

Software Requirements Specification for Kenakata- An E-Commerce Website

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Section 1

Introduction

1.1 Purpose

This Software Requirements Specification (SRS) document outlines the software requirements for "Kenakata", an E-Commerce Website, version 1.0. The aim of this website is to provide a digital marketplace for customers and sellers. In detailed view, this website provides a digital storefront for sellers to list their products and a seamless shopping experience for customers to browse, purchase, and track their orders. The main purpose of this online platform is to establish a secure and scalable online digital storefront. It also provides a unified platform where customers and sellers can easily connect to conduct product sales and purchases. The document is also important to outline the functional, non-functional, and technical aspects of the system to ensure a smooth development process. It serves as a guide for all project members to understand the objectives, operations, and expected performance of the website. The main goal of this system is to simplify online shopping, ensuring users can browse, purchase, and sell products safely and efficiently. This document helps maintain a common understanding between all stakeholders involved in the project.

1.2 Intended Audience

The Software Requirements Specification document is intended for all project stakeholders, including administrators, business analysts, developers, project managers, testers, and investors. The primary stakeholders include:

- Administrators: Responsible for system management and oversight.
- Business Analysts (BAs): To understand business processes and requirements.
- Project Managers (PMs): To oversee the project development process.
- Developers: For system coding and implementation.
- QA/QC Engineers: For developing test cases and ensuring quality.
- End-users (Customers and Sellers): The primary users of the system.
- Marketing Staff: To understand platform features for promotion.
- Testers: Responsible for validating system functionalities.

- Investors: To evaluate the system's scope, potential, and market value.

This SRS isn't just a document; it's a tool. It cuts through the confusion by tailoring information, so every stakeholder knows their part, ensuring we're all working toward the same goal for the E-commerce website.

1.3 Intended Use

The SRS will serve as a reference guide throughout the project lifecycle. The intended audience of our SRS has been declared in the previous section. In this section, we will discuss how they can use the SRS for better understanding.

1.3.1 Administrators

- They will use the SRS to understand the system requirements, deployment considerations, and potential administrative tasks associated with the E-Commerce System.

1.3.2 Business Analysts (BAs)

- BAs play a crucial role in understanding business needs and translating them into functional requirements.
- The SRS provides detailed information about the business logic, user interactions, and functional specifications, aiding BAs in their analysis and documentation.

1.3.3 Project Managers (PMs)

- Project managers use the SRS to understand the scope of the project, user needs, and constraints.
- They ensure that the project aligns with user expectations and oversee that the development process meets the specified requirements.

1.3.4 Developers

- Developers use the SRS as their main guide, checking it constantly to understand exactly what the app needs to do, how users will interact with it, and any technical limitations they have to respect.
- They treat the functional requirements like a checklist for building the system's features, making sure everything they create meets the specified rules and constraints.

1.3.5 QA/QC Engineers

- Quality assurance and quality control engineers focus on ensuring the reliability and performance of the system.
- The SRS provides a basis for developing test cases and validating that the implemented system meets the specified quality standards.

1.3.6 Users (Customers and Sellers)

- For users (Customers and Sellers), their interaction with the system primarily occurs through functional requirements that they will give to achieve better visualization of the system.

1.3.7 Stakeholders (Leadership, Marketing, Logistics)

- Stakeholders refer to the SRS to understand the product scope, target user classes, and characteristics to align marketing strategies and communicate the product effectively.

1.3.8 Testers

- Testers utilize the SRS to create test scenarios and validate expected system behaviors.
- They ensure that the system meets the specified functional and non-functional requirements.

1.3.9 Investors

- Investors are interested in understanding the project's scope, potential returns, and associated risks.
- The SRS offers a comprehensive overview of the E-Commerce System, helping investors make informed decisions about supporting the project.

1.4 Product Scope

The E-Commerce Website System is like an online shopping community. It allows the sellers to sell their products without any hassle and helps the customers to find their desired products to buy.

1.4.1 Purpose

The purpose of the E-Commerce Website is to create a digital platform that connects customers and sellers in a secure and efficient marketplace. It enables sellers to showcase their products and customers to purchase them through an easy-to-use interface. The system's goal is to simplify online shopping.

