GreenPath : Tracking Your Carbon Footprint and Beyond

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| **Name** | **Student ID** |
| Subasinghe Mudiyanselage Indika Gayashan Upasena | 300362878 |

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# System Requirements Specification (SRS) Document

**Milestone 1:** Finalize Functional and Non-Functional Requirements

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## Introduction

### 1.1 Purpose

The purpose of this System Requirements Specification (SRS) document is to define the functional and non-functional requirements for the development of the GreenPath web app. The app is designed to help users track and reduce their environmental impact by monitoring their carbon footprint, water usage, and waste production. The system will provide personalized recommendations based on user inputs.

### 1.2 Scope

GreenPath will offer actively tracking and reporting of users' environmental impact across different domains (carbon, water, and waste). The system will integrate with third-party APIs and user inputs to collect data, process it, and deliver actionable insights.

This document outlines the functional and non-functional requirements for the successful completion of Milestone 1: the Requirements Analysis phase.

## 2.0 Functional Requirements

### 2.1 User Management

**FR-1**: **User Registration and Login**

* The system shall allow users to register with a username, email, and password.
* Users shall be able to log in with their credentials and access their personal dashboard.

**FR-2**: **Profile Setup**

* The system shall allow users to set up their profiles, including inputting details about their energy usage habits, transportation modes, and general lifestyle.

### 2.2 Data Collection

**FR-3: Carbon Footprint Tracking**

* The system shall allow users to input data on their daily transportation habits, such as car use, biking, and public transit.
* The system shall integrate with backend apis to track and calculate carbon emissions based on travel distances.

**FR-4: Water Consumption Tracking**

* The system shall allow users to manually input water usage data (e.g., shower duration, dishwasher usage).
* The system shall integrate with backend apis to record water consumption.

**FR-5: Waste Tracking**

* The system shall allow users to log their waste disposal and recycling habits via manual input.

### 2.3 Recommendations

**FR-6**: **Personalized Recommendations**

* The system shall analyze the user's data and provide personalized recommendations to reduce their carbon footprint, water consumption, and waste production.
* Recommendations shall be delivered in real-time, based on current behavior and goals.

### 2.4 Dashboard and Data Visualization

**FR-7**: **Dashboard Overview**

* The system shall provide a user dashboard that displays their environmental impact data in real-time, including carbon emissions, water usage, and waste statistics.

**FR-8**: **Progress Tracking**

* The system shall allow users to track their progress over time, displaying trends and milestones in their sustainability journey.

**FR-9**: **Goal Setting**

* The system shall enable users to set sustainability goals and track their progress toward achieving them.

### 2.5 Community & Gamification Dashboard

**FR-10**: **User Rankings & Leaderboards**

* The system shall provide a leaderboard where users can compare their carbon footprint, water usage, and waste management metrics with other users.

**FR-11**: **Challenges**

* The system shall allow users to participate in community challenges aimed at reducing carbon emissions, saving water, or minimizing waste.
* The system shall display progress bars for ongoing challenges so that users can track their progress.

**FR-12**: **Badges & Rewards**

* The system shall award badges for achieving specific sustainability milestones (e.g., "Carbon Footprint Hero" for reducing emissions by a significant percentage).
* The system shall notify users when they earn badges or complete challenges.

**FR-13**: **Badges & Rewards**

* The system shall allow users to share their achievements, badges, and leaderboard rankings on social media platforms.

## 3.0 Non-Functional Requirements

### 3.1 Performance Requirements

**NFR-1**: **Response Time**

* The system shall provide real-time recommendations and updates within 7 seconds of data input or changes.

**NFR-2**: **Data Processing**

* The system shall process user input and API data with minimal latency (no more than 4 seconds delay in data update).

### 3.2 Usability Requirements

**NFR-3**: **User Interface (UI)**

* The UI shall be intuitive, easy to navigate, and provide clear access to features such as data input, real-time feedback, and dashboards.
* The UI shall be responsive across desktop and mobile devices.

**NFR-4**: **User Guidance**

* The system shall provide help documentation, tooltips, and a tutorial for new users.

## 3.3 Security Requirements

**NFR-5**: **Data Encryption**

* The system shall encrypt sensitive data, such as user credentials and profile information, using industry-standard encryption protocols (e.g., AES-256).

**NFR-6**: **Authentication and Authorization**

* The system shall require users to authenticate before accessing any personal data or dashboards.
* Authorization rules shall prevent unauthorized access to other users' data.

## 4.0 Assumptions and Constraints

* The system will assume that users have access to the internet and can input data through the web app or connected smart devices.