

IT-314: Software Engineering Group-10 Software Requirements Specifications



eBook Library System

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1. INTRODUCTION

1.1. Purpose of the document

- The purpose of this document is to explain the problem statement and scope of FlipThePage, an ebook library system, and outline the process for identifying and prioritizing its requirements.
- It describes the requirement elicitation techniques used for the system, along with a detailed explanation of the key features and their respective priorities.
- Additionally, this document provides an overview of the approaches taken for requirement analysis and prioritization, establishing a clear understanding of the project's objectives and functionalities.

1.2. Problem Statement

The current digital landscape lacks a comprehensive platform where readers can efficiently manage and access e-books while fostering a direct connection with authors.

Authors often struggle to find platforms where they can independently upload their works and directly engage with their readers.

Authors and readers need a solution that provides:

- eBook cataloging and organization.
- Search functionality for quick and accurate book discovery.
- Controlled user access for privacy and content management.
- Functionality for authors to upload and share their books with readers.
- An eBook reader for an uninterrupted reading experience.

1.3. Product Scope

- The scope of this project is to develop a system that connects readers and authors, simplifying the process of discovering, reading, and uploading eBooks. It addresses the lack of a centralized platform for managing eBooks and for authors to directly share their work with readers.
- This SRS document outlines the requirements that are required to achieve these goals, serving as a guide for the design, development, testing, and deployment of the platform.

1.4. Definitions and Acronyms

• Acronyms:

SRS: Software Requirements Specifications

FR: Function Requirements

NFR: Non-Functional Requirements

Definitions:

SRS: Software Requirements Specifications

A detailed document that describes the software system's purpose, functionality, and constraints.

FR: Function Requirements

Specifications that define the behavior and functionality of the system. These are the actions or features the system must perform to meet user needs.

NFR: Non-Functional Requirements

Requirements that define the constraints on the system.

1.5. Technologies used

- UI/UX Design: Figma
- Frontend: ReactJS
- Backend: MongoDB, NodeJS, ExpressJS, Cloudinary, GoogleDrive
- Testing:
 - 1. Jest, Istanbul for Unit Testing
 - 2. Selenium for GUI Testing
 - 3. Apache JMeter for NFR Testing
- Deployment:
 - 1. Vercel-app for Frontend
 - 2. Render for Backend

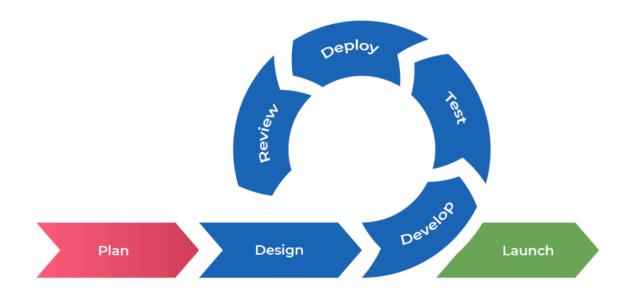
2. PROCESS MODEL

2.1 Explanation of Process Model

We have used **Agile Software Development** for our system.

Agile Software Development is an iterative and incremental approach to software development that emphasizes the importance of delivering a working product quickly and frequently. It emphasizes collaboration, flexibility, and rapid iteration.

Explanation of Agile Model:



1. Requirements Gathering

The team collaborates with stakeholders to collect requirements.

2. Sprint Planning

Requirements are divided into smaller, manageable tasks. These tasks are then prioritized based on:

- Importance
- Dependencies

Tasks are grouped into sprints (short cycles of 2-4 weeks) to ensure incremental progress.

3. Development and Testing

During each sprint:

- Developers write and test code to implement features.
- Unit tests and integration tests ensure functionality and compatibility.
- Regular code reviews are conducted to maintain quality and address issues early.

4. Sprint Review

At the end of each sprint, the team demonstrates the progress to stakeholders.

5. Sprint Retrospective

After the sprint review, the team reflects on the sprint's effectiveness.

 Areas for improvement in processes, tools, or workflows are identified.

6. Iteration and Completion

The cycle of planning, development, testing, and feedback repeats.

