

Software Requirements Specification (SRS) for E-Commerce Application

1. Introduction

1.1 Purpose

The purpose of this document is to outline the requirements for the development of an e-commerce application. This application will allow users to browse, search, and purchase products online, as well as manage their accounts and orders.

1.2 Scope

This SRS document covers the functionalities of the e-commerce application, including user management, product catalog, shopping cart, order management, payment processing, and administration. It is intended for developers, project managers, and stakeholders.

1.3 Definitions, Acronyms, and Abbreviations

SRS: Software Requirements Specification

Admin: Administrator

User: Customer using the e-commerce application

1.4 References

IEEE Std 830-1998, IEEE Recommended Practice for Software Requirements Specifications

Online Payment Processing Guidelines

Data Protection and Privacy Regulations

1.5 Overview

The document is organized into several sections detailing system features, external interface requirements, system features, and other non-functional requirements.

2. Overall Description

2.1 Product Perspective

The e-commerce application is a standalone system designed to be accessible via web browsers on various devices. It interfaces with payment gateways, email services, and a backend database.

2.2 Product Functions

User Registration and Login

Product Browsing and Search

Shopping Cart Management

Order Processing and Management

Payment Processing

User Profile Management

Administrative Functions

2.3 User Classes and Characteristics

Regular Users: Can browse products, manage shopping cart, place orders, and manage their profile.

Admins: Can manage product listings, view and process orders, and manage users.

2.4 Operating Environment

The application will be hosted on a web server and accessible via modern web browsers (Chrome, Firefox, Safari, Edge). It will require integration with a backend database (MySQL) and payment gateways (PayPal, Stripe).

2.5 Design and Implementation Constraints

Must comply with data protection regulations (e.g., GDPR).

Must be mobile-responsive.

Must support high traffic volumes and ensure fast load times.

2.6 User Documentation

User Manual

Admin Guide

FAQs and Online Help

2.7 Assumptions and Dependencies

Reliable internet connection for users.

Availability of payment gateway services.

Users have basic knowledge of using web applications.

3. External Interface Requirements

3.1 User Interfaces

Login/Registration Page: Forms for user login and registration.

Home Page: Display featured products and categories.

Product Page: Detailed view of individual products.

Cart Page: Display items in the shopping cart.

Checkout Page: Forms for payment and order details.

Profile Page: User account management interface.

Admin Dashboard: Interface for managing the application backend.

3.2 Hardware Interfaces

Web server

Database server

3.3 Software Interfaces

Payment Gateway API (e.g., PayPal, Stripe)

Email Service API (e.g., SendGrid)

Database Management System (MySQL)

3.4 Communications Interfaces

HTTPS for secure communication

4. System Features

4.1 User Registration and Login

4.1.1 Description and Priority

Allows users to register and log in to the application. Priority: High

4.1.2 Stimulus/Response Sequences

User accesses the registration page.

User fills out the registration form and submits it.

System validates input and creates a new user account.

User receives a confirmation email.

4.1.3 Functional Requirements

FR1: The system shall provide a registration form with fields for username, password, email, and contact information.

FR2: The system shall validate the registration form inputs.

FR3: The system shall send a confirmation email upon successful registration.

4.2 Product Browsing and Search

4.2.1 Description and Priority

Allows users to browse and search for products. Priority: High

4.2.2 Stimulus/Response Sequences

User accesses the home page or search page.

User enters search criteria or selects a category.

System displays matching products.

4.2.3 Functional Requirements

FR4: The system shall provide a search bar for users to search products by name, category, or keywords.

FR5: The system shall display a list of products matching the search criteria.

4.3 Shopping Cart Management

4.3.1 Description and Priority

Allows users to add, update, or remove products in their shopping cart.

Priority: High

4.3.2 Stimulus/Response Sequences

User adds a product to the cart.

User updates the quantity of a product in the cart.

User removes a product from the cart.

4.3.3 Functional Requirements

FR6: The system shall allow users to add products to their shopping cart.

FR7: The system shall allow users to update product quantities in their cart.

FR8: The system shall allow users to remove products from their cart.

4.4 Order Processing and Management

4.4.1 Description and Priority

Handles the checkout process and order tracking. Priority: High

4.4.2 Stimulus/Response Sequences

User proceeds to checkout from the cart page.

User enters shipping and payment information.

System processes the payment and confirms the order.

4.4.3 Functional Requirements

FR9: The system shall provide a checkout page for users to enter shipping and payment information.

FR10: The system shall process the payment through the selected payment gateway.

FR11: The system shall send an order confirmation email to the user.

4.5 Payment Processing

4.5.1 Description and Priority

Integrates with payment gateways to process transactions. Priority: High

4.5.2 Stimulus/Response Sequences

User submits payment information.

System validates and processes the payment.

User receives confirmation of payment success or failure.

4.5.3 Functional Requirements

FR12: The system shall integrate with payment gateways (e.g., PayPal, Stripe) to process payments.

FR13: The system shall validate payment information before processing.

FR14: The system shall handle payment success and failure scenarios appropriately.

4.6 User Profile Management

4.6.1 Description and Priority

Allows users to manage their personal information and view order history. Priority: Medium

4.6.2 Stimulus/Response Sequences

User accesses the profile page.

User updates personal information or views order history.

4.6.3 Functional Requirements

FR15: The system shall provide a profile page for users to update their personal information.

FR16: The system shall allow users to view their order history.

4.7 Administrative Functions

4.7.1 Description and Priority

Allows admins to manage products, users, and orders. Priority: High

4.7.2 Stimulus/Response Sequences

Admin logs into the admin dashboard.

Admin performs management tasks (e.g., add/edit products, view orders).

4.7.3 Functional Requirements

FR17: The system shall provide an admin dashboard for managing products, users, and orders.

FR18: The system shall allow admins to add, edit, or remove products.

FR19: The system shall allow admins to view and manage user accounts and orders.

5. Non-Functional Requirements

5.1 Performance Requirements

The system should handle up to 10,000 concurrent users.

Page load times should not exceed 2 seconds under normal load.

5.2 Security Requirements

The system must use HTTPS for all communications.

User passwords must be stored using strong encryption.

5.3 Usability Requirements

The user interface should be intuitive and easy to navigate.

The system should be accessible to users with disabilities, complying with WCAG 2.1 guidelines.

5.4 Reliability Requirements

The system should have an uptime of 99.9%.

The system should handle transaction failures gracefully and provide clear error messages to users.

5.5 Maintainability Requirements

The system should be modular to facilitate easy updates and maintenance.

The codebase should be well-documented.

5.6 Portability Requirements

The application should be accessible on various devices (desktops, tablets, smartphones).

6. Other Requirements

6.1 Legal and Regulatory Requirements

The system must comply with data protection laws (e.g., GDPR).

The system must adhere to PCI DSS standards for payment processing.

6.2 Environmental Requirements

The application should be optimized for low power consumption on mobile devices.