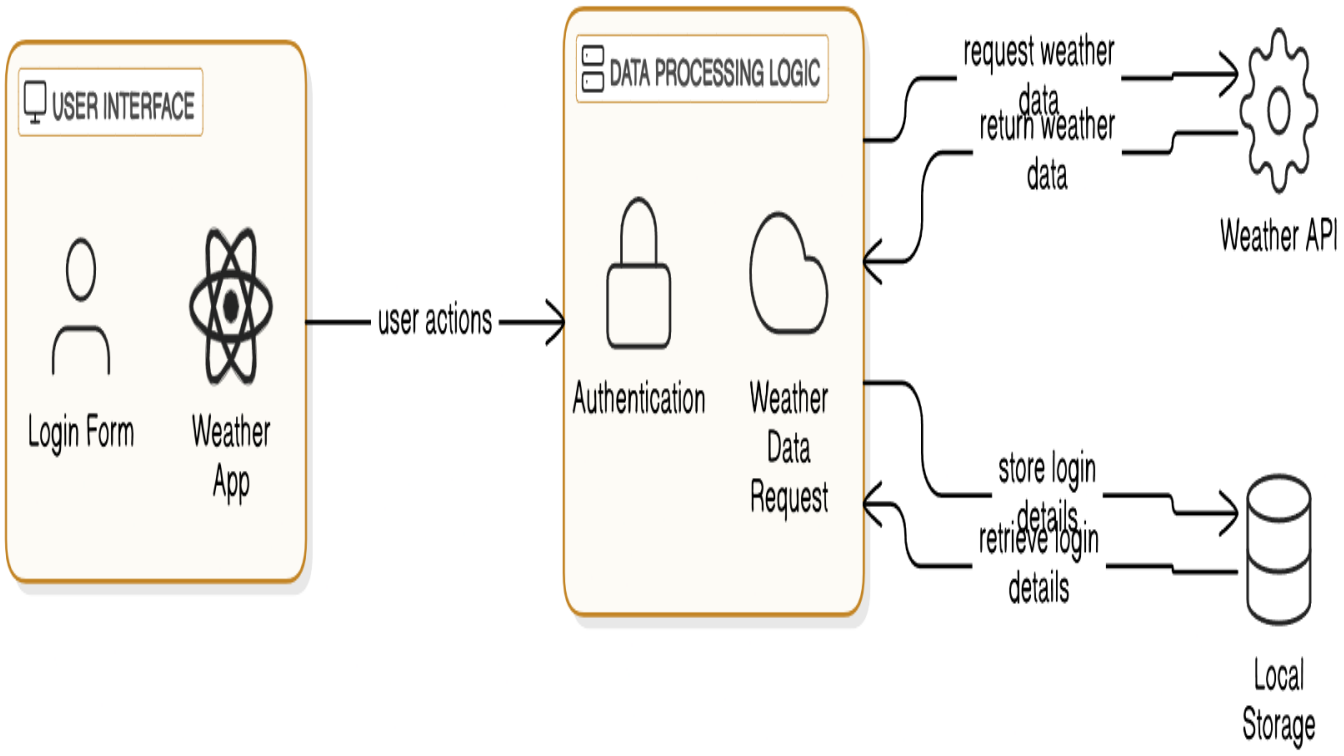

Fig. 3.1. Architecture Diagram

he **Live Weather Web Application** uses a client-server architecture. The front-end, built with HTML, CSS, JavaScript, and Bootstrap, handles user input and displays weather data. The back-end, using PHP and MySQL, processes requests and fetches weather information from an API. User data is stored in MySQL, and the app is hosted on a web server, ensuring smooth interaction between the client, server, and API for a seamless user experience.

CHAPTER 4

MODULE DESCRIPTION

4.1. User Registration and Login Module:

The **User Registration and Login Module** is a crucial feature of the **Live Weather Web Application**, allowing users to securely create accounts, log in, and access personalized weather updates. Users can register by providing their username, password, and email, with the password being encrypted for security. After registration, users can log in using their credentials, which are validated against the stored data. Successful logins allow access to the application, while incorrect credentials trigger an error message. The user's details are saved in local storage for future sessions, ensuring a seamless experience. This module prioritizes security by encrypting passwords and using secure authentication methods to protect user data.

