

LAB 1 - LIBRARY MANAGEMENT SYSTEM

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AIM - To write the Problem Statement and Software Requirements Specification (SRS) for Library Management System.

Problem Statement:

The current library management system is inefficient and outdated, causing delays and errors in book borrowing, returning, and inventory management. There is a need to develop a new and modern library management system that can streamline the process of book circulation, reduce human errors, and provide real-time access to inventory and borrowing information. The new system should also be user-friendly and accessible for both library staff and patrons, with features such as online book reservations, automated notifications, and easy-to-use interfaces for staff to manage the library's collection.

Software Requirement Specification (SRS)

1 Introduction:

1.1 Purpose:

The purpose of this document is to provide a detailed description of the Library Management System. The document will explain the functional and non-functional requirements of the software system to be developed.

1.2 Scope:

The scope of a library management system includes various activities and processes involved in managing a library's collections, resources, services, and users. It should cover the entire process of managing a library's resources and services, from acquisition to circulation to reporting, with a focus on enhancing the user experience and improving the efficiency of library operations. The development time for the system is estimated to be ten months, and the budget for the project is \$495,000.

1.3 Overview:

A library management system (LMS) is a software application designed to manage and automate various tasks and processes involved in library operations. It provides a centralized platform for managing a library's resources and services. It enables library staff to efficiently manage their collections, services, and users, while also providing a user-friendly experience for library patrons.

2 General Description:

An LMS typically includes features for book cataloging, book acquisition, book circulation, user management, inventory management, reporting, interlibrary loan, and online services. The system also typically includes tools for managing library staff roles and permissions, as well as integrating with other library systems and technologies.

- Book cataloging involves creating and maintaining a comprehensive and organized catalog of library resources, including bibliographic information, subject classifications, and other metadata. Book acquisition involves ordering, receiving, and processing new materials for the library's collection.
- Book circulation involves the borrowing and returning of books, managing due dates, renewals, and reservations. User management involves managing user accounts, including registration, authentication, and access control.
- Inventory management involves tracking and managing library resources, including the physical location, availability, and condition of books. Reporting involves providing reports and analytics on library usage, including borrowing patterns, popular materials, and resource utilization.
- Interlibrary loan enables the library to request and lend materials to other libraries, while online services provide library users with access to digital resources, online renewals, and book reservations.

Overall, an LMS provides a centralized platform for managing a library's resources and services, improving the efficiency of library operations, and enhancing the user experience for library patrons.

3 Functional Requirements:

Here are some of the key functional requirements of a Library management system:

- **Book Cataloging:** The system should allow for the creation and maintenance of a comprehensive and organized catalog of library resources, including bibliographic information, subject classifications, and other metadata.
- **Book Acquisition:** The system should enable library staff to order, receive, and process new materials for the library's collection, including managing the purchase, receipt, and invoicing processes.
- **Book Circulation:** The system should facilitate the borrowing and returning of books, including managing due dates, renewals, and reservations, as well as generating notifications and alerts.
- **User Management:** The system should enable library staff to manage user accounts, including registration, authentication, and access control, as well as tracking user borrowing history and fine payments.
- **Inventory Management:** The system should allow for the tracking and management of library resources, including the physical location, availability, and condition of books, as well as generating reports on resource utilization and circulation.
- **Online Services:** The system should provide online services to library users, such as book reservations, online renewals, and access to digital resources, as well as customizable online interfaces for library staff.

4 Interface Requirements:

The interface requirements of a library management system (LMS) are the specifications for the graphical user interface (GUI) that library staff and patrons interact with to use the system. Here are some of the key interface requirements of an LMS:

- **Navigation:** The interface should provide clear and consistent navigation options for accessing all functions and features of the LMS, with easily accessible menus and icons.
- **Search:** The interface should provide a simple and effective search function for locating books, authors, subjects, and other library resources, with filters and sorting options.
- **Book Details:** The interface should display comprehensive information about each book in the library, including the title, author, publication date, edition, and subject.
- **Book Availability:** The interface should display the availability status of each book in the library, including whether it is checked out, on hold, or available for checkout.

5 Performance Requirements:

Here are some of the key performance requirements of an LMS:

- **Response Time:** The LMS should provide a fast response time for all functions and features, with minimal latency between user actions and system responses.
- **Scalability:** The LMS should be scalable to accommodate future growth and expansion, with the ability to handle increasing numbers of users and resources.

- Reliability: The LMS should be reliable and stable, with minimal downtime and high availability, to ensure that library services are available to users at all times.
- Integration: The LMS should be capable of integrating with other library systems and technologies, such as RFID systems, digital libraries, and online catalogs.

6 Design Constraints

The design constraints of an LMS are the limitations and restrictions that must be taken into account during the design and development of the system. Here are some of the key design constraints of an LMS:

- **Budget:** The design of the LMS must be cost-effective and within the budget allocated for the project.
- **Technology:** The LMS must be designed using technologies that are compatible with the existing hardware and software infrastructure of the library.
- **Data Security:** The LMS must be designed to comply with data security and privacy regulations, protecting user data and preventing unauthorized access.
- **User Experience:** The LMS must be designed to provide a positive user experience, with a user-friendly interface and intuitive navigation.

7 Non-Functional Requirements:

The non-functional requirements of a library management system (LMS) are the specifications for the system's performance characteristics that are not directly related to the system's primary functions or features. Here are some of the key non-functional requirements of an LMS:

- **Usability:** The LMS should be designed to be user-friendly and easy to navigate, with clear and intuitive interfaces for both library staff and patrons.
- **Accessibility:** The LMS should be accessible to all users, including those with disabilities, and should comply with accessibility standards and guidelines.
- **Reliability:** The LMS should be reliable and stable, with minimal downtime and high availability, to ensure that library services are available to users at all times.
- **Performance:** The LMS should be optimized for performance, with fast response times, high throughput, and minimal latency between user actions and system responses.
- **Security:** The LMS should provide robust security features to protect user data, including authentication, access control, encryption, and backup and recovery mechanisms.
- **Scalability:** The LMS should be scalable to accommodate future growth and expansion, with the ability to handle increasing numbers of users and resources.

8 Preliminary Schedule and Budget:

Schedule:

Requirements gathering and analysis - 4 weeks

System design and architecture - 5 weeks

Development and testing - 16 weeks

Integration and user acceptance testing - 6 weeks

Training and deployment - 4 weeks

Post-deployment support and maintenance – ongoing

Total project duration: 35 weeks (9 months)

Budget:

Salaries and wages for development team - \$100,000

Hardware and software costs - \$50,000

Training and deployment costs - \$25,000

Post-deployment support and maintenance - \$50,000 per year

Total project cost: \$495,000