Library Management System Manual

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1 Introduction

This manual provides documentation for the Library Management System project implemented in C++. The project includes various classes and structures to manage library transactions, book collection, library cards, and users. This manual describes the usage and functionality of each component.

2 Components

2.1 Date

The `Date` structure represents a date with year, month, and day attributes. It includes a method `laterThan()` to compare dates.

2.2 TimeOfTheDay

The `TimeOfTheDay` structure represents a time of the day with hour and minute attributes. It includes a method `laterThan()` to compare times.

2.3 Fine

The `Fine` class represents a fine associated with a library card.
It is automatically given to a user, once they return a book to the library with delay.

2.4 Transaction

The `Transaction` class represents a transaction between a user and the library. It provides methods to retrieve the transaction details.

2.5 ReturnTransaction

The `ReturnTransaction` class extends the `Transaction` class and includes an additional attribute `overtime` to tell if the book was returned late.

2.6 BorrowTransaction

The `BorrowTransaction` class extends the `Transaction` class and includes an additional attribute `return_deadline` to indicate the deadline for returning the book. It provides methods to retrieve the return deadline and extend the deadline.

2.7 Book

The `Book` class represents a book in the library. It includes attributes such as title, author, ISBN, and book ID. It also maintains a list of transactions associated with the book. The class provides methods to borrow and return books, retrieve book details, and check if the book is currently borrowed.

2.8 LibraryCard

The `LibraryCard` class represents a library card issued to a user. It includes attributes such as name, surname, ID, start date, and a list of transactions. It also maintains a map of borrowed books and a list of fines associated with the card. The class provides methods to borrow and return books, apply fines, and retrieve card details.

2.9 User

The `User` class represents a library user. It includes attributes such as name, surname, and user ID. It also maintains a library card associated with the user. The class provides methods to retrieve user details.

2.10 Librarian

The `Librarian` class extends the `User` class and represents a librarian. It includes a schedule attribute to define working hours for each day of the week. The class provides methods to retrieve the schedule and change work hours.

2.11 Library

The `Library` class represents a library which is a very big database. It includes a collection of books, users, and librarians. The class provides methods to add and remove books, users, and librarians, issue library cards, manage transactions, and also calculate fines.

3 Usage and REPL

By default - all operations are made in REPL. To get more info about available functions, you must run program and type ”help” in prompt.

4 Quick help with REPL

4.1 Print all available functions

To get a list of all commands, use the `help` function.

4.2 Exiting the program

To exit the program, use the `exit` function.

4.3 Adding Books

To add a book to the library collection, use the `addBook` function.

4.4 Deleting Books

To delete a book from the library collection, use the `deleteBook` function.

4.5 Adding Users

To add a user to the library database, use the `addUser` function.

4.6 Deleting Users

To delete a user from the library database, use the `deleteUser` function.

4.7 Hiring Librarians

To hire a new librarian, use the `hireLibrarian` function.

4.8 Fire Librarians

To fire a librarian, use the `fireLibrarian` function.

4.9 Creating Library Card

To get access to all books, you have to get an active library card. To do so, use the `createCard` function.

4.10 Listing all books

To get a list of all books that are currently in the library, use the `lsbooks` function.

4.11 Listing all users

To get a list of all users that are registered in the library database, use the `lsusers` function.

4.12 Borrowing books

To borrow a book, use `borrowBook` function.

4.13 Returning a book

To return a book, use `returnBook` function.

4.14 Informations about User

To get info about a certain user, please type `userInfo` .

4.15 Checking card balance

To check a library card's balance with all fines that have been assigned to this card, use `balance` function.