
Software Requirements Specification

For

BOOKTRADE

Version 1.0 approved.

Prepared by-
Aditya Raj- 229310470
Ayan Joshi- 229309053
Harsh Dixit- 229310376
Shad Alam - 229309140
Samyak Jain- 229310171

Manipal University Jaipur

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Revision History

Name	Date	Reason For Changes	Version

1. Introduction

1.1 Purpose

This Software Requirements Specification (SRS) document outlines the requirements for the development of "BOOKTRADE," an online bookstore e-commerce website. The purpose of this document is to provide a comprehensive understanding of the software specifications, functionalities, and constraints associated with the development and deployment of BOOKTRADE. This document serves as a guide for the development team, project managers, and stakeholders involved in the project. The Online Bookstore is meant as a way for customers to browse books on the website and buy them from home without the need to travel to a book shop. Defining the functions and specifications of the Online Bookstore is the primary purpose of this SRS [1]. The SRS illustrates in clear terms, the system's primary uses.

1.2 Document Conventions

This document follows standard documentation conventions, utilizing clear and concise language to describe the requirements. Priority levels are assigned to requirements to indicate their relative importance. Higher-level requirements' priorities are assumed to be inherited by detailed requirements unless otherwise specified. This SRS is written in Arial font with size 11 in italics, and Times font with size 14 for bullet points. The priorities for higher level requirements are inherited in detailed requirements.

1.3 Intended Audience and Reading Suggestions

This System Requirement Specification is meant for the Project makers, Project overseers, The Website Administrators, Customers, and the Suppliers. The SRS is written in the standard IEEE [2] format. The readers should read the whole SRS sequentially to gain a proper understanding of the project.

This document is intended for various stakeholders involved in the development and implementation of BOOKTRADE, including developers, project managers, marketing staff, users, testers, and documentation writers.

- Developers will find detailed technical specifications to guide the implementation of features.*
- Project managers will gain insights into the project scope, milestones, and resource requirements.*
- Marketing staff will understand the features and capabilities of BOOKTRADE.*
- Users will find information on the functionalities and user interactions.*
- Testers will use this document to derive test cases and validate the system.*

Readers are suggested to start with the overview sections and then proceed to sections most relevant to their role for a comprehensive understanding of the BOOKTRADE project.

1.4 Project Scope

BOOKTRADE is an online bookstore that facilitates the purchase of books by providing a user-friendly e-commerce platform. Users can register and log in using their email and password, and their credentials are securely stored in Google Firebase. The website includes an inventory system that allows users to browse, search, and order books. Payments are processed through UPI (Unified Payments Interface) for a seamless and secure transaction experience.

The scope of this project includes the development of the entire BOOKTRADE website, encompassing user authentication, inventory management, order processing, and payment integration. Future releases may extend the features based on user feedback and market demands.

1.5 References

<http://www.cse.msu.edu/~chengb/RE-491/Papers/SRS-BECS-2007.pdf>

An SRS of an example of online bookstore on a small scale of a university campus.

<https://docplayer.net/25969140-Srs-for-bsu-online-bookstore.html>

Firebase Documentation:

<https://console.firebase.google.com/u/0/project/booktrade-5653c/authentication/users>

YouTube:

<https://www.youtube.com/playlist?list=PLEjKBGxF74J4ZxGhA53u-7Y1CSgGQcvAI>

2. Overall Description

2.1 Product Perspective

BOOKTRADE stands as a self-contained e-commerce website, establishing itself as a novel online bookstore. Its design prioritizes universal accessibility, ensuring flawless functionality across popular browsers without necessitating specific hardware or software prerequisites. The platform not only operates independently but also interfaces with external systems for enhanced capabilities. For secure transactions, BOOKTRADE integrates seamlessly with a credit/debit card processing system. Additionally, it establishes a vital connection with the Bookstore's Inventory database, facilitating real-time updates on available stock and preventing discrepancies.

