Software Requirements Specification (SRS)

# E-Commerce Platform

## 1. Introduction

### 1.1 Purpose

The purpose of this document is to define the requirements for the development of an E-Commerce Platform. The platform allows users to browse products, place orders, make payments, and track deliveries. It is intended for customers, sellers, and admin users.

### 1.2 Scope

The E-Commerce Platform will be a web-based application where:  
- Customers can register, log in, browse and search products, place orders, and track them.  
- Sellers can list products, manage inventory, and track orders.  
- Admins can manage users, products, categories, and transactions.  
  
The platform will support payment gateway integration, order history, customer support, and a review system.

### 1.3 Definitions, Acronyms, and Abbreviations

- SRS: Software Requirements Specification  
- UI: User Interface  
- DBMS: Database Management System  
- SKU: Stock Keeping Unit

### 1.4 References

- IEEE SRS Standard – IEEE Std 830-1998  
- Bootstrap Framework Documentation  
- Spring Boot Documentation

## 2. Overall Description

### 2.1 Product Perspective

This product is an independent web application. It will use:  
- Frontend: HTML, CSS, Bootstrap, JavaScript  
- Backend: Spring Boot  
- Database: MySQL  
- Authentication: JWT (JSON Web Token) or Session-based

### 2.2 Product Functions

- User registration and login  
- Product catalog with search and filter  
- Shopping cart and checkout  
- Payment gateway integration  
- Order history and tracking  
- Admin dashboard for user and product management

### 2.3 User Classes and Characteristics

Customer: End users who browse and purchase products  
Seller: Users who upload and manage product listings  
Admin: Supervisors who control site-wide settings

### 2.4 Operating Environment

- Browser: Chrome, Firefox, Edge  
- OS: Windows, Linux, macOS  
- Database: MySQL  
- Server: Tomcat or embedded Spring Boot server

### 2.5 Design and Implementation Constraints

- Must be mobile responsive  
- Data must be secured (encryption and role-based access)  
- Must comply with GDPR for data privacy

## 3. System Features

### 3.1 User Registration and Authentication

Description: Users can register using email and password. Admin approves seller accounts.

Inputs: Name, Email, Password

Outputs: Success or error messages

Functional Requirements:  
- FR1: The system shall store encrypted passwords.  
- FR2: The system shall validate the email format and uniqueness.

### 3.2 Product Catalog

Description: Users can view and search for products.

Inputs: Search keywords, filters

Outputs: List of matched products

Functional Requirements:  
- FR3: The system shall allow category and price filtering.  
- FR4: The system shall support pagination for product listings.

### 3.3 Shopping Cart and Checkout

Description: Users can add products to a cart and place orders.

Inputs: Product IDs, quantity

Outputs: Order summary and confirmation

Functional Requirements:  
- FR5: The system shall update inventory after successful purchase.  
- FR6: The system shall send an email confirmation.

### 3.4 Payment Integration

Description: Supports online payments via Razorpay/Stripe.

Inputs: Payment credentials

Outputs: Payment success/failure message

Functional Requirements:  
- FR7: The system shall securely process payments.  
- FR8: The system shall handle payment callbacks.

### 3.5 Order Management

Description: Customers and sellers can view and manage orders.

Inputs: Order ID

Outputs: Order status and delivery info

Functional Requirements:  
- FR9: The system shall allow users to cancel unshipped orders.  
- FR10: The system shall auto-update status post-delivery.

### 3.6 Admin Panel

Description: Admin can manage all entities.

Inputs: Admin credentials, management options

Outputs: Dashboard, analytics

Functional Requirements:  
- FR11: The system shall allow product/category/user CRUD operations.  
- FR12: The system shall display sales analytics.

## 4. Non-Functional Requirements

### 4.1 Performance Requirements

- The platform should support 100 concurrent users.  
- Page load time should be under 3 seconds.

### 4.2 Security Requirements

- Passwords must be hashed using bcrypt.  
- Role-based access control must be implemented.

### 4.3 Usability Requirements

- User interface must be responsive and accessible (WCAG 2.1 compliant).

### 4.4 Availability

- The system must maintain 99.5% uptime.

### 4.5 Maintainability

- Code should follow SOLID principles.  
- Modules should be decoupled for easy updates.

## 5. Appendices

### 5.1 Assumptions and Dependencies

- Internet connection is available to all users.  
- Users have access to a modern web browser.

### 5.2 Future Enhancements

- Mobile app support  
- Multi-language support  
- AI-based product recommendations