**Project**

**Student Course Registration System**

**1. Problem Statement:**

**Problem Statement**:  
We need to design an **online bookstore system** where users can browse books, search for specific titles or authors, view book details, add books to their shopping cart, and checkout for purchase. The system should be user-friendly and responsive, ensuring smooth navigation and secure transactions.

**2. Functional Requirements:**

Functional requirements define what the system should do. These are the core features and operations your system must support.

* **Search Books**: Users should be able to search for books based on different criteria such as title, author, ISBN, genre, etc.
* **View Book Details**: Upon selecting a book, users should be able to view detailed information like:
  + Title, Author, Price, Description, and Availability.
  + Optionally, reviews and ratings can also be included.
* **Add to Cart**: Users should be able to add books to their shopping cart.
  + The cart should display the list of selected books, their quantity, and total price.
* **Checkout**:
  + Users should be able to proceed to checkout.
  + During checkout, users should provide necessary payment information and shipping details.
  + Ensure secure payment processing.
  + Optionally, users can select the shipping method.

**3. Non-Functional Requirements:**

Non-functional requirements describe how the system should behave and define performance criteria. These are just as critical for system success.

* **Fast Search**:
  + The search functionality should return results quickly, even with a large inventory of books. Optimization techniques like indexing or caching may be used.
* **Secure Payment**:
  + Payment processing should be secure, ensuring customer information (like credit card details) is encrypted and not stored insecurely.
  + Implement integration with a reliable payment gateway (e.g., PayPal, Stripe).
* **Responsive Design**:
  + The bookstore should be easily accessible and functional on both desktop and mobile devices. This could involve using frameworks like **Bootstrap** or **React** to ensure the user interface adapts based on screen size.
* **High Availability**:
  + The system should be available with minimal downtime. This means using reliable hosting and cloud-based solutions if needed.
* **Scalability**:
  + The system should handle an increase in users or books without a significant decrease in performance.
* **User-friendly Interface**:
  + The interface should be intuitive and easy to navigate for all users, even those who aren’t very tech-savvy.

**4. Requirement Specification Document (RSD):**

Now, let's write this down in the form of a formal **Requirement Specification Document (RSD)**.

**[Online Bookstore System] Requirement Specification Document**

**1. Introduction**

The Online Bookstore System is a platform that enables users to browse books, search for specific titles or authors, add books to their shopping cart, and checkout for purchase. The system will offer a smooth user experience with fast search functionality, secure payment integration, and a responsive design for various devices.

**2. Functional Requirements**

The system must support the following functionalities:

* **Search Books**:  
  Users should be able to search for books by:
  + Title
  + Author
  + ISBN
  + Genre
* **View Book Details**:  
  For each book, the following details should be available:
  + Title
  + Author
  + Price
  + Description
  + Availability (in stock or out of stock)
  + Reviews and Ratings (optional)
* **Add to Cart**:  
  Users can add selected books to their shopping cart. The cart will display:
  + Book title, quantity, and price.
  + Total price of items in the cart.
* **Checkout**:  
  The checkout process should include:
  + Providing shipping information.
  + Selecting a payment method.
  + Completing a secure payment transaction.
  + A confirmation of the order (e.g., order number, receipt).

**3. Non-Functional Requirements**

* **Fast Search**:  
  The system should return search results within **2 seconds** for up to **1000 books** in the database.
* **Secure Payment**:  
  The payment gateway must comply with PCI DSS standards to ensure the secure handling of customer credit card information.
* **Responsive Design**:  
  The website must be fully functional on both mobile and desktop devices. The layout should adapt based on screen size.
* **Scalability**:  
  The system should support **up to 10,000 concurrent users** without significant performance degradation.
* **Availability**:  
  The system should have **99.9% uptime** to ensure it is available to users at all times.

**4. System Design Considerations**

* The system should have a **three-layer architecture**:
  + **Presentation Layer**: User Interface (UI) for interaction.
  + **Business Logic Layer**: Manages the application’s logic, including searching and cart functionality.
  + **Data Layer**: Manages the data (books, cart, users) and interacts with a database.
* **Database Requirements**:  
  A relational database should store:
  + **Books**: bookID, title, author, genre, price, description, stock status.
  + **Cart**: cartID, userID, bookID, quantity, totalPrice.
  + **Users**: userID, name, email, password (hashed), address.

**5. User Interface (UI) Requirements**

* The UI should be intuitive and user-friendly.
* The homepage should show a search bar, featured books, and categories.
* Each book should have a "view details" option.
* The cart should be accessible from any page and should display the number of items currently in the cart.

**6. Security Requirements**

* All sensitive user information, such as passwords and payment details, must be securely encrypted.
* Use **HTTPS** for all transactions involving sensitive data.
* User authentication and authorization must be implemented, ensuring only authorized users can complete the checkout process.

**7. Performance Requirements**

* The system should handle **at least 1000 products** and **500 concurrent users** with minimal performance degradation.
* The system should be capable of scaling up to handle increased traffic.

**5. Conclusion:**

This Requirement Specification Document outlines the core functional and non-functional requirements for the **Online Bookstore System**. Meeting these requirements will ensure the development of a robust, scalable, and user-friendly system that provides a seamless shopping experience.

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