4.2. Property Listing and Management Module:

The **Property Listing and Management Module** is an essential feature of the **Live Weather Web Application**, designed to enable users to search, view, and manage property listings alongside real-time weather data. Users can search for properties based on location and apply filters such as price, type, or city. Each property listing is integrated with real-time weather data from an API, providing users with relevant weather conditions for the location. Registered users can add, edit, or remove their property listings through a secure backend. The module also stores user preferences and search filters in local storage, ensuring a seamless experience for future visits, while prioritizing the security of user data.

4.3. About Module:

The **About Module** in the **Live Weather Web Application** provides users with essential information about the app’s purpose, functionality, and the technologies

used in its development. It explains how the application delivers real-time weather updates, allows users to search for weather information by location, and offers personalized experiences through secure login and local storage. The module also highlights the technologies involved, such as the weather API (e.g., OpenWeatherMap), front-end tools (HTML, CSS, JavaScript, Bootstrap), and back-end technologies (PHP, MySQL). Additionally, it may include contact information for support, as well as credits for third-party services and tools, ensuring users understand the app's features and the team behind it.

4.4. Profile and User Management Module:

The **Profile and User Management Module** in the **Live Weather Web Application** allows users to manage their personal information and preferences. Users can view and edit their profile details, including their username, email, and password, with changes validated and encrypted for security. The module also enables users to set preferences, such as preferred locations for weather updates, which are saved for future visits to provide a personalized experience. Additionally, it includes options for enhancing account security, such as two-factor authentication and password recovery. Users can also deactivate or delete their account if desired. Overall, this module ensures users have control over their accounts, maintaining both security and personalization.

4.5. Weather Search Module:

The **Weather Search Module** in the **Live Weather Web Application** allows users to search for real-time weather information by entering a location, such as a city name, zip code, or coordinates. Once a search query is submitted, the system retrieves weather data from an external API (e.g., OpenWeatherMap) and displays key information such as temperature, humidity, wind speed, and weather conditions (e.g., sunny, rainy).