Appendix A provides a detailed architectural diagram, offering insights into the platform's major components, subsystem interconnections, and external interfaces. This visual aid serves as a valuable reference, illuminating the intricacies of the BOOKTRADE system. In essence, BOOKTRADE isn't just a user-friendly space for browsing and purchasing books; it's a comprehensive solution that streamlines the entire online bookstore experience for consumers while providing efficient management tools for the bookstore's administration.

2.2 Product Features

BOOKTRADE encompasses the following major features:

- *User Authentication: Users can register and log in using their email and password credentials, securely stored in Google Firebase.*
- *Maintain data associated with the inventory (a collection of books). • A book has a title, author and price.*
- *The inventory also keeps track of the stock/quantity of each book. • Maintain records for many customers.*
- *A customer can be either a member or non-member. • A customer has a username (unique across all users), password (no restrictions), email address (no restrictions), and postal address (unverified).*
- *Anyone may sign up for a customer account.*
- *Book Inventory: The website maintains an inventory of books, allowing users to browse, search, and view details about each book.*
- *Order Placement: Users can add books to their cart and place orders seamlessly through an intuitive interface.*

2.3 User Classes and Characteristics

User classes include registered users, administrators, and moderators. Users are book enthusiasts looking to purchase or books. Administrators and moderators oversee system activities and ensure compliance with the platform's policies. It provides clarity on the distinctions between registered users, administrators, and moderators, highlighting their respective functions in maintaining a thriving and secure online book community.

1. User Classes:

- *Registered Users: These are the primary users of the "Book Trade" website. They are individuals who have created accounts on the platform to actively participate in book purchase , and community interactions. Registered users are book enthusiasts who list books, browse listings, engage in discussions, and connect with others who share their love for literature.*

- *Administrators: Administrators are individuals or personnel responsible for overseeing the overall operation of the website. They have elevated privileges that enable them to manage the platform, including user accounts, content moderation, system configurations, and policy enforcement. Administrators play a crucial role in maintaining the integrity and security of the platform.*

- *Moderators: Moderators are also responsible for maintaining the platform's health and safety. They have specific permissions to moderate user-generated content, ensuring it complies with the platform's policies and guidelines. They may have limited administrative privileges but primarily focus on content and user behavior moderation.*

2. Characteristics of Each User Class:

- *Registered Users:*
 - *They have personal profiles with details like full name, location, and book preferences.*
 - *They can create and manage book listings, specifying details about books they want to purchase or buy*

- Registered users can search for books, browse listings, and engage in in-site messaging with other users.
- Registered users are primarily focused on book-related activities and community engagement.
- Administrators:
 - They have access to an administrative dashboard that allows them to manage user accounts, view system logs, and configure platform settings through Firebase management.
 - Administrators can take actions to enforce platform policies, such as suspending or banning users who violate the rules.
 - They play a crucial role in maintaining the platform's security and integrity, addressing technical issues, and ensuring a safe and respectful environment.
- Moderators:
 - Moderators primarily focus on content moderation and ensuring user interactions follow platform policies.
 - They can review reported content, edit or remove posts that violate guidelines, and issue warnings to users as necessary.
 - Moderators work to maintain a positive and respectful atmosphere on the platform, addressing issues related to user behavior and content quality.

2.4 Operating Environment

BOOKTRADE operates in the following environment:

- Hardware Platform: Compatible with standard web browsers on desktop and mobile devices.
- Operating System: Platform-independent; compatible with various operating systems.
- Software Components: Relies on JavaScript, HTML, CSS for front-end development, and Google Firebase for backend data storage and user authentication.

2.5 Design and Implementation Constraints

BOOKTRADE Development Constraints:

1. Google Firebase:
 - Reliance on Google Firebase for backend data storage and user authentication.
2. Front-end Technologies:
 - Constrained to JavaScript, HTML, and CSS for front-end development.
3. Payment Processing:
 - Limited to UPI interface for seamless payment transactions.

