Library Manegement System

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Contents

Description

The aim of the program was to help members of a Library perform simple tasks like issuing and returning of books without a librarian/admin.
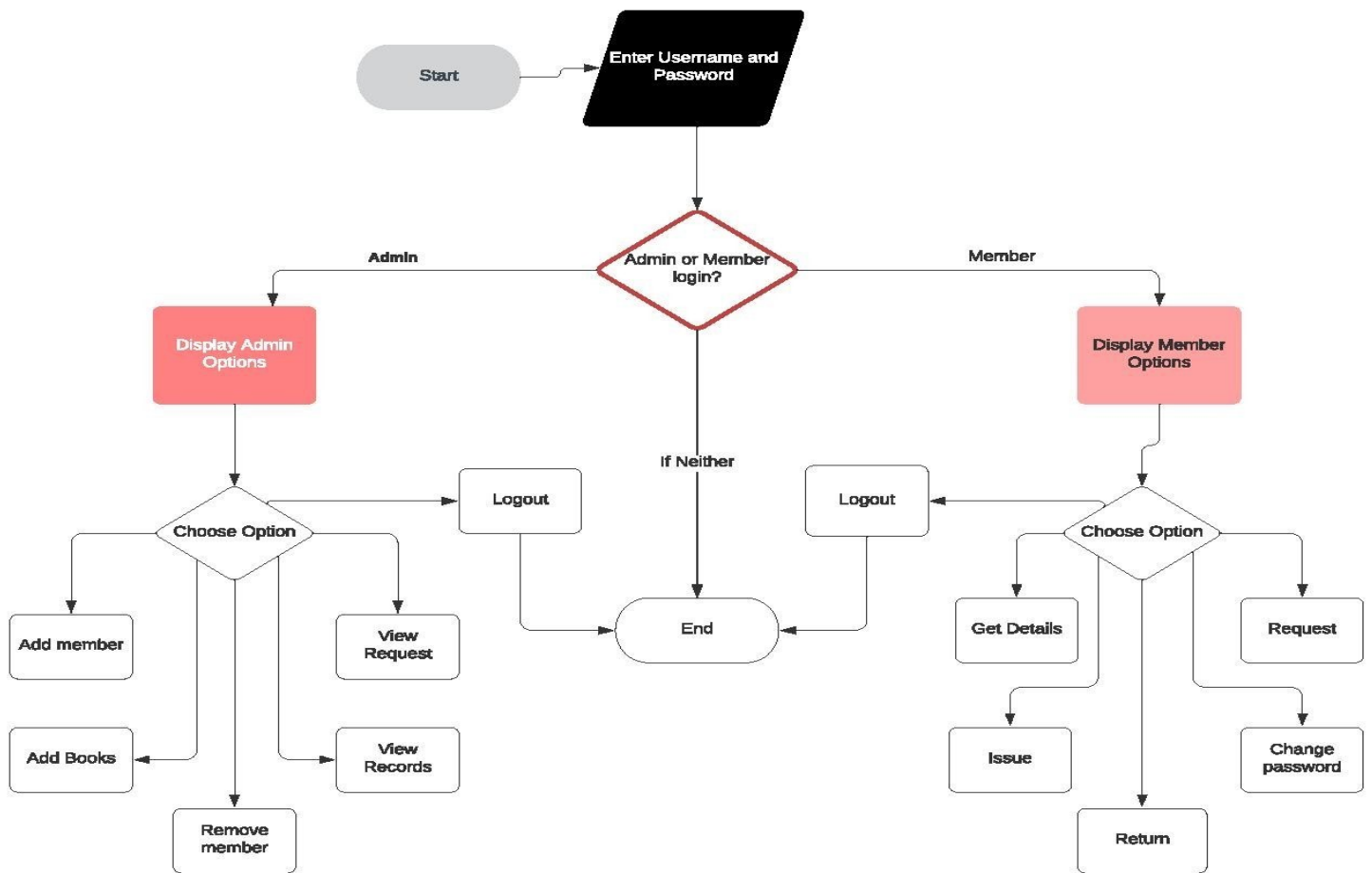The user can also get details of the books and request books that are not available.
The Admin still has some functions like adding,removing members and adding new books to the library depending on the requests of the members. In addition to the requests of the members the admin can also record which book was borrowed by which member.
The program is built by using multiple text files as a database which help in doing these simple task

Flo

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Start

Enter Username and Password

Admin or Member login?

