Software Requirements Specification (SRS)
Library Management System (LMS)
Version 1.0

Contents

5 Other Nonfunctional Requirements   7

6 Other Requirements   8

1 Introduction

1.1 Purpose

This document specifies the software requirements for the Library Management System (LMS) Version 1.0. The LMS will provide functionality to manage library resources efficiently, including books, users, and transactions such as issuing and returning books. This SRS covers the entire LMS system.

1.2 Document Conventions

- **Bold** is used for section headings.

- Requirements are uniquely identified using the format `REQ-#`.

- Priority levels are classified as **High**, **Medium**, or **Low**.

- Placeholder information not yet finalized is marked as **TBD**.

1.3 Intended Audience and Reading Suggestions

- **Developers:** Refer to Sections 3 and 4 for system and interface requirements.

- **Project Managers:** Focus on Sections 1, 2, and 5 to understand scope and constraints.

- **Testers:** Use Sections 4 and 5 for test case development.

- **Users and Librarians:** Refer to User Interface descriptions in Section 3.1.

- **Documentation Writers:** Consult Sections 2.6 and 3 for help content guidelines.

1.4 Product Scope

The LMS is designed to automate the management of books and user transactions in a library. It will allow users to search, borrow, and return books, while providing administrative features to librarians for catalog management and user control. The system aligns with the institution's strategy to digitize services and enhance user experience.

1.5 References

- IEEE Software Requirements Specification Template

- ISO/IEC 25010 Software Quality Model

- Vision Document for Library Automation, Version 2.0, 2025

- University IT Guidelines and Policies

2 Overall Description

2.1 Product Perspective

The LMS is a standalone web-based application but may be integrated with a university's central authentication system. It replaces a legacy system currently in use. The main components include:

- Web client (user interface)

- Backend server (business logic and database)

- Admin panel

2.2 Product Functions

- Book search and catalog browsing

- User registration and login

- Book issuance and return

- Book reservation

- Fine calculation and payment

- Admin functions: user management, catalog management, reports

2.3 User Classes and Characteristics

- **Librarian/Admin:** Full access to all modules. Technically trained.

- **Registered Users/Students:** Access to search, borrow, and view account details. Basic IT skills.

- **Guests:** Limited access for searching books without login.

2.4 Operating Environment

- Web browser: Chrome, Firefox, Edge (latest versions)

- OS: Windows, macOS, Linux (for users)

- Server: Ubuntu 22.04+, Apache/Nginx, MySQL, PHP/Python

- Mobile-responsive UI

2.5 Design and Implementation Constraints

- Must follow university's authentication system (Single Sign-On)

- Data privacy must comply with institutional and regional policies

- Use of open-source tools is preferred

- Database: MySQL

- Programming languages: Python (Django) or PHP (Laravel)

2.6 User Documentation

- User manual (PDF and HTML)

- Online help system (tooltips, FAQs)

- Admin guide

- Installation guide for system administrators

2.7 Assumptions and Dependencies

- Users will have internet access

- University will provide server infrastructure

- Barcode scanners will be used for issuing/returning books

- SMS/email integration depends on third-party APIs

3 External Interface Requirements

3.1 User Interfaces

- Responsive web design

- Standard layout with consistent navigation

- GUI must include:
  - Search bar
  - Login/Register
  - Dashboard
  - Book detail pages

- Keyboard shortcuts: Enter (Search), ESC (Close popups)

- Error messages must be displayed clearly in red

3.2   Hardware Interfaces

- Integration with barcode scanners

- Printer support for transaction receipts

- Optional RFID system (TBD)

3.3   Software Interfaces

- Database: MySQL

- Auth system: LDAP/SSO

- Integration with external SMS/email services

- REST APIs for third-party access (future phase)

3.4   Communications Interfaces

- HTTP/HTTPS for web communication

- SMTP for email notifications

- API endpoints must be secured via OAuth 2.0

4   System Features

4.1   Book Search and Browse

4.1.1   Description and Priority

Allow users to search and browse available books using filters like title, author, genre.
Priority: High

4.1.2   Stimulus/Response Sequences

- User enters search keyword → System displays list of matching books

- User applies filter → System updates results

4.1.3   Functional Requirements

- `REQ-1:` System shall allow keyword-based search

- `REQ-2:` System shall support filters (author, genre, publication year)

4.2 Book Issuance and Return

4.2.1 Description and Priority

Librarians and users manage issuing and returning of books.
Priority: High

4.2.2 Stimulus/Response Sequences

- Librarian scans book and user ID → System confirms and logs issuance

- User returns book → System updates status and calculates fine if any

4.2.3 Functional Requirements

- `REQ-3`: System shall log issue date and due date

- `REQ-4`: System shall calculate overdue fines automatically

4.3 Admin User Management

4.3.1 Description and Priority

Admin can manage users and roles.
Priority: Medium

4.3.2 Functional Requirements

- `REQ-5`: Admin can add/edit/remove users

- `REQ-6`: Admin can assign roles (librarian, student)

5 Other Nonfunctional Requirements

5.1 Performance Requirements

- Response time for all operations must be < 2 seconds

- System should support up to 500 concurrent users

5.2 Safety Requirements

- Regular backups of data

- Confirmation prompts before deleting any data

5.3 Security Requirements

- Encrypted user passwords

- Role-based access control

- Logs for all critical actions (issue, return, deletion)

- User authentication through SSO

5.4 Software Quality Attributes

- **Usability:** Interface should be intuitive for all user types

- **Maintainability:** Modular codebase for easy updates

- **Reliability:** 99.5% uptime with error recovery features

- **Portability:** Compatible across major OS and browsers

5.5 Business Rules

- A user can borrow up to 5 books at a time

- Maximum borrowing period is 14 days

- Overdue fine is $0.50 per day

- Only admins can delete records

6 Other Requirements

- Data should be exportable in CSV and PDF format

- System must support English (additional languages TBD)

- Adhere to FERPA/GDPR compliance

Appendix A: Glossary

- **LMS:** Library Management System

- **SSO:** Single Sign-On

- **GUI:** Graphical User Interface

- **LDAP:** Lightweight Directory Access Protocol

- **RFID:** Radio Frequency Identification

Appendix B: Analysis Models

- Use case diagrams (TBD)

- ER diagrams for database schema (TBD)

Appendix C: To Be Determined List

- RFID integration (feasibility and cost)

- Multi-language support timeline

- Final list of SMS/email providers