

SOFTWARE REQUIREMENTS SPECIFICATION

ShopEasy E-commerce Platform

Version 1.0

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1. INTRODUCTION

1.1 Purpose

This Software Requirements Specification (SRS) document describes the functional and non-functional requirements for the ShopEasy E-commerce Platform. The platform is designed to provide customers with a seamless online shopping experience while enabling merchants to manage their products, inventory, and orders efficiently.

This document is intended for:

- Development team members
- Quality Assurance and Testing team
- Project stakeholders and management
- System architects and designers
- Documentation team

1.2 Scope

ShopEasy is a web-based B2C e-commerce platform that allows customers to browse products, add items to cart, make secure payments, and track their orders. The system will support multiple product categories, payment methods, and shipping options.

Key Features:

- User registration and profile management
- Product catalog with search and filter capabilities
- Shopping cart and wishlist functionality

- Secure payment processing
- Order tracking and management
- Customer reviews and ratings
- Email notifications

1.3 Definitions and Acronyms

Term	Definition
SRS	Software Requirements Specification
UI	User Interface
API	Application Programming Interface
SKU	Stock Keeping Unit
OTP	One-Time Password
Guest User	User who shops without registration
Registered User	User with an account in the system

2. OVERALL DESCRIPTION

2.1 Product Perspective

ShopEasy is a standalone web application that integrates with third-party services including:

- Payment gateways (PayPal, Stripe, Credit/Debit cards)
- Shipping providers (FedEx, UPS, USPS)
- Email service providers (SendGrid)
- SMS notification services

2.2 User Classes

User Type	Description	Key Activities
Guest User	Visitor without an account	Browse products, view details, contact support
Registered Customer	User with an account	All guest activities plus: purchase, track orders, save wishlist, write reviews
Administrator	System admin	Manage users, products, orders, view reports

3. FUNCTIONAL REQUIREMENTS

3.1 User Registration and Authentication

REQ-AUTH-001

User Registration

The system shall allow new users to register by providing email address, password, full name, and phone number.

Priority: High

Type: Functional

Preconditions: User must not have an existing account with the provided email

Acceptance Criteria:

- Email must be unique and in valid format (example@domain.com)
- Password must be minimum 8 characters with at least 1 uppercase, 1 lowercase, 1 number, and 1 special character
- Phone number must be 10 digits
- All fields are mandatory
- System sends verification email upon successful registration
- User must verify email within 24 hours
- Success message displayed: "Registration successful. Please check your email to verify your account."

REQ-AUTH-002

User Login

The system shall allow registered users to login using their email and password.

Priority: High

Type: Functional

Preconditions: User must have a registered and verified account

Acceptance Criteria:

- System validates email and password combination
- Maximum 3 failed login attempts allowed within 15 minutes
- Account locked for 30 minutes after 3 failed attempts
- Error message for invalid credentials: "Invalid email or password"
- Successful login redirects to homepage or last visited page
- Session remains active for 24 hours or until logout
- "Remember me" option keeps user logged in for 30 days

REQ-AUTH-003

Password Reset

The system shall allow users to reset their password via email verification.

Priority: High

Type: Functional

Acceptance Criteria:

- User clicks "Forgot Password" link on login page
- User enters registered email address
- System sends password reset link valid for 1 hour
- Link expires after first use or 1 hour, whichever comes first
- New password must meet password complexity requirements
- Confirmation email sent after successful password change

3.2 Product Browsing and Search

REQ-PROD-001

Product Catalog Display

The system shall display all available products in a grid view with product image, name, price, and ratings.

Priority: High

Type: Functional

Acceptance Criteria:

- Display 24 products per page
- Products shown in grid format (4 columns on desktop, 2 on mobile)
- Each product card shows: thumbnail image, product name, current price, original price (if discounted), discount percentage, star rating
- Pagination controls at bottom of page
- "Quick View" button on hover shows additional details
- Out-of-stock items displayed with "Out of Stock" badge

REQ-PROD-002

Product Search

The system shall provide a search functionality to find products by name, description, category, or SKU.