CHAPTER 5

SYSTEM DESIGN

5.1 USE CASE DIAGRAM

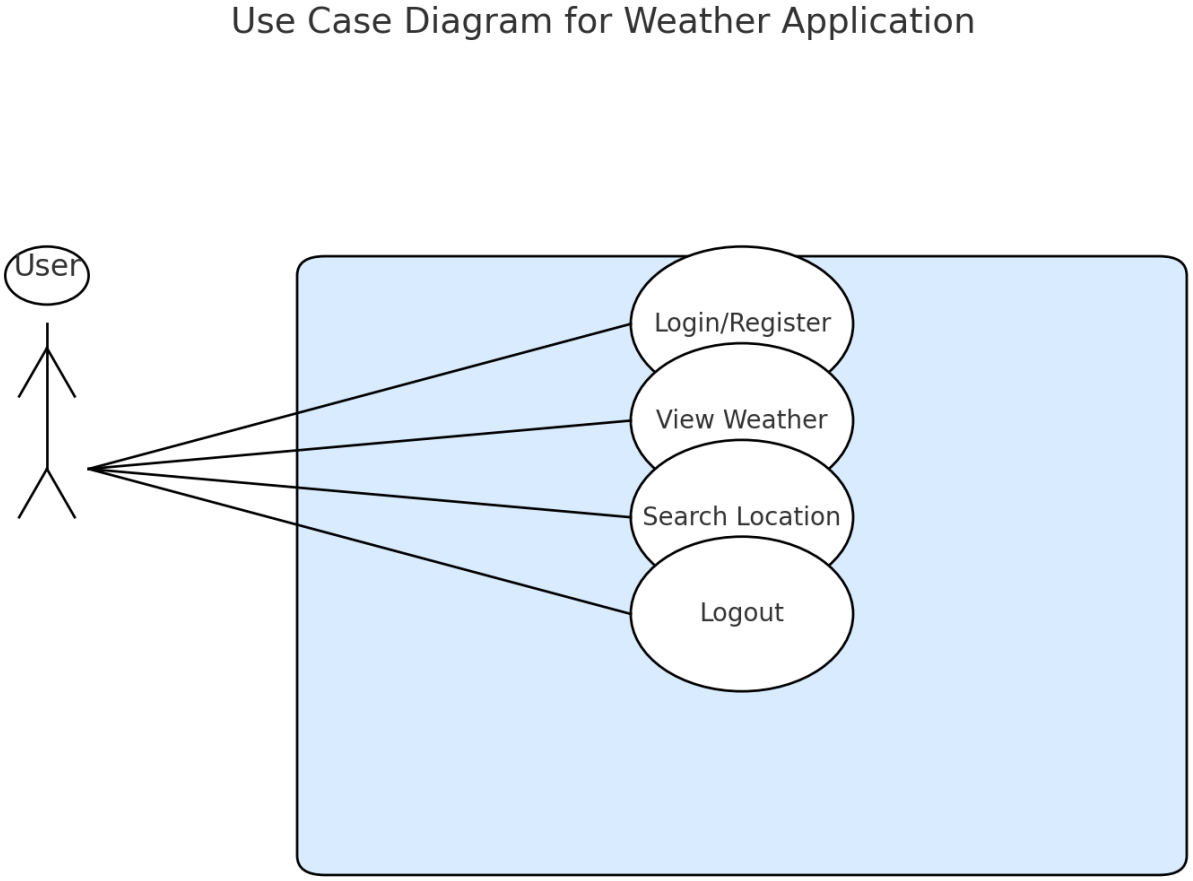

Fig. 5.1. Use Case Diagram

A Use Case Diagram shows how users interact with a system to perform tasks, highlighting key functions like "Search Weather," "Login," and "View Weather Data" in the Live Weather Web Application.