- Each iteration incorporates feedback and improvements.
- The process continues until the system fully meets the stakeholders' requirements.

2.2 Reason behind selection of the Process Model

Why Agile?

We chose Agile for our system because it allows us to deliver value quickly and adapt as we go.

Agile works the best in our case because of the following reasons:

- Early Delivery of Value: Agile focuses on delivering useful features early in the project. We can gather feedback to improve further.
- Focus on What Matters: Agile encourages us to work on features that add the most value, reducing time spent on unnecessary tasks.
- Adaptability: Agile gives us the flexibility to adjust to changing requirements or priorities, which is crucial for a dynamic system like ours.
- Cross-Functional Teamwork: Agile fosters self-organizing, cross-functional teams that share information effectively, communicate more effectively and feel more like a unit.

3. SPECIFIC REQUIREMENTS

3.1 Requirement Elicitation Techniques

There are several requirement elicitation techniques such as brainstorming, prototyping, use case scenarios, interviewing etc. For our system we have used two of these:

- 1. Brainstorming
- 2. Use case scenarios

1.Brainstorming

Brainstorming is a technique used to generate ideas and solutions for a specific problem. It involves a group of participants led by a facilitator who encourages open and creative thinking. The key strength of brainstorming is the ability of participants to connect their ideas freely, fostering collaboration and expanding the range of potential solutions. This process helps uncover innovative approaches to addressing the issue at hand.

Two main activities:

The Storm: Generating as many ideas as possible

During this phase, all types of ideas were shared, including both practical and non-practical suggestions. The generated ideas included:

- Login/Signup
- Upload/Update profile
- Book cataloging and organization
- Advanced search and filter options
- Track reading progress

- Feedback and ratings
- Rent/Purchase eBook
- Admin side functionality
- Author-upload feature
- Community forum or chat for readers and authors
- Personalized recommendations
- Wishlist for saving books
- User bio
- eBook reviews in video format
- Privacy settings and user controls
- Notifications and reminders for new releases

- The Calm: Filtering out of ideas

After discussions and refinement, we finalized the following key features to focus on in the initial stages of development:

- Login/Signup
- Upload/Update profile
- Book cataloging and organization
- · Advanced search and filter options
- Track reading progress
- Feedback and ratings
- Rent/Purchase eBook
- Admin side functionality
- Author-upload feature
- Personalized recommendations
- Wishlist for saving books
- Privacy settings and user control

2. Use Case Scenarios:

This is explained in detail in the section 4 of this SRS document.

3.2 Users and Stakeholders

• Users:

A **user** is an individual who interacts with the system.

-Visitors, Readers, Authors and Administrators

• Stakeholders:

A **stakeholder** is anyone who impacts or is impacted by an organization's actions or products.

-Developers, Designers and Testers

3.3 User Stories

User Stories

Front of the Card	Back of the card
As a Visitor, I want to search/browse the eBook catalog so that I can explore available books without registration.	• Success:
	A search bar is accessible on the homepage.
	Visitors can search by keywords, and results show book details like title and author.
	Clicking a book provides more information.
	Failure:
	If no matches are found, a "No results found" message is shown

	with suggestions.
2. As a Visitor, I want to filter search results based on book's title, author, editions, publisher and series so that I can easily find relevant eBooks.	• Success:
	Filters are available for title, author, editions, publisher, and series.
	Visitors can apply multiple filters simultaneously to refine search results.
	Results update dynamically based on selected filters.
	Failure:
	If no results match the filters, a "No matching eBooks found" message is displayed.
3. As a Visitor, I want to register an account so that I can gain access to more features.	• Success:
	A registration page is available with fields for username, email, and password.
	User successfully creates an account upon entering valid details.
	A confirmation message is displayed, and the user is redirected to the dashboard.
	Failure:
	If required fields are left empty, an error message prompts the user to

