Project Title: GreenCart	
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Software Requirements Specification

Green Cart

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for

Green Cart

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GreenCart organization

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1. Introduction

1.1 Purpose

The purpose of the GreenCart Software Requirements Specification (SRS) is to define the key objectives, features, and operational requirements of the system. GreenCart aims to create an online platform that facilitates the sale of organic products to customers while enabling admins to manage products, orders, and customer interactions. This document serves as a guideline for developers, designers, testers, and stakeholders to ensure the development of a robust, scalable, and user-friendly platform. The SRS defines the functional and non-functional requirements necessary for successful system implementation, ensuring that user needs and business objectives are met effectively.

1.2 Scope

The scope of this project is to develop a web application that facilitates the online sale of organic products, supporting the health and well-being of patients and people in urban areas. The platform will cater to two primary stakeholders: Admin and Customers. The system aims to bridge the gap between authentic organic product suppliers and consumers seeking healthy, natural products.

This project will provide a centralized platform where Admins can manage product listings, monitor customer activity, and oversee orders. On the other hand, Customers will have access to a simple, user-friendly interface to browse, purchase, and track their orders online. The platform is dedicated to promoting healthy living through the easy availability of fresh and authentic organic products.

1.3 Definitions, Acronyms, and Abbreviations

Term	Definition
Admin	A user with permissions to manage products, orders, and customer data.
Customer	A user who browses and purchases products on the platform.
UI	User Interface - The visual elements and interaction design that users interact with on the platform.
UX	User Experience - The overall experience of a person using the system, including ease of use and satisfaction.

Term	Definition
RBAC	Role-Based Access Control - A method of restricting system access based on user roles.
CRUD	Create, Read, Update, Delete - Refers to basic operations performed on data in a database or system.

1.4 References

- https://organickart.org/#
- https://ayudaorganics.com/about/

1.5 Overview

This document outlines the system features, functional requirements, non-functional requirements, system design constraints, and other specifications necessary to develop the GreenCart platform. The document will serve as a reference for developers, testers, and stakeholders.

2. Overall Description

2.1 Product Perspective

GreenCart is a standalone system designed as a web and mobile platform that enables users to browse, purchase, and manage organic products. The system employs a three-tier architecture comprising a client-side (ReactJS), server-side (Node.js), and a database (MongoDB). This architecture ensures separation of concerns, scalability, and maintainability. The platform operates as an independent system and does not depend on any pre-existing software applications.

2.2 Product Functions

The primary functions of the GreenCart platform include the following:

- **User Authentication & Role-Based Access Control (RBAC):** Secure user login and access control to differentiate between Admins, Customers, and Guests.
- **Product Management:** Admins can add, update, delete, categorize, and manage product inventory.
- **Customer Shopping Experience:** Customers can browse available products, add products to the cart, place orders, and review products post-purchase.
- **Search and Filter:** Users can search for products by name, category, or brand and filter them using price, product type, and availability.
- **Admin Dashboard:** Admins can view sales analytics, manage orders, and track customer activity for better business decisions.

2.3 User Classes and Characteristics

The user base of the GreenCart system is divided into the following distinct classes:

- **Admin Users:** Admins are responsible for managing the system's backend operations. Their roles include adding, editing, and deleting products, managing customer profiles, overseeing orders, and monitoring system performance. Admins are expected to have basic technical proficiency to navigate the admin dashboard.

- **Customers:** Customers are end-users who browse, purchase, and review products. They access the system via web browsers or mobile devices. Customers interact with a simple and user-friendly interface to browse products, manage their cart, and view their order history. Minimal technical skills are required for this user class.

2.4 Operating Environment

The GreenCart system will operate in the following environment:

- **Web Browsers:** The system will be compatible with modern web browsers, including Google Chrome, Mozilla Firefox, and Safari. This compatibility ensures accessibility across a wide range of devices and platforms.
- **Mobile Devices:** The system will be optimized for mobile access to ensure responsiveness and seamless user experience on mobile phones and tablets.
- **Internet Connection:** A stable internet connection is required for users to access and interact with the GreenCart platform.