Security Considerations:

Security is not a focal point for BOOKTRADE, and the following conditions apply:

- Password Handling:
 - Passwords may be stored in plain text.
 - No password recovery feature or lockout mechanism after multiple invalid login attempts.
- Payment Security:

- Lack of encryption when transmitting credit card information.
 - Password Strength:
 - Users are not forced to use "strong" passwords, which typically include a combination of characters, capitals, numbers, and symbols.
- While these constraints allow for a simplified system, it is essential to note that BOOKTRADE may not be suitable for cases where security is a primary concern, especially in scenarios involving encrypted connections, secure password handling, and robust authentication mechanisms.*

2.6 User Documentation

User documentation for BOOKTRADE will include:

- *User Manuals: Comprehensive guides on using the website features.*
- *On-line Help: In-context assistance accessible within the website.*
- *Tutorials: Step-by-step guides for common tasks.*

2.7 Assumptions and Dependencies

The underlying conditions that are necessary for the effective operation of the "Book Trade" platform are given in this section. It highlights the reliance on a reliable web hosting service for hosting and performance, the need for users to have adequate internet connectivity for a seamless experience, and the expectation that users will comply with platform policies to maintain a respectful and secure online community. These assumptions and dependencies are integral to the platform's functionality and success.

1. Reliable Web Hosting Service:

- *Assumption: The successful operation of the "Book Trade" platform assumes that the website will be hosted on a reliable and well-maintained web hosting service. This hosting service should provide the necessary infrastructure, server resources, and technical support to ensure the platform's continuous availability and performance.*
- *Dependency: The platform's reliability, uptime, and scalability are dependent on the quality and stability of the chosen web hosting service. The service should be capable of handling the expected web traffic, storage requirements, and database operations.*

2. Adequate Internet Connectivity:

- *Assumption: Users of the "Book Trade" website are assumed to have access to adequate and reliable internet connectivity. This includes a reasonable bandwidth and low latency to ensure a smooth and responsive user experience.*
- *Dependency: The platform's performance, including the loading of web pages, quick data transfers, and the responsiveness of features like in-site messaging, depend on users having sufficient internet connectivity. Insufficient or unreliable internet connections may lead to a suboptimal user experience.*

3. User Compliance with Platform Policies:

- *Assumption: The successful operation and safety of the platform depends on users adhering to the platform's policies and guidelines. Users are expected to respect and follow the terms of service, privacy policies, and community guidelines.*

- *Dependency: The platform's administrators and moderators rely on user compliance to maintain a safe and respectful environment. They depend on users to report any suspicious or inappropriate activities that violate platform policies. Ensuring user adherence to policies is crucial for creating a positive and secure user community.*

3. System Features

3.1 User Authentication

3.1.1 Description and Priority

The User Authentication feature allows users to register and log in using their email and password credentials. This feature is of high priority as it establishes secure access to personalized features and order history.

3.1.2 Stimulus/Response Sequences

1. Registration:

- *Stimulus: User clicks on the "Register" button.*
- *Response: System prompts the user for email and password, validates inputs, and stores the registration data in Google Firebase.*

2. Login:

- *Stimulus: User enters email and password and clicks on the "Login" button.*
- *Response: System verifies user credentials with Firebase and grants access to user-specific features upon successful authentication.*

3.1.3 Functional Requirements

REQ-1: Registration

- 1. The system shall prompt the user for a valid email address and password during the registration process.*
- 2. The system shall validate the email format and ensure it is unique in the Firebase database.*
- 3. Passwords must meet security criteria, including a minimum length and a combination of alphanumeric characters.*
- 4. Upon successful validation, the system shall store the user's email and password securely in Google Firebase.*

REQ-2: Login

- 1. The system shall provide a login interface with fields for email and password.*
- 2. Upon submission, the system shall verify the entered credentials against the data stored in Google Firebase.*
- 3. If authentication is successful, the system shall grant access to user-specific features.*
- 4. In case of unsuccessful authentication, the system shall display an appropriate error message.*

3.2 Book Inventory Management

3.2.1 Description and Priority

Book Inventory Management enables users to browse, search, and view details about books available on the platform. This feature is of high priority as it forms the core functionality of the BOOKTRADE platform.

