

Software Requirement Specification

Carbon Footprint Tracker

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1. Introduction

1.1 Purpose

The Carbon Footprint Tracker is a web-based application designed to help users monitor and reduce their carbon footprint by tracking daily activities such as transportation, electricity usage, waste disposal, and plastic consumption. The system calculates CO₂ emissions based on predefined formulas and provides insights for sustainable living.

1.2 Intended Audience

- Individuals who want to track and reduce their carbon footprint.
- Organizations promoting sustainability initiatives.
- Researchers studying environmental impact and carbon emissions.

1.3 Product Scope

- A fully responsive web application with an intuitive user interface.
- Uses scientifically approved CO₂ emission formulas.
- Stores user data securely for tracking progress.
- Generates visual reports and recommendations.

2. Overall Description

2.1 Product Perspective

- The system will function as an independent web application.
- Users will log in and track their daily CO₂ emissions.
- Data will be stored in a database for generating reports and analysis.

2.2 Product Functions

- User Authentication: Sign Up, Login, Logout.
- Data Entry: Users input daily transport, electricity, waste, and plastic usage.
- CO₂ Calculation: System computes emissions based on standard formulas.
- Dashboard & Reports: Users can view graphical representations of their footprint.
- Sorting & Filtering: Users can filter past data by week, month, or year.

2.3 Constraints

- Users need internet access to use the platform.
- The system will only track self-reported data (no real-time sensors).
- Free-tier hosting limitations may affect database storage capacity.

2.4 Assumptions & Dependencies

- Users will enter accurate data for precise calculations.
- The system assumes standard CO₂ emission factors.

3. Functional Requirements

- Users must be able to register and log in.
- Users can enter daily carbon footprint data.
- The system calculates emissions dynamically.
- Users can view past data and track trends over time.
- The system prevents duplicate daily entries.
- Users can log out securely.

4. Non-Functional Requirements

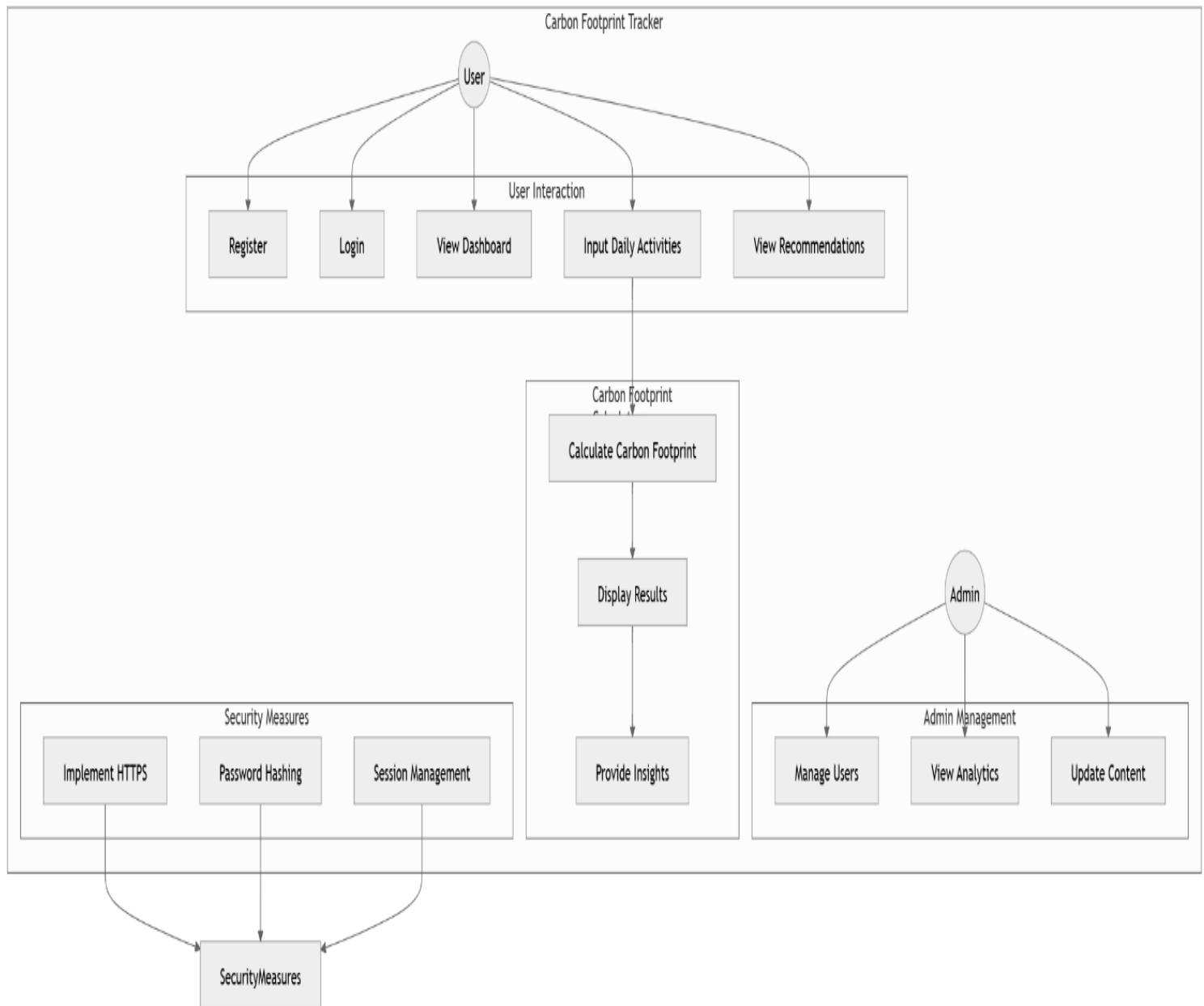
- **Performance** : The system must respond to user inputs smooth even under moderate traffic.
- **Usability** : The interface is designed to be intuitive and accessible to users of all technical skill levels
- **Maintainability** : The codebase is modular and well-documented, making it easier to update and maintain over time.
- **Localization** : To cater to a global audience, the platform supports multiple languages and adapts to local date, time, and number formats.