2.5 Design and Implementation Constraints

The following design and implementation constraints must be adhered to during development:

- **Technology Stack:** The system must be developed using ReactJS for the client-side, Node.js for the server-side, and MongoDB as the database.
- **Data Security:** All data transmitted between the client and server must be encrypted using HTTPS to protect user information from potential threats.
- **Responsive Design:** The user interface must be responsive to ensure usability on both desktop and mobile devices, providing a consistent experience across devices.
- **Payment Integration:** The platform must integrate with secure, third-party payment gateways to ensure reliable and secure payment processing.

2.6 Assumptions and Dependencies

The development and successful operation of the GreenCart system depend on the following assumptions and dependencies:

- **Internet Availability:** It is assumed that users will have access to a stable internet connection to access and interact with the system.
- **Third-Party Payment Gateway:** The platform will depend on the availability and stability of third-party payment gateways for handling online payments.
- **Cross-Browser Compatibility:** It is assumed that the web application will function correctly on major web browsers (Chrome, Firefox, Safari) without any performance issues.

3. Specific Requirements

3.1 Functional Requirements

Customer-Side Requirements

1. User Authentication

R.1 Sign Up/Login

- **Description:** Users can register for a new account or log in using their credentials to access platform features.
- **R.1.1 Create Account**
  - **Input:** User provides email, password, and personal details.
  - **Output:** Successful account creation and user can log in.
  - **State:** User enters details, system verifies them, and the account is created.
- **R.1.2 Login**
  - **Input:** Username and password are entered for login.
  - **Output:** Successful login grants the user access to their dashboard.
  - **State:** User enters credentials, the system validates them, and the user is authenticated.

2. Product Search and Filtering

R.2 Product Search and Filter

- **Description:** Users can search for products using keywords and apply filters to narrow down results.
- **R.2.1 Search Products**
  - **Input:** User enters search terms into the search bar.
  - **Output:** List of matching products is displayed.
  - **State:** User enters a query, the system retrieves results, and displays relevant products.
- **R.2.2 Apply Filters**
  - **Input:** User applies filters (e.g., category, price range) to the product list.
  - **Output:** The list of displayed products updates based on selected filters.

    - **State:** User applies filter criteria, and the system updates the product list accordingly.

3. Shopping Cart

R.3 Shopping Cart Management

- **Description:** Users can add, update, and remove products in their shopping cart.
- **R.3.1 Add to Cart**
    - **Input:** User clicks the 'Add to Cart' button for a product.
    - **Output:** The product is added to the cart, and a confirmation message is displayed.
    - **State:** User clicks 'Add to Cart,' system updates cart contents, and confirmation is displayed.
- **R.3.2 Update Cart**
    - **Input:** User changes the quantity of a product in the cart.
    - **Output:** The cart is updated, and the new total price is displayed.
    - **State:** User changes quantity, the system updates cart content and total.
- **R.3.3 Remove from Cart**
    - **Input:** User clicks 'Remove' to delete a product from the cart.
    - **Output:** Product is removed, and the updated cart is displayed.
    - **State:** User removes an item, and the system updates the cart.

4. Order Management

R.4 Order Placement and Tracking

- **Description:** Users can place orders, track their status, and view order history.
- **R.4.1 Place Order**
    - **Input:** User clicks the 'Place Order' button at checkout.
    - **Output:** The order is confirmed, and an order summary is displayed.
    - **State:** User confirms order, system processes it, and displays the order summary.
- **R.4.2 View Order History**
    - **Input:** User navigates to the order history page.
    - **Output:** List of previous orders is displayed with their status and details.

    - **State:** User navigates to the page, and the system retrieves order data for display.

