

TEST RESULTS



LIBRERIA
LIBRARY INFORMATION SYSTEM
Group Number : 52
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1 INTRODUCTION

This document sketches out the test plan for Library Information Software (LIS). This prescribes the nature, purpose and methodology of all testing activities. The test plan is aimed at verifying the functionality and correct working of every aspect and part of the Library Information Software (LIS) which aims to automate the various transaction of a public library with not more than 10000 books.

1.1 OBJECTIVE

The software is tested using appropriate testing strategies which exhaustively test the entire program and any bugs, if detected are reported and ways to correct them are suggested. Software Testing is an important stage in Software Development Life Cycle (SDLC). The definition of testing is the process of analyzing a software item, to detect the differences between existing and required conditions i.e. defects/errors/bugs and to evaluate the features of the software item.

1.2 Testing Strategy

The strategy is to detect the differences between existing and required conditions and to evaluate the features of the software item.

Specific test plan components include:

1. Purpose for testing
2. Items/Features to be tested
3. Pass/Fail criteria
4. Bugs if any

1.3 Scope

The testing will be performed at several points in the life cycle as the product is constructed. Testing is a very 'dependent' activity. As a result, test planning is a continuing activity performed throughout the system development life cycle. Test plans must be developed for each level of product testing.

1.4 Purpose

The purpose of testing is to verify and validate a software to check if it fits the requirements specified and to find the bugs present in a software. The bugs found are then fixed.

Bug is a variance between the expected and actual result. The bug's ultimate source may be traced to a fault introduced in the specification, design, or development (coding) phases.

2 FEATURES TO BE TESTED

Some areas/functions in the software are to be examined and handled carefully as they are error prone. Majority of the users of LIS include: Librarian Library Clerk Library Member

Example:

1. **Correct username, password and type combination :** If any person (Clerk/Librarian/User) try to access their accounts with unregistered usernames or with wrong passwords then the softwares raises an alert.
2. **Alert if text fields are left blank.**
3. **Unique Username:** Usernames of 2 persons cannot be same. On creating a new clerk/user with an existing username raises an alert
4. **Unique ISBN:** In case the clerk enters the ISBN number of book an existing one, then Author's name, name of book, publisher must all match, otherwise an alert is raised.
5. **Functions like issue and reserve, return are tested.** Also cases like user trying to issue/reserve a book which he has currently issued raises alert
6. **Notifications issued to user on return of a reserved book** must be tested, as it is a complex sequential procedure.
7. **Notifications issued to librarian on overdue books,** who in turn notifies the corresponding user must be tested.
8. **Statistics:** Book issue statistics are kept for only 5 years. Issues earlier than 5 years are not reflected on the statistics.
9. **Revocation:** If an user who has reserved a book does not issue it within seven days of its return, the reservation is revoked. And the book becomes available for issue.

3 Black box testing

- **MainWindow Login**

Description : Here we test the login feature of the software once with a valid username and password combination and once with an invalid username and password combination.

Tester Name	Ashrujit Ghoshal	Test Date:12/4/2016		
Class Name	MainWindow	Method Name: MainWindow(Constructor)		
Parameter		Username,password,usertype		
Test Case		Correct Combination	Empty Fields/wrong combination	Type Empty
Expected Output		Successful Login	Error	Enter valid Type error
Obtained Output		Successful Login	Error	Enter valid Type error
Bug?		No	No	No

Tester Name	Ashrujit Ghoshal	Test Date:12/4/2016		
Class Name	MainWindow	Method Name: MainWindow(Constructor)		
Parameter		Username, password, usertype		
Test Case		Correct Combination	Empty Fields/wrong combination	Type Empty
Expected Output		Successful Login	Error	Enter valid Type error
Obtained Output		Successful Login	Error	Enter valid Type error
Bug?		No	No	No

- **Create user :**

Description : The librarian creates the user in the system by giving the valid entries in the dialog box 'Create User'. The test has been done to see if the user can be properly created in the system. If created properly a window will be displayed confirming the creation of the new user.

Tester Name	Ashrujit Ghoshal	Test Date:12/4/2016		
Class Name	CreateUser	Method Name: checkEntry		
Parameter		Username,name,phone,address,password,type		
Test Case		A field is blank	Username exists in database	Phone number is non integral
Expected Output		error	error	error
Obtained Output		error	error	error
Bug?		No	No	No

- **Create clerk :**

Description : The librarian creates the clerk in the system by giving the valid entries in the dialog box 'Create Clerk'. The test has been done to see if the clerk can be properly created in the system. If created properly a window will be displayed confirming the creation of the new clerk.

Tester Name	Sayan Ghosh	Test Date:12/4/2016		
Class Name	CreateClerk	Method Name: checkEntry		
Parameter		Username,name,phone,address,password,type		
Test Case		A field is blank	Username exists in database	Phone number is non integral
Expected Output		error	error	error
Obtained Output		error	error	error
Bug?		No	No	No

- **Add book :**

Description : The clerk adds the book in the system by giving the valid entries in the dialog box 'Add Book'. The test has been done to see if the book can be properly added in the system. If created properly a window will be displayed confirming that the book has been added to the database.

Tester Name	Ashrujit Ghoshal	Test Date:12/4/2016		
Class Name	AddBook	Method Name: checkEntry		
Parameter		ISBN, name ,author, publisher		
Test Case		Unique ISBN(not previously present in database)	ISBN exists in database,name ,author and publisher are same as that of entry with identical ISBN	ISBN exists in database,name ,author and not all publisher are same as that of entry with identical ISBN
Expected Output		No error	No error	Error
Obtained Output		No error	No error	Error
Bug?		No	No	No

- **Issue of books :**

Description : Any of the valid users of the library can issue a book which is available in the library at that instant of time.

