Software Requirements Specification

On

<u>RETAIL APPLICATION MANAGEMENT SYSTEM</u>

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1. <u>INTRODUCTION</u>

1.1 Problem

Purpose of the Project: The purpose of this database is to streamline the management of user accounts, product catalogs, orders, and transactions in a retail environment, enhancing operational efficiency and user experience.

Reason for Choosing the Topic: This database is designed to address the complexities of managing extensive e-commerce data, including secure user information, real-time product updates, and detailed order tracking, while providing valuable reporting capabilities.

System Overview: The database provides a comprehensive solution for organizing and accessing data related to users, products, orders, payments, and reviews, improving the efficiency of retail operations and supporting informed decision-making.

Key Features: It offers structured management of product details, user accounts, wishlists, shopping carts, inventory levels, and discount promotions, enabling seamless order processing and tracking, and generating insightful reports for business optimization.

2. <u>FUNCTIONAL REQUIREMENTS</u>

The Retail Management System must have the following functional requirements:

1. User Management

1. **User Registration**
   - Store user information including username, password (hashed), email, full name, address, phone number, and role.
   - Ensure data validation and secure storage.
2. **User Login**
   - Authenticate user credentials (username and password) against the stored data.
   - Manage user session details securely.
3. **User Profile Management**
   - Allow retrieval and updating of user profile information.

2. Product Management

1. **Add New Product**
   - Store product details including name, description, price, category, stock quantity, SKU, brand, weight, dimensions, and image URL.
   - Maintain data integrity and security.
2. **View Product Catalog**
   - Retrieve and display product details, including name, price, and image.
   - Support filtering by category, price, and brand.

3. Order Management

1. **Place an Order**
   - Store order details including user information, product details, quantities, shipping and billing information.
   - Record the order status and generate unique order IDs.
2. **View Order History**
   - Retrieve and display a list of orders placed by a specific user, including order date, total amount, and status.

4. Payment Management

1. **Process Payment**
   - Store payment details including payment method, transaction ID, and amount.
   - Ensure secure storage and retrieval of payment information.
2. **Link Payments to Orders**
   - Associate payment records with corresponding orders.

5. Review Management

1. **Submit a Review**
   - Store user reviews including product ID, user ID, rating, and comment.
   - Retrieve and display reviews on product pages.

6. Wishlist Management

1. **Add Product to Wishlist**
   - Store wishlist items for users, including product IDs and user IDs.
   - Retrieve and display user wishlists.

7. Shipping Tracking

1. **Store Shipment Details**
   - Record shipping information including order ID, shipment status, tracking number, and carrier details.
   - Update shipment status as needed.

8. Discount Management

1. **Manage Discounts**
   - Store discount details including discount codes, amounts, and applicable conditions.
   - Apply discounts to orders and track their usage.

9. Inventory Management

1. **Track Inventory Levels**
   - Store and update inventory levels for each product.

- o Ensure real-time updates to reflect stock availability.

10. Address Management

1. **Store User Addresses**
   - o Maintain a list of addresses for each user, including shipping and billing addresses.

11. Notifications

1. **Manage User Notifications**
   - o Store and manage notifications related to orders, payments, and other user activities.

12. Data Integrity and Security

1. **Ensure Data Integrity**
   - o Implement constraints and validations to maintain data accuracy and consistency.
2. **Data Encryption**
   - o Encrypt sensitive data such as user passwords and payment information.

13. Reporting and Analytics

1. **Generate Reports**
   - o Provide functionality to generate reports on sales, orders, inventory, and other metrics based on stored data.

3. <u>NON-FUNCTIONAL REQUIREMENTS</u>

3.1 Usability Requirements

The user interface should be interactive, simple and easy to understand. The system should prompt for the user and administrator to login to the application for proper input criteria.

3.2 Error Handling

Retail management system shall handle expected and non-expected errors in ways that prevent loss in information and long downtime period.

3.3 Security Requirements

The Retail management system should provide databases modification only for the admin after proper authorization.

The system shall accommodate high number of customers and products without any fault.

3.4 Software Requirements

1. Database - MSSQL is used as database as it easy to maintain and retrieve records by simple queries which are in English language which are easy to understand and easy to write.

2. Development tools and Programming language- Asp.Net with C# programming, MSSQL DB, Bootstrap.

3.5 Hardware Requirements

1. Intel core i5 and above is required for a stable experience and fast retrieval of data.

2. 8 GB RAM is required as it will provide fast reading and writing capabilities which will in turn result in better performance time.

4.   <u>USE CASE ANALYSIS</u>

Name	Register
Actors	Customer
Preconditions	User must provide all required registration details
Description	Users can register on the platform by providing necessary details such as username, password, email, etc.

Name	Login
Actors	Customer
Preconditions	User must have a registered account
Description	Registered users can log in to the platform using their username and password.

Name	View Product Catalog
Actors	Customer
Preconditions	Products must be added to the catalog by admin
Description	Users can browse through the product catalog to view available products.

