Software Requirements Specification

for

ShopEasy: Your Favourite E-Commerce System

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Chapter 1

Introduction

1.1 Purpose

The purpose of this SRS document is to provide a detailed description of the system requirements for the project. The system will focus on creating an e-commerce platform with functionalities such as warehouse management, product categorization, user authentication, payment gateway, order tracking, and customer feedback. This document outlines the functional and non-functional requirements of the system to ensure proper development and user satisfaction. The purpose of this project is to design and develop a comprehensive e-commerce platform that specializes in providing home décor, wearables, artifacts, antiques, and collector items from various cultural and ethnic groups around the world. As the global community becomes more interconnected, there is a growing demand for unique cultural items that reflect diverse traditions, craftsmanship, and history. However, the current market lacks a centralized platform where consumers can easily access and purchase such items. This platform will bridge that gap, offering a one-stop online marketplace for consumers who are passionate about global cultures and traditions. The platform will focus on curated products such as Turkish traditional caps, Bhutanese scarves, Mongolian home décor, Italian prints/wallpaper, Gurkha kukris, and much more. It will cater to both collectors and everyday consumers looking for unique home décor and wearables that carry cultural significance. Key objectives of the project: Provide a digital platform that aggregates diverse cultural and ethnic items from around the world. Enable a seamless shopping experience with user-friendly features such as product categorization, payment gateways, and GPS-based order tracking. Support vendors and artisans from various regions to showcase their unique items to a global audience. Offer consumer-oriented features like product feedback, promotions, and secure online payments. Create an open market segment, addressing the need for cultural items in the e-commerce industry that is currently underserved. The platform will not only satisfy the need for such a marketplace but also provide a novel business opportunity within a largely untapped market, blending digital commerce with global cultural heritage.

1.2 Intended Audience

This document is intended for multiple audiences, each playing a crucial role in the development and success of the system:

- **Developers:** The primary audience, responsible for building the system according to the detailed specifications outlined in this document. Developers will use the functional and non-functional requirements provided here as a blueprint to implement the system's features and ensure it meets the outlined technical standards.
- **Testers:** This document serves as a guide for testers to validate and verify that the system's functionalities are working as expected. Testers will use the specific requirements to conduct various tests, including unit tests, integration tests, and user acceptance tests, ensuring the system is robust, secure,

and performs optimally.

- **Project Managers:** Project managers will utilize this document to oversee and track the project's development lifecycle, ensuring that the team follows the scope, timeline, and budget. This document provides clear milestones and deliverables, helping project managers ensure that the system progresses according to plan and that any issues or risks are identified and managed effectively.
- **Stakeholders:** Business stakeholders, including executives and investors, will refer to this document to ensure that the system meets the business objectives and user needs. It serves as a reference for ensuring alignment between the development process and the overall strategic goals of the organization, ensuring that the final product delivers value to both the business and its users.

By catering to these audiences, the document ensures that all team members are aligned on the system's objectives and requirements, promoting clear communication and efficient collaboration throughout the development process.

1.3 Intended Use

The system is designed to function as a comprehensive online e-commerce platform, catering to both customers and internal staff. For customers, the platform will provide an intuitive shopping experience where they can browse a wide range of products, add desired items to their shopping cart, proceed with secure online payments, and track the status of their orders in real time. Additionally, users will have the ability to provide feedback and product reviews, enhancing the customer interaction and fostering trust in the platform. On the other hand, internal staff, including warehouse managers and administrators, will use the system to manage the backend operations. Warehouse managers will be able to efficiently oversee inventory, update stock levels, and manage the addition or removal of products. Administrators will have access to system management tools, allowing them to monitor user activity, manage product categories, apply promotions or discounts, and ensure the smooth operation of the platform. Overall, the system aims to streamline the shopping process for customers while optimizing operational efficiency for internal staff, ensuring a seamless experience from product browsing to post-purchase support.

1.4 Product Scope

The e-commerce system is designed to provide a complete and seamless shopping experience by allowing users to browse through a well-organized and categorized list of products, select items of interest, and make purchases through an integrated and secure payment gateway. In addition to purchasing products, users will be able to track their orders in real-time, from the moment of purchase to final delivery, ensuring transparency and customer satisfaction. To enhance user interaction, the system will offer essential user authentication features, including secure login, registration, and account management, allowing customers to maintain personal accounts for a more personalized shopping experience. The system will also include a robust feedback mechanism, where users can provide reviews and ratings on products, helping to build trust and facilitate informed purchase decisions. On the backend, the system will offer efficient warehouse management tools, enabling internal staff to handle product inventories, manage stock levels, and track the flow of products through the system. The platform will also allow administrators to monitor system operations, manage product listings, and handle customer service inquiries. The primary goal of the system is to deliver a smooth and intuitive shopping experience for customers while optimizing the backend processes for internal staff, ensuring both front-end usability and operational efficiency in managing products, orders, and customer relationships.