Tester Name	Ashrujit Ghoshal	Test Date:12/4/2016		
Class Name	Issue	Method Name: issue		
Parameter		Username,ISBN		
Test Case		Book is on Shelf	Book is not on shelf	Already issued by the same user
Expected Output		Successful issue	error	error
Obtained Output		Successful issue	error	error
Bug?		No	No	no

- **Returning books which are not reserved by anyone:**

Description : The user who has issued the book can return the book. If the book has not been reserved by anyone beforehand then no notification is sent to the other users.

Tester Name	Ashrujit Ghoshal	Test Date:12/4/2016	
Class Name	ReturnAndInform	Method Name: returned	
Parameter		Username,ISBN	
Test Case		Book Returned with no overdue period	Overdue Book returned
Expected Output		Fine due=0.0	Fine Due>0
Obtained Output		Fine Due=0.0	Fine Due>0
Bug?		No	No

- **Returning books which are reserved :**

Description : The user who has issued the book can return the book and if the book has already

been reserved beforehand then a notification is sent to the users who have reserved the book.

Tester Name	Ashruijit Ghoshal	Test Date:12/4/2016	
Class Name	ReturnAndInform	Method Name:informReservedMembers	
Parameter		ISBN	
Test Case		Book Returned was not reserved	Book returned was reserved
Expected Output		Book made available for issue	Inform members who had reserved the book
Obtained Output		Book issuable	Notification Sent to members who reserved the book
Bug?		No	No

- **Reserving books :**

Description : The user can reserve a book which has been issued by someone else. Whenever the book is returned the user receives a notification valid for 7 days that the said book is now available.

Tester Name	Sayan Ghosh	Test Date:12/4/2016		
Class Name	Reserver	Method Name: reserve		
Parameter		ISBN		
Test Case		Book available for issue	Book not available for issue	Book already issued by same user
Expected Output		Reservation not allowed	Reservation <u>sucessful</u>	Error
Obtained Output		Reservation not allowed	Reservation <u>sucessful</u>	Error
Bug?		No	No	No

- **Check Fine**

Description : It is a cron job which is run by the system periodically to check if any book is overdue and if overdue case is found then the fine is calculated by the system at the rate of Re. 1 per day.

Tester Name	Ashruijit Ghoshal	Test Date:12/4/2016		
Class Name	FineChecker	Method Name: fine		
Parameter		username		
Test Case	No fine	Non zero Fine but all books not returned	Non zero fine and all books have been returned	
Expected Output	No fine	Fine not payable until books returned	Fine Payable	
Obtained Output	No fine	Fine not payable until books returned	Fine Payable	
Bug?	No	No	No	

- **Remove User**

Description : The librarian has the authority to delete a user from the system by using the username of the user. But the user can not be removed if he/she has any book issued against

his/her account.

Tester Name	Sayan Ghosh	Test Date:12/4/2016		
Class Name	RemoveUser	Method Name: RemoveUser(Constructor)		
Parameter		Username		
Test Case		Does not exist in Database	Exists but has unreturned Books	Exists and has returned all books
Expected Output		Error	Error	Deletion Successful
Obtained Output		Error	Error	Deletion Successful
Bug?		No	No	No

- **Remove Clerk**

Description : The librarian has the authority to remove the clerk from the system by using the username of the clerk.

Tester Name	Sayan Ghosh	Test Date:12/4/2016	
Class Name	RemoveClerk	Method Name: RemoveClerk(Constructor)	
Parameter		Username	
Test Case		Does not exist in Database	Exists
Expected Output		Error	Deletion Successful
Obtained Output		Error	Deletion Successful
Bug?		No	No

- **Dispose Book**

Description : First the librarian issues a notification to the clerks stating that a book is to be disposed if the statistics of that book is not that good fro the last 5 years. Only then a valid clerk can dispose the book from the library using the ISBN code of the book.

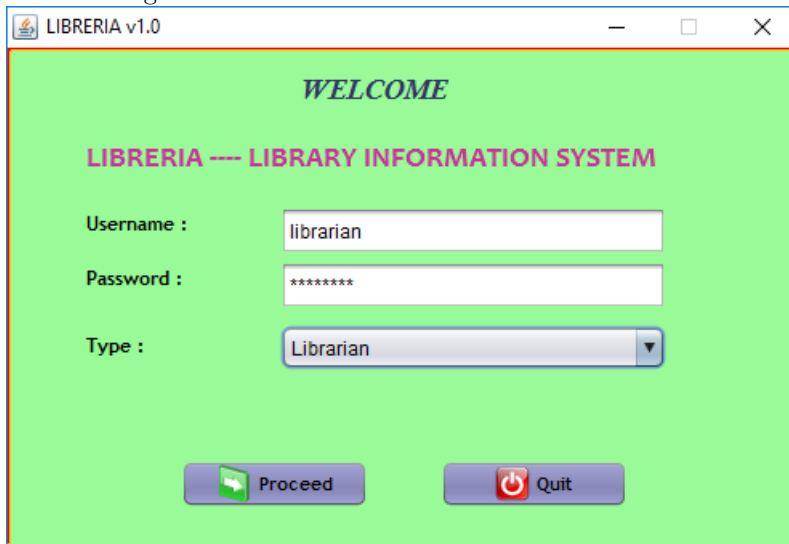
Tester Name	Ashrujit Ghoshal	Test Date:12/4/2016			
Class Name	DelBook	Method Name: DelBook(Constructor)			
Parameter		ISBN			
Test Case		Does not exist in Database	Exists but is issued out	Exists but has not been disposed by librarian	Exists, has no issued copies, has been disposed by librarian
Expected Output		Error	Error	Error	Deletion Successful
Obtained Output		Error	Error	Error	Deletion Successful
Bug?		No	No	No	No