1.4.2 Benefits and Objectives

- **Helping Sellers Make Money:** It allows sellers to make money by selling their products.
- **Makes Buying Product Easier:** It makes buying product easier for the customers.
- **Building Trust:** By letting people give reviews, it helps everyone trust each other more.
- **Growing the Marketplace:** By offering many different things to sell, it makes the system more popular and helps seller make more money.
- **Effortless Convenience:** Makes shopping accessible 24/7 from anywhere, removing the hassle of physical stores, crowds, and travel.
- **Wider Selection:** Offers customers a massive catalog of products and brands—far greater than any single physical location—ensuring they always find exactly what they need.

1.4.3 Alignment with Corporate Goals

This E-Commerce system aligns with the goal of digital transformation, market expansion, and creating a new, scalable revenue stream by leveraging the growing trend of online shopping. The project aligns with corporate goals such as innovation, customer satisfaction, and sustainable revenue growth. It also contributes to long-term business scalability and competitive advantage in the online marketplace.

1.4.4 Relation to Business Strategies

The development of this website complements the organization's business strategies by integrating technology with customer-centric services. It provides an online sales channel that reduces physical infrastructure costs while reaching a broader audience. The system's design focuses on increasing operational efficiency and improving marketing through digital promotions. This ensures that the company stays adaptive and relevant in a rapidly evolving e-commerce environment.

1.5 Risk Definitions

The Software Requirement Specification of risk in potential that users (both Customers and Sellers) may not fully adhere to platform policies, terms of use, or ethical guidelines. This non-compliance could lead to issues reported to administrators, impacting the seamless experience intended for all participants and potentially compromising the overall integrity of the E-Commerce System.

1.5.1 User Inactivity

Risk that users (both Customers and Sellers) may not actively participate, potentially affecting the collaborative community-building aspect and the overall success of the platform.

1.5.2 Administrator Workload

Risk that administrators may face a high workload, especially in handling user issues and enforcing policies, potentially impacting the seamless experience for participants.

1.5.3 Communication Breakdown

Risk that stakeholders may interpret the SRS differently, potentially leading to misalignment in project understanding and objectives.

1.5.4 Limited User Reference

Risk that users may not refer to the SRS directly, potentially resulting in a disconnect between their expectations and the delivered system.

1.5.5 Changes in Project Scope

Risk that unforeseen changes in project scope and requirements may not be promptly reflected in the SRS, leading to potential misguidance for developers, testers, and project managers.

1.5.6 Changing Stakeholder Needs

Risk that evolving stakeholder needs and priorities may not be adequately reflected in the initially tailored SRS, requiring ongoing communication and updates.

1.5.7 Security Vulnerabilities

Risk that potential security vulnerabilities may arise, posing a threat to user data, financial transactions, and the overall integrity of the platform, necessitating robust security measures.

1.5.8 Low Customer Retention

There is a risk that users may not return to the platform if they face poor service quality, technical issues, or lack of product variety. Continuous monitoring of customer feedback is necessary to identify dissatisfaction early.

1.5.9 Payment Gateway Failures

Payment gateway downtime or transaction errors pose a significant risk to system reliability. Failed transactions can lead to order cancellations, refund complications, and customer dissatisfaction. Such incidents may also cause disputes between buyers and sellers.

Section 2

Overall Description

2.1 User Classes and Characteristics

In this E-Commerce system, user classes can be distinguished to cater to the specific roles and needs of Customers, Sellers and administrators.

2.1.1 User Class: Customers

Characteristics:

- Customers actively browse the platform to explore products.
- They engage in purchasing products.
- Their main goal is to complete purchases quickly and safely without technical or payment interruptions.
- They manage their accounts, ensuring their profiles are up-to-date and reflecting accurate information.
- They need an easy-to-navigate interface, secure payment options, and accurate product descriptions to make informed purchase decisions.
- Customers expect features like product search, filtering, order tracking, and live customer support.

2.1.2 User Class: Sellers

Characteristics:

- They require tools to upload product information, set prices, update stock, and track sales performance.
- They manage the availability and status of their listed products, marking them as available or unavailable for sell.

