# Software Development Plan for Library Management System (LMS)

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**1. Define Requirements**

**System Description**: is a console-based software application designed to manage a collection of books in a library setting. The system facilitates the core tasks of library management, including adding new books, removing books from the collection, and displaying the current list of books.

**Key Features**:

1. Add new books from a text file (ID, title, author).
2. Remove a book by its ID.
3. List all books in the collection.

I**ntended Users**: Library managers or staff who need a simple system to manage book collections.

**2. Gather Requirements**

**Intended Users**: Library staff or managers.

**User Needs**: Easy-to-use system for adding, removing, and listing books.

**Constraints**: The system should be lightweight, intuitive, and capable of handling large book collections via text file input.

**3. Implementation Plan**

**System Structure**:

- **Class 1**: Library
  - Methods:
    - addBooksFromFile(String filePath): Adds books from a file.
    - removeBookById(int id): Removes a book by ID.
    - listBooks(): Lists all books in the collection.
- **Class 2**: Book
  - Attributes: int id, String title, String author

    - Methods:
        - toString(): Displays book details.
- **Details of Each Task**:
    - **Adding Books**: Read from a file, parse each line, and store books in an ArrayList
    - **Removing Books**: Find the book by ID and remove it from the collection.
    - **Listing Books**: Print all books in the collection.

**4. Testing Plan**

**Test Cases**:

1. **Add Books Test**: Load books from a properly formatted file and check if all books are added.
2. **Remove Book Test**: Remove a book by ID and verify that the correct book is removed.
3. **List Books Test**: Verify that the system lists all books.

- **Testing**:
    - Invalid file format.
    - Attempting to remove a non-existent book.
    - Empty collection listing.