4 White box testing

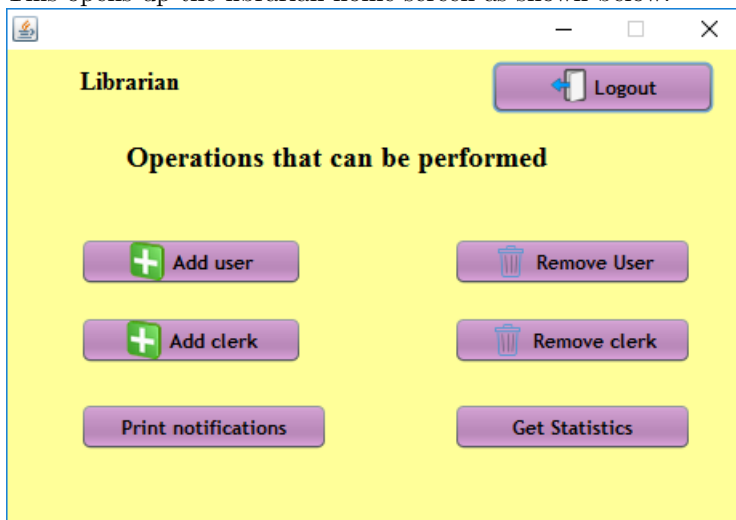
Librarian, Library Clerk, User are the major users/stakeholders of this software and their functions are co-dependent and inter-related.

1. login into the library information system

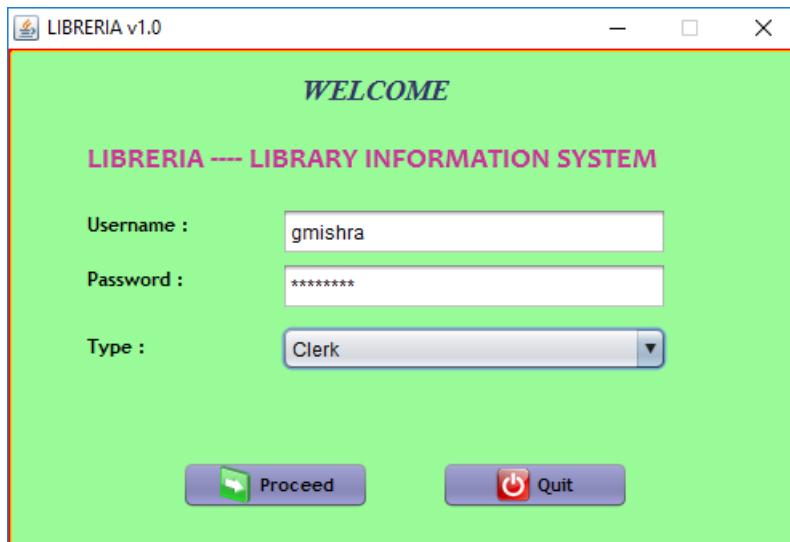
- Librarian login :



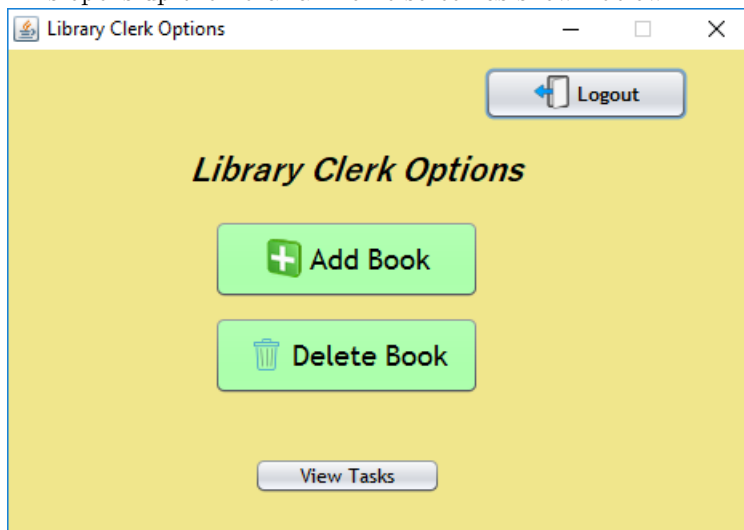
This opens up the librarian home screen as shown below:



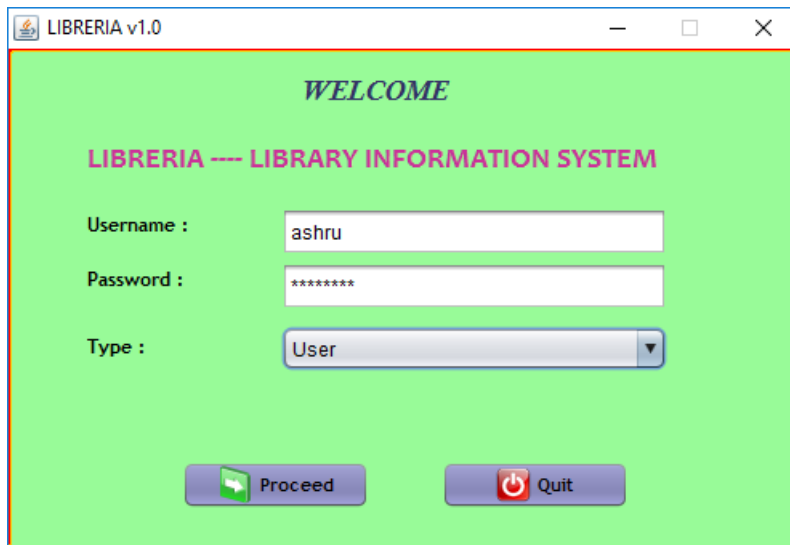
- Clerk login :