1.5 Risk Definition

Several potential risks could impact the successful operation of the e-commerce platform, including:

- **Security Breaches:** Without proper security measures, sensitive customer data, such as personal information and payment details, could be exposed to unauthorized access or cyberattacks. Failure to adhere to industry-standard security protocols (e.g., SSL encryption, PCI-DSS compliance) may result in data breaches, legal consequences, and loss of customer trust.
- **Payment Gateway Failure:** The failure of the integrated payment gateway during transaction processing could lead to failed or incomplete transactions, causing a direct loss of revenue and leading to customer dissatisfaction. Ensuring the stability and reliability of the payment gateway is critical to maintaining a positive customer experience and ensuring the continuity of sales.
- **Performance Bottlenecks:** High traffic or increased user activity on the platform may lead to performance slowdowns, causing delayed page load times or transaction processing issues. This could negatively impact the user experience, leading to frustration, cart abandonment, and potential loss of customers. Adequate infrastructure and load balancing must be implemented to handle peak traffic efficiently.

Addressing these risks through robust security measures, payment gateway redundancy, and performance optimization will be essential to ensuring the long-term success and stability of the platform.

Chapter 2

Overall Description

2.1 User Classes and Characteristics

- **End Users (Customers):** These are general public users who will interact with the platform to browse various products, make purchases, and track their orders. They seek a user-friendly experience with intuitive navigation and seamless transactions.
- **Warehouse Managers:** These users are responsible for overseeing the inventory within the system. They need efficient tools for managing stock levels, adding or removing products, and ensuring that the inventory data is up-to-date and accurate.
- **Administrators:** Administrators have the highest level of access within the system, responsible for overall management tasks. This includes overseeing user accounts, managing product listings, implementing promotions and discounts, and ensuring the smooth operation of the platform.

2.2 User Needs

- **Customers:** Customers need an easy-to-navigate platform that allows them to browse products effortlessly, make secure purchases, and track their orders from the moment of purchase to delivery. They also appreciate the ability to provide feedback on products they purchase.
- **Warehouse Managers:** Warehouse managers need an effective system for inventory management that enables them to efficiently update stock levels, manage product additions or removals, and generate inventory reports as necessary.
- **Administrators:** Administrators require comprehensive tools to manage users, monitor product listings, handle order statuses, and apply promotional campaigns. They also need access to analytical tools to assess system performance and user engagement.

2.3 Operating Environment

The system will function as a web-based application accessible on modern web browsers, including Google Chrome, Mozilla Firefox, Microsoft Edge, and Safari. It will be designed to be mobile-responsive, ensuring that users can access the platform seamlessly on smartphones and tablets. This versatility allows users to engage with the e-commerce platform anytime and anywhere.

2.4 Constraints

- **System Uptime:** The system must maintain a high availability rate, with an uptime target of 99.9%. This is essential to ensure that users can access the platform without interruptions.
- **Compliance:** The system must adhere to relevant security standards, such as PCI-DSS, particularly in the handling of payment information. Compliance is crucial to safeguarding customer data and maintaining trust.
- **Performance:** The system should be designed to handle up to 10,000 concurrent users without performance degradation. This capability is vital to ensure that the platform remains responsive and user-friendly during peak traffic periods.

2.5 Assumptions

Several assumptions have been made regarding the operation and use of the e-commerce system, which are crucial for its design and implementation:

- **Cloud Hosting:** The system will be hosted on a cloud platform, allowing for scalability and flexibility in resource allocation as user demand fluctuates. This hosting strategy will enable the application to adapt to varying traffic levels and provide a reliable infrastructure that can grow with the business needs.
- **Internet Access:** It is assumed that users will have reliable internet access to interact effectively with the platform. This assumption is fundamental to ensuring that customers can navigate the site, complete transactions, and receive timely updates about their orders. Considerations will be made for optimizing performance over slower connections.
- **Inventory Management by Warehouse Managers:** Warehouse managers will utilize the system's available functionalities to manually manage product inventory. They will rely on the tools provided within the platform to efficiently track stock levels, process orders, and ensure accurate inventory records. Training and support will be provided to warehouse staff to maximize their effectiveness in using these tools.