5. Security Requirements

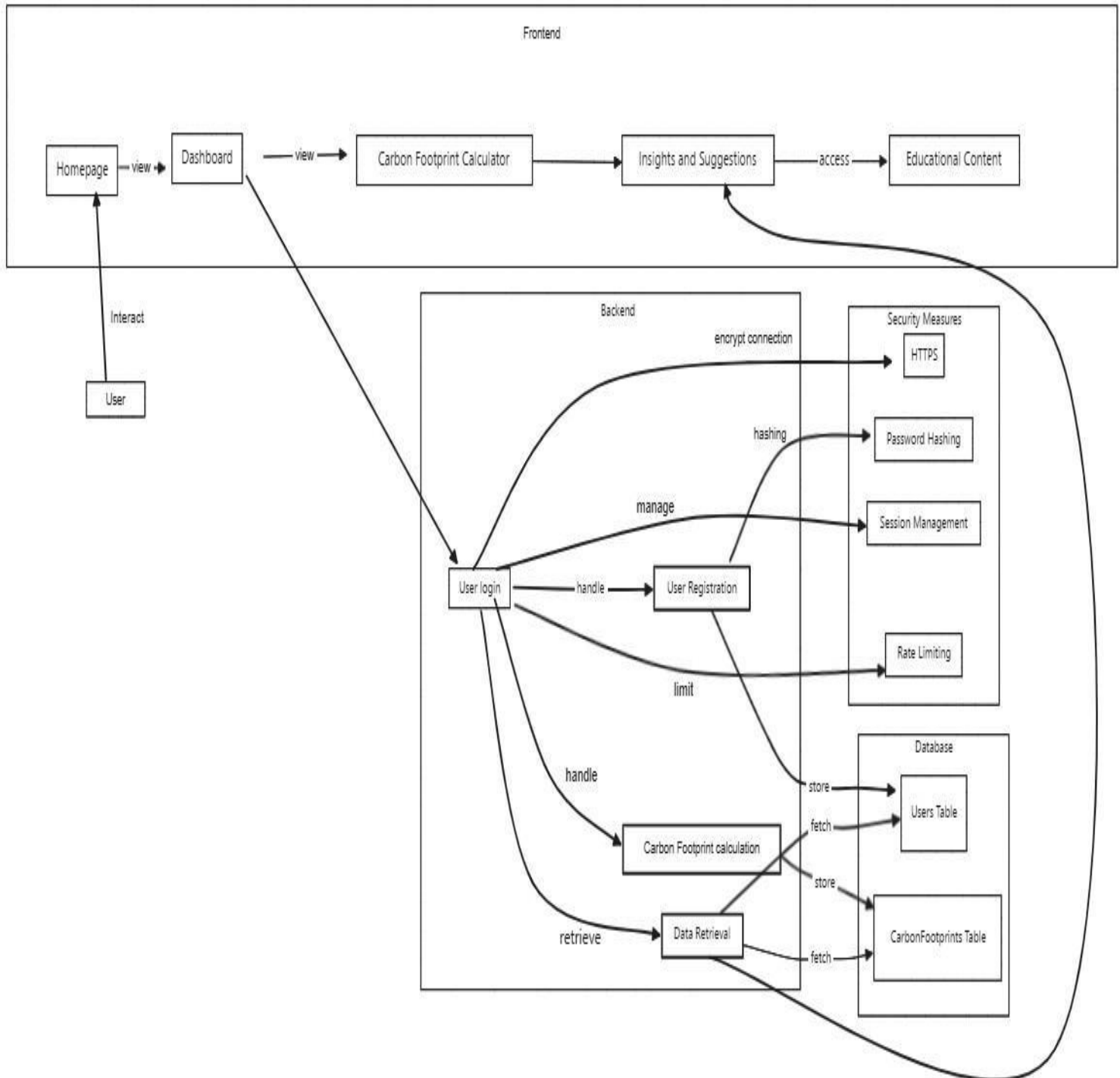
- **HTTPS** : Use HTTPS to secure data in transit.
- **Password Security** : Use secure password hashing (e.g., bcrypt) and store passwords securely.
- **Rate Limiting** : Implement rate limiting to prevent brute-force attacks.
- **Error Handling** : Provide generic error messages to avoid leaking sensitive information.

6. Diagrams

6.1 Use Case Diagram



6.2 System Architecture Diagram



7. Conclusion

The Carbon Footprint Tracker provides a user-friendly platform for tracking and reducing CO₂ emissions. With real-time calculations, interactive charts, and personalized recommendations, users can adopt sustainable habits and contribute to a greener environment.