Name	Place an Order
Actors	Customer
Preconditions	User must be logged in and have items in the cart
Description	Users can place an order for products they wish to purchase.

Name	Process Payment
Actors	Customer
Preconditions	User must have an order ready for payment
Description	Users can make payments for their orders using various payment methods.

Name	Track Shipment
Actors	Customer
Preconditions	User must have an order with a shipment in progress
Description	Users can track the shipment status of their orders.

Name	View Order History
Actors	Customer
Preconditions	User must be logged in
Description	Users can view the history of their past orders.

Name	Submit Review
Actors	Customer
Preconditions	User must have purchased the product
Description	Users can submit reviews for products they have purchased.

Name	Manage Wishlist
Actors	Customer
Preconditions	User must be logged in
Description	Users can add products to their wishlist for future reference.

Name	Manage Products
Actors	Administrator
Preconditions	Admin must be logged in
Description	Administrators can add, update, and delete products in the catalog.

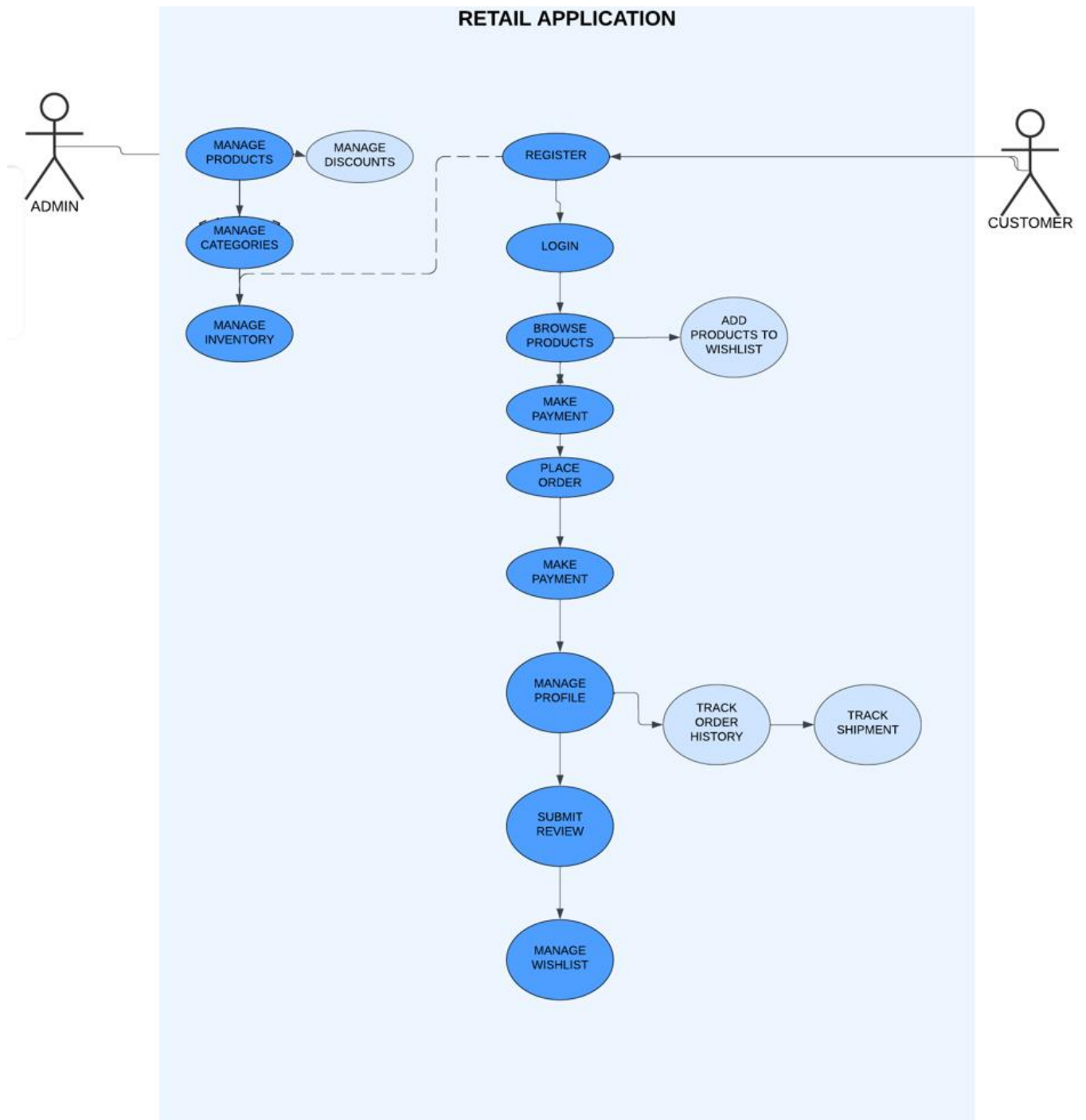| Name	Manage Categories
Actors	Administrator
Preconditions	Admin must be logged in
Description	Administrators can add, update, and delete product categories.