- Sellers engage in communication with potential customers, responding to inquiries, negotiating terms, and coordinating the selling process.
- Sellers depend on the system's reliability to ensure smooth order processing and payment handling.
- Their activities directly affect the platform's product availability and overall quality.
- The system must ensure that sellers have a secure and efficient dashboard for managing their business operations.
- Customers manage their user accounts, keeping their profiles updated with accurate information.

2.1.3 User Class: Administrators

Characteristics:

- Admins have access to comprehensive controls, allowing them to manage and monitor all aspects of the Online Shopping system.
- Admins manage user accounts, ensuring accuracy, compliance with policies, and a secure user base.
- They handle and resolve issues reported by users, ensuring a seamless experience for all participants.
- Admins enforce platform policies, ensuring that users adhere to terms of use and ethical guidelines.
- Admins implement and manage security measures to safeguard user data, financial transactions, and the overall integrity of the platform.
- Admins serve as a central communication hub.

Tailoring the system to these user classes ensures that customers and sellers experience a seamless buying and selling process, while administrators have the necessary tools to manage and maintain the overall functionality of the platform.

2.2 User Needs

This section of the Software Requirements Specification (SRS) articulates the specific requirements and expectations of the end-users, encompassing both sellers and buyers, within the context of the E-Commerce System.

2.2.1 Customers

- Find Items Easily: Customers need to search, filter, and sort the products quickly to find exactly what they want.
- Clear Product Info: They must see big pictures, the correct price, item details, and real customer reviews before they buy.
- Simple Buying Steps: The process must be easy. Customers need to quickly manage their cart, choose their address, and pay without any stops.
- Safe Payment Options: Customers need many payment choices (like card or cash). The system must keep all their money information safe.
- Manage Their Account: They need an easy place to check their past orders, save shipping addresses, and update their passwords.
- Quick Help: Customers must be able to find answers fast using FAQs or the Contact page on any device they use.

2.2.2 Sellers

- Easy Product Listing: Sellers need a simple form to quickly upload product details, images, and set prices.
- Manage Orders: They must have tools to see new orders, confirm shipments, and update order status (like 'Shipped' or 'Delivered').
- Talk to Customers: They must have a simple way to answer questions from shoppers about their products or an order.
- Update Stock Quickly: Sellers need a tool to change the number of items they have for sale (inventory) so they don't sell something that is out of stock.
- See Performance: They need reports to see which products sell best and how many people look at their listings.

2.2.3 General User Needs

- User Authentication and Authorization: A secure and user-friendly authentication system is crucial, ensuring that users can access and manage their accounts securely.
- Accessibility and Intuitiveness: The system should be accessible to users with varying levels of technological proficiency, offering an intuitive interface for a positive user experience.
- Notifications: Users should receive timely notifications about order status, communication updates, and other relevant information to stay informed about their transactions.

2.3 Operating Environment

2.3.1 Hardware Platform

- Desktops: Intel Core i5 processor or equivalent, 8GB RAM, 256GB SSD or higher
- Laptops: Intel Core i3 processor or equivalent, 4GB RAM, 128GB SSD or higher
- Mobile Devices: iOS devices (iPhone 6S and above), Android devices (running Android 8.0 and above)

2.3.2 Operating System and Versions

- Windows: Windows 10 (64-bit), Windows 11 (64-bit)
- macOS: macOS Catalina (10.15) and above
- Linux: Ubuntu 20.04 LTS and above, Fedora 33 and above
- Mobile: iOS 13 and above, Android 9.0 and above

2.3.3 Software Components and Applications

- Google Chrome (latest stable version)
- Mozilla Firefox (latest stable version)
- Microsoft Edge (latest stable version)
- Safari (latest stable version)

2.3.4 Database Compatibility

- MySQL (version 8.0)
- PostgreSQL (version 13)
- MongoDB (version 4.4)

2.3.5 Interoperability

- The system utilizes RESTful APIs and adheres to JSON data interchange standards, ensuring compatibility with third-party services and applications.

2.3.6 Network Requirements

- The system requires a stable internet connection with a minimum bandwidth of 5 Mbps for optimal performance.
- It supports both wired (Ethernet) and wireless (Wi-Fi) network connections.

2.3.7 Security Considerations

- The system employs TLS encryption (SSL certificates) for secure data transmission.
- It's compatible with industry-standard firewalls and security software to ensure data protection.

