Software Requirements Specification

for

Library Management System

Version 1.0

Prepared by

Group No: 08

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Table of Contents

[Table of Contents 2](#_Toc112012224)

[1. Introduction 4](#_Toc112012225)

[1.1 Purpose 4](#_Toc112012226)

[1.2 Document Conventions 4](#_Toc112012227)

[1.3 Intended Audience and Reading Suggestions 5](#_Toc112012228)

[1.4 Product Scope 5](#_Toc112012229)

[1.5 References 6](#_Toc112012230)

[2. Overall Description 7](#_Toc112012231)

[2.1 Product Perspective 7](#_Toc112012232)

[2.2 Product Functions 7](#_Toc112012233)

[2.3 User Classes and Characteristics 8](#_Toc112012234)

[2.4 Operating Environment 9](#_Toc112012235)

[2.5 Design and Implementation Constraints 9](#_Toc112012236)

[2.6 User Documentation 9](#_Toc112012237)

[2.7 Assumptions and Dependencies 9](#_Toc112012238)

[3. External Interface Requirements 10](#_Toc112012239)

[3.1 User interfaces 10](#_Toc112012240)

[3.2 Hardware Interfaces 11](#_Toc112012241)

[3.3 Software Interfaces 11](#_Toc112012242)

[3.4 Communications Interfaces 12](#_Toc112012243)

[4. System Features 12](#_Toc112012244)

[4.1 Registration 12](#_Toc112012245)

[4.2 Sign up 12](#_Toc112012246)

[4.3 Login 12](#_Toc112012247)

[4.4 Add Books 13](#_Toc112012248)

[4.5 Search Books 13](#_Toc112012249)

[4.6 Update/Edit Book details 13](#_Toc112012250)

[4.7 Book Requests 13](#_Toc112012251)

[4.8 Book Issue 13](#_Toc112012252)

[4.9 Books Renew 13](#_Toc112012253)

[4.10 Automated reminders to users for book return 14](#_Toc112012254)

[4.11 Alerts on Fine on user profile 14](#_Toc112012255)

[4.12 Return Book 14](#_Toc112012256)

[4.13 History of issued books by users 14](#_Toc112012257)

[4.14 User profile 15](#_Toc112012258)

[4.15 User password change 15](#_Toc112012259)

[5. Non-Functional Requirements 15](#_Toc112012260)

[5.1 Usability Requirement 15](#_Toc112012261)

[5.2 Availability Requirement 15](#_Toc112012262)

[5.3 Efficiency Requirement 15](#_Toc112012263)

[5.4 Accuracy 16](#_Toc112012264)

[5.5 Performance Requirement 16](#_Toc112012265)

[5.6 Reliability Requirement 16](#_Toc112012266)

[6. Other Requirements 17](#_Toc112012267)

# 1. Introduction

## 1.1 Purpose

The document details the software requirements specification (SRS) for the web-based application Library Management System. The library management system is a software designed to aid librarians and users by controlling important library operations in a systematic way from a single point of access. It automates the manual tasks for the librarians and helps in keeping records of all the library resources like books, journals, research papers, newspapers, catalogs, etc. The system gives users their individual accounts to keep record of their issued books, book requests, deadlines for return of books, penalties etc. Interface of the systems allows users to search for books and reserve them online. It is an efficient and responsive user-friendly software that is free of human error, economical and provides 24/7 availability to its users.

## 1.2 Document Conventions

This document is created based on the IEEE template for System Requirement Specification Documents.

The entire document is justified.

Convention for Main title:

* Font face: Times New Roman
* Font style: Bold
* Font size: 18

Convention for Subtitle:

* Font face: Times New Roman
* Font style: Bold
* Font size: 14

Convention for body:

* Font face: Times New Roman
* Font size: 12

## 1.3 Intended Audience and Reading Suggestions

This document is intended for both the stakeholders who are interested in purchasing this product as well as the developers and engineers who are building this system. Lastly, the Library Management System will be proposed to its client, Bangladesh University of Professionals, for its approval.

## 1.4 Product Scope

Library Management System is a web application which will be focusing a university environment and automate the repeated tasks done by librarians and students, teachers, or any users of the library from a single place. The features of this product entail providing a system that enables librarians to have their own admin accounts from where they can monitor and make changes to the catalog of the library. It is especially beneficial for any education institute where modifications to the resources of a library needs to be updated constantly. The resources of the library will be stored in the system database. Librarians with admin’s accounts can update the count for a certain book or add new books easily. A complete record of the availability of resources in the library will be transparent to both the librarians and the users.

Users of the library like students, staff, faculties, or anyone with a registered account can view the catalogue of books available under each defined category. They can also search for books, journals, research papers etc. by author, title, keywords, or availability from the system interface. The users with a registered account will be able to issue books online as well as renew their issue remotely without ever visiting the library. Every user’s book records, and history will be stored individually in the system’s database. Users will have their personalized view of a timeline of their issued books, returned books, clear dues, penalties (if any) and reminders through notifications a few days prior to the date of return of books. Librarians can manage users account, process their dues, and view recommendations from users as well. All these can be viewed and done remotely through the internet at any time, only if users are registered under the university library system. This automated and interactive system is efficient and cost effective.