Priority: High

Type: Functional

Acceptance Criteria:

- Search bar visible on all pages in header
- Auto-suggest displays top 5 matching products as user types (minimum 3 characters)
- Search results page shows matching products with relevance sorting
- Display "No results found" message if no matches
- Search history saved for logged-in users (last 10 searches)
- Filters can be applied on search results

REQ-PROD-003

Product Filtering

The system shall allow users to filter products by category, price range, brand, ratings, and availability.

Priority: Medium

Type: Functional

Acceptance Criteria:

- Filter panel displayed on left side of product listing page
- Multiple filters can be applied simultaneously
- Price range filter: slider with min/max values
- Category filter: checkbox list with product count
- Brand filter: searchable checkbox list
- Rating filter: 4 stars & above, 3 stars & above, etc.
- Applied filters shown as removable tags above product grid

- "Clear All Filters" button resets all selections
- Filter count updated dynamically as selections change

REQ-PROD-004

Product Details Page

The system shall display comprehensive product information including images, specifications, price, availability, and customer reviews.

Priority: High

Type: Functional

Acceptance Criteria:

- Display product image gallery with zoom functionality (minimum 3 images)
- Show product name, brand, SKU, and price prominently
- Display availability status (In Stock / Out of Stock / Limited Stock)
- Show estimated delivery date based on customer location
- List product specifications in tabular format
- Display customer reviews with star ratings (latest 10 reviews)
- "Add to Cart" button with quantity selector
- "Add to Wishlist" button for registered users
- Related/Similar products section at bottom

3.3 Shopping Cart Management

REQ-CART-001

Add to Cart

The system shall allow users to add products to their shopping cart with specified quantity.

Priority: High

Type: Functional

Acceptance Criteria:

- Users can add products from product listing or details page
- Default quantity is 1, maximum is 10 per product
- System validates stock availability before adding
- Success message displayed: "Product added to cart"
- Cart icon in header shows updated item count
- If product already in cart, quantity is updated
- Cannot add out-of-stock items to cart
- Guest users can add items; cart persists for 7 days via cookies

REQ-CART-002

View Cart

The system shall display all items in the cart with product details, quantity, price, and total amount.

Priority: High

Type: Functional

Acceptance Criteria:

- Cart page shows list of all added products
- Each item displays: image, name, price, quantity selector, subtotal, remove button
- Display cart summary: Subtotal, Shipping charges, Tax, Total amount
- Apply coupon code section below cart items
- "Continue Shopping" and "Proceed to Checkout" buttons
- Empty cart shows message: "Your cart is empty" with shop button
- Cart auto-updates when quantity changed

REQ-CART-003

Update Cart

The system shall allow users to update item quantities or remove items from cart.

Priority: High

Type: Functional

Acceptance Criteria:

- Quantity can be increased/decreased using +/- buttons
- System validates stock availability when increasing quantity
- Prices and totals recalculated automatically
- "Remove" button deletes item from cart with confirmation

- Undo option available for 5 seconds after removal
- Warning message if quantity exceeds available stock

3.4 Checkout and Payment

REQ-CHECK-001

Checkout Process

The system shall provide a multi-step checkout process for order placement including shipping address, payment method, and order review.

Priority: High

Type: Functional

Preconditions: User must have items in cart

Acceptance Criteria:

- Step 1: Login/Register (skip if already logged in)
- Step 2: Enter shipping address with fields: Name, Address Line 1, Address Line 2, City, State, ZIP Code, Phone
- Option to save address for future use
- Step 3: Select shipping method (Standard, Express, Next Day) with costs
- Step 4: Select payment method (Credit Card, Debit Card, PayPal, COD)
- Step 5: Review order summary before final submission
- Progress indicator showing current step
- Ability to edit previous steps before final submission

REQ-CHECK-002

Payment Processing

The system shall securely process payments through integrated payment gateways.

