

LIBRARY MANAGEMENT SYSTEM

This software will be used by the library management for keeping the record of the books and the users to whom the books have been issued. The librarian will manage the record related to the availability of the books. We have made this project by using the concept of classes.

The classes which we have used are:

1. **Class Book**
2. **Class Librarian**
3. **Class User**
4. **Class Date**
5. **Class Helper** (Helps in finding string length and Concatenation.)

BOOK CLASS

This class will keep all the records and data related to each of the books. For this purpose, this class will perform the following tasks:

- **Load Books from the File**
Initially, the data of the books are saved in the text file. This function will take data from that file.
- **Set Name of the Authors**
This will set the name of the author of the book. The first and last name of the author will be given by the user. **e.g.**, Nelson Mandela.
- **Set Type of the Books**
This will set the type of the books. The type of book will be given by the user. **e.g.**, Political.
- **Set Name of the Books**
This will set the name of the books. The name will be given by the user. **e.g.**, Long Walk to Freedom.

- **Set Status of the Books**
This will set the status regarding each of the books. Initially, the status of all the books is **Available**.
- **Get Status of the Books**
This will give the status of the book to the librarian. If the status of the book is **available** it will be issued to the user otherwise not.
- **Get Serial Number of the Books**
Each book has a unique serial number. This function will give that particular serial number.
- **Add new Book**
This will add new books to the file. The serial number, name of the author, name of the book, and its type is required to add a new book to the book list in the text file.
- **Save Books to the File**
The newly added books will also be saved in this file and the list of the books in the text file will be updated in this case.
- **Print Books Information**
This will print the information regarding each of the books and also it will show the librarian if the book is available or not.

LIBRARIAN CLASS

The librarian can manage the books and the users.

This class will perform the following tasks:

- **Load Books File**
This function will load the list of books from the text file and associate it to the library class.
- **Load Users File**
This function will load the list of default users from the text file and associate them with the library class.

- **Login**

The librarian has an ID-NUMBER and PASSWORD which is saved in the text file. He will use that information to login into the program.

- **Add Books**

This will add the new books and the total number of books available in the library will be increased accordingly. Librarian will be asked about how many books he wanted to add.

- **Remove Books**

This will remove the books from the book list available in the text file and the total number of books in the library will be decreased accordingly. The librarian will be asked to enter the serial number of the book to remove.

- **Edit Books**

This will edit the information of the book. If the librarian wanted to change the name or type of the book or the name of the author, he will be asked to enter the serial number of that particular book.

- **Grant Permission to Customer**

This will permit the customer to issue a required book if the status of the book is available, otherwise, it will not grant permission.

- **Issue Book**

This function is associated with the book class. If the serial of the book matches and the status of the book is available, then it will be issued to the customer.

- **Returned Books**

This function is also associated with the book class. If the serial of the book matches it will get the returned book.

- **Save Files**

This function will save the data of the new books into the initially created books text file and will increase the total number of books in it.

- **Information Regarding books**

This function will ask the serial number and if the serial number matches, then it will show the information of that particular book.

DATE CLASS

This class will keep a record of the dates. This includes issuing date, returning date, etc.

USER CLASS

This class will manage the users' actions regarding issuing or returning books. This class is also associated with the Books class to link users and books.

This will perform the following tasks:

- **Load user File**

By default, we have set some user's data in the text file which will be loaded. If the user wanted to log in, he should use one of them to enter the library. If the new user sign-up, then the record of him will also be saved in that text file and the list of the users will be updated accordingly.

- **Sign Up for new users**

This will allow the new users to sign up by entering the complete name, username, and password which will store in the text file of the user. After that, the user can log in for the next time.

- **Login for added users**

This will load the text file of the users in which the login record of the users is saved. Then, the username and password will be asked to log in and if it matches with file data, then the user will be successfully logged in to the library.

- **Request for issue Books**

This will issue the book to the user. The user will be asked to enter the serial number of the book which he wanted. If it matches, then it will be issued to him. This shows that the user and the book classes are associated with each other.

- **Return Book**

This will get back the issued book to the user. Before returning, the user will be asked for the serial number of the issued book, if it matches it will be returned to the librarian and will be stored in the book list file.

- **Request for Information**

If the user wants to know about any book, then he will enter the serial number of that book, and then the information related to it will be shown to him.

MAIN INTERFACE

The main interface on the console will show you the following options:

1. **Librarian**
2. **User**
3. **Quit**

AS A LIBRARIAN

If you are the **librarian**, you have to choose **option 1** and then the additional options for the librarian will be shown to you which are:

- A. **Login**
- B. **Add Book**
- C. **Remove Book**
- D. **Edit Book**
- E. **Back**

(**Note:** You have to **Log in** first to use the other features of librarian)

- To log in, you have to select **option A**, then you will be asked to enter the **ID-NUMBER** and **PASSWORD** of the librarian given in the text file.

- If you are successfully Logged in to the program, you are then able to use the other features as a librarian.
- If you want to add a book, then you have to select **option B**. Then you will be asked to enter the **number** of books you want.
- If you want to remove any book from the list, then you have to select **option C**. Then you will be asked to enter the **serial number** of the book to remove it.
- If you want to edit any book, then you have to select **option D**. Then you will be asked to enter the **serial number** of the book to edit. Now you can change the name of the author, name of the book, and type of book.
- If you want to go back to Menu, then you should select **option E**. Then you will go back to the main screen of the program.

AS A USER

If you are the **user**, you have to choose **option 2** and then the additional options for the user will be shown to you which are:

- A. Signup**
- B. Login**
- C. Issue Book**
- D. Return Book**
- E. Back**

(Note: You have to **Sign up** first if you are a new user OR you have to **Log in** with your username and password to use the other features of a user)

- If you are a new user, you have to select **option A** for sign up. Then you will be asked to enter your **full name**, **username**, and **password**.
- If you already have signed up, you have to select **option B** for login. Then you will be asked to enter your **username** and **password**.
- After successfully get into the system as a user, you are now able to use the other features as a user.

- If you want to issue a book, you have to select **option C** for issuing the book. Then you will be asked to enter the **serial number** of the book you want to issue.
- If you want to return an issued book, you have to select **option D** for returning the book. Then you will be asked to enter the **serial number** of the book you want to return.
- If you want to go back to Menu, then you should select **option E**. Then you will go back to the main screen of the program.

To Quit the Program

If you simply want to **QUIT** the program, then you should simply select **option 3** of the main screen's options.

Group Members

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