Admin

Member

Display Admin Options

Display Member Options

If Neither

Choose Option

Logout

Logout

Choose Option

Add member

View Request

End

Get Details

Request

Add Books

View Records

Issue

Change password

Remove member

Return

w Chart showing the flow of the program

Class Structure

The Management program consists of 4 text files that have the different details related to the library and the members:
1)Login.txt
    The login file consists of the usernames and the passwords of all the users.

2)Books.txt
    The books file has the names,authors and the number of books present at the library.

3)Requets.txt
    It has the requests sent by the members to the admin for adding more books

4)Records.txt
    It has the record of which book was borrowed by which user.

The program consists of 4 classes:
1)User
2)Admin
3)Member
4)Date

1) User

The login class is base class for both the admin and the member classes. It has 3 methods: a) check
b)page(Use user)
c)page()

a)check

Method reads the file for the username and password, if the username and password match, the Member Menu is displayed.
If username or password do not match, method checks for admin login and Admin Menu is displayed.
On not finding any of the above program quits with an error message.

b)page():

Menu with switch case displays the options and ask for the admins choice. Depending on the admins choice the respective function is called from the admin class. If choice is wrong , error message is displayed. Admin has to logout to quit program.

c)page(User user):
The class gets a user as an object.
Menu with switch case displays the options and ask for the users choice. Depending on the users

choice the respective function is called from the member class. If choice is wrong , error message is displayed. User has to logout to quit program

2)Admin

The admin class is one of the base classes for the login class. It contains all the functions of an admin:

1)Add Members
2)Remove Members
3)Add Books

4)View Requests
5)View Records 6)View
MemberList

1)Add Member
Asks the admin for the username of the new user and checks whether the username is taken or not , if the username is free it writes the username and password(the username in Uppercase) on to the login text file and displays the login details.

2)Remove members
Admin is asked for the username of the member he wants to remove if user is found he/she is removed and else error message is displayed.
A temporary file is used to edit the Login file, all the data from the login file is copied to the temporary file expect for the username of the member to be removed.
The Login file is then removed and the temporary file is renamed to take its place.

3) Add Books

Admin can add books to the Library, the admin enter the name of the book and the author,if the book already exists in the Books text file the number of the book is updated by 1. if the book does not exist in the file new book's name and author are written to the file by using a temporary file to store the edited data and then removing the books file and renaming the temporary file.

4)View Requests

Admin can view the requests for new books to be added by the members by reading data in the Requests text file.

5)View Records

Admin can view the records as to which member had borrowed which book by a simple reading of the file.

6)View MemberList

Admin can view a list of all the current members of the Library.

3) Member class

The member class is the other base class for the login class. It has all the functions a member can perform:

1)Get Details
2)Issue
3)Return
4)View Library Card
5)Extend Due Date
6)Change Password
7)Request

1)Get Details

Member can ask for the details of a book by entering the name,if the book is in the library system the name, author and availability to borrow will be shown. If the book is not in the library system the member can request for it.

2)Issue

The Member is shown all of the books available for borrowing. Upon enter the name the book is

issued and the name of the user and the book is stored in the records. The number of the book is reduced in the Book text file by 1 using a temporary file to store the edited data and then removing the books file and renaming the temporary file. The Member is also asked the date on which he/she will return the book which is noted in the Records.

3)Return

Member when wanting to return a book has to write the name of the book. If the book is in the system the number will be updated ,else a new book will be added. A temporary file is used to edit the above details

4)View Library Card

The Member can view the books borrowed by him/her and the due date for returning each book.

5)Extend Due Date

Member can extend the date of returning of a book from the books he/she has borrowed

the member has to input the name of the book whose due date he/she has to increase and the Extend function from the Date class adds 7 days as a default extension to the existing due date.

6)Change Password

     The Member can change the assigned password user has to enter their username,new password and repeat it if passwords match and the username is present in the login file the password is changed.

7)Request

     Member can Request the admin to add a new book   by entering the name of the book and the author by writing in the Request text file.

4) Date class

     The Date class is a small class which is used to store and extend the due dates of the books .
It has :
1)Extend Function
2) display function

1)Extend function

     The function extends the date of returning the book by 7 days, it takes into account the month and

the maximum number of days each month has and returns the date object with the new date.

2) Display
    Display was used to test the extend function.