Priority: Critical

Type: Functional

Acceptance Criteria:

- Support Credit/Debit card payments (Visa, MasterCard, Amex)
- Card number validation using Luhn algorithm
- CVV is 3 digits (4 for Amex)
- Expiry date must be future date
- Integrate PayPal for alternative payment
- Cash on Delivery option available for orders under \$500
- Payment confirmation displayed after successful transaction
- Transaction failure message with retry option
- All payment data transmitted over HTTPS
- Payment information not stored in database

REQ-CHECK-003

Order Confirmation

The system shall generate order confirmation with unique order ID after successful payment.

Priority: High

Type: Functional

Acceptance Criteria:

- Generate unique order ID in format: ORD-YYYYMMDD-XXXX
- Display order confirmation page with order details
- Send order confirmation email with order summary, items, total amount, shipping address
- Include estimated delivery date
- Provide "Track Order" link in email
- Order saved in user's order history
- Cart emptied after successful order placement

3.5 Order Management

REQ-ORDER-001

Order History

The system shall display all past orders for registered users with order details and status.

Priority: Medium

Type: Functional

Preconditions: User must be logged in

Acceptance Criteria:

- Display orders in reverse chronological order (latest first)
- Show Order ID, date, total amount, payment method, status
- Filter options: Date range, Order status, Payment method
- Search by Order ID
- "View Details" button for each order
- Display paginated results (10 orders per page)
- Download invoice option for completed orders

REQ-ORDER-002

Order Tracking

The system shall allow users to track their order status in real-time.

Priority: Medium

Type: Functional

Acceptance Criteria:

- Display order status: Order Placed, Payment Confirmed, Processing, Shipped, Out for Delivery, Delivered
- Show timeline with timestamps for each status change
- Display shipping carrier name and tracking number when shipped
- Link to carrier's tracking page
- SMS/Email notification for each status change
- Estimated delivery date updated based on current status

REQ-ORDER-003

Order Cancellation

The system shall allow users to cancel orders before they are shipped.

Priority: Medium

Type: Functional

Acceptance Criteria:

- Cancel button available only for orders with status "Order Placed" or "Processing"
- Confirmation dialog: "Are you sure you want to cancel this order?"
- Reason for cancellation required (dropdown + text field)
- Refund initiated automatically for prepaid orders
- Refund processed within 5-7 business days

- Cancellation confirmation email sent
- Order status updated to "Cancelled"

REQ-ORDER-004

Return and Refund

The system shall allow users to initiate return requests for delivered orders within 7 days of delivery.

Priority: Medium

Type: Functional

Acceptance Criteria:

- "Return" button available for 7 days after delivery
- User selects items to return (can be partial or full order)
- Reason for return required (dropdown): Damaged, Wrong item, Not as described, Changed mind
- Upload photos mandatory for damaged/wrong item claims
- Return request submitted for admin approval
- Return pickup scheduled after approval
- Refund initiated after item received and inspected
- Email notifications at each return status change

4. NON-FUNCTIONAL REQUIREMENTS

4.1 Performance Requirements

REQ-PERF-001

Page Load Time

All pages shall load within 3 seconds under normal network conditions.

Acceptance Criteria:

- Homepage load time: \leq 2 seconds
- Product listing pages: \leq 3 seconds
- Product details page: \leq 2.5 seconds
- Checkout pages: \leq 3 seconds
- Measured on 4G network with 50 Mbps download speed

REQ-PERF-002

Concurrent Users

The system shall support at least 10,000 concurrent users without performance degradation.

Acceptance Criteria:

- Response time remains under 3 seconds for 10,000 concurrent users

- No transaction failures during peak load
- Database queries execute within 500ms
- API response time under 1 second

4.2 Security Requirements

REQ-SEC-001

Data Encryption

All sensitive data shall be encrypted in transit and at rest.