3.2.2 Stimulus/Response Sequences

1. Browsing Books:

- Stimulus: User navigates to the "Browse Books" section.
- Response: System displays a list of available books with relevant details.

2. Searching Books:

- Stimulus: User enters search criteria in the search bar.
- Response: System filters and displays books based on the search criteria.

3.2.3 Functional Requirements

REQ-3: Display Book List

1. The system shall present a paginated list of books with details such as title, author, and price.
2. Each book entry shall be accompanied by an image and a "Details" button for more information.

REQ-4: Search Books

1. The system shall provide a search bar for users to enter keywords, titles, or authors.
2. Upon entering search criteria, the system shall filter the displayed book list accordingly.

REQ-5: View Book Details

1. The system shall display detailed information about a selected book, including a synopsis, author, and price.
2. Users shall have the option to add the book to their cart for future purchase.

4. External Interface Requirements

4.1 User Interfaces

4.1.1 Login and Registration Interface

- Description: Users interact with the login and registration interface to access personalized features.
- Characteristics:
 - Design: Clean and intuitive design with a user-friendly layout.
 - Input Fields: During registration and login, users are prompted to enter their email and password.
 - Error Handling: System provides clear error messages for invalid inputs.
 - Forgot Password: Option available for users who need to recover their password.
 - Registration Link: Provided for new users to create an account.

4.1.2 Book Browsing Interface

- Description: Users explore available books using the book browsing interface.

- *Characteristics:*

- *Book List:* A paginated list of books with details such as title, author, and price.
- *Search Bar:* Users can enter keywords, titles, or authors to search for specific books.
- *Book Details:* Detailed information displayed on book selection, including synopsis and author.
- *Add to Cart:* Option available for users to add selected books to their shopping cart.

4.1.3 Shopping Cart Interface

- *Description:* Users manage selected items and proceed to check out in the shopping cart interface.
- *Characteristics:*
 - *Item List:* Display of items in the cart with details, quantities, and individual prices.
 - *Update and Remove:* Options for users to update quantities or remove items from the cart.
 - *Total Amount:* Calculation of the total amount based on selected items.
 - *Proceed to Checkout:* Button to initiate the checkout process.

4.1.4 Checkout and Payment Interface

- *Description:* Users finalize their orders and make payments through the checkout interface.
- *Characteristics:*
 - *Shipping Address:* Entry field for users to provide their shipping address.
 - *Payment Option:* UPI payment option with a secure entry for UPI ID.
 - *Order Summary:* Display of a summary of the order, including selected items and total amount.
 - *Place Order:* Button to confirm the order and proceed with the payment.

4.2 Hardware Interfaces

4.2.1 Supported Devices

- *Description:* The software product is designed to operate on various hardware devices.
 - *Characteristics:*
 - *Compatibility:* Compatible with standard web browsers on desktop and mobile devices.
 - *Responsive Design:* The user interface is designed to be responsive for optimal viewing on different screen sizes.
- The system will be hosted on a web server, and users will access it through their internet-connected devices. Therefore, there are no special hardware interface requirements.

4.3 Software Interfaces

4.3.1 Google Firebase

- *Description:* The backend of BOOKTRADE relies on Google Firebase for data storage and user authentication.
- *Characteristics:*
 - *Realtime Database:* Utilizes Firebase Realtime Database for storing user data.
 - *Authentication:* Relies on Firebase Authentication for secure user login.

4.3.2 Front-End Technologies

- *Description:* The user interface is built using JavaScript, HTML, and CSS.
- *Characteristics:*
 - *JavaScript:* Used for dynamic content and interactive features.
 - *HTML:* Employed for structuring web pages.
 - *CSS:* Utilized for styling and layout.

