2) Library Management System

Problem Statement:

With the world now moving towards digitalization of every possible task, it is inevitable that libraries stop relying on physical staff for operation. Library management should allow users to borrow, return books and various other library user tasks.

Introduction

Purpose: Operate a library efficiently using automation streamlining tasks involved in running a library such as cataloging issues managing membership details, placing fine for delayed returns

Scope: To specify the functional, behavioural and non functional requirements of the software application that automates and streamlines various tasks involved in running a library

Overview: A library management system is a software application that helps libraries to manage the library operations such as acquisition, cataloging, circulation and repository of library materials

General Description:

A library management system is a software application that helps to manage the library operations such as aquiring cataloguing circulating and keeping on library materials.

Functional Requirements:

- System should allow the librarian to add edit delete and view the details of books, members and loans
- System should generate reports on the inventory circulation, and financial transactions of the library
- Users should be allowed to borrow, renew and return books using login credentials and barcode scanner
- System should keep track of due dates of books issued and active membership period.

Interface Requirements:

User Interfaces:

→ simple, intuitive, responsive and consistent
→ Interface should support different languages and devices as needed
→ UI should display availability and location of books in the library

Hardware Interfaces:

→ The system should be compatible with multiple OS & OS.

→ System should be reliable when communicating with hardware devices.

→ The system should use QR codes to scan books and cards, and facilitate payments.

Software Interfaces:

→ A working OS

→ Front-end framework like React/Vue

→ RDBMS

→ Containers and orchestration services like kubernetes.

Performance Requirements:

- The number of pages should be minimized for users convenience.
- Adding members, borrowing and renewing books should be quick.
- There should be a procedure for when there is loss of data due to failure of storage device

Design Constraints:

→ The information of all users, books and libraries must be stored in a database that is accessible by the website

→ Users must have their correct usernames and passwords to enter into their online accounts and do actions.

Non Functional Attributes

Usability: The UI should be simple to understand and easy to use and get relevant info without any special training.

Accuracy: The data stored about the books and the fines calculated should be correct, consistent and reliable

Availability: The system should be available for the duration when the library operates and must be recovered within an hour or less if it fails.

Scalability: The system should be able to handle increasing number of users and books without degrading the performance or functionality