5.2 ER DIAGRAM

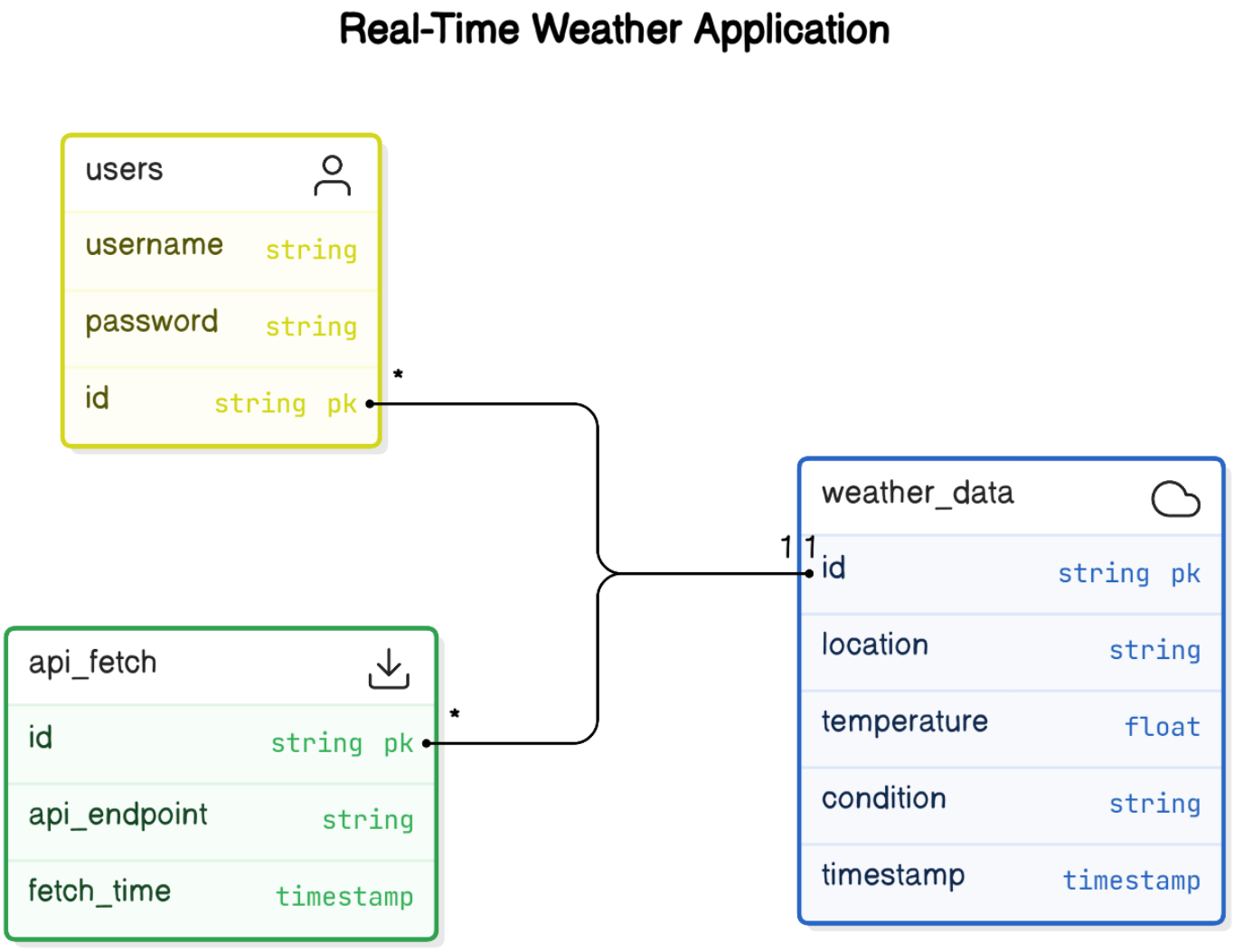

Fig. 5.2. Entity Relationship Diagram

The ER diagram represents the relationships between users, listings, and listing images, where users can create listings, and each listing can have multiple associated images.