complete them. Invalid email or password format results in appropriate error messages. If registration fails due to system issues, the user is prompted to try again later. 4. As a Visitor, I want to preview Success: eBooks so that I can get a glimpse of the content before A "view" option is available for each deciding to read the eBook. eBook in the catalog. When a visitor selects the preview, a sample of the eBook content (e.g., the first few pages or a sample chapter) is displayed. The preview is presented in an easy-to-read format, allowing the visitor to assess the content before making a decision. Failure: If the eBook preview fails to load, the visitor sees an error message. 5. As a registered user, I want Success: to log in to my account, so that I can access my A login page with fields for entering personalized library and the username/email and password features. is available. After successful login, the user is

redirected to their personalized dashboard or library, where they can access saved books, wishlist, reading history, and other features tailored to their account. • Failure: If the login credentials are incorrect, the user receives an error message. 6. As a frequent user of the Success: platform, I want the option to enable a feature that can The login page includes an option remember me during login, so to "Remember Me" that I can stay logged in on my device without having to When enabled, the platform stores enter my login credentials a secure, encrypted cookie/token every time I access the on the user's device to maintain the platform. session. Upon returning, the user is automatically logged in without needing to enter their credentials. • Failure: If the "Remember Me" feature is not enabled, the user will need to enter their login credentials every time they access the platform. 7. As a registered user, I want Success: to have the option to reset my password if I forget it, so that I The login page includes a "Forgot can regain access to my Password" link, which redirects the

account and continue using the platform without interruption.

user to a password reset page.

The user enters their registered email address, and a password reset link is sent.

Upon clicking the reset link, the user is directed to a page where they can set a new password.

After successful password reset, the user can log in with the new password.

• Failure:

If the email entered is not registered, an error message is displayed informing the user that the email is not found in the system.

If the reset link has expired or is invalid, the user is prompted to request a new reset link.

 As a User, I want to add/remove eBooks to my wishlist so that I can keep track of books I'm interested in.

Success:

A "Wish List" button is available on each eBook's detail page.

When clicked, the eBook is added to the user's wishlist, accessible from their profile or dashboard.

Users can view, manage, or remove books from the wishlist at any time.

• Failure:

If the user is not logged in, they are prompted to log in before adding a

	book to the wishlist.
	If there is a system error while adding the book, the user receives an error message and is asked to try again later.
9. As a User, I want to read a book online without downloading it.	 Success: The platform provides a dedicated reading interface where users can read eBooks online without interruptions. Failure: If the reading interface fails to load, the user is shown an error message and an option to try again.
10. As a User, I want to view my reading history so that I can revisit books I've read before.	 Success: Users can access a "Reading History" section from their profile or dashboard, showing a list of previously read books Failure: If no reading history is available (e.g., for a new user), the system displays a message indicating that no books have been read yet.

11. As an Author, I want to upload my eBooks so that I can make them available to readers

Success:

Authors can access an "Upload eBook" section where they can upload their eBooks in supported formats (e.g., PDF).

The system prompts authors to provide essential details such as the book title, description, author name, genre, and cover image.

Once uploaded, the eBook becomes available in the catalog for readers to explore, with a confirmation message for the author.

• Failure:

If the upload fails (e.g., unsupported file format or network issue), the author is notified with an error message.

If required fields (e.g., title, description) are missing, the system prompts the author to complete them before successfully submitting the eBook.

12. As an author, I want to view feedback and ratings for my eBooks and respond to understand how readers are engaging with my work.

Success:

Authors can view the feedback and ratings left by readers for their eBooks

13. As an author, I want to see the history of the books that I have uploaded so that I can keep a track of my books.

Success:

Authors can view a "Books History" section in their profile, listing all the books they've uploaded.

• Failure:

If no books have been uploaded yet, the author is notified with a message indicating no books are available in their history.

14. As an Administrator, I want to manage user accounts so that I can deactivate or ban users who violate policies.

Success:

Administrators can access a "User Management" section where they can view all registered users.

The system provides options to deactivate or ban users based on policy violations, with the ability to add notes or reasons for the action.

15. As an Administrator, I want to manage the eBook catalog so that I can add or remove content as needed.

Success:

Administrators can upload eBooks through the backend interface, with support for file uploads and metadata entry (title, author, genre, etc.).