Testing

   The program is a dynamic console application, most of it involves reading and writing form different files.
The Testing for the program was done manually by entering some of the possible inputs and checking their effects on the text files.
The following inputs should be used to test the admin and the member functions:

ADMIN LOGIN DETAILS
username: admin
password:password

MEMBER LOGIN DETAILS
username: sahej
password : hello

Test Cases for Admin

a)Add Member
    1.username:test
    2.username:sahej

Expected output:

1

```
Username:
admin
Password:
password
MENU
1.Add Members
2.Remove Members
3.Add books
4.View Requests
5.View Records
6.View Member List
7.Logout
Enter the number of your choice
1
Enter the name of the member
test
User has been added
Login Details:
Username:test
Password:TEST
```

2

```
MENU
1.Add Members
2.Remove Members
3.Add books
4.View Requests
5.View Records
6.View Member List
7.Logout
Enter the number of your choice
1
Enter the name of the member
sahej
The user already exists
MENU
```

b)Add Books
    1.name:Dune
    2.name:book
       author:author

Expected output:

1

```
The book already exists the number h
MENU
1.Add Members
2.Remove Members
3.Add books
4.View Requests
5.View Records
6.View Member List
7.Logout
Enter the number of your choice
3
Enter the name of the book
book
Enter the name of the author
author
The book has been added
MENU
```

2

```
MENU
1.Add Members
2.Remove Members
3.Add books
4.View Requests
5.View Records
6.View Member List
7.Logout
Enter the number of your choice
3
Enter the name of the book
Dune
The book already exists the number has been updated
MENU
```

c)Remove member
1.username = test
2.username = test
Expected output:
1   2

```
password
MENU
1.Add Members
2.Remove Members
3.Add books
4.View Requests
5.View Records
6.View Member List
7.Logout
Enter the number of your choice
2
Enter the name of the member to be removed
test
The user has been removed
MENU
```

```
MENU
1.Add Members
2.Remove Members
3.Add books
4.View Requests
5.View Records
6.View Member List
7.Logout
Enter the number of your choice
2
Enter the name of the member to be removed
test
The username does not exist
MENU
```

d)View Member List
Expected output:

```
The username does not exist
MENU
1.Add Members
2.Remove Members
3.Add books
4.View Requests
5.View Records
6.View Member List
7.Logout
Enter the number of your choice
6
1.sahej

2.Mark

3.ADAM

4.pali
```

e)View Records
Expected output:

```
MENU
1.Add Members
2.Remove Members
3.Add books
4.View Requests
5.View Records
6.View Member List
7.Logout
Enter the number of your choice
5
1.sahej
   LITTLE WOMEN
Date of return:4/6

2.Adam
   THE THREE MUSKETEERS
Date of return:4/6

3.sahej
   HARRY POTTER
Date of return:11/6

4.gurdeep
   DUNE
Date of return:4/6

5.sahej
   THE STORY OF MY LIFE
Date of return:12/9
MENU
```

f)View requests
Expected Output:

```
MENU
1.Add Members
2.Remove Members
3.Add books
4.View Requests
5.View Records
6.View Member List
7.Logout
Enter the number of your choice
4
1.Name: HARRY POTTER
   By:   J.K ROWLING
2.Name: DUNE
   By:   FRANK HERBERT
3.Name: ROOM WITH A VIEW
   By:   E.M FORSTER
4.Name: TUESDAYS WITH MORRIE
   By:   MITCH ALBOM
5.Name: HONEY
   By:   SAHEJPAL
6.Name: YALGAAR
   By:   CARRYMINATI
MENU
```

Test cases for Member
a)Get Details
Expected output

```
Username:
sahej
Password:
cool
Menu
1.Get Details
2.Issue
3.Return
4.Change Password
5.Request Books
6.View Library Card
7.Extend Return date
8.Logout
Enter the number of your choice
1
Enter the name of the book
Dune
DUNE
By: FRANK HERBERT
Available for Borrowing
Menu
```

```
Available for Borrowing
Menu
1.Get Details
2.Issue
3.Return
4.Change Password
5.Request Books
6.View Library Card
7.Extend Return date
8.Logout
Enter the number of your choice
1
Enter the name of the book
test
Book not found
Press y to request the book
Press any other button to go back to the MENU
y
Enter the name of the book
test
Enter the name of the author
author
Request has been Registered , Thank You!!
Menu
```

