CSE360

Software Engineering Lab



Requirements Analysis

Report On

**Book Store System**

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**Chapter 1: Introduction**

**1.1 System Purpose**

The purpose of the Bookstore Web Page is to provide a platform for users to browse, buy, and manage books online while offering an administrative panel for the bookstore owners to manage books, orders, and users. The system is developed using the MERN stack (MongoDB, Express.js, React, Node.js) to deliver a seamless user experience, modern design, and efficient backend operations.

**1.2 System Scope**

This system encompasses both user-facing features and an admin panel:

* **User Features**: Modern Landing Page, Browse Books, Book Details Page, User Authentication, Order Management, Wishlist, and Responsive Design.
* **Admin Panel Features**: Dashboard Analytics, Book Management, Order Management, User Management, and Theme Control.

The system includes the following components:

* **Frontend Development**: Built using React.js to offer a responsive user interface.
* **Backend Development**: Node.js with Express.js to handle API requests and server-side logic.
* **Database Management**: MongoDB for managing user data, book information, and orders.

* **Real-Time Features**: Notification system for updates on orders and availability.
* **Deployment**: Deploying the application on cloud platforms like AWS or Heroku for scalability and availability.

**1.3 Goals of Team**

* **Develop a user-friendly interface** for browsing books and managing orders.
* **Implement a robust and scalable backend** to manage data and handle user and admin requests.
* **Provide real-time notifications** to improve user experience.
* **Ensure the platform is responsive** across different devices.
* **Create a secure authentication system** for user login and order management.
* **Develop an efficient admin panel** for managing books, users, and orders.

**1.4 Process Model**

The system follows the **Agile Development** process model, which includes:

* **Iterative Development**: Continuous improvements through sprint cycles.
* **Collaboration**: Regular communication between frontend and backend teams.

* **Testing**: Regular testing of individual components and the overall system.
* **Feedback**: Feedback from users and admins for enhancements

**1.5 Team Organization**

* **Frontend Team**: Responsible for UI/UX development using React.js and ensuring the responsiveness of the application.
* **Backend Team**: Responsible for developing the server-side logic with Node.js, Express.js, and managing the database with MongoDB.
* **Database Team**: Handles database schema design, optimization, and management.
* **Testing and QA Team**: Responsible for testing the functionality and usability of the system.
* **Project Manager**: Oversees the project, ensuring timely delivery and coordination between teams.

**Chapter 2: Research**

**2.1 Market Research**

The online bookstore market has seen significant growth, driven by the increasing demand for digital shopping experiences and easy access to a wide range of books. Competition includes established e-commerce platforms such as Amazon, Barnes & Noble, and smaller specialized online bookstores. Key features demanded by users include a user-friendly interface, easy navigation, detailed product descriptions, secure payment options, and responsive design for mobile devices.

**2.2 Literature Survey**

Existing online bookstore systems emphasize features such as:

* **Book Browsing**: Advanced search functionality, category filters, and personalized recommendations.
* **Order Management**: Secure checkout process, order tracking, and payment integrations.
* **Admin Panels**: Comprehensive dashboards for managing inventory, orders, and user data.
* **Responsive Design**: Adaptive interfaces for both mobile and desktop users.
* Several open-source projects and frameworks (such as MERN stack) have been widely adopted for building scalable, maintainable systems, demonstrating the benefits of using these technologies for modern web applications.

**Chapter 3: Description**

This system enables customers to browse, order, and manage books online. Users can view detailed information about books, add them to their Wishlist, and track their orders. The admin panel enables bookstore staff to manage inventory, orders, and user accounts efficiently. The system also incorporates a responsive design, ensuring that users have a seamless experience across all devices.

**Chapter 4: Requirements**

**4.1 Functional Requirements**

**• User Features:**

* Modern landing page with book categories.
* Browsing and searching for books.
* Viewing detailed book information (author, price, description, etc.).
* User authentication (sign-up, login, logout).
* Managing orders (place, track, cancel).
* Wishlist functionality.
* Responsive and mobile-friendly design.

**• Admin Panel Features:**

* Dashboard with analytics (sales, active users, etc.).
* Adding, updating, and removing books.
* Viewing and managing user orders.
* User management (viewing, deleting, updating users).
* Theme control for customizing the look and feel of the platform.

**4.2 Structure Requirements**

* **Frontend:** React.js for the user interface and responsive design.
* **Backend:** Node.js with Express.js for API handling.
* **Database:** MongoDB for managing user data, books, and orders.
* **Authentication:** JWT (JSON Web Token) for secure login and session management.
* **Admin Panel:** Admin dashboard implemented with React.js.

**4.3 Performance Requirements**

* Fast page load times (less than 3 seconds).
* Ability to handle hundreds of concurrent users without performance degradation.
* Real-time updates for order status and notifications.

**4.4 Software Requirements**

* **Frontend:** React.js, Redux for state management.
* **Backend:** Node.js, Express.js.
* **Database:** MongoDB.
* **Authentication:** Passport.js or JWT for user authentication.
* **Deployment:** vercel for hosting.

**4.5 Hardware Requirements**

* A server capable of running Node.js and MongoDB.
* Minimum hardware configuration for hosting (e.g., 4 GB RAM, 2 CPU cores).
* For local development, a system with at least 8 GB of RAM and an i5 processor.

**4.6 Non-Functional Requirements**

* Security: Data encryption for passwords and payment transactions.
* Scalability: System should be scalable to accommodate increasing users and data.
* Availability: High availability with minimum downtime.
* Usability: Intuitive design for both users and administrators.

**4.7 Project Constraints**

* Time: The project must be completed in 12 weeks.
* Budget: The project is constrained to a budget for hosting, third party services, and development resources.
* Technology Stack: The MERN stack is fixed, limiting choices for frontend and backend frameworks.

**Chapter 5: System Analysis and Modeling**

**5.1 Functional Modeling**  
The system is designed with two major components:

* **User Side**: A responsive UI with book browsing, order management, and wishlist features.
* **Admin Panel**: A dashboard for managing books, users, and orders, with built-in analytics for performance monitoring.

**5.2 Use Case Analysis**

* **Use Case 1: User Registration/Login**
  + **Actors**: User
  + **Description**: A user registers, logs in, and gains access to their account for purchasing and order management.
* **Use Case 2: Book Browsing**
  + **Actors**: User
  + **Description**: Users can browse books by category, search, and view detailed information.
* **Use Case 3: Order Management**
  + **Actors**: User, Admin
  + **Description**: Users can place, track, and manage orders. Admins can view and update order statuses.

**Chapter 6: Division of Work**

| **Phase** | **Task** | **Duration** |
| --- | --- | --- |
| Phase 1 | Requirement gathering and architecture design | 1 week |
| Phase 2 | Frontend and backend setup | 2 weeks |
| Phase 3 | API development and database integration | 2 weeks |
| Phase 4 | Frontend features (User and Admin) | 3 weeks |
| Phase 5 | Testing and debugging | 1 week |
| Phase 6 | Deployment and final presentation | 1 week |

**Chapter 7: Conclusion**  
This Requirements Analysis Report outlines the detailed requirements, scope, and features for the Bookstore Web System using the MERN stack. The project focuses on creating a seamless, scalable, and secure platform for users and administrators, offering advanced functionality and a user-friendly experience.