## References

* IEEE. IEEE Std 830-1998 IEEE Recommended Practice for Software Requirements Specifications. IEEE Computer Society, 1998.
* Smith, S.S (2010). Web-Based Instruction: A Guide for Libraries (3rd ed.). American Library Associations (ALA).
* Software Requirements and Specifications: A Lexicon of Practice, Principles and Prejudices (ACM Press) by Michael Jackson

# 2. Overall Description

## 2.1 Product Perspective

The Library Management System is designed to help libraries manage, issue, and return books more efficiently. The designed system will considerably assist library members and the librarian. It allows the user to search using several criteria, such as the title of the book, the author of the book, or the genre of the book. The system displays information about the books that the user looked for in a field, and the user can select the book that he wants and issue it with a single click. Furthermore, the user can check their profile to see whether they have any outstanding dues that need to be paid. The user can re-issue the book online. An automated fine will be imposed on the user who fails to return the book on time. The librarian can add and update books.

## 2.2 Product Functions

This part provides a clear functional overview of the finished product. The product is planned to include the following features:

1. Registration
2. Sign up
3. Login
4. Add Book
5. Search Books
6. Update/Edit Book details
7. Book Requests
8. Book issue
9. Books reissuing online
10. Automated reminders to users for book return
11. Automated fine on users who fail to do so
12. User profile
13. History of issued books by users
14. Alerts on fine on user profile
15. User password change

## 2.3 User Classes and Characteristics

We have 2 levels of users:

User module:

In the user module, user will be able to:

* check the availability of the books.
* Request book
* Issue book
* Reserve book
* Return book
* Re-Issue
* Fine details
* See profile history

Librarian module:

In the module, librarian will be able to:

* Add new book
* Remove books
* Update details of book

## 2.4 Operating Environment

Technologies:

HTML, CSS, PHP, Bootstrap, JavaScript, bootstrap, Laravel.

The product will be operating in windows environment. The Library Management System is a website and shall operate in all famous browsers, for a model we are taking Microsoft edge, Google Chrome, and Mozilla Firefox. Also, it will be compatible with IE 6.0. Most of the features will be compatible with the Mozilla Firefox & Opera 7.0 or higher version. The only requirement to use this online product would be the internet connection. The hardware configuration includes Hard Disk: 40 GB, Monitor: 15” Color monitor, Keyboard: 122 keys. The basic input devices required are keyboard, mouse and output devices are monitor, printer etc.

## 2.5 Design and Implementation Constraints

The system is developed using HTML, CSS, PHP, Bootstrap, JavaScript, Laravel and bootstrap and is supposed to work in different smart devices. For using the system, one must have a user account. Users should log in to their accounts using the correct username and password. The user data of every user must be kept in a database that the website can access. The system will not possibly have any hardware constraints if it has internet connections.

## 2.6 User Documentation

It will give user-specific instructions for using the library management system.

## 2.7 Assumptions and Dependencies

The assumptions are: -

* The coding should be error-free
* The system should be user-friendly so that it is easy to use for the users
* The information of all users, books, and libraries must be stored in a database that is accessible by the website
* The system should have more storage capacity and provide fast access to the database
* The system should provide search facility and support quick transactions
* The Library System is running 24 hours a day
* Users may access from any computer that has Internet browsing capabilities and an Internet connection
* Users must have their correct usernames and passwords to enter into their online accounts
* and do actions

The dependencies are: -

* The specific hardware and software due to which the product will be run
* On the basis of listing requirements and specification the project will be developed and run
* The end users (admin) should have proper understanding of the product
* The system should have the general report stored
* The information of all the users must be stored in a database that is accessible by the Library System
* Any update regarding the book from the library is to be recorded to the database and the data entered should be correct

# 3. External Interface Requirements

## 3.1 User interfaces

Login interface: The system provides a sophisticated platform for the user to enter their account information as to login to their account. If there is a new user who needs to register into the library and wishes to become a member, they can simply sign up. If the user is not already registered, he can input his information and register. To login, the system will ask for username and password. The password won’t be shown while entering. If the user enters wrong username or password, then the system will show error. If a user does not remember their password, they can retrieve their password after answering to a security question.

Search: After login into the system, the member or librarian can search the book they want. After entering search command, they system will show whether the book is available or not. They can search books by title, author, and genre.

Admin Control: The admin panel will allow the librarian to add user, remove user. This panel is available only to Forum Administrators, regardless of the user's role on the API Portal. By default, the API Portal Administrator account has Forum Administrator access.

## 3.2 Hardware Interfaces

Various interfaces for the product could be:

1. Monitor

2. Keypad

3. Mouse

4. A connection to the library database

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1. Monitor

2. Keypad

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4. A connection to the library database

Software Interfaces:

1. Any Windows OS.

2. JDK or JRE must be installed on the system to run the application. In addition to that, NetBeans

or Eclipse IDE should also be installed for easier execution of the application.

