Project Requirements Document: Web Application Development

ABSTRACT

The project aims to develop a web application for a fictional online bookstore named "BookBarn."

Venkat Shiva Reddy
https://www.linkedin.com/in/venkatshivareddy/

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Project Overview: The project aims to develop a web application for a fictional online bookstore named "BookBarn." The application will allow users to browse, search, and purchase books from a wide range of categories. The application will have an Angular front end for the client-side interface and a Web API back end to handle data storage, retrieval, and business logic.

1. Functional Requirements:

1.1 User Authentication:

- Users should be able to register an account and log in securely.
- Authentication should be implemented using JWT (JSON Web Tokens) for secure access to protected resources.

1.2 Book Catalog:

- Users should be able to browse books by categories (e.g., fiction, non-fiction, science fiction, etc.).
- Each book should have details such as title, author, description, price, and cover image.
- Users should be able to search for books by title, author, or category.

1.3 Shopping Cart:

- Users should be able to add books to their shopping cart.
- They should be able to view and edit the contents of their cart.
- Users should be able to proceed to checkout to finalize their purchases.

1.4 Order Management:

- Users should be able to view their order history.
- Admin users should have access to an order management dashboard to view, edit, and fulfill orders.

2. Non-Functional Requirements:

2.1 Performance:

- The application should be responsive and fast-loading to provide a seamless user experience.
- APIs should be optimized for efficient data retrieval and processing.

2.2 **Security:**

- User authentication and authorization should be implemented securely to prevent unauthorized access.
- Data transmission between the client and server should be encrypted using HTTPS.

2.3 **Scalability:**

- The application architecture should be designed to handle a growing number of users and books.
- Database and server infrastructure should be scalable to accommodate increased load.

2.4 **Usability:**

- The user interface should be intuitive and easy to navigate.
- Clear error messages and notifications should be provided to guide users through the application.

3. Technical Requirements:

3.1 **Front End (Angular):**

- The front end should be developed using Angular framework (latest stable version).
- Use Angular Material or Bootstrap for UI components and styling.
- Implement routing for different pages and components within the application.

3.2 **Back End (Web API):**

- Develop a RESTful Web API using ASP.NET Core or Node.js for the back end.
- Use Entity Framework Core or Mongoose for database interaction.
- Ensure proper error handling and logging in the back end for debugging and monitoring.

3.3 **Database:**

- Choose a relational (e.g., SQL Server, MySQL) or NoSQL (e.g., MongoDB) database based on project requirements and scalability needs.
- Design and implement the database schema to store book information, user data, and orders.

3.4 **Deployment:**

- Deploy the application to a cloud platform such as Microsoft Azure, AWS, or Google Cloud Platform.
- Set up continuous integration/continuous deployment (CI/CD) pipelines for automated testing and deployment.

4. Additional Features (Optional):

4.1 **Reviews and Ratings:**

- Allow users to leave reviews and ratings for books they have purchased.
- Display average ratings and reviews on book detail pages.

4.2 **Wishlist:**

- Implement a wishlist feature for users to save books they are interested in for future purchase.

4.3 **Recommendation Engine:**

- Develop a recommendation engine to suggest books based on user preferences and browsing history.

5. Constraints:

5.1 **Budget:**

- The project budget should be kept within reasonable limits for development, hosting, and maintenance.

5.2 **Timeframe:**

- The project should be completed within a specified timeframe to meet business requirements and launch deadlines.

6. Assumptions:

6.1 Technical Expertise:

- It is assumed that the development team has expertise in Angular, Web API development, and database management.

6.2 Data Sources:

- Data sources for book information (e.g., ISBN databases) and user authentication (e.g., OAuth providers) are assumed to be available for integration.

7. Risks:

7.1 Third-Party Dependencies:

- Dependencies on external APIs or libraries may introduce risks related to availability, reliability, and compatibility.

7.2 Security Vulnerabilities:

- Potential security vulnerabilities such as SQL injection, XSS attacks, and data breaches should be addressed through thorough testing and security measures.

8. Stakeholders:

8.1 Project Team:

- Development team members responsible for front end, back end, database, and deployment tasks.
- Project manager for coordinating tasks, timelines, and resources.

8.2 End Users:

- Customers who will use the application to browse, purchase, and review books.

9. Approval:

This document is subject to review and approval by project stakeholders before proceeding with development.

10. Revision History:

Version	Date	Description	Author
1.0	2024-04-16	Initial draft	Venkat Shiva Reddy