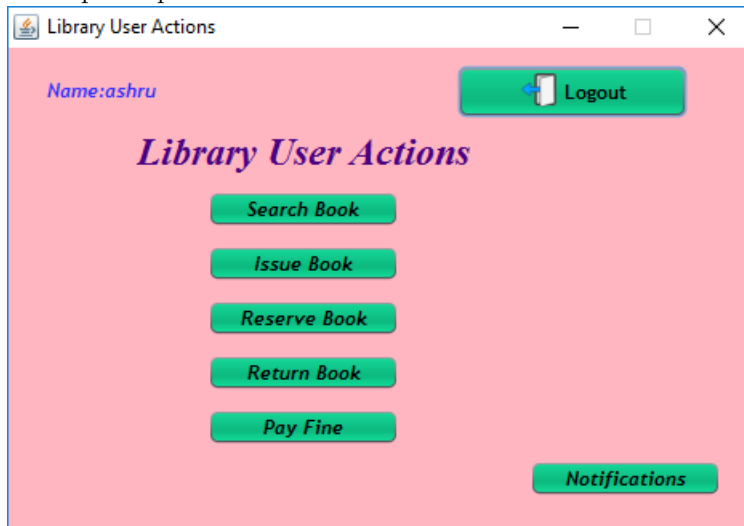
This opens up the librarian home screen as shown below:



- User login :

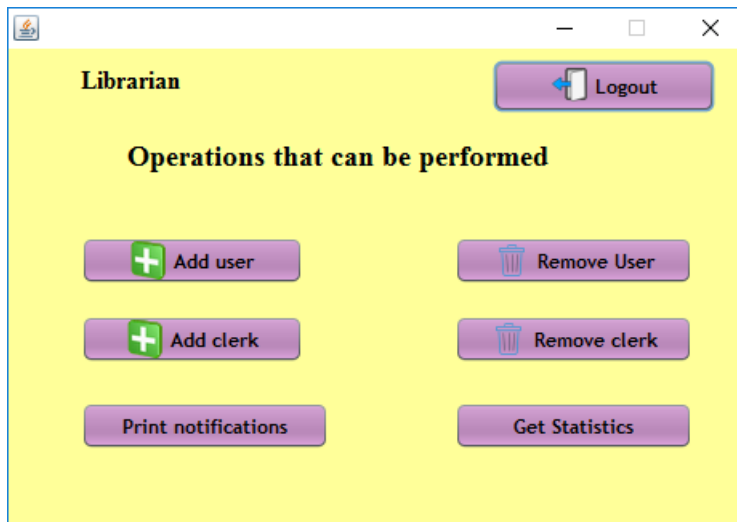


This opens up the librarian home screen as shown below:



2. Librarian creates user and clerk

- Creation of library user :
After logging in to the librarian home screen press the Add User button:



– Creation of UG Student:

A screenshot of a web application window titled "Create New User". The window has an orange background. The title "Create New User" is in blue. Below the title, there are five input fields with labels: "Name" (Ashrujit Ghoshal), "Username" (ashru), "Address" (C-133,LLR Hall,IITKGP), "Phone Number" (9474340716), and "Password" (masked with asterisks). Below these fields is a "Choose User Type" dropdown menu with "UG Student" selected. At the bottom, there are two buttons: "Back" and "Create User".

– Creation of PG Student:

Create New User

Create New User

Name: Sayan Ghosh

Username: sayan

Address: W3-204,MS Hall,IITKGP

Phone Number: 9474202564

Password: *****

Choose User Type: PG Student

Back Create User

– Creation of Research Scholar:

Create New User

Create New User

Name: Avishek Mukherjee

Username: avim

Address: D-202,LBS Hall,IITKGP

Phone Number: 9232486554

Password: *****

Choose User Type: Research Scholar

Back Create User

– Creation of Faculty:

Create New User

Name: Ashok Sen

Username: asen

Address: B-306, Faculty Quarters IITKGP

Phone Number: 9434235689

Password: *****

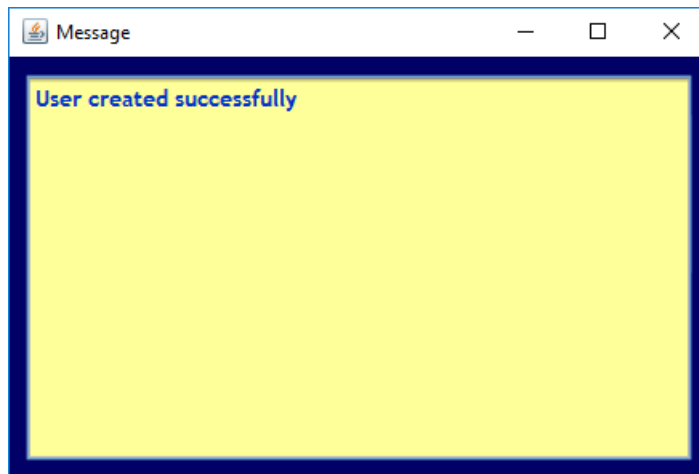
Choose User Type: Faculty

Back Create User

Expected Result:

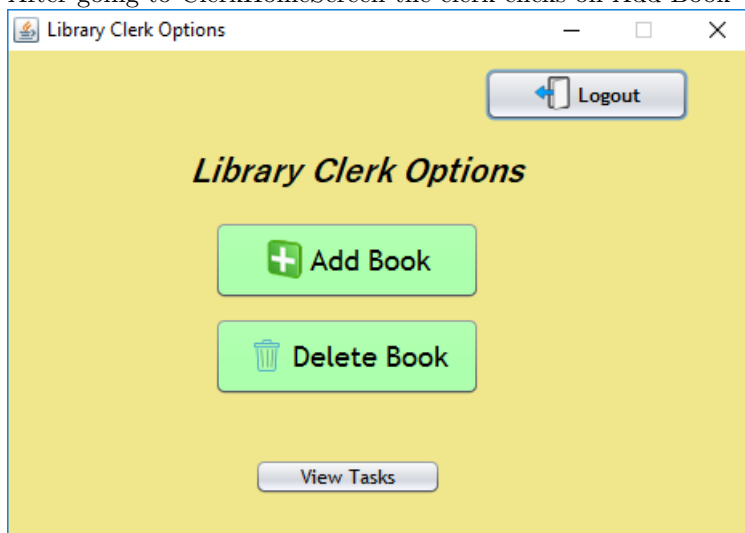


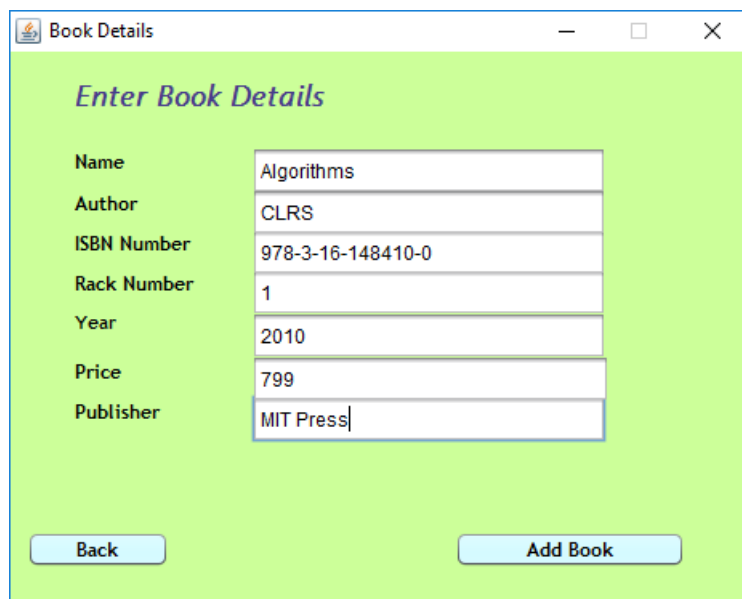
Result Obtained:



3. Library clerk adds book

After going to ClerkHomeScreen the clerk clicks on Add Book



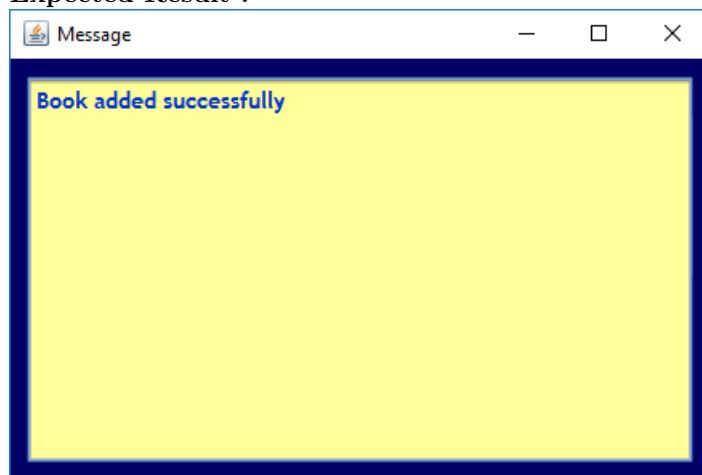


The screenshot shows a window titled "Book Details" with a light green background. At the top, it says "Enter Book Details". Below this, there are seven input fields with labels to their left: "Name" (containing "Algorithms"), "Author" (containing "CLRS"), "ISBN Number" (containing "978-3-16-148410-0"), "Rack Number" (containing "1"), "Year" (containing "2010"), "Price" (containing "799"), and "Publisher" (containing "MIT Press"). At the bottom of the window, there are two buttons: "Back" on the left and "Add Book" on the right.

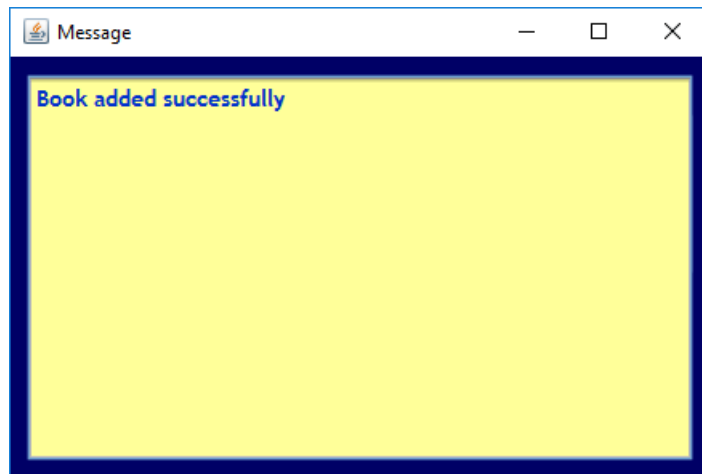
Field	Value
Name	Algorithms
Author	CLRS
ISBN Number	978-3-16-148410-0
Rack Number	1
Year	2010
Price	799
Publisher	MIT Press

Then click on Add Book button

Expected Result :



Result Obtained :



4. User issues, reserves, returns, searches book and pays fine
First the user has to successfully login and the UserHomeScreen opens up :


- Search Book :


A screenshot of a 'Search Book' window. The window has a title bar with the text 'Search Book' and standard minimize, maximize, and close buttons. The main content area has an orange background. At the top, the text 'SEARCH BOOK' is displayed in a stylized font. Below this, there are two input fields. The first is labeled 'ISBN Number' and contains the text '978-3-16-148410-0'. The second is labeled 'Name of the Book' and is empty. At the bottom, there are two buttons: 'Back' and 'Search'.