b)Issue
Expected output

```
4.Change Password
5.Request Books
6.View Library Card
7.Extend Return date
8.Logout
Enter the number of your choice
2
The Library currently has the following books available for borrowing

1.BOOK
By: AUTHOR

2.DUNE
By: FRANK HERBERT

3.YALGAAR
By: CARRYMINATI

4.A MAN CALLED OVE
By: FREDRICK BACHMANN

5.HARRY POTTER
By: J.K ROWLING

6.LITTLE WOMEN
By: LOUISA MAY ALLCOT

7.THE THREE MUSKETEERS
By: ALEXANDER DUMAS

8.THE GREAT GATSBY
By: F. SCOTT FITZGERALD

9.SHERLOCK HOLMES
By: SIR ARTHUR CONAN DOYLE
Enter the name of the book You want to borrow
book
Please add the Date of return
Enter the day
3
Enter the month
6
The book has been successfully borrowed
Menu
```

```
1.Get Details
2.Issue
3.Return
4.Change Password
5.Request Books
6.View Library Card
7.Extend Return date
8.Logout
Enter the number of your choice
2
The Library currently has the following books available for borrowing

1.DUNE
By: FRANK HERBERT

2.YALGAAR
By: CARRYMINATI

3.A MAN CALLED OVE
By: FREDRICK BACHMANN

4.HARRY POTTER
By: J.K ROWLING

5.LITTLE WOMEN
By: LOUISA MAY ALLCOT

6.THE THREE MUSKETEERS
By: ALEXANDER DUMAS

7.THE GREAT GATSBY
By: F. SCOTT FITZGERALD

8.SHERLOCK HOLMES
By: SIR ARTHUR CONAN DOYLE
Enter the name of the book You want to borrow
test
Please add the Date of return
Enter the day
2
Enter the month
6
Choice is not available
```

c)Return
Expected Output

```
Menu
1.Get Details
2.Issue
3.Return
4.Change Password
5.Request Books
6.View Library Card
7.Extend Return date
8.Logout
Enter the number of your choice
3
Enter the name of the book you want to return
test
Enter the name of the author
author
The book has been returned successfully
```

```
choice is not available
Menu
1.Get Details
2.Issue
3.Return
4.Change Password
5.Request Books
6.View Library Card
7.Extend Return date
8.Logout
Enter the number of your choice

3
Enter the name of the book you want to return
book
The book has been returned successfully
Menu
```

d)Change Password
Expected output:

```
Menu
1.Get Details
2.Issue
3.Return
4.Change Password
5.Request Books
6.View Library Card
7.Extend Return date
8.Logout
Enter the number of your choice
4
Enter your Username
sahej
Enter your new password
vool
Enter New Password
hello
The Passwords Don't match
User not found
```

```
The Book has Been returned successfully
Menu
1.Get Details
2.Issue
3.Return
4.Change Password
5.Request Books
6.View Library Card
7.Extend Return date
8.Logout
Enter the number of your choice
4
Enter your Username
sahej
Enter your new password
hello
Enter New Password
hello
Password has been updated
M
```

e)Request
Expected output:

```
user not found
Menu
1.Get Details
2.Issue
3.Return
4.Change Password
5.Request Books
6.View Library Card
7.Extend Return date
8.Logout
Enter the number of your choice
5
Enter the name of the book
test
Enter the name of the author
author
Request has been registered,Thank You!!
```

f)View Library card
Expected output:

```
Menu
1.Get Details
2.Issue
3.Return
4.Change Password
5.Request Books
6.View Library Card
7.Extend Return date
8.Logout
Enter the number of your choice
6
Borowed Books:
1.LITTLE WOMEN
Date of return: 4/6

2.HARRY POTTER
Date of return: 11/6

3.THE STORY OF MY LIFE
Date of return: 12/9

4.BOOK
Date of return: 3/6

Menu
```

g)Extend Due Date
Expected output:

```
Menu
1.Get Details
2.Issue
3.Return
4.Change Password
5.Request Books
6.View Library Card
7.Extend Return date
8.Logout
Enter the number of your choice
7
Borowed Books:
1.LITTLE WOMEN
Date of return: 4/6

2.HARRY POTTER
Date of return: 11/6

3.THE STORY OF MY LIFE
Date of return: 12/9

4.BOOK
Date of return: 3/6

Enter the name of the book whose return date you want to extend
book
10/6
The date has been updated
```

