E-commerce Clothing Website - Requirement Document

## Project Overview

The project involves the development of a comprehensive E-commerce platform specifically for selling clothing. The platform will cater to both users looking to purchase clothing items and administrators managing the product catalog, orders, and customer relationships. The platform will feature modern functionalities such as user management, product search and filtering, shopping cart, and AI-based recommendations.

## 1. Functional Requirements (Requirement Document)

1. **Create Accounts:** Users can create accounts and log in to the website.
2. **Contact Details:** Users can store their name and contact details such as email and phone number….
3. **Addresses:** Users can add one or more addresses to their account and set a default shipping address.
4. **Payment Methods:** Users can add one or more payment methods to their account and can set a default payment method.
5. **Products:** The website can store many products.
6. **Categories:** Each product belongs in a category, and categories can belong to other categories.
7. **Product Variations:** Each product can have different variations, such as different colors or sizes. Each of these variations (e.g., color) can have different values (e.g., red, blue, black).
8. **Number In Stock:** The website should keep track of the number of each product that is in stock.
9. **Shopping Cart:** Visitors can add one or more products to their shopping cart as part of their shopping experience. Shopping carts are not saved in the database unless they are logged in.
10. **Payment Details for Order:** A user needs to provide their payment details and address details as part of placing an order.
11. **Shipping Method:** The user can select a shipping method from a list of methods. Each shipping method has a single standard price (to keep things simple).
12. **Order Status:** The order and shipping process follows several stages once the order is placed, such as processing, delivery in progress, and delivered.
13. **Reviews:** Users can leave reviews for products they have purchased, which include a rating from 1-5 and a text comment.
14. **Promotions:** The website allows promotions or sales to be run, which allows for one or more product categories to have a specific discount on their price.

# The Flow of Operations

### User Management

- Register via email/password and social media accounts.

- Secure login/logout with optional two-factor authentication.

- Password recovery and profile management.

- Wishlist functionality for saving products.

- Product reviews and ratings.

### Product Management

- Display products with details, images, and variants.

- Organize products into categories and subcategories.

- Search and filter products by various criteria.

- Inventory management to track stock levels.

- Discounts, coupons, and promotional campaigns.

- Product recommendations based on user behavior.

### Shopping Cart

- Add, view, update, and remove items from the cart.

- Save cart functionality for future sessions.

- Guest checkout option.

- Checkout process with shipping and payment details.

### Order Management

- Place, track, and view order history.

- Order cancellation and return/refund processes.

- Multiple shipping options and tracking.

- Email notifications for order updates.

### Payment Integration

- Integration with multiple payment gateways (PayPal, Stripe).

- Support for credit/debit cards, bank transfers, and digital wallets.

- Secure payment processing with transaction history.

### Admin Dashboard

- Manage products, categories, and inventory.

- View and manage orders and user accounts.

- Generate and view sales and user activity reports.

- Role-based access control for admin staff.

- Manage site content and customer support tickets.

## 2. Non-Functional Requirements

- Efficient handling of concurrent users.

- Optimized page load times (under 3 seconds).

- SSL encryption for secure communication.

- Protection against SQL injection, XSS, and other vulnerabilities.

- Data privacy and integrity measures.

- Intuitive and user-friendly interface.

- Responsive design for various devices.

- Ability to scale with growing user base and product catalog.

- High availability with minimal downtime.

- Regular backups and disaster recovery plans.

## 3. Use Case Diagram

Actors:

- Customer

- Admin

Use Cases:

- Register/Login/Logout

- Browse/Search Products

- Add to Cart/Checkout

- View/Cancel Orders

- Manage Products/Orders/Users

- Generate Reports

- Manage Site Content/Customer Support

## 4. Data Flow Diagram (DFD)

Processes:

- User Registration and Authentication

- Product Browsing and Search

- Cart Management

- Order Processing and Payment Handling

- Inventory Management

Data Stores:

- User Database

- Product Database

- Order Database

External Entities:

- Users

- Payment Gateway

# 5. Entity-Relationship Diagram (ERD) & Schema

**Entities:**

1. **User:** Represents users who have accounts on the website.
2. **User address:** Stores addresses associated with users.
3. **Address:** Contains details of specific addresses.
4. **Shopping cart:** Represents shopping carts associated with users.
5. **Shopping cart items:** Items in a user's shopping cart.
6. **Product:** Represents products available on the website.
7. **Product item:** Represents individual items of a product, including variations.
8. **product category:** Represents categories to which products belong.
9. **Promotion:** Represents promotional offers on products.
10. **Promotion category:** Links promotions with product categories.
11. **Order:** Represents orders placed by users.
12. **Order line:** Items within an order.
13. **Order status:** Tracks the status of an order.
14. **Shipping method:** Represents different shipping methods available.
15. **User payment method:** Stores payment methods linked to users.
16. **Payment type:** Types of payment methods (e.g., credit card, PayPal).
17. **Review:** Represents reviews left by users on purchased products.

# 1. Site User

- id (PK), email\_address, phone\_number, password, FName, LName, DOB, Age

# 2. User Address

- id (PK), user\_id (FK), address\_id (FK), is\_default

# 3. Address

- id (PK), unit\_number, street\_number, city, region, postal\_code

# 4. User Review

- id (PK), user\_id (FK), ordered\_product\_id (FK), rating\_value, comment

# 5. User Payment Method

- id (PK), user\_id (FK), payment\_type\_id (FK), provider, account\_number, expiry\_date, is\_default

# 6. Payment Type

- id (PK), value

# 7. Shopping Cart

- id (PK), user\_id (FK)

# 8. Shopping Cart Item

- id (PK), cart\_id (FK), variation\_id (FK), qty

# 9. Product

- id (PK), category\_id (FK), name, description, product\_image

# 10. Product Variation

- variation\_id (PK), product\_id (FK), color, size, SKU (Unique), qty\_in\_stock, product\_image, price

# 11. Order Line

- id (PK), variation\_id (FK), order\_id (FK), qty, price

# 12. Shop Order

- id (PK), user\_id (FK), order\_date, payment\_method\_id (FK), shipping\_address (FK), shipping\_method (FK), order\_total, order\_status (FK)

# 13. Shipping Method

- id (PK), name, price

# 14. Order Status

- id (PK), status

# 15. Product Category

- id (PK), parent\_category\_id (FK), category\_name

# 16. Promotion

- id (PK), name, description, discount\_rate, start\_date, end\_date

# 17. Promotion Category

- category\_id (FK), promotion\_id (FK)

# Assumptions

- User data is stored securely.

- SKUs are unique and consistent across the catalog.

- The system interfaces with third-party payment and shipping services.

# Coding

## 6. Technology Stack

Front-End: HTML, CSS, JavaScript, Razor

Back-End: ASP.NET Core, C#

Database: SQL Server

Authentication: ASP.NET Identity

Payment Integration: PayPal, Stripe APIs

Hosting: Azure, AWS

## 7. Timeline and Milestones

- Phase 1: Requirements Gathering and System Analysis

- Phase 2: Design Database.

- Phase 3: Development (Front-End, Back-End)

- Phase 4: Integration (Payment Gateway, APIs)

- Phase 5: Testing (Unit, Integration, User Acceptance)

- Phase 6: Deployment and Maintenance

# Dependencies

- Integration with payment gateways and shipping provider (Stripe).

- Register via Facebook account.