2.4 Constraints

2.4.1 Technical Constraints

- Selection of appropriate frameworks and technologies for secure payment processing and user authentication.
- Consideration of scalability as the user base grows.

2.4.2 Time Constraints

- Development phases with set milestones for feature implementation and testing.
- Launch deadline considerations based on market analysis.

2.4.3 Budget Constraints

- Allocation of resources for development, hosting, and potentially marketing efforts.

2.4.4 Regulatory and Compliance Constraints

- Compliance with data protection laws, especially regarding user information and payment details.
- Consideration of any legal aspects related to rental agreements and liabilities.

2.4.5 Resource Constraints

- Availability of skilled development resources and their expertise in the required technologies.

2.5 Assumptions

The Software Requirement Specification in expectation that users, including both Customers and Sellers, will actively participate in platform activities, such as browsing, initiating transactions,

and managing their accounts. This assumption forms the basis for the seamless selling and buying processes envisioned for the E-Commerce System.

2.5.1 User Participation

Assumes that users (both Customers and Sellers) will actively engage with the platform, listing products, initiating transactions, and following through with the buying and selling process.

2.5.2 User Proficiency

Assumes that both Customers and Sellers have a basic understanding of online platforms, allowing them to navigate and utilize the system effectively.

2.5.3 Administrator Authority

Assumes that administrators have the necessary skills and authority to manage and monitor all aspects of the E-Commerce system, ensuring a secure and compliant user base.

2.5.4 Document Accessibility

Assumes that all intended users have access to the SRS and can comprehend its content effectively, fostering a unified understanding of the project.

2.5.5 Document Relevance

Assumes that the tailored information in the SRS accurately addresses the specific needs and concerns of each stakeholder group.

2.5.6 Aligned Objectives

Assumes that the information provided in the SRS accurately aligns with the objectives and expectations of developers, testers, project managers, stakeholders, and users.

2.5.7 Stakeholder Collaboration

Assumes effective collaboration and communication among diverse stakeholders, allowing for a shared understanding of the Software Requirements Specification (SRS).

2.5.8 Consistent Connectivity

Assumes that users, both Customers and Sellers, have consistent and reliable internet connectivity for seamless interaction with the E-Commerce System.

Section 3

Requirements

3.1 Functional Requirements

3.1.1 User Registration and Authentication

As a user (Customer or Seller), I want to access the system and register on the platform with my email and user information verified for system access. I want to fill out the registration form with my username, password, email, address and phone number and submit it to have a verified account.

Success

- After successful submission, a “Terms and Conditions” form is shown.
- If ‘I agree’ is chosen, the registration information is passed to the admin panel.
- The user receives a confirmation email within 72 hours after admins verify it.
- If the provided login credentials are valid, the user is redirected to the homepage successfully.
- Access for a particular role (customer or seller) is granted.

Failure

- If the admin disapproves, user receives a notification with details about the issue.
- If the user disagrees with the “Terms and Conditions,” the user is redirected to the registration page.
- System displays “Invalid user id or password”.
- System redirects the user to the login page.

3.1.2 Product Listing and Management

As an admin or seller, I want to add, update, and delete products so that users can view current product information.

Success:

- Admin successfully adds or edits product details.
- Users can see updated product information in listings.

Failure:

- Invalid data prevents product creation or update.
- Product not visible due to missing details or database error.

3.1.3 Product Search and Filtering

As a user, I want to search and filter products so that I can easily find what I'm looking for.

Success:

- System returns matching products based on search or filters.

Failure:

- No results found for invalid queries.
- Search fails due to missing or corrupted product data.

3.1.4 Product Details Viewing

As a user, I want to view detailed information about a product so that I can make an informed purchase.

Success:

- Product details load with full information and images.

Failure:

- Product details fail to load due to missing data or connection issues.

3.1.5 Add to Cart and Wishlist

As a user, I want to add products to my cart or wishlist so that I can purchase or save them later.

Success:

- Product added successfully to cart or wishlist.
- Quantity and price update dynamically.

Failure:

- Operation fails if user is not logged in.
- Product unavailable or out of stock.

3.1.6 Checkout and Order Placement

As a user, I want to review and confirm my order so that I can complete my purchase securely.