Chapter 3

Requirements

3.1 Functional Requirements

3.1.1 3.1.1 Add/Remove Product to/from Warehouse

As a warehouse manager, I want to add a new product to the inventory by providing its name, SKU, quantity, and price so that I can keep the inventory updated.
As a warehouse manager, I want to remove products from the inventory so that I can manage the stock effectively.
As a warehouse manager, I want the system to validate product details before adding or removing them so that I can avoid errors in inventory management.
As a warehouse manager, I want the system to update product stock in real-time after any addition or removal so that I always have accurate inventory information.

3.1.2 3.1.2 Add/Remove Product to/from Cart

As a user, I want to add a product to my shopping cart with a single click so that I can easily select items for purchase.
As a user, I want to remove items from my cart so that I can modify my selections as needed.
As a user, I want the system to display the total cart value in real time so that I can keep track of my expenses while shopping.

3.1.3 3.1.3 Categorize Products for Frontend

As a vendor, I want to assign categories to each product during product creation so that users can easily find items based on their interests.
As a user, I want to see a categorized list of products on the frontend with filtering options so that I can navigate the inventory effectively.
As a user, I want to combine multiple filters (e.g., "Home Décor" and "Asian") to narrow down my search results so that I can find specific items quickly.
As a user, I want the product listing to update dynamically without page reloads so that my browsing experience is smooth.
As a user, I want SEO-friendly URLs for category pages so that I can easily share product links.

3.1.4 3.1.4 Online Payment Gateway

As a user, I want a user-friendly payment form that captures my payment details so that I can complete my purchase easily.
As a user, I want the system to integrate with reliable third-party payment gateways like PayPal and Stripe so that I have multiple options for secure payment.
As a user, I want to receive a clear confirmation message after successful payment processing so that I am reassured my transaction is complete.

3.1.5 3.1.5 Order Tracking

As a user, I want to track the status of my orders after they have been placed so that I can stay informed about my purchases.
As a user, I want to receive automatic email notifications when my order status changes so that I am kept up-to-date in real-time.
As a user, I want to access a detailed view of my order, including tracking numbers and estimated delivery dates, so that I have comprehensive information about my purchase.

3.1.6 3.1.6 GPS Integration for User Location

As a user, I want the system to automatically detect my current location during checkout so that I can save time filling out my shipping information.
As a user, I want to see my detected location in a user-friendly format so that I can confirm or edit my address easily.
As a user, I want to have the option to allow or deny location access so that I can maintain control over my privacy.

3.1.7 3.1.7 Product Feedback

As a user, I want to submit product ratings and reviews so that I can share my feedback with others.
As a user, I want to see other users' reviews on the product page so that I can make informed purchase decisions.

3.1.8 3.1.8 User Authentication (Login/Logout)

As a user, I want to register for an account by providing a valid email address and creating a secure password so that I can access personalized features.
As a user, I want to log in using my registered email address and password so that I can securely access my account.
As a user, I want the login process to include a "Remember Me" option so that I can easily return to my account.
As a user, I want to receive a confirmation email after registration so that I can verify my account.
As a user, I want to reset my password if I forget it so that I can regain access to my account securely.

3.1.9 3.1.9 Registration

As a user, I want to fill out a registration form to capture my details, such as name, email, and password, so that I can create an account.
As a user, I want the system to validate my inputs and display error messages if needed so that I can correct any mistakes during registration.
As a user, I want to create an account using my existing Google/Facebook accounts and link it with this application using OAuth.

3.1.10 3.1.10 Contact Us

As a user, I want to send inquiries through a contact form so that I can communicate with customer support easily.
As a support staff member, I want to receive user inquiries forwarded to a designated email address so that I can assist customers effectively.
As a support staff member, I want the system to store submitted contact forms in a database for future reference so that we can track and resolve issues.
As a user, I want the contact form to include CAPTCHA functionality to avoid spam submissions so that I can ensure my query is seen by the support team.
As a user, I want to receive confirmation of successful form submission so that I know my inquiry has been sent.

3.1.11 3.1.11 About Us

As a user, I want to see static content on the "About Us" page so that I can learn more about the platform.
As an administrator, I want to update the content on the "About Us" page so that the information remains accurate and relevant.
As a user, I want to see social media links and contact details on the "About Us" page so that I can connect with the platform.
As a user, I want the "About Us" page to be responsive and mobile-friendly so that I can access it easily on any device.
As a user, I want the "About Us" page to be accessible so that all users can understand the platform's mission and values.

