Software Requirements Specification

1.Introduction

1.1 Overview
- Provides a brief overview of the Library Management System (LMS), its purpose, and the intended audience.

1.2 Objectives
 - Clearly defines the goals of the LMS, including enhancing efficiency, simplifying processes, and improving user experience.

1.3 Scope
- Defines the scope of the LMS, detailing what features and functionalities are included and what are not.
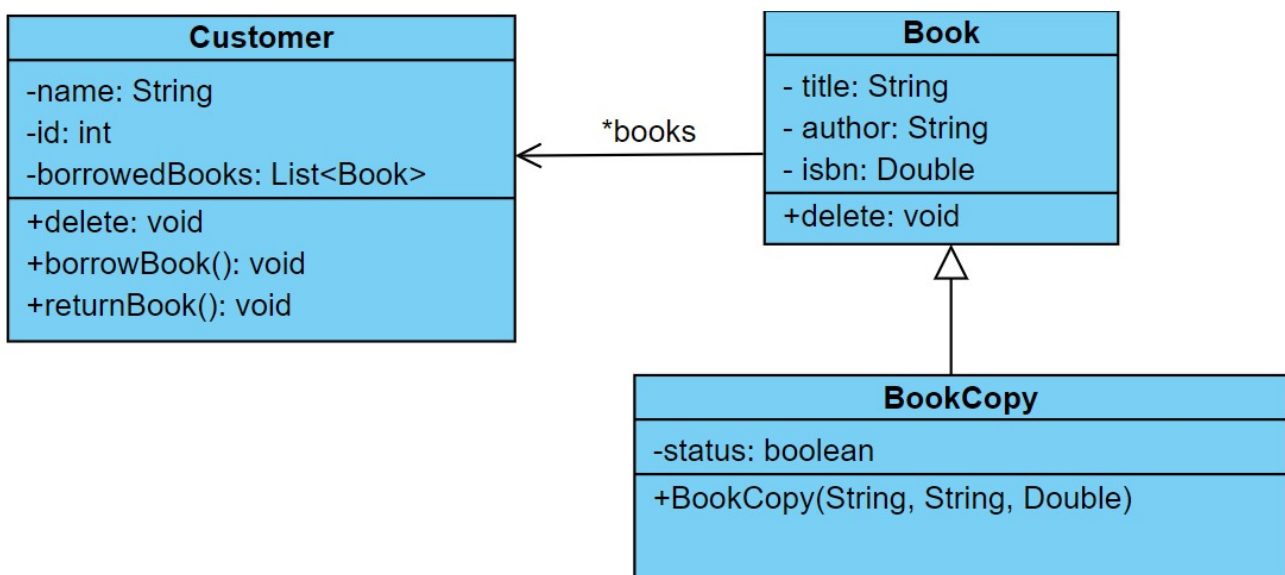
2. General description

2.1 Implementation Overview
- Offers an insightful overview of the LMS implementation, detailing the use of Java programming language, platform compatibility factors, and relevant dependencies.

2.2 Core Classes
- Elaborates on the essential classes within the LMS, such as Customer, Book, and BookCopy, providing comprehensive descriptions of their attributes, behaviours, and relationships.

Customer
-name: String
-id: int
-borrowedBooks: List<Book>
+delete: void
+borrowBook(): void
+returnBook(): void

*books

Book
- title: String
- author: String
- isbn: Double
+delete: void

BookCopy
-status: boolean
+BookCopy(String, String, Double)

2.3 User Roles and Responsibilities
- Defines the distinct roles within the LMS ecosystem, outlining the responsibilities and privileges associated with each role, including Librarian, Customer, and the System .

2.4 System Architecture
- Provides a high-level view of the LMS system's design, explaining the main parts of the system, how they work together, and any important design rules or concepts that were used.

3.Specific Requirements

3.1 Functional Requirements
- **Importing CSV Files**: Import data regarding books, copies, and customers.
- **Deleting Entities**: Allow deletion of books, copies, and customers with constraints.
- **Searching for Book Copies**: Provide a search functionality.
- **Borrowing and Returning Book Copies**: Enable borrowing and returning with clear guidelines.
- **Reporting**: Generate reports on various aspects.
- **Maximum Books Borrowed per Customer**: Limit borrowing to 5 books per customer.
- **Overdue Fee**: Apply fees for overdue items.
- **Deleting Process Constraints**: Allow deletion only for non-borrowed items.
- **Deleting Process for Customers**: Allow deletion only for customers with no borrowed items.

3.2 Non-Functional Requirements
- **Java Implementation**: Implement using Java.
- **Command Line Interface Only**: Use a command-line interface.
- **Efficiency and User-Friendliness**: Prioritise in interface design.
- **Visibility and Accessibility**: Ensure easy access to frequently used options.

4. Tables

- Borrowing a book copy involves the Customer, Librarian, and the Library Management System. The preconditions include the customer having valid credentials to either register or login and the book copy being available in the library inventory. Once these conditions are met, the customer is accepted, and the book copy is marked as borrowed for the customer. The standard procedure starts with the customer requesting to borrow the book copy. Then, the system checks the availability of the book copy. Special cases handling includes scenarios where the book copy is not available or the customer is not registered.

Name	Borrowing a Book Copy
Goal	The customer would like to borrow a book copy
Actors	Customer , Librarian ,Library Management System
Preconditions	• The customer has his credentials to register or to login • The book copy is available
Postconditions	• The customer is accepted • Book copy is marked as borrowed for the customer
Standard Procedure	1. The customer requests to borrow the book copy 2. The system checks the availability of the book copy 3. In case of the availability of the book , The system marks the copy as borrowed for the customer
Special Cases Handling	• If the book copy is not available , a message is shown to inform the customer and the process is ended. • The customer is not registered , a message is displayed to inform him to register first

- Returning a book copy involves the Customer, Librarian, and the Library Management System. The preconditions include the customer having valid credentials to login and having borrowed a book copy. The standard procedure starts with the customer requesting to return the book copy. Then, the customer selects the book copy to return. Subsequently, the system marks the copy as returned and available to borrow. Special cases handling includes the scenario where the book copy is damaged.

Name	Returning a Book Copy
Goal	The customer would like to return a book copy
Actors	Customer , Librarian ,Library Management System
Preconditions	• The customer has his credentials to login • The cutomer has borrowed a book copy
Postconditions	• The return of the book is accepted • Book copy is marked as available in the library
Standard Procedure	1. The customer requests to return the book copy 2. The customer selects the book copy to return 3. The system marks the copy as returned and available to borrow