

# Software Requirements Specification (SRS)

## Multi-Vendor E-commerce Platform

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### 1. Introduction

#### 1.1 Purpose

This Software Requirements Specification (SRS) describes the complete requirements for the Multi-Vendor E-commerce Platform. It specifies functional and non-functional requirements, system architecture, database entities, user roles, and system behavior. This document will be used by developers, testers, and stakeholders to understand the system's structure and expected behavior.

#### 1.2 Scope

The platform allows **multiple sellers** to register and sell products, while customers can browse, purchase, and review items. The system provides authentication, secure checkout, order tracking, and an admin panel for platform management.

#### 1.3 System Goals

- Enable sellers to easily list and manage products.
  - Provide customers with a smooth shopping and checkout experience.
  - Ensure secure and scalable operations.
  - Offer admins full visibility and control over platform activities.
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### 2. Overall Description

#### 2.1 System Users (Actors)

Actor	Description
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**Admin** Manages users, orders, products, and categories. Has full system privileges.

**Seller** Manages their own products and handles received orders.

**Customer** Browses items, purchases products, writes reviews, manages cart and orders.

#### 2.2 Assumptions

- Users must have valid email addresses.
- Internet availability is required.
- Payment is initially limited to Cash on Delivery (COD).

## 2.3 Constraints

- Authentication follows JWT standards.
  - All passwords must be securely hashed.
  - System must support responsive design.
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# 3. Functional Requirements

## 3.1 Authentication & Authorization

### 3.1.1 User Registration

- Users register using:
  - Name
  - Email
  - Password
  - Phone number
- Passwords are hashed before storing.

### 3.1.2 Login

- Login using email + password.
- Generate JWT token on successful login.

### 3.1.3 Role-Based Access

Roles:

- Admin
- Seller
- Customer

Each role has different permissions and view access.

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## **3.2 Product Management**

### **3.2.1 Add Product**

- Seller provides:
  - Name
  - Description
  - Price
  - Stock
  - Category
  - Images

### **3.2.2 Edit Product**

- Seller can update product details anytime.

### **3.2.3 Delete Product**

- Seller can remove their own products only.
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## **3.3 Product Browsing & Search**

### **3.3.1 Browse by Category**

- Users can view products filtered by category.

### **3.3.2 Product Search**

- Search by:
  - Name
  - Category
  - Keywords

### **3.3.3 Filtering**

- By price range
- By customer rating

- By alphabetical order
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## **3.4 Shopping Cart & Checkout**

### **3.4.1 Add to Cart**

- Customers can add any product to their personal cart.

### **3.4.2 Update Cart**

- Change product quantity.
- Remove items.

### **3.4.3 Checkout**

Customer provides:

- Shipping address
- Payment method (Cash on Delivery)
- Contact phone

System calculates:

- Total price
  - Taxes (if applied)
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## **3.5 Order Management**

### **3.5.1 Customer Order Tracking**

Statuses:

- Pending
- Processing
- Shipped
- Delivered

### **3.5.2 Seller Order Handling**

- Seller views orders containing their products.

- Seller updates order status.

### **3.5.3 Order History**

- Customer can view previous orders.
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## **3.6 Reviews & Ratings**

### **3.6.1 Submit Review**

- Only customers who purchased the product can review it.

### **3.6.2 Product Rating**

- Rating from 1 to 5 stars.
- Comment is optional.

### **3.6.3 Average Rating Calculation**

- Product pages display:
    - Average rating
    - Review list (chronological)
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## **3.7 Admin Panel**

### **Admin can:**

- Manage users (delete, disable)
  - Manage all products
  - Manage categories
  - View and manage orders
  - View dashboard analytics:
    - Sales statistics
    - Most sold products
    - Top sellers
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## 4. Non-Functional Requirements

### 4.1 Security

- Password hashing (bcrypt recommended)
- JWT-based authentication
- Role authorization middleware

### 4.2 Performance

- Handle large number of concurrent users
- Pages must load under **2 seconds**

### 4.3 Usability

- Fully responsive UI
- Accessible from desktop, tablet, and mobile

### 4.4 Deployment

- Azure
  - Any external cloud hosting
  - Code hosted on GitHub
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## 5. Entity Descriptions (Database Schema)

### 5.1 Users

- UserID (PK)
- Name
- Email
- PasswordHash
- Role
- PhoneNumber
- CreatedAt

### 5.2 Products

- ProductID (PK)
- Name
- Description
- Price
- Stock
- ImageUrl
- CategoryID (FK)
- SellerID (FK)

### 5.3 Categories

- CategoryID (PK)
- Name
- Description

### 5.4 Orders

- OrderID (PK)
- UserID (FK)
- TotalPrice
- Status
- CreatedAt
- ShippingAddressID (FK)

### 5.5 OrderItems

- OrderItemID (PK)
- OrderID (FK)
- ProductID (FK)
- Quantity
- Price

### 5.6 Cart

- CartID (PK)
- UserID (FK)
- CreatedAt

### 5.7 CartItems

- CartItemID (PK)
- CartID (FK)
- ProductID (FK)
- Quantity

### 5.8 Reviews

- ReviewID (PK)
- ProductID (FK)
- UserID (FK)
- Rating
- Comment
- CreatedAt

### 5.9 Addresses

- AddressID (PK)
- UserID (FK)
- Street
- City
- PostalCode
- Country

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## 6. Entity Relationships

Entities

Relationship

<b>Entities</b>	<b>Relationship</b>
Users → Orders	One-to-Many
Users → Reviews	One-to-Many
Users → Addresses	One-to-Many
Users → Cart	One-to-One
Products → OrderItems	One-to-Many
Products → Reviews	One-to-Many
Products → Categories	Many-to-One
Orders → OrderItems	One-to-Many
Cart → CartItems	One-to-Many
CartItems → Products	Many-to-One

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## 7. System Architecture (Overview)

### 7.1 Backend (API)

- RESTful API
- Authentication middleware
- Product, order, user, category controllers
- Database ORM (e.g., Prisma, Sequelize, EF Core)

### 7.2 Frontend

- Modern SPA framework (React / Angular / Vue)
- Responsive layout
- Dashboard for admin & sellers
- Customer-friendly UI

### 7.3 Database

- Relational DB (MySQL / PostgreSQL)
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## 8. Future Enhancements

- Online payment integration (Visa/Mastercard)
  - AI-based product recommendations
  - Multi-language support
  - Real-time chat between seller & customer
  - Analytics-based dynamic pricing
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## 9. Conclusion

This document represents a complete description of the Multi-Vendor E-commerce Platform based on the requirements extracted from your provided file. It is ready for development, documentation submission, and client presentation.