Once the eBook is uploaded, it automatically appears in the catalog, and the administrator can review the details to ensure

accuracy.

The administrator can also remove books from the backend if necessary, ensuring content remains up-to-date and compliant with the platform's policies.

• Failure:

If there is an error during the upload process (e.g., file format issue, missing metadata), an error message is shown with instructions on correcting the issue.

16. As an administrator, I want a verification system where the user needs to enter the required information to prove their authenticity.

Success:

When a new user registers, they receive an email containing a verification link.

The user clicks on the link to verify their email address, and their account is activated once the system confirms the validity of the email.

After successful email verification, the user can log in and access the platform.

• Failure:

If the user does not receive the verification email, they can request a new verification link. The system checks if the email address entered

	is correct and valid.
17. As an administrator, I want users to select a role 'reader' or 'author' while registering their account so that I can cater to their needs.	• Success:
	During registration, users are prompted to select their role as either "Reader" or "Author."
	The user successfully selects a role, and the registration is completed.
	The system stores the selected role in the user's account and grants appropriate access based on the role.
	Failure:
	If no role is selected, an error message prompts the user to choose one.
18. As an administrator, I want an online payment system with possible payment methods on websites so that readers can easily purchase the chargeable books.	Success:
	The platform integrates a secure online payment system, allowing readers to purchase chargeable eBooks with ease.
	Multiple payment methods are supported, including credit/debit cards, PayPal, and other popular online payment gateways.
	Upon successful payment, users are redirected to a confirmation

page where they can access the purchased eBook.

• Failure:

In case of payment gateway issues, an error message is displayed, and the user is prompted to try again or contact support.

The system prevents unauthorized access to purchased eBooks until the payment is fully processed.

19. As a reader, I want to receive a payment receipt and receive an email notification after completing a transaction, so that I have proof of payment for my records and can reference the details of my purchase.

Success:

After completing a payment, the reader receives a payment receipt that contains the transaction details, including the eBook purchased, payment amount, and payment method.

An email notification is sent to the reader confirming the transaction and providing the payment receipt.

• Failure:

If the email fails to send due to a technical issue, the reader is notified with an error message and instructed to check their account for transaction details.

In case of missing or incorrect transaction details, the reader can contact support for assistance and

	clarification.
OO As an Advairsistant on Louisia	
20. As an Administrator, I want to create and manage promotions and offers so that users have incentives to use the platform	Success:
	The administrator can create promotional campaigns, including discounts, bundle offers, and limited-time deals, through the backend interface.
	Offers are displayed prominently on the platform, such as on the homepage or a dedicated "Promotions" section, ensuring visibility to users.
	Users are notified of ongoing offers via email notifications and in-app alerts to encourage participation.
	The administrator can modify or deactivate promotions as needed.
	Failure:
	If the promotion setup fails, the administrator is shown an error message with troubleshooting guidance.
	Incorrect or expired offers are not applied during transactions, and users are notified if they try to use such offers.

21. As an Administrator, I want to view reports on user activities and eBook access so that I can make informed decisions on system improvements.

Success:

The administrator can access detailed reports on user activities, such as registration trends, login frequency, and search patterns.

Reports include insights on eBook access, such as most-read eBooks, genre popularity, and user preferences.

The data is presented in a user-friendly format, including graphs and tables, allowing the administrator to analyze trends and usage statistics easily.

The system allows exporting reports in formats like CSV or PDF for record-keeping and further analysis.

Failure:

If report generation fails due to system errors, the administrator is notified with an error message and troubleshooting steps.

Missing or incomplete data in reports is flagged, and the system attempts to regenerate accurate reports.

3.4 Requirement Analysis

3.4.1 Functional requirements

1. User Management

- **FR 1.1:** Users should be able to create accounts by providing essential details like name, email, and password.
- **FR 1.2:** Registered users should be able to log in securely using their credentials.
- **FR 1.3:** Registered users should be able to maintain a wishlist of eBooks for later reference.

2. Role Selection

FR 2.1: Users should be able to select their roles such as 'reader' or 'author'.

3. eBook Management

- **FR 3.1:** Users should be able to browse a collection of eBooks categorized by genres, authors, and other filters.
- FR 3.2: Users should be able to read eBooks directly through the platform.

4. eBook Transactions

- **FR 4.1:** Users should be able to rent or purchase chargeable eBooks through the platform.
- **FR 4.2:** Users should receive payment receipts and email notifications for completed transactions.

5. Author Management

- **FR 5.1:** Authors should be able to upload and manage their eBooks, including updating content and metadata.
- **FR 5.2:** Authors should be able to view feedback and ratings on their uploaded eBooks.

6. Feedback and Ratings

FR 6.1: Users should be able to share their thoughts on eBooks by submitting ratings and reviews.

7. Administrator Features

- **FR 7.1:** Administrators should be able to verify user accounts to ensure authenticity.
- **FR 7.2:** Administrators should be able to add or remove eBooks from the platform.
- **FR 7.3:** Administrators should be able to view reports on user activities and eBook access to make informed decisions on system improvements.
- **FR 7.4:** Administrators should be able to manage an online payment system with various payment methods to facilitate book purchases.

3.4.2 Non-functional requirements

1. Compatibility and Data Conversion

The system should support seamless data migration from lightweight sources and ensure **compatibility across common web browsers** considering resource limitations.

2. Robustness

The system should effectively handle exceptions and recover gracefully from errors without affecting active users or processes, within the constraints of the limited backend capacity

3. Load Handling:

The system should maintain stability and responsiveness under increased loads, including:

- Supporting at least 1000 simultaneous users.
- Handling 100,000 transactions per day without performance degradation.

4. Performance

The platform should deliver response times within 3 seconds for key operations, efficiently manage datasets of up to 500,000 records, and handle light concurrent traffic without degradation.

5. Usability

The system should provide an intuitive interface optimized for smaller-scale use, enabling users to navigate seamlessly and perform tasks efficiently within resource limitations.

6. Privacy

The system shall ensure basic security measures are in place, such as hashed passwords and secure communication (e.g., HTTPS), to protect user credentials and sensitive data, even in a limited resource environment.

4. USE CASE SCENARIOS

1. Use Case: Login

Actor: User

Preconditions:

- The user has an existing account.
- The user wants to log in to access their account.

Main Flow:

- 1. The user enters their email, username and password.
- 2. The system authenticates the credentials.
- 3. If valid, the system logs the user in and redirects them to their homepage.

Postconditions:

• The user is logged in.

Extensions:

• If the credentials are invalid, the system displays an error message.

2. Use Case: Forgot Password

Actor: User

Preconditions:

- The user has forgotten their password.
- The user must already be registered.

Main Flow:

1. The user clicks on "Forgot Password" on the login page.

- 2. The system asks for the email address.
- 3. The user enters the required information.
- 4. The system sends a password reset link to the user's email.
- 5. The user follows the link to reset the password.

Postconditions:

• The user successfully resets their password.

3. Use Case: User Registration

Actor: Visitor Preconditions:

The user wants to create a new account.

Main Flow:

- 1. The visitor clicks on "Sign Up."
- 2. The system displays a registration form.
- 3. The visitor enters their personal details, including name, email, and password.
- 4. The visitor submits the form.
- 5. The system validates the information and creates an account.

Postconditions:

• The visitor has a registered account.

Extensions:

• The system may require email verification before account activation.

4. Use Case: Role Selection

Actor: Visitor Preconditions:

• The visitor is registering for the platform.

Main Flow:

- 1. The user clicks on the "Register" button.
- 2. The system prompts the user to select a role: "Reader" or "Author."
- 3. The user selects their desired role.
- 4. The user completes the registration form and submits it.
- 5. The system registers the visitor with the selected role.

Postconditions:

The visitor is registered with the chosen role (Reader or Author).

Extensions:

 If the user is an author, they may be prompted for additional information like biography or book uploads.

5. Use Case: Search/Browse eBooks

Actor: Visitor or User

Preconditions:

 The user is logged in and is on the platform's homepage or eBook browsing section.