## 3.3 Software Interfaces

1. Backend Language: PHP, JavaScript

2. Backend Framework: Laravel

3. Frontend: HTML5, CSS3, Bootstrap5

4. Database: MySQL Database

## 3.4 Communications Interfaces

The communications standards that will be used is GUI (Graphical user interface). The GUI of this web application will be built using HTML, CSS, and JavaScript. This interface must be highly intuitive or interactive because there will not be an assistance for the user who is operating the system. The interface is designed to be very user-friendly so anyone with a very little knowledge of the computers can also operate the system. Also, the password should be private, and this can be done by using asterisks at the password panel.

# 4. System Features

## 4.1 Registration

Description: Users will need to register/register first. There are two different types of users.

* Library manager/manager: The manager needs to provide detailed information about the name, address, phone number, email id of libraries.
* Regular/Student: User must provide detailed information about his/her name, address, phone number, email id, and student id.

## 4.2 Sign up

* Input: Details about the user mentioned in the description.
* Output: Registration status confirmation.
* Processing: All information is checked, and error message is displayed if an error occurs.

## 4.3 Login

* Input: Enter the identification number(id) and password provided.
* Output: The user will be able to use the features of software.

## 4.4 Add Books

* Input: Enter the details of the books such as names, author, edition, quantity.
* Output: confirmation of addition.

## 4.5 Search Books

* Input: Enter the name of author, book’s name, or code number to be issued.
* Output: List of books related to the keyword.

## 4.6 Update/Edit Book details

* The librarian will be able to edit the book details and the number of books that are available
* The user will be able to see after the update/Edit

## 4.7 Book Requests

* The user will be able to request for a book if it is unavailable.

# 4.8 Book Issue

* Description: If the books are available, then the books can be issued.
* Book Limit: The System can issue 5 books at a time to one user. But The user cannot take more than five books at a single issue.
* Deadline: The maximum time-period of an issued book is one week. So, if it exceeds the time limit then a fine would be imposed.
* Input: click the book the user wants.
* Output: confirmation for book issue and apology for failure in issue.

## 4.9 Books Renew

* Description: This system allows this unique feature where the user can extend their time limits of issued books without any hassle.
* State: Book is issued and is about to reach the date of return.
* Input: Select the book to be renewed.
* Output: confirmation message.
* Processing: If the issued book is already reserved by another user, then an error message will be sent and if not, then a confirmation message will be displayed.

## 4.10 Automated reminders to users for book return

* Description: When the time of book issue is about to reach the deadline, the system will automatically remind the users to return their books on their profile.
* Input: Return the book to the library.
* Output: The issued list will be updated, and the returned book will be listed out.

## 4.11 Alerts on Fine on user profile

* Processing: If the book issue crossed the date of return and the user did not renew it, then fine will be applied by 50 taka per day and will be visible both at user profile and librarian profile.
* Condition: So, to issue next books further, the user must clear all the dues.
* Input: check for the fines.
* Output: Details about fines on different books issued by the user.

## 4.12 Return Book

* Input: Return the book to the library.
* Output: The issued list will be updated, and the returned book will be listed out.

## 4.13 History of issued books by users

* Description: This system will provide a database-based user history where all the book records will be updated automatically. This is a unique feature of this system where the user can see that till now how many books, he/she has read.

## 4.14 User profile

* Users can manage her own profile in this system. And also he/she can update his and her personal information.
* A user can also request for a book using her own profile.

## 4.15 User password change

* Description: A user can change her password in our system.
* Security: This system ensures the security of its users.

# 5. Non-Functional Requirements

## 5.1 Usability Requirement

The system is versatile and shall allow the users to access the system from different devices that are connected to the Internet. Since all users are familiar with the general usage of web browsers and web applications, no special training is required. The system is user friendly which makes the system easy.

## 5.2 Availability Requirement

The system is available 100% for the user and is used 24 hrs. a day and 365 days a year. The system shall be operational 24 hours a day and 7 days a week.

## 5.3 Efficiency Requirement

Mean Time to Repair (MTTR) - Even if the system fails, the system will be recovered back up within an hour or less.

## 5.4 Accuracy

The system should accurately provide real time information taking into consideration various concurrency issues. The system shall provide 100% access reliability.

## 5.5 Performance Requirement

The information is refreshed depending upon whether some updates have occurred or not in the application. The system shall respond to the member in not less than two seconds from the time of the request submission. The system shall be allowed to take more time when doing large processing jobs. Responses to view information shall take no longer than 5 seconds to appear on the screen.

## 5.6 Reliability Requirement

The system has to be 100% reliable due to the importance of data and the damages that can be caused by incorrect or incomplete data. The system will run 7 days a week, 24 hours a day.

# 6. Other Requirements

**Appendix A: Glossary:**

A software requirement specification (SRS) is a description of a software system to be developed. The software requirements specification lays out functional and non-functional requirements, and it may include a set of test cases that describes the model used as well as user interaction that the software must provide.

**Appendix B: Analysis Models:**

DFD Diagram:

