Introduction

A library management system can be implemented using data structures such as linked lists, Queues, Stacks, trees, and graphs. These data structures can be used to represent books, patrons, and transactions, as well as track borrowing history, due dates, and fines. By using data structures, the library management system can efficiently store, retrieve, and manipulate information, leading to better organization, faster search and retrieval times, and improved overall performance.

Functionalities

- Add new books to the system, including their title, author, and other relevant information.
- Remove books from the system when they are no longer in the library's collection.
- Allow patrons to borrow books by checking out copies and tracking the borrowing history.
- Set due dates for borrowed books and calculate fines for overdue items.
- Search for books in the system using various criteria, such as title, author, or keyword to efficiently retrieve results.
- Login and Authentication.
- Display information about books and their availability to patrons, to ensure efficient and accurate data retrieval.
- Generate Reports.
- Allow librarians to manage the system, including adding and removing patrons, updating book records, and generating reports on various aspects of library operations, using a secure login and authentication system.

Justification

A library management system using a queue data structure can be used to efficiently manage the borrowing and returning of books. Books can be added to the queue when they are available for borrowing and removed when they are returned. The queue ensures that books are borrowed and returned in a first-in-first-out (FIFO) order. This system can be extended to include features such as due dates and fines for late returns.

Members and Contribution

MAHDSE221F-007

- Set due dates for borrowed books
- Calculate fines for overdue items
- Login and Authentication

MAHDSE221F-008

- Search for books
- Display information about books and their availability to patrons
- Update book records

MAHDSE221F-009

- Allow patrons to borrow books
- Add and remove patrons
- Tracking borrowing history

MAHDSE221F-029

- Add new books
- Remove new books