Book Details

Book Details

Name	Algorithms
Author	CLRS
ISBN Number	978-3-16-148410-0
Number of Copies	2
Number of Copies available	2
Rack Number	1

 Back to User Home Screen

 Back Issue Book Reserve Book

Search Book

SEARCH BOOK

ISBN Number	
Name of the Book	Algorithms

Back Search

The screenshot shows a window titled "Book Details" with a light blue background. At the top, the title "Book Details" is displayed in a purple, italicized font. Below the title, there are six input fields arranged in two columns. The left column contains labels: "Name", "Author", "ISBN Number", "Number of Copies", "Number of Copies available", and "Rack Number". The right column contains the corresponding values: "Algorithms", "CLRS", "978-3-16-148410-0", "2", "2", and "1". At the bottom of the window, there are four buttons: a "Back to User Home Screen" button with a house icon, a "Back" button with a green circular arrow icon, an "Issue Book" button, and a "Reserve Book" button.

Field	Value
Name	Algorithms
Author	CLRS
ISBN Number	978-3-16-148410-0
Number of Copies	2
Number of Copies available	2
Rack Number	1

Buttons: Back to User Home Screen, Back, Issue Book, Reserve Book

- Issue Book:

Path 2: After searching for the book in the previous step click on 'Issue Book' button :

This screenshot is identical to the one above, showing the "Book Details" window with the same data and buttons. It represents the state of the application after the "Issue Book" button has been clicked, although the visual state of the fields and buttons remains unchanged in this specific image.

Field	Value
Name	Algorithms
Author	CLRS
ISBN Number	978-3-16-148410-0
Number of Copies	2
Number of Copies available	2
Rack Number	1

Buttons: Back to User Home Screen, Back, Issue Book, Reserve Book

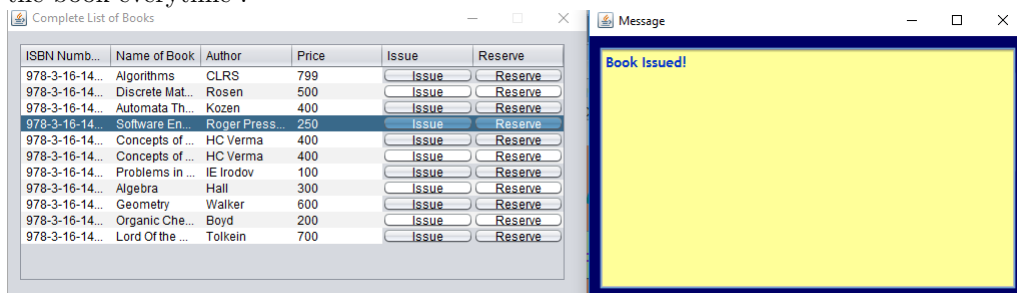
Expected Result :



Result Obtained :



Path 2: The user can also issue the book from the complete book list instead of the searching the book everytime .




- Reserve Book


Path 1: After searching for the book in the previous step click on 'Reserve Book' button :

Book Details

Book Details

Name	Algorithms
Author	CLRS
ISBN Number	978-3-16-148410-0
Number of Copies	2
Number of Copies available	2
Rack Number	1

 Back to User Home Screen

 Back Issue Book Reserve Book

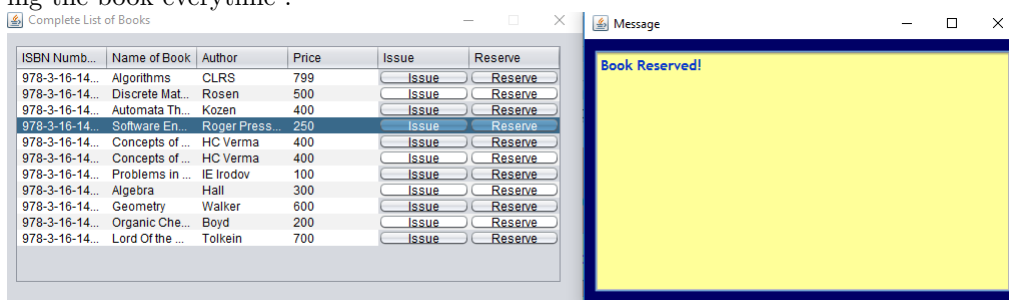
Expected Result :



Result Obtained :

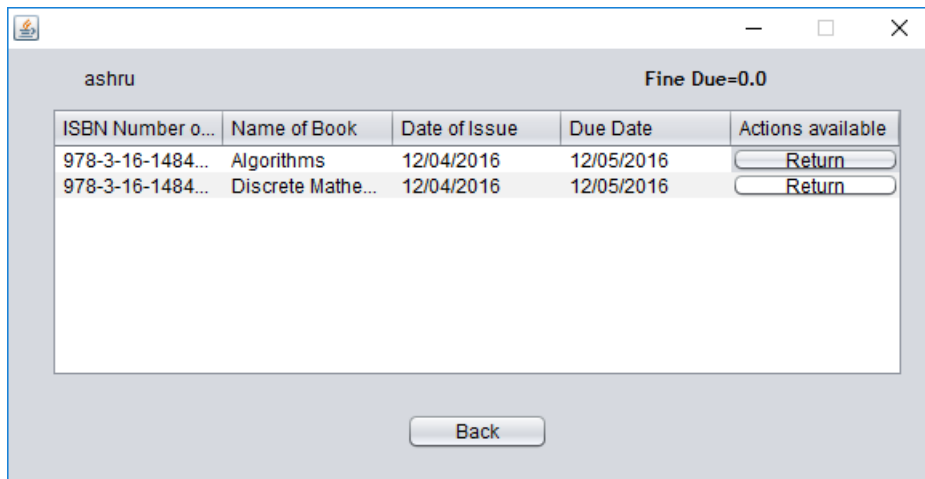


Path 2: The user can also reserve the book from the complete book list instead of the searching the book everytime .



- Return book :

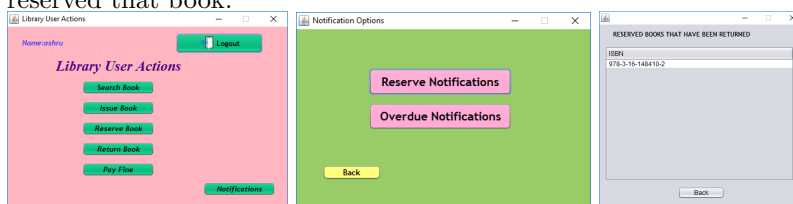
After reaching the user home screen the user needs to click on the Return Book button. The following window opens up showing the list of the books already issued.