5.3 DFD DIAGRAM

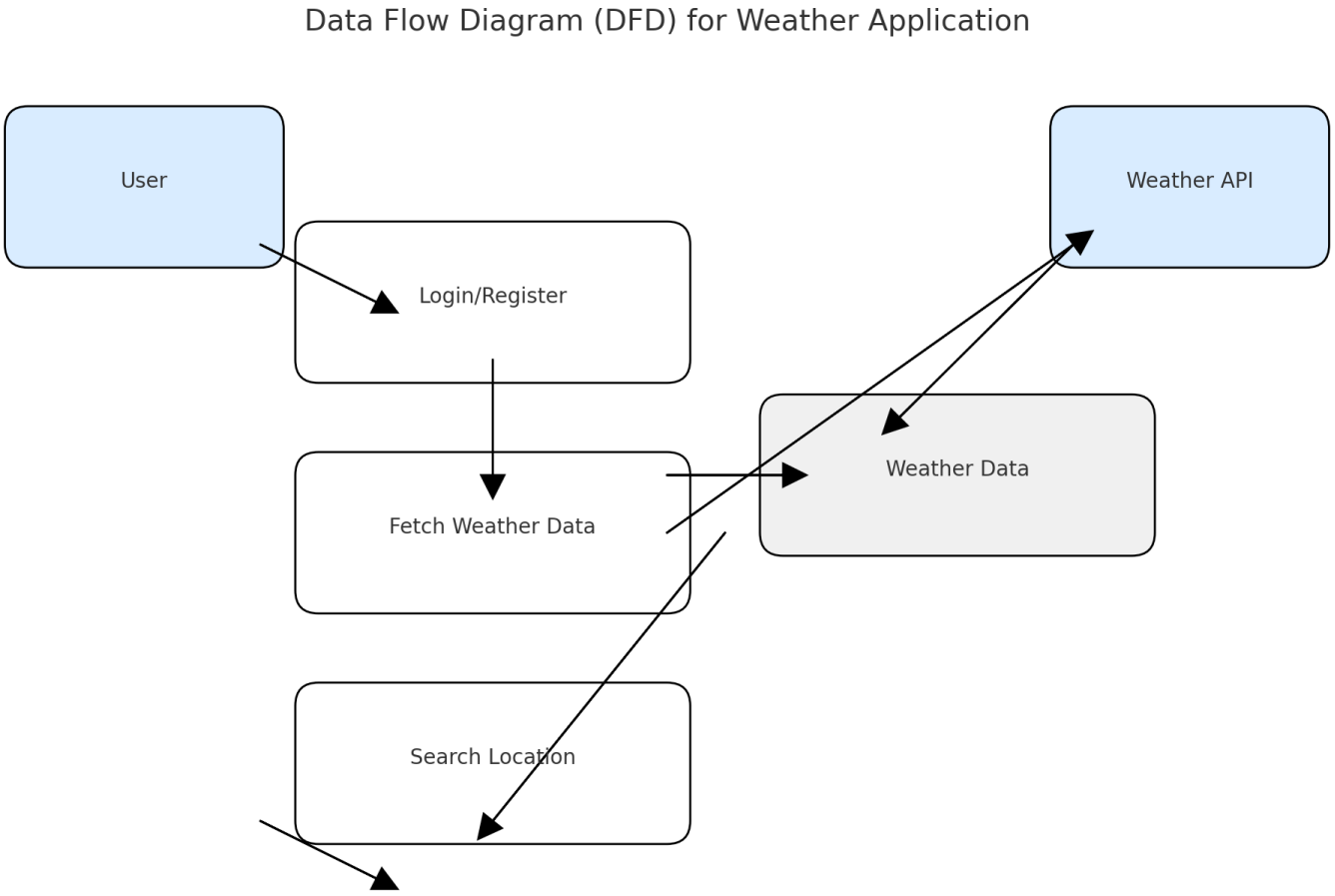

Fig. 5.3.1. DFD Level-0 Diagram

5.4 ACTIVITY DIAGRAM

