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1. Introduction

# 1.1. Purpose

The Online Bookstore Management System aims to provide an online platform for users to browse, search for, purchase, and manage books and orders conveniently.

# 1.2. Scope

The system will include user authentication, book catalog management, shopping cart functionality, order processing, and user account management.

2. System Overview

2.1. System Description The Online Bookstore Management System is an online platform that enables users to browse, search for, purchase, and manage books and orders. It includes user authentication, book catalog management, shopping cart functionality, order processing, and user account management.

# 2.2. System Architecture

## The architecture of the Online Bookstore Management System for the Java desktop application follows a layered design, separating the application into three main tiers: Presentation, Business Logic, and Data Access.

## 2.2.1. Presentation Layer

The Presentation Layer is responsible for the graphical user interface (GUI) and user interaction. It encompasses the following components:

**User Interface (UI):** This component includes the creation of graphical elements, windows, dialogs, and menus that form the user interface. Java Swing or JavaFX can be employed to develop the desktop application's UI.

**Presentation Logic:**  Presentation logic manages the display of data from the Business Logic layer to the user interface and captures user input. It ensures a seamless user experience by rendering information in a user-friendly manner and interpreting user actions.

## 2.2.2. Business Logic Layer

The Business Logic Layer serves as the heart of the application, where core functionality and data processing take place. It is further divided into the following components:

**Controller:** The Controller component handles user interactions and translates them into actions. It manages user authentication, cart operations, order processing, and user account functions. The Controller ensures that user input is properly processed and routed to the appropriate parts of the application.

**Service:** The Service layer contains the application's business logic, encompassing functions related to book catalog management, order processing, and user account management. It acts as a bridge between the Controller and the Data Access Layer, facilitating data retrieval and updates.

**Integration with External Services:** The Business Logic Layer integrates with external services, if necessary, to enable features like secure online payments. Integration with payment gateways or other external services can be implemented here.

## 2.2.3. Data Access Layer

The Data Access Layer manages the interaction with the application's data and ensures efficient data storage and retrieval. It consists of the following components:

**Data Storage:** This component includes a relational database (e.g., MySQL) that stores information such as user accounts, book details, order history, and reviews. The database schema is designed to efficiently store and retrieve data related to users, books, orders, and other entities.

3. Functional Requirements

# 3.1 User Authentication

* The system shall allow users to register new accounts.
* Users shall be able to log in using their username and password.
* Passwords shall be securely hashed and stored.

# 3.2 Book Catalog

* Users shall be able to browse books by categories, genres, and authors.
* Users shall be able to search for books by title, author, genre, and ISBN.
* Each book listing shall display its details, including title, author, price, availability, and a brief description.
* Users shall be able to view book reviews and ratings.

# 3.3 Shopping Cart

* Registered users shall have a shopping cart associated with their account.
* Users shall be able to add books to their shopping cart.
* Users shall be able to modify the quantity of books in their cart.
* Users shall be able to remove books from their cart.
* The cart shall display the total price of items in the cart.

# 3.4 Order Management

* Registered users shall be able to place orders.
* Users shall receive order confirmation emails.
* Users shall be able to view their order history.
* Admin users shall be able to manage orders and update their status (e.g., processing, shipped, delivered).

# 3.5 User Account Management

* Users shall be able to update their profile information.
* Users shall be able to change their password.
* Admin users shall have additional privileges to manage user accounts.

# 3.6 Reviews and Ratings

* Registered users shall be able to leave book reviews and ratings.
* Users shall be able to view average ratings for books.
* Users shall be able to see individual user reviews and ratings.

4. Non-Functional Requirements

# 4.1 Performance

* The system shall handle concurrent user requests efficiently.
* Response times for browsing and searching books shall be within acceptable limits.

# 4.2 Security

* User passwords shall be securely stored and transmitted.
* Sensitive user data shall be protected.
* Admin functionalities shall require proper authentication and authorization.

# 4.3 Usability

* The user interface shall be intuitive and user-friendly.
* Users shall be able to navigate the application easily and perform tasks without confusion.

# 4.4 Compatibility

* The system shall be responsive and work on desktop.

5. System Design

# 5.1 Database Schema

The database shall include tables for users, books, orders, shopping carts, reviews, and other necessary entities.

# 5.2 User Interface

The user interface shall follow modern design principles.

It shall include pages for browsing books, managing the shopping cart, placing orders, and managing user accounts.

6. Testing

# 6.1 Unit Testing

The system shall undergo rigorous unit testing for critical components.

# 6.2 Integration Testing

Integration testing shall be performed to ensure seamless communication between system components.

7. Constraints

The project shall adhere to legal and regulatory constraints related to online sales and user data protection.

The project shall be developed using Java and MySQL technologies.