

Library Management system -

The implemented java program manages the library comprising of three classes Book ,Members and library which helps to run various functions for librarian and member.This project was made in IntelliJ using maven.

At just starting you can enter as i) Librarian ii) Member

functions provided to you when entered as Librarian by selecting option 1  
:

- i) Register a member
- ii) Remove a member
- iii)Add a book
- iv)Remove a book
- v)View all members along with their book and fine
- vi)view all books
- vii)Back(to the interface where you can enter an librarian , member or exit)

functions provided to you when entered as a member by selecting option 2  
:

When entering as a member Code will ask you for your name and registered phone number , if they both are coorect as per the registered member it will give you access for the member functions and otherwise it will show no member exist for the given name and phone number.

- i)List Available books
- ii)List my books(borrowed one)
- iii)Issue a book
- iv)Return a book
- v)Pay fine(Imposed if book is not returned within 10 days i.e within 10 sec acc. to code)
- vi)Back

#### HANDLING OF ERROR:

Some conditions are just implemented where the input have been taken such as while taking a phone number as input so it is checked whether it is of 9 or 10 digits or not , if not it will display Invalid phone number by using chechp function of library class, and in case of age it is defined that it cannot be less the and equal to 0 and can't be greater then 130.

Two functions are defined in Library class Getint and Getlong which are used to check the inputs given by user .

Such that where int variables are defined and user gives some another input such as string so it will diplsay Invalid input and ask the user to enter again.

Various error handling were made acc. to instrucions given such as for books tha a member can issue atmost two books at a time , Cannot issue second book if fine was imposed on the first one by borrowBook function of Member class. For member class you cannot register two members for same contact number.

If user has not issued any book and it clicks option 5 i.e Payfine then pf function of member class will display that No fine is there.

Name could be anything for example - Ayush -1 , Ayush -2  
Maximum Age is setted to 130.

#### ABOUT CLASSES IMPLEMENTED IN PROGRAM

Book class--  
private attributes:

bt- borrowing time  
bID - Book Id  
title - name of book  
author - author of book  
TC - total copies of book  
rt - return time of the book

A constructor was made which sets Book id , title , author , total copies of the book.

Member class -  
Private attributes:

fi - determine fine on member  
Id - Member Id  
name - Name of the member  
age - Age of member  
pn - Phone Number of maember  
BB - list of type class Book (Borrowed books of a member)

A constructor was made which sets name , age , phone number , Id of the member.

Public Function implemented -

1. borrowBook - Helps a member to issue a book by taking the book to be issued as a parameter.
2. listbook - lists te book borrowed by a member
3. retb - Helps a member to return a book by taking Book to be returned as a parameter and also calculates penalty from borrowint time to the time function is called.
- 4.updatef - Updates a fine for a member for the book given as a parameter from the borrowing time to the time function is called.
- 5.pf - helps in paying fine if imposed on member
- 6.tfine - gives the totl fine imposed on a member
- 7.checks - Check whether the book of given Id by user is present in borrowed book list of member or not.
8. rb -return book by taking id as an input.

Library class -

Various static int type variables are defined to have a track on Id's and some return type function to check existence.

Two list are defined -

- 1.BOOK - this is a list of class type Book , keeps the record of the books in Library.
- 2.MEM - this is a list of type class Member , keeps the record of the registered member in library.

Public functions implemented -

1. Addbook - helps in Adding the book to library by taking Name , author , and total copies of the book and assigns Id to the book by increasing value of defined static variable zz.
- 2.enterasmem - Helps a member to get access of the library by taking name and phone number as a parameter and returns a(1 if member is registered and both input given are correct otherwise 0)
- 3.removebook - Helps in removing book from library by taking Id of the book to be removed as a parameter.
- 4.removemem - Helps in removing member from library by taking Id of member to be removed as a parameter.
- 5.listbook - Lists the available books in library.
- 6.listmem - Lists the registered member in library along with borrowed books and fine.
- 7.registermem - Registered the member in library by taking name , age and phone number as a parameter.

Various other function are implemented in library to check , return member , return book and to have good feasibility of code.

#### EXITING THE CODE

To exit the program choose option 3 from main interface , It will display Thanks for visiting .

There is no another way of exiting the program , if user gives invalid input for different specified variables then it will show invalid input instead of terminating it.