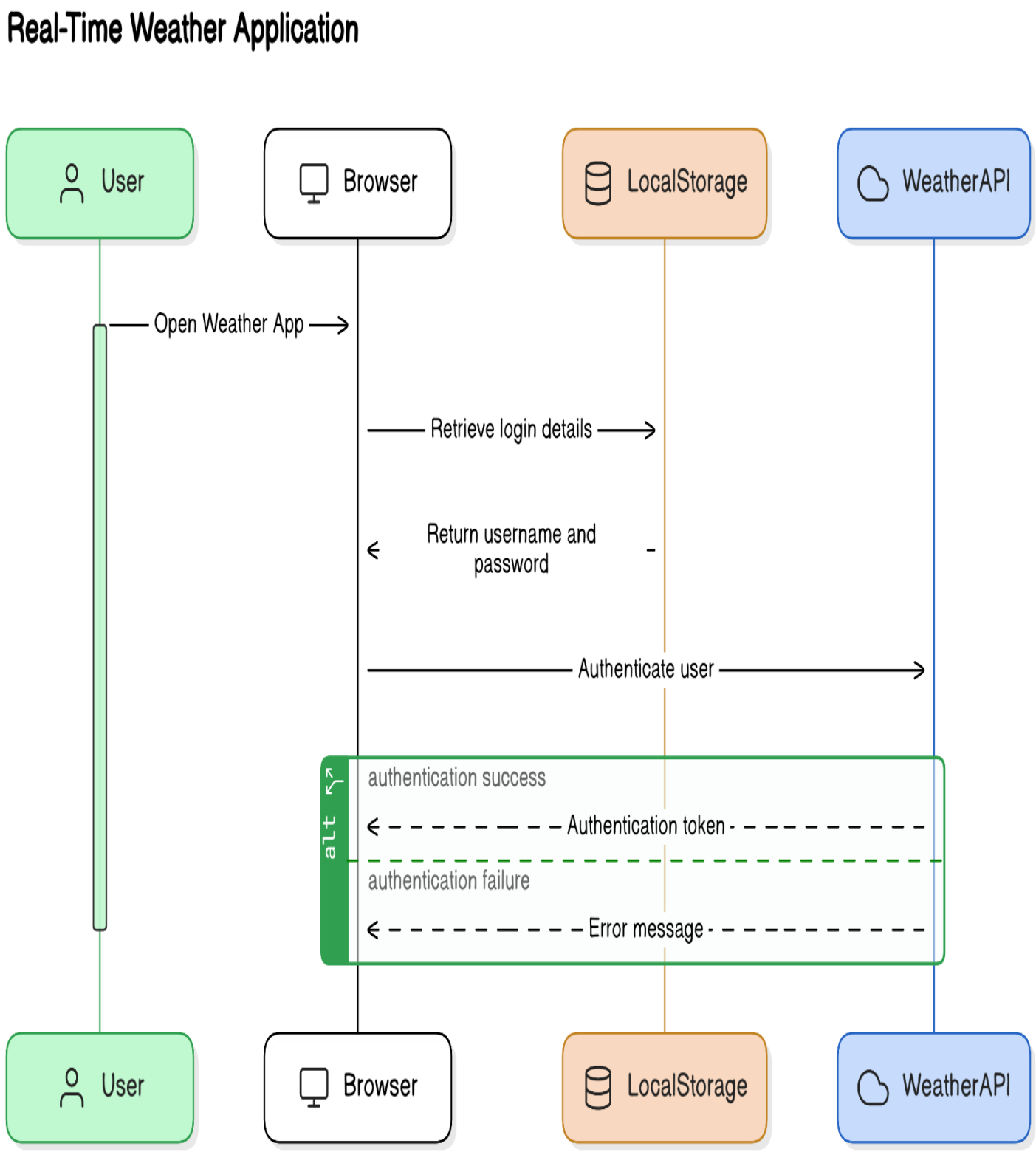

Fig. 5.4. Activity Diagram

CHAPTER 6

SCREENSHOTS

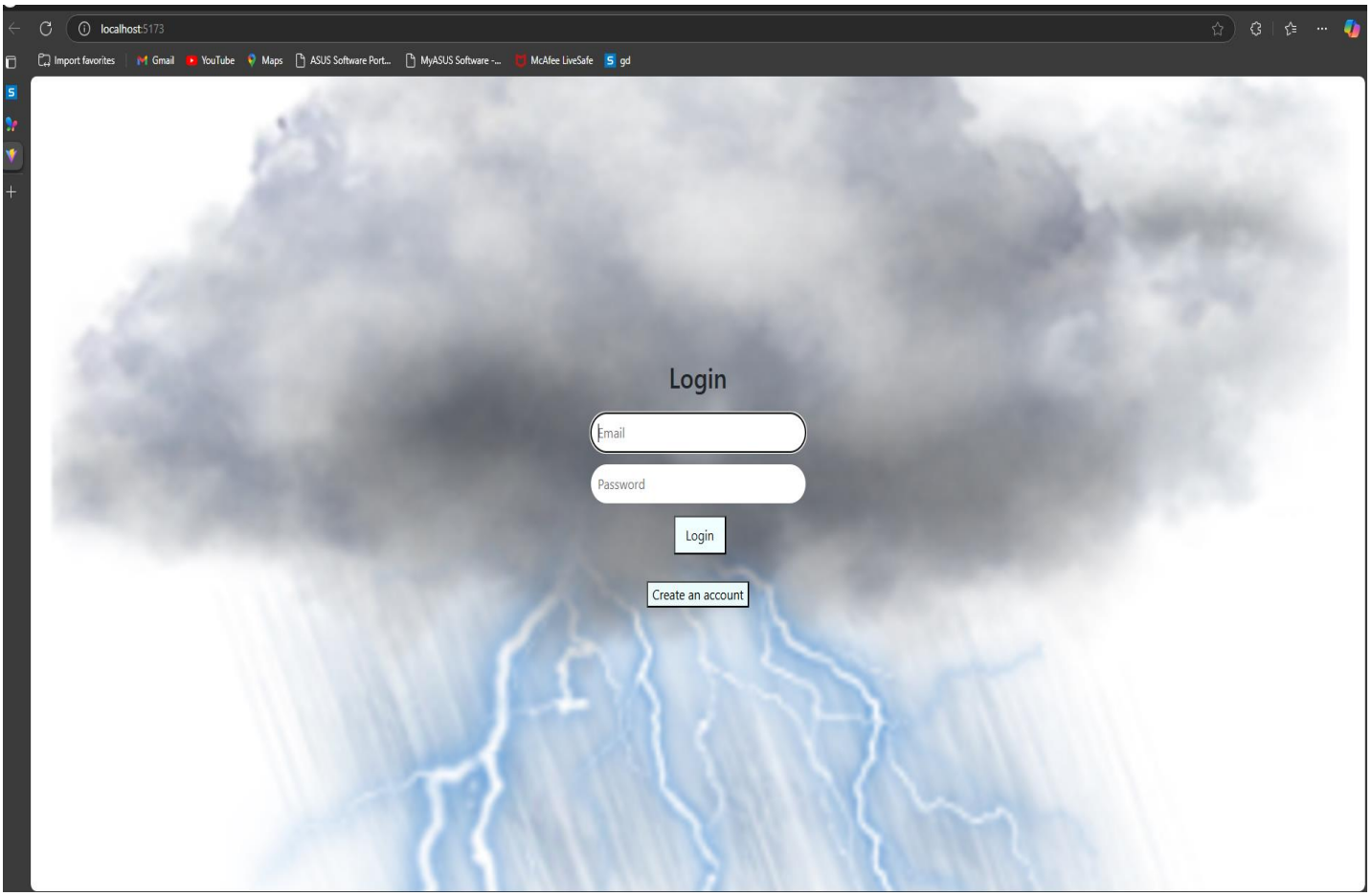

Fig. 6.1. Login Page

The home page provides user-friendly interface to explore properties and access key features.