Admin-Side Requirements

1. Product Management

R.5 Product Management

- **Description:** Admins can add, edit, delete, and categorize products.
- **R.5.1 Add Product**
    - **Input:** Admin enters product details (name, description, price, image).
    - **Output:** The product is added to the system, and a confirmation is displayed.
    - **State:** Admin enters product info, system saves it, and displays a confirmation message.
- **R.5.2 Edit Product**
    - **Input:** Admin modifies existing product details.
    - **Output:** The updated product is saved, and a confirmation message is displayed.
    - **State:** Admin edits product info, system updates it, and displays a confirmation message.
- **R.5.3 Delete Product**
    - **Input:** Admin selects a product and clicks 'Delete.'
    - **Output:** Product is removed from the system, and a confirmation message is displayed.
    - **State:** Admin deletes a product, system removes it, and confirmation is displayed.

2. Order Management

R.6 Order Management

- **Description:** Admins can view, track, and update customer orders.
- **R.6.1 View Orders**
    - **Input:** Admin selects 'View Orders' in the admin dashboard.
    - **Output:** List of all customer orders is displayed.
    - **State:** Admin views order list, system displays order details.

3. Customer Management

R.7 Customer Management

- **Description:** Admins can view and manage customer profiles.
- **R.7.1 View Customer Profiles**
  - **Input:** Admin navigates to the 'Customer Profiles' page.
  - **Output:** List of customer profiles is displayed.
  - **State:** Admin views list, system displays customer data.

3.2 Non-Functional Requirements

3.2.1 Usability Requirements

- The system shall have a user-friendly interface designed for both customers and admins.
- Navigation shall be intuitive, with clear labels, buttons, and breadcrumbs to guide users.

3.2.2 Reliability Requirements

- The system shall achieve 99.9% uptime, excluding scheduled maintenance periods.
- A backup system shall ensure no data loss in the event of a failure, with backups performed daily.

3.2.3 Performance Requirements

- All user interactions (e.g., page loads, search, and product filtering) shall complete within 2 seconds under normal load conditions.
- The system shall support at least 1000 simultaneous users without performance degradation.
- Data retrieval operations, such as product search or order history viewing, shall execute within 3 seconds.

3.2.4 Maintainability and Support Requirements

- The system shall use modular architecture to allow updates and feature additions with minimal impact on existing components.
- Documentation for the system's codebase and architecture shall be maintained and updated with each release.
- The system shall include a self-diagnostic feature for detecting and reporting errors to the support team.
- Software updates shall be rolled out without downtime through a zero-downtime deployment pipeline.

4. System Features

4.1 Product Management

- **Feature Description:**
  Enables Admins to manage product listings, categories, and inventory effectively.
- **Core Functionalities:**
  - CRUD (Create, Read, Update, Delete) operations for products.
  - Ability to add product details such as name, description, price, images, and categories.
  - Category-based filtering and sorting for easier management.
  - Low-stock alerts for inventory management.

4.2 Shopping Cart

- **Feature Description:**
  Facilitates customers to manage their selected products before placing an order.
- **Core Functionalities:**
  - Add, remove, and update product quantities in the cart.
  - Automatic price recalculation based on item quantity and discounts (if applicable).
  - Ability to save a shopping cart for later use (future enhancement).

4.3 Order Management

- **Feature Description:**
  Allows customers to manage their orders and track their status.
- **Core Functionalities:**
  - Customers can view past orders and order statuses.
  - Admins can update the status of orders (e.g., pending, shipped, delivered).
  - Real-time order tracking will be implemented in future updates.

4.4 Analytics & Reporting

- **Feature Description:**
  Provides Admins with insights into sales performance and customer activity.
- **Core Functionalities:**
  - Sales reports showing revenue, top-selling products, and sales trends over time.
  - Customer activity reports, including active users and purchase patterns.
  - Customizable dashboards for viewing specific metrics.

