web service project

**Clear Trails CA**

Final Report

**Project Aim:**

The aim of this project is to develop a web application that empowers nature enthusiasts to discover nearby national parks with optimal air quality and pleasant weather conditions. By leveraging real-time environmental and meteorological data, the application seeks to enhance the overall park-going experience, promoting health, safety, and outdoor enjoyment.

**Project Description:**

Our web application, named "Clear Trails CA", is designed to assist users in locating national parks within their proximity that offer favorable air quality and pleasant weather conditions. Whether it's a family outing, a nature walk, or an outdoor adventure, Clear Trails CA ensures that users can make informed decisions about when and where to visit a national park.

**Functional Requirements:**

User Registration and Authentication:

* Users are able to register for an account and log in securely.

Search for Nearby National Parks:

* Users are able to search for national parks based on their current or specified location.

Air Quality Information:

* The application integrates with air quality data sources to provide the current Air Quality Health Index (AQHI) for each national park.

Weather Information:

* Real-time weather data, including temperature and weather conditions, are provided for each national park.

Search Filters:

* Users are able to apply filters to refine park search results based on their preferences, such as distance and specific weather conditions.

Interactive Maps:

* The application can display the location of each park on an interactive map for users.

**Non-Functional Requirements:**

Performance:

* The application can respond quickly to user queries and display park name, air quality, and weather data in a timely manner.

Usability and Accessibility:

* The application is user-friendly and accessible on various devices, including mobile phones and desktop computers.

Data Accuracy and Integrity:

* Data, including air quality and weather information, is sourced from reliable and up-to-date providers to ensure accuracy.

Compliance:

* The application adheres to environmental regulations regarding air quality data and weather data sources.

Environmental Impact:

* The application aims to reduce its own environmental impact through sustainable server hosting and data sourcing practices.

Documentation:

* Provide comprehensive documentation for developers and users.

By adhering to these functional and non-functional requirements, the web application will be well-equipped to provide users with a reliable and user-friendly experience in their search for national parks with suitable air quality and weather conditions.

**User Stories**

* **User Registration and Authentication:**

As a new user, I want to create an account and log in to the application.

* **User Profile:**

As a registered user, I want to create and manage my user profile including my location, preferences, and notification settings.

* **Search for Nearby National Parks:**

As a user, I want to search for a certain number of national parks near my location or a specified location.

* **View Park Details:**

As a user, I want to view detailed information about a specific national park, including air quality index, current weather, and other relevant data.

* **Air Quality Information:**

As a user, I want to see the current air quality index (AQI) of the selected national park.

* **Weather Information:**

As a user, I want to see the current weather conditions in the selected national park, including temperature and precipitation.

* **Maps and Directions:**

As a user, I want to see the location of the national park on a map.

* **Accessibility and Usability:**

As a user, I want the application to be accessible and easy to use on various devices, including mobile phones and desktop computers.

**Individual’s role and responsibilities**

**Mario:**

UI: User Profile, About Us, (Activity Selection)

API implemented: Google Login API

Hosting (on an AWS server) & Using CI/CD tools

Final report (finalization)

**Zheng Xue:**

UI: Location Input, Park Details, (Park Recommendations)

API implemented: Google Map API

Test cases

API documentation

**Chunmei Zhang:**

UI: Terminology, (Map View, Safety & Information)

API implemented: Google Air Quality API

OpenWeather API

Final report (first draft)