
Software Requirements Specification (SRS)

E-Commerce Cart and Payment Gateway System (Web-Based)

1. Introduction

1.1 Purpose

This Software Requirements Specification (SRS) document defines the functional and non-functional requirements of the **E-Commerce Cart and Payment Gateway System**. The purpose of this document is to provide a detailed description of system features, constraints, and interfaces to guide developers, testers, and stakeholders throughout the development lifecycle.

1.2 Document Conventions

- **Shall** – Mandatory requirement
- **Should** – Recommended requirement
- **May** – Optional requirement

1.3 Intended Audience and Reading Suggestions

This document is intended for:

- Project stakeholders
- Web developers
- QA/Test engineers
- UI/UX designers
- System administrators

Readers are advised to review the overall description before examining detailed system features.

1.4 Product Scope

The **E-Commerce Cart and Payment Gateway System** is a web-based application that allows users to browse products, add items to a shopping cart, and complete purchases using secure online payment methods. The system aims to provide a seamless, secure, and efficient online shopping experience for customers and easy order management for administrators.

1.5 References

- IEEE 830 / IEEE 29148 Software Requirements Specification
 - E-Commerce Best Practices Documentation
 - Payment Card Industry Data Security Standard (PCI-DSS)
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2. Overall Description

2.1 Product Perspective

The system is a web-based application built using a client–server architecture. It interacts with a backend server, a relational database, and third-party payment gateway services.

2.2 Product Functions

Key functions of the system include:

- User registration and login
- Product browsing and searching
- Shopping cart management
- Secure checkout process
- Online payment processing
- Order confirmation and history
- Admin product and order management

2.3 User Classes and Characteristics

User Class	Description
Customer	Browses products, manages cart, makes payments
Admin	Manages products, orders, users, and system settings
Guest User	Browses products without purchasing

2.4 Operating Environment

- Platform: Web Application
- Client: Modern web browsers (Chrome, Firefox, Edge)
- Frontend: HTML, CSS, JavaScript (React / Angular)
- Backend: Node.js / Java / Python
- Database: MySQL / PostgreSQL / MongoDB
- Server: Cloud-hosted environment

2.5 Design and Implementation Constraints

- Must comply with **PCI-DSS** standards
- Secure handling of sensitive payment data
- Browser compatibility requirements
- Budget and timeline constraints

2.6 User Documentation

- User guide for customers
- Admin manual
- Online help and FAQs

2.7 Assumptions and Dependencies

- Users have internet access
 - Payment processing depends on third-party gateways
 - Email/SMS services are available for notifications
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3. External Interface Requirements

3.1 User Interfaces

- Responsive web interface
- Product catalog and cart pages
- Secure checkout page
- Admin dashboard

3.2 Hardware Interfaces

- Web server and database server
- End-user devices (desktop, laptop, mobile browsers)

3.3 Software Interfaces

- Payment gateways (PayPal, Stripe, Razorpay, etc.)
- Email notification services
- Database management system

3.4 Communication Interfaces

- HTTPS protocol
 - RESTful APIs
 - JSON data format
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4. System Features

4.1 User Registration and Authentication

Description:

The system shall allow users to register, log in, and log out securely.

Functional Requirements:

- The system shall allow customers to create an account
 - The system shall authenticate users using encrypted credentials
 - The system shall support password recovery
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4.2 Product Catalog Management

Description:

The system shall display available products with details.

Functional Requirements:

- The system shall display product name, price, description, and images
 - The system shall allow customers to search and filter products
 - The system shall allow admins to add, update, and delete products
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4.3 Shopping Cart Management

Description:

The system shall allow customers to manage items in a shopping cart.

Functional Requirements:

- The system shall allow customers to add products to the cart
 - The system shall allow customers to update item quantity
 - The system shall calculate total price dynamically
 - The system shall persist cart data across sessions
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4.4 Checkout Process

Description:

The system shall guide users through a secure checkout process.

Functional Requirements:

- The system shall collect shipping and billing details
 - The system shall validate checkout information
 - The system shall display order summary before payment
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4.5 Payment Gateway Integration

Description:

The system shall process online payments securely.

Functional Requirements:

- The system shall support multiple payment methods (credit/debit cards, UPI, wallets)
 - The system shall redirect users to a secure payment gateway
 - The system shall confirm payment success or failure
 - The system shall generate transaction IDs
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4.6 Order Management

Description:

The system shall manage customer orders.

Functional Requirements:

- The system shall generate order confirmation after payment
 - The system shall store order history
 - The system shall allow admins to update order status
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5. Non-Functional Requirements

5.1 Performance Requirements

- System shall support at least **500 concurrent users**
- Page response time shall be less than **3 seconds**

5.2 Security Requirements

- Data encryption using SSL/TLS
- Secure authentication and authorization
- No storage of sensitive card details on the server
- Compliance with PCI-DSS standards

5.3 Usability Requirements

- Simple and intuitive user interface
- Mobile-responsive design
- Easy checkout process

5.4 Reliability Requirements

- System uptime of **99%**
- Automatic order recovery in case of payment failure

5.5 Scalability Requirements

- Support for increasing product inventory
 - Ability to integrate additional payment gateways
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6. Other Requirements

6.1 Legal and Regulatory Requirements

- Compliance with e-commerce laws
- Adherence to data protection regulations

6.2 Logging and Monitoring

- System shall log payment and order transactions
 - Admin access to logs for auditing purposes
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7. Appendices

Appendix A: Glossary

- **Cart** – Temporary storage of selected products
- **Payment Gateway** – Third-party service for payment processing
- **PCI-DSS** – Payment Card Industry Data Security Standard

Appendix B: Future Enhancements

- Wishlist feature
 - Coupon and discount system
 - Mobile application version
 - AI-based product recommendations
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8. Approval

Name Role Signature Date