3.1.12 3.1.12 Paid Promotion and Discounts

As an administrator, I want to define promotion periods and discount percentages so that I can manage marketing campaigns effectively.
As a user, I want the system to apply promotions and discounts automatically during checkout so that I can easily benefit from deals.
As a user, I want to validate discount codes and see the updated total price after applying a discount so that I know I'm getting the best deal.
As a user, I want to be notified if a discount code is invalid or expired so that I can avoid confusion during checkout.
As an administrator, I want to enforce limits on the usage of discount codes (e.g., one-time use, per-user limits) so that the promotions are managed effectively.

3.2 Non-Functional Requirements

Non-functional requirements define the quality attributes, system performance, and constraints of the e-commerce platform. They are critical to ensuring that the system not only functions correctly but also provides a positive user experience. Below are the key non-functional requirements for the system:

- **Performance:** The system must respond to user actions within 3 seconds to ensure a smooth and efficient user experience. This includes page loading times, transaction processing times, and search query responses. Maintaining optimal performance is essential to prevent user frustration and cart abandonment.
- **Security:** All data transmissions must utilize SSL encryption to protect sensitive information, such as personal user details and payment data, during transit. Additionally, the system must implement secure authentication methods (e.g., multi-factor authentication) and comply with industry standards, such as PCI-DSS, to safeguard against potential breaches.

- **Scalability:** The architecture of the system should support scalability, enabling it to handle up to 10,000 concurrent users without performance degradation. This includes efficient database management and the ability to dynamically allocate resources based on user demand to accommodate traffic spikes during peak shopping periods.
- **Usability:** The system must be designed for ease of navigation, ensuring that users can find products quickly and efficiently. The interface should be intuitive and user-friendly, allowing both tech-savvy and non-tech-savvy users to interact with the platform effortlessly. Additionally, the system should be mobile-friendly, providing a seamless experience across various devices and screen sizes.
- **Reliability:** The system should ensure high reliability, with an uptime of 99.9%. This means that the system must be robust and capable of handling unexpected failures without disrupting the user experience. Regular backups and failover mechanisms should be implemented to prevent data loss and ensure continuity.
- **Maintainability:** The system should be designed with maintainability in mind, allowing for easy updates, bug fixes, and feature enhancements. This includes clear code documentation, modular architecture, and the ability to deploy changes without significant downtime.
- **Accessibility:** The platform should adhere to accessibility standards (such as WCAG 2.1) to ensure that it is usable by individuals with disabilities. Features such as keyboard navigation, screen reader compatibility, and alternative text for images should be implemented to make the site inclusive for all users.
- **Data Integrity:** The system must ensure data integrity, meaning that all data entered, stored, and processed must be accurate and consistent. This includes implementing validation checks on user inputs and maintaining accurate inventory levels to prevent discrepancies.
- **Internationalization:** The system should support multiple languages and currencies to accommodate a global user base. This allows users from different regions to interact with the platform in their preferred language and currency, enhancing user satisfaction and engagement.

Appendices

Appendix A

Glossary

- **E-commerce:** A platform that facilitates the buying and selling of goods and services over the internet.
- **SKU (Stock Keeping Unit):** A unique identifier for each product in the inventory.
- **PCI-DSS (Payment Card Industry Data Security Standard):** A set of security standards to ensure that companies processing, storing, or transmitting credit card information maintain a secure environment.
- **SSL (Secure Sockets Layer):** A security protocol for establishing encrypted links between a web server and a browser.
- **Payment Gateway:** A service that authorizes credit card or direct payments for online purchases.
- **User Authentication:** The process of verifying the identity of a user attempting to access a system.
- **Inventory Management:** The process of overseeing and controlling the ordering, storage, and use of products.
- **Multi-filtering:** The ability to apply multiple filters to a set of products for refined search results.
- **AJAX (Asynchronous JavaScript and XML):** A technique used to create dynamic and fast web applications by exchanging data with the server in the background.
- **Django Channels:** A framework for handling real-time web functionality in Django.
- **Scalability:** The capability of a system to handle growing amounts of work or its potential to accommodate growth.
- **Uptime:** The amount of time a system is operational and accessible.
- **User Feedback:** Reviews or comments provided by users regarding their experience with a product or service.
- **CAPTCHA:** A challenge-response test used to determine whether the user is human.
- **Order Tracking:** A feature that allows users to view the status of their purchase from order placement to delivery.
- **Geolocation API:** Technology that uses GPS or IP-based methods to identify a user's physical location.
- **Internationalization:** The process of designing software to adapt to various languages and regions without requiring engineering changes.
- **Accessibility:** Ensuring a system is usable by people with disabilities, often adhering to standards such as WCAG.

- **Load Balancing:** Distributing workloads across multiple computing resources to prevent any single resource from being overwhelmed.
- **Order Fulfillment:** The process of completing an order from the point of sale to delivery.