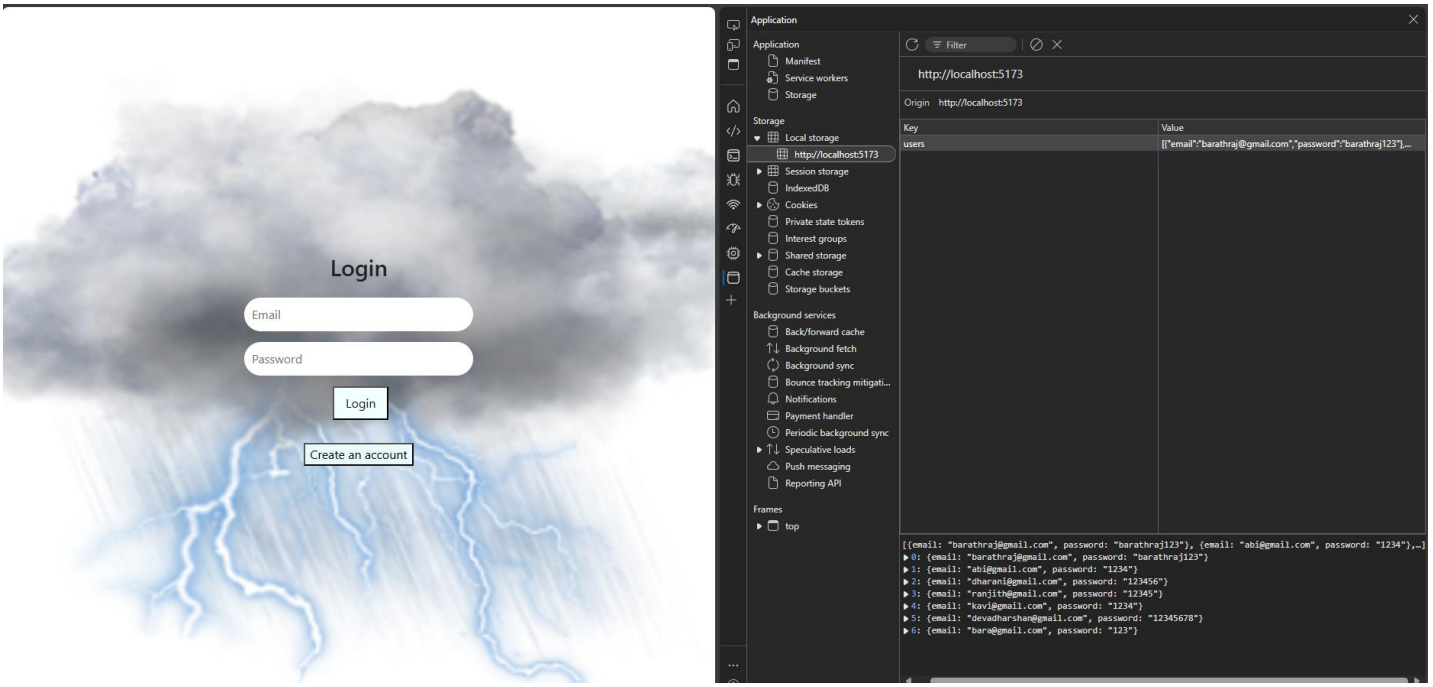

Fig. 6.2. Local Storage

Where thee all the username and password are stored in the Local Storage

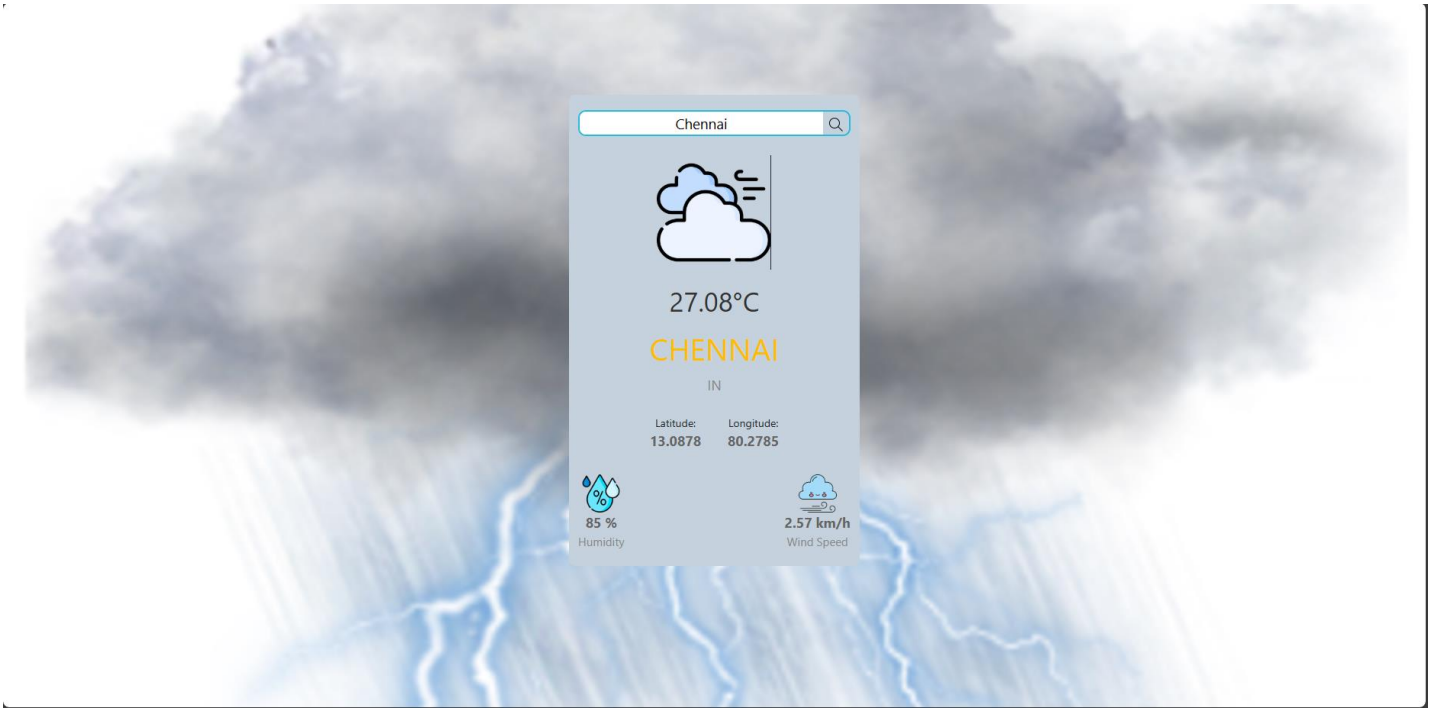

Fig. 6.3. Home Page

The where the we can search the city in the search and we get the Weather data, Latitude, Longitude, Humidity and Wind speed

CHAPTER 7

CONCLUSION

In conclusion, The **Live Weather Web Application** is a robust and interactive platform designed to provide users with real-time weather updates. It offers a variety of features including user registration, login, profile management, and weather search, ensuring a personalized and secure experience. The integration of an external weather API allows users to access up-to-date weather data for any location, enhancing the app's functionality and usability. Additionally, the application’s modular design, which includes property listing and management capabilities, adds value by combining weather information with potential real estate decisions. The system is built with security in mind, ensuring user credentials and preferences are safely stored. Overall, the project showcases the potential of web technologies to deliver dynamic, user-centric applications that are both practical and engaging, providing a seamless and intuitive experience for users seeking accurate and relevant weather information.

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