State of Files after above Tests
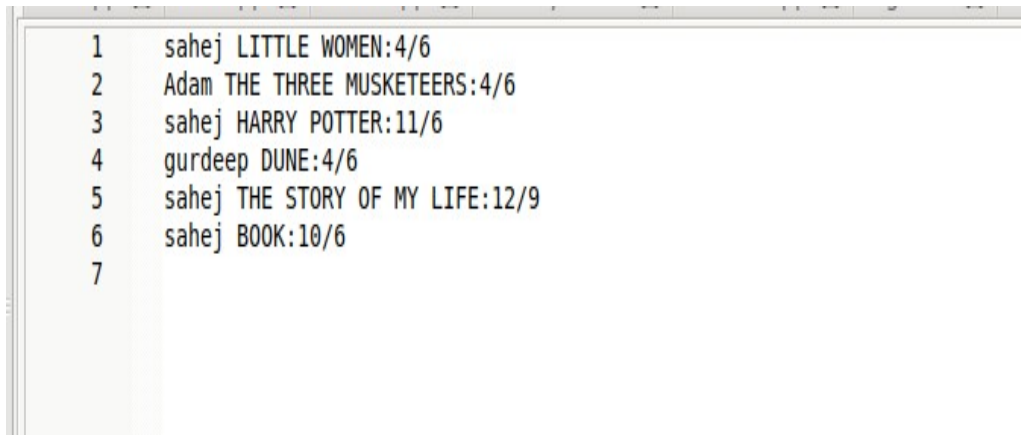
a)Books.txt

```
 1    TEST:AUTHOR:1
 2    BOOK:AUTHOR:1
 3    DUNE:FRANK HERBERT:5
 4    YALGAAR:CARRYMINATI:1
 5    A MAN CALLED OVE:FREDRICK BACHMANN:1
 6    HARRY POTTER:J.K ROWLING:5
 7    LITTLE WOMEN:LOUISA MAY ALLCOT:2
 8    THE THREE MUSKETEERS:ALEXANDER DUMAS:1
 9    THE STORY OF MY LIFE:HELEN KELLER:0
10    THE GREAT GATSBY:F. SCOTT FITZGERALD:2
11    SHERLOCK HOLMES:SIR ARTHUR CONAN DOYLE:3
12
```

b)Login.txt

```
 1    Mark MARK
 2    ADAM fruitloops
 3    pali cool
 4    sahej hello
 5
```
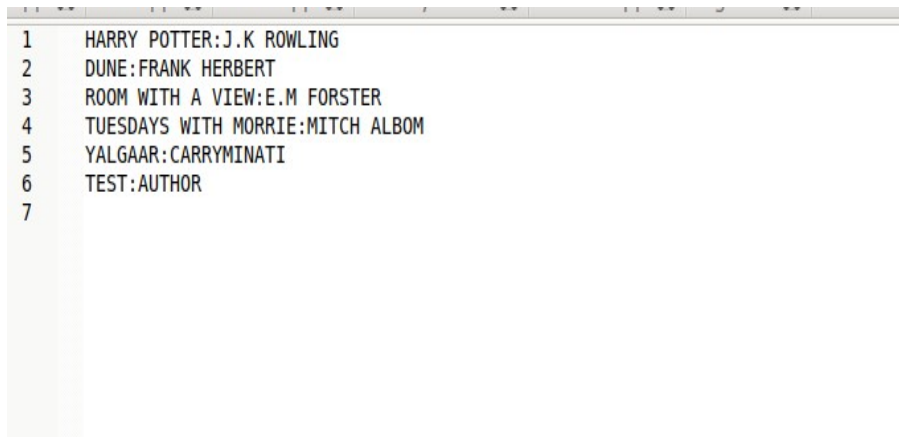
c)Records.txt

```
1    sahej LITTLE WOMEN:4/6
2    Adam THE THREE MUSKETEERS:4/6
3    sahej HARRY POTTER:11/6
4    gurdeep DUNE:4/6
5    sahej THE STORY OF MY LIFE:12/9
6    sahej BOOK:10/6
7
```

d)Requests.txt

```
1    HARRY POTTER:J.K ROWLING
2    DUNE:FRANK HERBERT
3    ROOM WITH A VIEW:E.M FORSTER
4    TUESDAYS WITH MORRIE:MITCH ALBOM
5    YALGAAR:CARRYMINATI
6    TEST:AUTHOR
7
```