5 External Interface Requirements

5.1 System Interfaces

The system will interface with the following systems:

- **Payment Gateway:** The system will integrate with third-party payment gateways (e.g., PayPal, Stripe) to facilitate secure payment processing for customer orders.
- **Email Service Provider:** The system will use an email service to send transactional emails such as order confirmations, password resets, and notifications.
- **Geolocation API:** The system will utilize geolocation services to provide users with location-based product recommendations and delivery tracking.

5.2 User Interfaces

The system will provide the ability for users to access the GreenCart platform via the internet. There will be two main user interfaces:

- **Customer Interface:**
  - **Login Page:** Allows users to log in to their accounts.
  - **Register Page:** Allows new users to register for an account.
  - **Homepage:** Displays product categories, search options, and personalized recommendations.
  - **Product Listing Page:** Displays products with options to filter and sort by various criteria.
  - **Product Details Page:** Provides detailed information on a selected product, including images, descriptions, reviews, and an option to add to the shopping cart.
  - **Shopping Cart Page:** Displays selected products, allows users to update quantities, and proceed to checkout.
  - **Checkout Page:** Allows users to enter payment details, shipping addresses, and confirm purchases.
  - **Order History Page:** Allows users to view the status of their past orders.

- **Admin Interface:**
    - **Admin Login Page:** A secure login page for admin users.
    - **Dashboard:** Displays key performance indicators (KPIs) such as total sales, number of active users, and system alerts.
    - **Product Management Page:** Allows admins to add, update, delete, and categorize products.
    - **Order Management Page:** Allows admins to view, track, and manage customer orders.
    - **Customer Management Page:** Allows admins to view customer profiles, activity, and support requests.

5.3 Hardware Interfaces

There are no special hardware interface requirements. The system will be accessible from any device with internet connectivity, such as desktops, laptops, tablets, and smartphones.

5.4 Software Interfaces

The system will interface with the following software components:

- **Web Browsers:** The system must be compatible with modern web browsers, including Google Chrome, Mozilla Firefox, and Safari.
- **Operating Systems:** The system will support Windows, macOS, Android, and iOS for optimal user access.
- **APIs:** The system will interact with external APIs for payment processing, geolocation services, and email notifications.

5.5 Communication Interfaces

The system will use HTTPS for all communication between the client, server, and third-party APIs. Encrypted communications will ensure secure data transfers, especially for payment and personal information.

6. Other Nonfunctional Requirements

6.1 Software Quality Attributes

- **Modularity:** The system architecture shall use modular design to simplify updates and integration of new features.
- **Maintainability:** The system shall include detailed documentation for developers to ensure maintainability.
- **Usability:** The user interface shall follow a clean and intuitive design to enhance the user experience.

6.2 Business Rules

- Customers must be logged in to make purchases.
- Admins can only modify products or orders assigned to them.
- Discounts and promotions can only be created by users with specific Admin permissions.

6.3 Scalability

- The system shall be capable of scaling to support a growing number of users, products, and transactions.
- Infrastructure updates shall be implemented during low-traffic hours to minimize disruptions.

6.4 Customer Support

- Multi-channel support shall be provided, including email, live chat, and an FAQ section.

6.5 Version Control

- All updates, bug fixes, and new feature implementations shall be tracked using a version control system.
- The system shall maintain rollback capability in case of deployment failures.

6.6 Acceptance Criteria

- The final system shall be accepted after successfully passing functional, usability, and security testing.
- User acceptance testing (UAT) must be completed and approved by stakeholders before deployment.

6.7 Change Management

- A formal change management process shall be followed for all updates and new features.
- Proposed changes must be documented, reviewed, and approved before implementation.
- All changes shall undergo thorough testing before being released to the production environment.

7. Appendices

7.1 References

- IEEE SRS Standard (IEEE 29148-2011)
- Documentation for ReactJS, Node.js, MongoDB
- https://organickart.org/#
- https://ayudaorganics.com/about/