4.4 Communications Interfaces

4.4.1 Payment Gateway

- *Description: The system communicates with a UPI payment gateway for processing user payments.*
- *Characteristics:*
 - *UPI Protocols: Utilizes UPI protocols for secure and standardized transactions.*
 - *API Integration: Integration with the chosen payment gateway's API for seamless payment processing.*

4.4.2 Network Communication

- *Description: The software product relies on network communication for user interactions.*
- *Characteristics:*
 - *Communication Protocols: Uses standard communication protocols (HTTP/HTTPS) for data exchange.*
 - *Secure Connections: Ensures secure connections (HTTPS) for the transmission of sensitive user data.*

5. Other Nonfunctional Requirements

5.1 Performance Requirements

5.1.1 Response Time

- *Requirement: The BOOKTRADE website should maintain an average response time of less than 3 seconds for loading pages and processing user interactions.*
- *Rationale: A swift and responsive user interface is crucial for enhancing the overall user experience, encouraging user engagement, and reducing frustration.*

5.1.2 Concurrent User Support

- *Requirement: The system must be capable of supporting at least 500 concurrent users without experiencing a noticeable degradation in performance.*
- *Rationale: Ensuring the platform's ability to handle peak usage scenarios without compromising the user experience is essential for customer satisfaction and retention.*

5.1.3 Inventory Update Frequency

- *Requirement: The book inventory should be updated in real-time to reflect changes in stock levels promptly.*
- *Rationale: Real-time inventory updates are vital to providing users with accurate and up-to-date information, preventing situations where users attempt to purchase out-of-stock items.*

5.2 Safety Requirements

5.2.1 Data Integrity

- *Requirement: BOOKTRADE must implement robust measures to ensure the integrity of user data stored in Google Firebase.*
- *Safeguards:*

- Regular data backups to prevent data loss.
- Implementing strict access controls to restrict unauthorized access.
- Employing secure data transmission protocols to safeguard data in transit.
- Rationale: Protecting user data integrity is paramount for maintaining trust, preventing data loss, and upholding the platform's reliability.

5.2.2 Transaction Accuracy

- Requirement: The system must accurately process and record user transactions, including order details and payment information.
- Safeguards:
 - Implementing error-checking mechanisms to identify and rectify transaction errors.
 - Ensuring the integrity of the payment gateway to prevent financial discrepancies.
- Rationale: Accurate transaction processing is essential for financial accountability, preventing disputes, and maintaining user confidence.

5.3 Security Requirements

5.3.1 User Authentication

- Requirement: User authentication through email and password must be secure and resistant to unauthorized access.
- Security Measures:
 - Enforcing strong password policies to enhance account security.
 - Encrypting sensitive data, such as passwords, to protect against unauthorized access.
 - Implementing secure communication protocols (e.g., HTTPS) to safeguard data during transmission.
- Rationale: User authentication is a critical security aspect to prevent unauthorized access, protecting user accounts and their associated data.

5.3.2 Payment Security

- Requirement: The UPI payment process must adhere to industry-standard security protocols.
- Security Measures:
 - Utilizing secure UPI protocols to safeguard financial transactions.
 - Implementing secure socket layer (SSL) for encrypted data transmission during the payment process.
 - Complying with payment industry security standards to ensure secure handling of sensitive payment information.
- Rationale: Ensuring the security of payment transactions is essential to protect user financial information and maintain the trust of users.

5.4 Software Quality Attributes

5.4.1 Usability

- Requirement: The BOOKTRADE website should be designed with a user-friendly interface, ensuring ease of use and navigation.
- Measurement: Conduct user testing sessions, gather feedback on usability, and evaluate user satisfaction through surveys.
- Rationale: A user-friendly interface contributes to customer satisfaction, user retention, and positive user experiences.