Main Flow:

- 1. The user clicks on the search bar.
- 2. The system displays a dropdown or suggestions based on the user's previous searches or trending eBooks.
- 3. The user applies the filter (e.g., genre, author, title, etc.) into the search bar.

4. The system filters the eBooks and displays a list of matching results.

5. The user can further filter the results by genre, author, price, or other

criteria.

Postconditions:

 The user is presented with search results relevant to the entered keywords.

Extensions:

 If no results are found, the system displays a message indicating no matches were found.

6. Use Case: Read eBooks

Actor: User

Preconditions:

• The user is logged in and has selected an eBook to read.

Main Flow:

1. The user selects an eBook from their library or search results.

2. The system redirects the user to the eBook content.

Postconditions:

• The user is reading the selected eBook.

7. Use Case: View Reading History

Actor: User

Preconditions:

• The user is logged in.

The user has a reading history (previously read eBooks).

Main Flow:

- 1. The user navigates to their profile section.
- 2. The user selects the "Reading History" option from the profile menu.
- 3. The system retrieves the user's reading history and displays a list of eBooks they have read, including titles, authors, and the date of reading.
- 4. The user can click on any eBook from the list to view more details or re-read the eBook.

Postconditions:

The user is able to view their complete reading history.

8. Use Case: Wishlist

Actor: User

Preconditions:

The user is logged in and browsing eBooks.

Main Flow:

- 1. The user selects an eBook they want to save for later.
- 2. The system displays an option to add the eBook to their wishlist.
- 3. The user clicks on "Add to Wishlist."
- 4. The eBook is added to the user's wishlist.

Postconditions:

The eBook is saved to the user's wishlist.

Extensions:

• The user may remove eBooks from their wishlist at any time.

9. Use Case: Rent or Purchase eBooks

Actor: User Preconditions:

• The user has selected an eBook they want to rent or purchase.

Main Flow:

- 1. The user selects the "Rent" or "Buy" option.
- 2. The system displays payment options.
- 3. The user selects a payment method and completes the transaction.
- 4. The system confirms the transaction and grants access to the eBook.

Postconditions:

The user has successfully rented or purchased the eBook.

Extensions:

• If the payment fails, the system displays an error message and prompts the user to try again.

10. Use Case: Author Upload

Actor: Author Preconditions:

• The author is logged in with the "Author" role.

Main Flow:

- 1. The author clicks on "Upload eBook."
- 2. The system displays an upload form where the author enters eBook details like title, description, genre, etc.
- 3. The author uploads the eBook file.

- 4. The system processes the upload and adds the eBook to the author's profile.
- 5. The eBook becomes available for readers to browse and purchase.

Postconditions:

• The eBook is uploaded and visible to users.

11. Use Case: View Upload History

Actor: Author Preconditions:

- The author is logged in.
- The author has uploaded eBooks to the platform.

Main Flow:

- 1. The author navigates to their profile section.
- 2. The author selects the "My Uploads" option from the profile menu.
- 3. The system retrieves and displays a list of eBooks uploaded by the author, including titles, publication dates, and any additional metadata (e.g., genre, description).

Postconditions:

• The author is able to view a complete list of their uploaded eBooks.

12. Use Case: Ratings and Feedback

Actor: User

Preconditions:

• The user has finished reading an eBook.

Main Flow:

- 1. The user selects the "Rate this eBook" option.
- 2. The system prompts the user to rate the eBook (e.g., 1 to 5 stars) and provide feedback.
- 3. The user submits their rating and review.
- 4. The system updates the eBook's rating and displays the new review.

Postconditions:

• The eBook has a new rating and review from the user.

Extensions:

• The user can edit or delete their review later.

5. GROUP MEMBERS

Student ID	Name
202201126	Dipesh Verma
202201129	Tasmay Patel
202201135	Tanmay Singh
202201141	Ayushi Jani
202201144	Dhruv Dhangar
202201145	Meet Andharia
202201157	Meet Kathrotiya
202201174	Parth Vadodaria
202201177	Sunil Rathva
202201187	Jay Patel

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