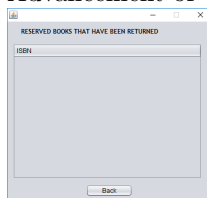
Then the user clicks on the Return button beside the specific book.



If the book has been returned then a Reserve Notification is issued to those users who had reserved that book.



Advancement of 7 days removes the notification from the book from the list.



5. Librarian can delete user and clerk

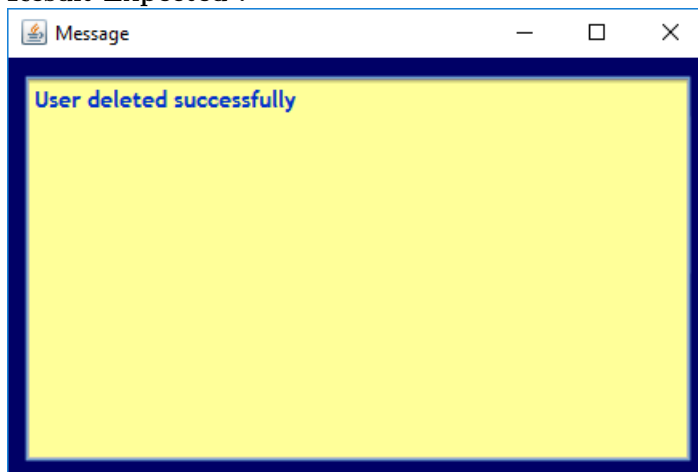
- Remove User :

Librarian after successful login clicks on the 'Remove User' button
Now, the Remove User dialog box opens up

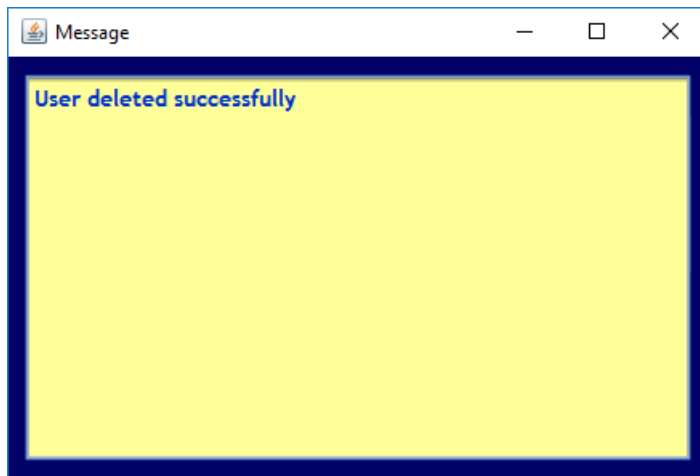


Now, press the 'Remove User' button,

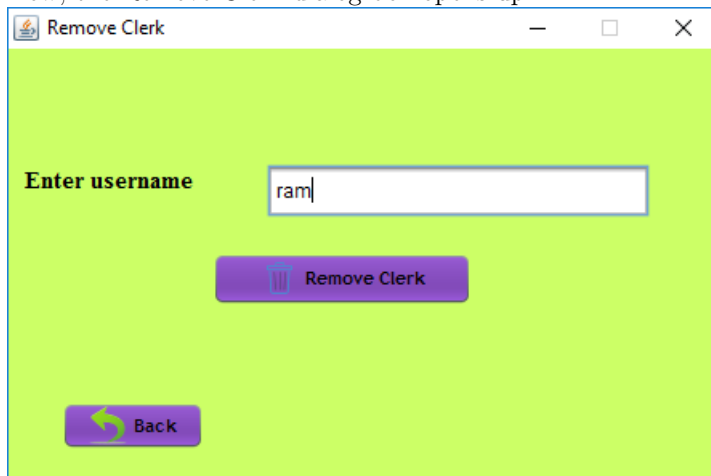
Result Expected :



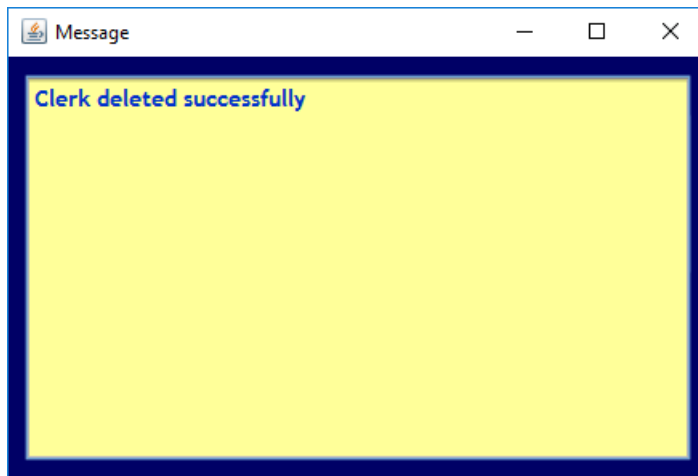
Result Obtained :



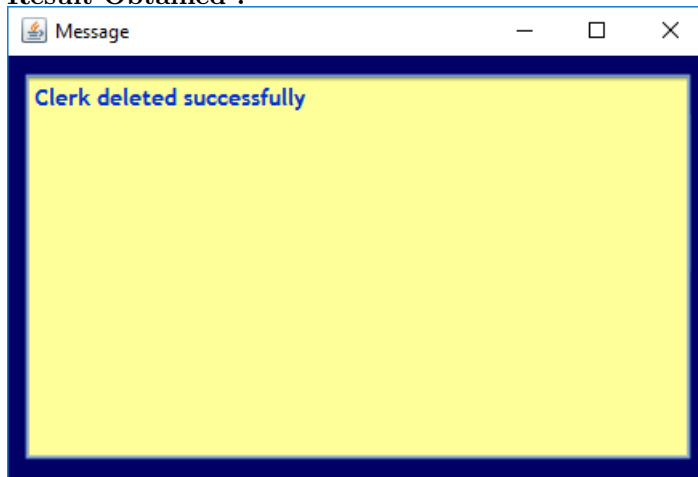
- Remove Clerk:
Librarian after successful login clicks on the 'Remove Clerk' button
Now, the Remove Clerk dialog box opens up



