Library

Management System

1. Introduction

Implement a comprehensive **Library Management System** using Python in the terminal. This system allows users to perform various actions such as borrowing and returning books, displaying available books, adding new books to the library, retrieving user data, and obtaining help. The system is fully **class-based** and utilizes a **file system** to store and manage book and user data. Each functionality comes with specific criteria and edge cases, ensuring a robust and user-friendly experience. The system enforces rules such as book availability, borrowing limits, and fines for late returns. This terminal application aims to provide an organized and efficient solution for managing a library's resources.

2. Features

The features should include: -

- ❖ Quit the program.
- ❖ Add new user.
- ❖ Borrow books.
- ❖ Return book back.
- ❖ Show all available books.
- ❖ Add new book to library.
- ❖ Getting help.
- ❖ View all the members of the library.

3. Details about each feature.

3.1. Quit the program.

- ➤ To provide librarians with control over the Library Management System, a dedicated functionality allows them to gracefully exit the program when desired. This feature is designed to offer a smooth and organized closure to the application. When the librarian chooses to quit the program, a simple command, such as entering 'q' in the terminal, triggers the termination process.

3.2. Add New Book to the library.

➢ The Library Management System empowers librarians with the capability to seamlessly integrate new books into the library's collection. When a librarian chooses to add a new book, the system automatically generates a unique identification (ID) for each book. This unique ID serves as a distinctive marker for efficient book tracking and management within the library. During the process of adding a new book, the librarian is prompted to input various details, including the book's name, author, genre, and any other relevant information. Additionally, the system allows the librarian to specify the quantity or stock of the book at the time of adding. This quantity represents the number of available copies of the book in the library. The auto-generated unique ID ensures that each book is distinctly identified within the system, facilitating easy retrieval and management. The inclusion of the quantity parameter allows librarians to specify the initial stock of the book, providing accurate information about the availability of the book in the library.

Edge Cases:

- The user cannot have the same member ID.

3.3. Add new user.

➢ In the Library Management System, librarians have the capability to enroll new users, enhancing the system's capacity to manage and track individual borrowers. When adding a new user, librarians are prompted to input essential details such as the user's full name, contact information, and any other pertinent information required for accurate user identification. Additionally, a unique user ID is automatically generated by the system to ensure a distinct identifier for each library member.

Edge Cases:

- The user cannot have the same member ID.
- The user cannot have the same contact number.

3.4. Borrow Books.

➢ Library members have the convenience to borrow books by providing either the book's unique ID or the book name, along with their own member ID. Upon borrowing a book, the Library Management System automatically records and saves essential details, including the book's information and the user's data along with the date and time on which the user has borrowed the book. This systematic recording ensures a comprehensive database of borrowed books and associated users, facilitating a seamless process for later book returns. The stored information enables the system to efficiently track and manage the return process, contributing to the overall organization and effectiveness of the library's operations. Ones the book is being borrowed successfully the stock of the book should be decreased from the library book records as well.

Edge Cases:

- The user cannot borrow the book if it is out of stock.
- The user cannot borrow more than 3 books at a time.

3.5. Return Book.

➢ When returning a book, the user is prompted to enter the ID or the name of the book and their own unique ID for accurate identification. In case the return exceeds 15 days from the borrowing date, a fine of 10 rupees per day is levied. This fine serves as an incentive for timely returns, ensuring the fair and efficient management of library resources while encouraging members to adhere to the stipulated return timeframe.

Edge Cases:

- A fine of 10 rupees per day will be charged if returned after 15 days.

3.6. Show all available books.

➢ Both members and librarians can access a comprehensive list of all books stored in the library. This feature provides a convenient overview of the entire collection, enabling users to browse and search for specific titles or explore the available literary resources within the Library Management System.

3.7. Getting help.

➢ When librarians forget the command, he/she can get help of all the commands.

3.8. View all the member of the library.

➢ The librarian can access or view all the list of members of the library.