5.4.2 Maintainability

- *Requirement: The codebase must be well-documented, modular, and adhere to coding standards to facilitate ease of maintenance.*
- *Measurement: Conduct regular code reviews, track the resolution of reported issues, and evaluate the time required for system updates.*
- *Rationale: A maintainable codebase ensures efficient and cost-effective updates, improvements, and bug fixes over the system's lifecycle.*

5.4.3 Reliability

- *Requirement: The system should have a minimum uptime of 99.9%, ensuring reliable access for users.*
- *Measurement: Monitor system downtime, track system availability, and conduct regular performance monitoring.*
- *Rationale: Reliable access is critical for user satisfaction, trust in the platform, and the success of an e-commerce service.*

6. Other Requirements

6.1 Technical Requirements

6.1.1 Browser Compatibility

- *Requirement: BOOKTRADE should be compatible with major web browsers, including but not limited to Google Chrome, Mozilla Firefox, Safari, and Microsoft Edge.*
- *Rationale: Ensuring broad browser compatibility enhances the accessibility of the platform for users using different web browsers.*

6.1.2 Mobile Responsiveness

- *Requirement: The website should be responsive and provide an optimal user experience on various devices, including smartphones and tablets.*
- *Rationale: Many users access e-commerce platforms through mobile devices, and responsiveness is crucial for a seamless user experience.*

6.1.3 Code Modularity

- *Requirement: The codebase should be modular to facilitate ease of maintenance and future enhancements.*
- *Rationale: Modularity enhances code maintainability and allows for the efficient addition of new features or modifications.*

6.2 Financial Requirements

6.2.1 Budget Constraints

- *Requirement: The development and maintenance of BOOKTRADE should adhere to the allocated budget.*
- *Rationale: Adhering to budget constraints ensures financial sustainability and efficient resource utilization.*

6.2.2 Scalability Costs

- *Requirement: The system architecture should be scalable to accommodate future growth without significant increases in operational costs.*
- *Rationale: Ensuring scalability while managing costs allows for efficient expansion and adaptation to changing user demands.*

6.3 Database Requirements

6.3.1 Data Backup

- Requirement: Regular automated backups of user data and transaction records should be performed.
- Rationale: Data backups are essential for safeguarding against data loss and facilitating recovery in case of unforeseen events.

6.3.2 Database Encryption

- Requirement: Sensitive user information stored in the database, such as passwords, should be encrypted.
- Rationale: Database encryption enhances security, protecting user data from unauthorized access or potential breaches.

6.4 Internationalization Requirements

6.4.1 Multilingual Support

- Requirement: BOOKTRADE should support multiple languages to cater to a diverse user base.
- Rationale: Providing multilingual support enhances accessibility and user engagement for a global audience.

6.5 Legal Requirements

6.5.1 Data Privacy Compliance

- Requirement: BOOKTRADE must comply with relevant data privacy regulations, ensuring the protection of user information.
- Rationale: Adherence to data privacy regulations is essential to maintain user trust and avoid legal consequences.

6.5.2 Terms of Service and User Agreement

- Requirement: A clear and comprehensive Terms of Service and User Agreement should be provided for users.
- Rationale: Clearly defining terms of use helps manage user expectations, outlines responsibilities, and mitigates legal risks.

6.6 Reuse Objectives

6.6.1 Code Reusability

- Requirement: Code components should be designed for reusability in future projects within the organization.
- Rationale: Promoting code reusability streamlines future development efforts and maximizes resource efficiency.

6.7 User Documentation

6.7.1 Online Help

- Requirement: An online help system or documentation should be provided to assist users in navigating and using BOOKTRADE.
- Rationale: Online help enhances user experience by providing guidance and support for users unfamiliar with the platform.

Appendix A: Glossary

- *BOOKTRADE*: The name of the e-commerce website developed for an online bookstore.
- *Firebase*: A mobile and web application development platform developed by Google.
- *SRS*: Software Requirements Specification.

Appendix B: Analysis Models

All diagrams and models of the project are included in UML diagram section.

Appendix C: Issues List

Known Issues

- *An ongoing list of known issues or bugs that have been identified in the system, along with their descriptions and status.*

Future Enhancements

- *A list of proposed future enhancements, including new features or improvements, with brief descriptions*