3) Library Management System

problem Statements:

Design and implement a Library management system to manage library operation such as user management and books

1. Introduction

1.1 Purpose of Document

This document specifies the requirements for the library management System (LMS). It defines the functionality, scope and constraints of the system to manage library operation, include category, user management and circulation of books.

1.2 Scope of documents:

The LMS aim to efficient management of books, records, and digitals resource. It will allow user to search borrow and return items, while librarian can add, update, or remove records. The system will maintain but generate reports, and notify user about

due dates

1.3 Overview

The LMS will

* provide user registration and login.
* Allow search and browsing of books
* manage borrowing, renewal and return
* Trade fines for overdue items
* Generate reports of library usage.

2. General Description:

The LMS service as a centralized system for students, faculty, and librarians. It automates manual tasks like issuing and returning books, tracking availability and maintaining records.

User include:

* Student / faculty: Search, borrow and return books.
* Librarians: Manage inventory, issue/return, update catalog.

* Admin: System performance and generate reports.

3. Functional Reports

* Uses registration as login with credentials.
* Add, update, and delete book records.
* Search books by title, author, subjects & ISBN
* Borrow, renew and return items.
* Generate alerts for due/~~over~~overdue books.
* Calculate and manage fines.
* Can Generate monthly/annual usage reports.

4) Interface ~~requirement~~.

User Interface: Web portal for students/faculty and dashboard for librarians.

External Interface: Barcode/RFID integration for book scaning.

API Interface: RESTful APIs for external integration with e-learning platforms.

5) performance Requirements:

* support upto 1000 concurrent users.
* Response time ≤ 2 seconds for book search
* handle upto 100,000 books records efficiently.

6) Design Constraints.

* Must be both on-premise and cloud deployment
* Database linked to relational models
* Should be compatible with major browsers and mobile devices.

7) Non-functional Attributes.

* Security: User authentication, role based access.
* Reliability: Daily backup of database.
* Usability: Simple search and borrow interface.
* Scability: expands to support large institutions

8) Preliminary Schedule and Budget

Schedule:

Requirement Analysis 1 week

~~Requirement Analysis: 1 week~~

System Design - 2 weeks

Development - 6 weeks

Testing - 2 weeks

Deployment and trainings - 1 week

Total week = 12 weeks.

Estimated Budget: 10 - 20 lakh