Success:

- User confirms order and receives confirmation message.

Failure:

- Checkout fails due to missing details or payment errors.

3.1.7 Payment Processing (COD, Card, Mobile Banking)

As a user, I want to select and complete payment via COD, card, or mobile banking so that I can pay conveniently.

Success:

- Payment processed successfully and order confirmed.

Failure:

- Payment gateway fails or incorrect payment details entered.

3.1.8 Order Tracking

As a user, I want to track my order status so that I know when it will arrive.

Success:

- Order status updates correctly at each delivery stage.

Failure:

- Tracking unavailable due to system or partner API error.

3.1.9 Review and Rating System

As a user, I want to rate and review products so that I can share feedback and help others.

Success:

- Review submitted and displayed under the correct product.

Failure:

- Review fails if required fields are missing or user not logged in.

3.1.10 Return and Refund Process

As a user, I want to request a return or refund so that I can get compensation for defective items.

Success:

- Return request submitted and processed by admin.

Failure:

- Request denied if return period expired or product not eligible.

3.1.11 Discount and Coupon Management

As an admin, I want to manage discount codes and coupons so that I can offer promotions to users.

Success:

- Coupon created, validated, and applied successfully.

Failure:

- Coupon expired or invalid for selected products.

3.1.12 Live Chat Support

As a user, I want to chat with customer support in real time so that I can get help with issues.

Success:

- Chat initiated and messages delivered properly.

Failure:

- Chat service unavailable or connection lost.

3.1.13 Inventory Management (Admin)

As an admin, I want to manage product inventory so that stock levels are accurate and updated.

Success:

- Inventory updates automatically after each sale or restock.

Failure:

- Stock count incorrect due to sync or input errors.

3.1.14 Seller Verification and Monitoring

As an admin, I want to verify sellers so that only trusted sellers can list products.

Success:

- Seller account verified and approved successfully.

Failure:

- Verification rejected due to invalid or missing credentials.

3.1.15 Sales Report Generation

As an admin, I want to generate sales reports so that I can analyze performance and trends.

Success:

- Report generated with accurate data and downloadable format.

Failure:

- Report fails due to missing data or system error.

3.1.16 Notification System

As a user, I want to receive notifications about orders, offers, and updates so that I stay informed.

Success:

- Notifications sent successfully through email or dashboard.

Failure:

- Notification not delivered due to incorrect settings or server issues.

3.1.17 Wishlist Sharing

As a user, I want to share my wishlist with others so that they can view or buy items for me.

Success:

- Wishlist link generated and shared successfully.

Failure:

- Sharing fails due to privacy settings or invalid link.

3.1.18 Delivery Partner Integration

As an admin, I want to integrate delivery partners so that users can track their shipments automatically.

Success:

- Delivery status updates in sync with partner APIs.

Failure:

- Integration fails due to invalid API key or network issues.

3.2 Non-Functional Requirements

3.2.1 Performance Requirements

- **Response Time:** The system should respond to user actions within 2 seconds under normal operating conditions to ensure a responsive user experience.
- **Scalability:** The system must be scalable to handle a 20% increase in concurrent users during peak times without significant degradation in performance.

3.2.2 Safety Requirements

- **User Data Protection:** The system must implement robust measures to ensure the confidentiality and integrity of user data to prevent unauthorized access or data breaches.
- **Transaction Integrity:** In the event of a system failure or interruption, the system should have mechanisms in place to recover and maintain the integrity of ongoing transactions.

3.2.3 Security Requirements

- **User Authentication:** Users must undergo secure authentication processes, including multifactor authentication, to ensure the security of user accounts.
- **Data Encryption:** All sensitive user data, including personal information and financial transactions, must be encrypted during transmission and storage.

3.2.4 Software Quality Attributes

- **Usability:** The system should provide an intuitive and user-friendly interface, with at least a 90% satisfaction rate in user feedback surveys.
- **Reliability:** The system should have a 99.99% uptime, ensuring reliable access for users at all times.

3.2.5 Business Rules

- **Rental Eligibility:** Only registered users with approved email verification are eligible to buy or sell products through the system.
- **Return Process:** The system must enforce a standardized process for product returns, including admin approval and confirmation to ensure consistency and accountability.