Name	Manage Orders
Actors	Administrator
Preconditions	Admin must be logged in
Description	Administrators can view and update the status of orders.

Name	Manage Shipments
Actors	Administrator
Preconditions	Admin must be logged in
Description	Administrators can update the shipment status of orders.

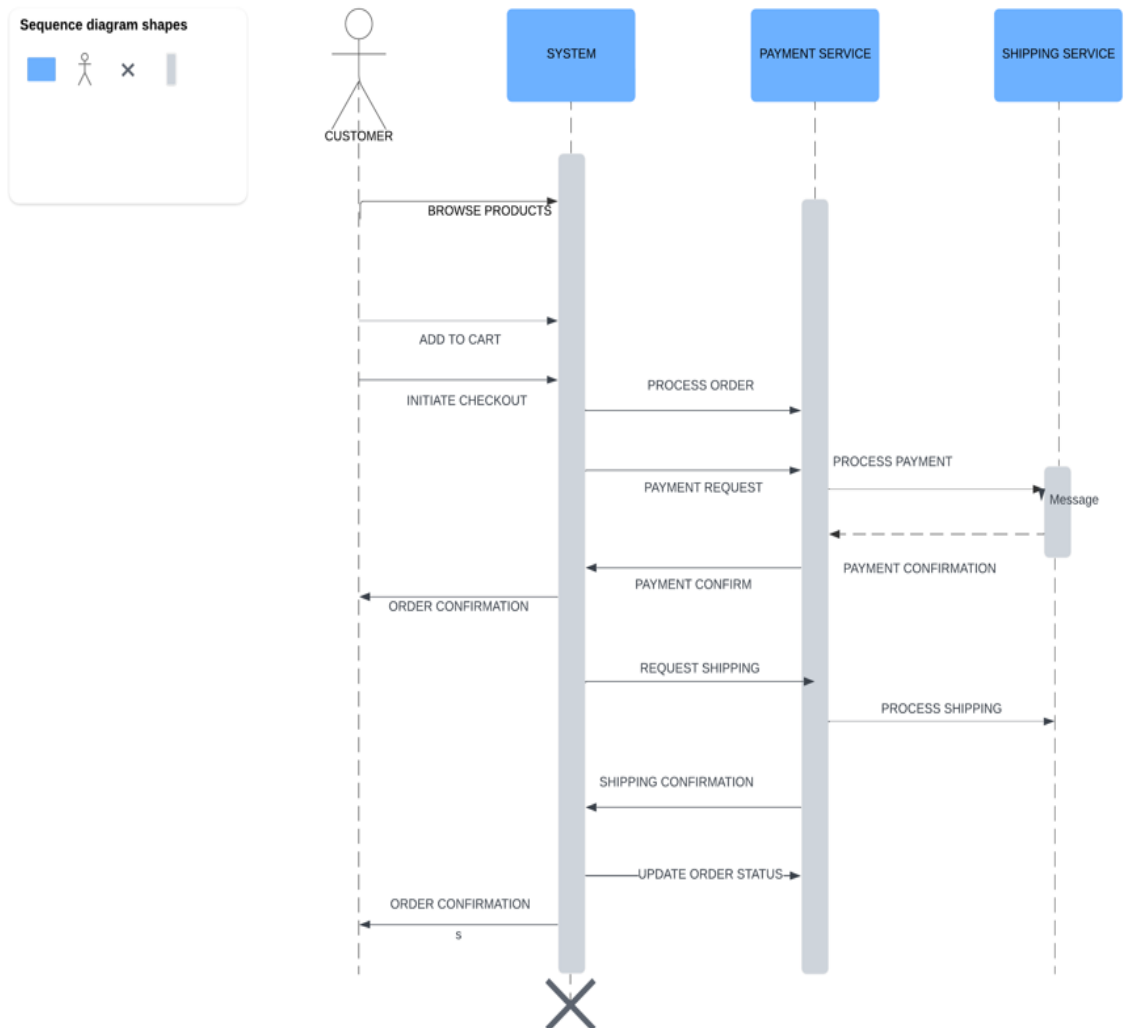| Name	Generate Reports
Actors	Administrator
Preconditions	Admin must be logged in
Description	Administrators can generate various reports such as sales reports, inventory reports, etc.

5. <u>USE CASE Diagram</u>

RETAIL APPLICATION

ADMIN

- MANAGE PRODUCTS
- MANAGE DISCOUNTS
- MANAGE CATEGORIES
- MANAGE INVENTORY

CUSTOMER

- REGISTER
- LOGIN
- BROWSE PRODUCTS
- ADD PRODUCTS TO WISHLIST
- MAKE PAYMENT
- PLACE ORDER
- MAKE PAYMENT
- MANAGE PROFILE
- TRACK ORDER HISTORY
- TRACK SHIPMENT
- SUBMIT REVIEW
- MANAGE WISHLIST

6. <u>Sequence Diagram</u>

7. __Entity Attributes__