Acceptance Criteria:

- HTTPS (TLS 1.2 or higher) for all communications
- Passwords hashed using bcrypt with salt
- Payment information encrypted using PCI DSS standards
- Database encryption for sensitive fields

REQ-SEC-002

Session Management

The system shall implement secure session management with automatic timeout.

Acceptance Criteria:

- Session timeout after 30 minutes of inactivity
- Secure, HTTPOnly cookies for session management
- CSRF tokens for all state-changing operations
- Single sign-on prevention (one session per user)

4.3 Usability Requirements

REQ-USAB-001

Responsive Design

The system shall be responsive and functional across all device types.

Acceptance Criteria:

- Support desktop (1920x1080, 1366x768)
- Support tablets (iPad, Android tablets)
- Support mobile phones (iOS, Android)
- All features accessible on mobile devices
- Touch-friendly interface for mobile/tablet

REQ-USAB-002

Accessibility

The system shall comply with WCAG 2.1 Level AA accessibility standards.

Acceptance Criteria:

- Keyboard navigation support for all functions
- Screen reader compatibility
- Sufficient color contrast ratios (4.5:1 minimum)
- Alt text for all images
- Form labels and error messages accessible

5. USE CASES

5.1 Use Case: Complete Purchase Flow

Use Case ID: UC-001

Use Case Name: Complete Product Purchase

Actor: Registered Customer

Goal: Successfully purchase a product from the platform

Preconditions:

- User has a registered and verified account
- Product is in stock
- User has valid payment method

Main Flow:

1. User logs into the system
2. User searches for a product or browses categories
3. User clicks on a product to view details
4. User selects quantity and clicks "Add to Cart"
5. System adds product to cart and updates cart count
6. User clicks on cart icon in header

7. User reviews cart contents and clicks "Proceed to Checkout"
8. System displays shipping address form (pre-filled if saved)
9. User confirms or enters new shipping address
10. User selects shipping method (Standard/Express/Next Day)
11. User selects payment method and enters payment details
12. User reviews order summary
13. User clicks "Place Order" button
14. System processes payment
15. System generates order confirmation with Order ID
16. System sends confirmation email
17. User sees order confirmation page with tracking information

Alternative Flows:

A1: Product Out of Stock (Step 4)

- System displays "Out of Stock" message
- "Add to Cart" button disabled
- Option to "Notify Me" when back in stock

A2: Payment Failure (Step 14)

- System displays error message: "Payment failed. Please try again."
- User returned to payment page
- Order not created
- Cart items preserved

Postconditions:

- Order created in system with unique Order ID
- Inventory updated (stock reduced)
- Confirmation email sent to user
- Cart emptied
- Order appears in user's order history

5.2 Use Case: Return Product

Use Case ID: UC-002

Use Case Name: Initiate Product Return

Actor: Registered Customer

Goal: Return a delivered product and receive refund

Preconditions:

- Order has been delivered
- Return window (7 days) has not expired
- User is logged in

Main Flow:

1. User navigates to "My Orders" section

2. User finds the delivered order
3. User clicks "Return" button
4. System displays return form
5. User selects items to return
6. User selects return reason from dropdown
7. User uploads photos (if damaged/wrong item)
8. User submits return request
9. System validates return eligibility
10. System creates return request with Return ID
11. System sends return confirmation email
12. Admin reviews and approves return
13. System schedules pickup
14. Courier picks up item
15. Admin inspects returned item
16. System initiates refund
17. User receives refund within 5-7 business days

Alternative Flows:

A1: Return Window Expired

- System displays message: "Return window has expired"
- "Return" button disabled
- Contact support option provided

A2: Return Rejected

- Admin rejects return (product damaged by customer)
- System sends rejection email with reason
- Item shipped back to customer
- No refund issued

Note: This requirements document serves as the foundation for test case generation. Each requirement with defined acceptance criteria should result in multiple test cases covering positive scenarios, negative scenarios, boundary conditions, and error handling.

End of Document

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