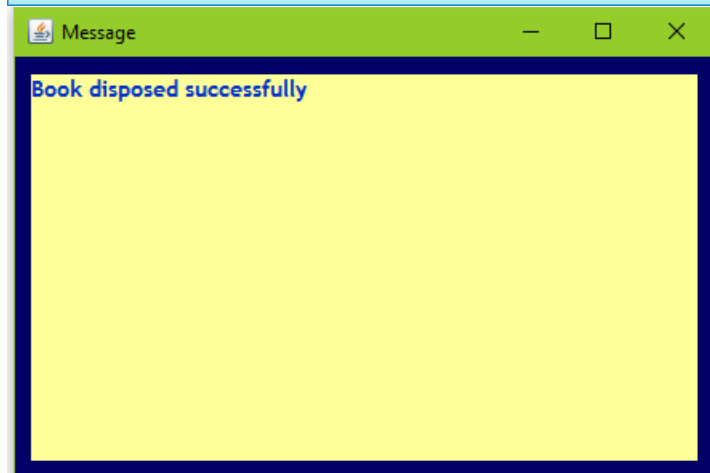
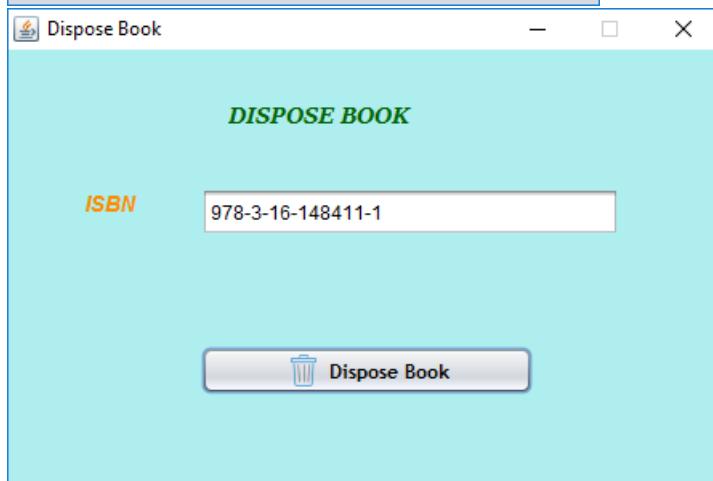
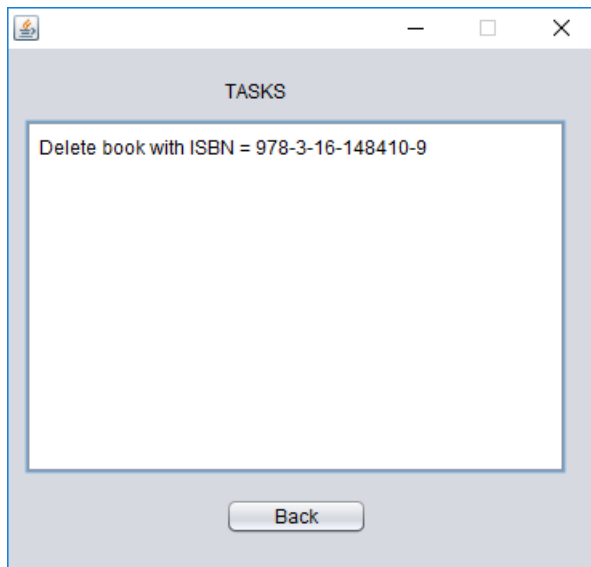
Now, press the 'Remove Clerk' button,
Result Expected :



Result Obtained :

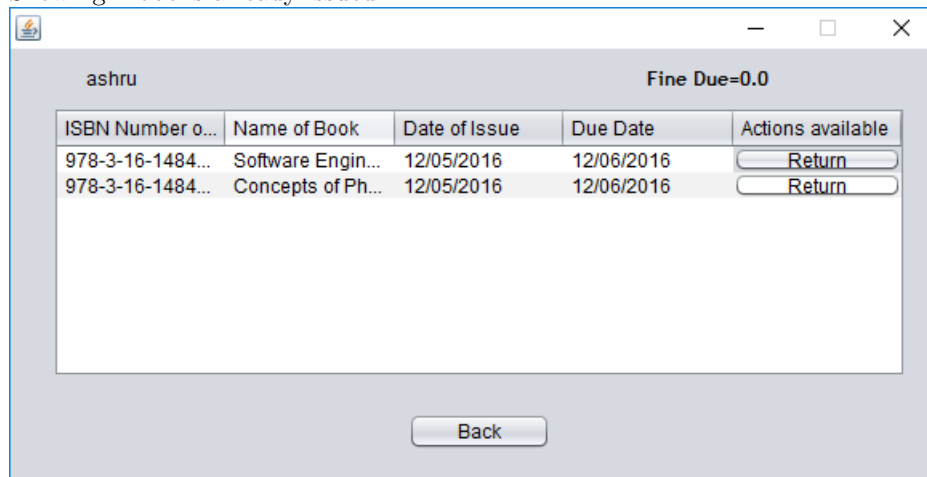


6. Library clerk can delete a book from database after librarian gives a notification to dispose it
First a librarian has to notify clerk regarding the books to dispose off, without these notification the clerk is not allowed to dispose any book.



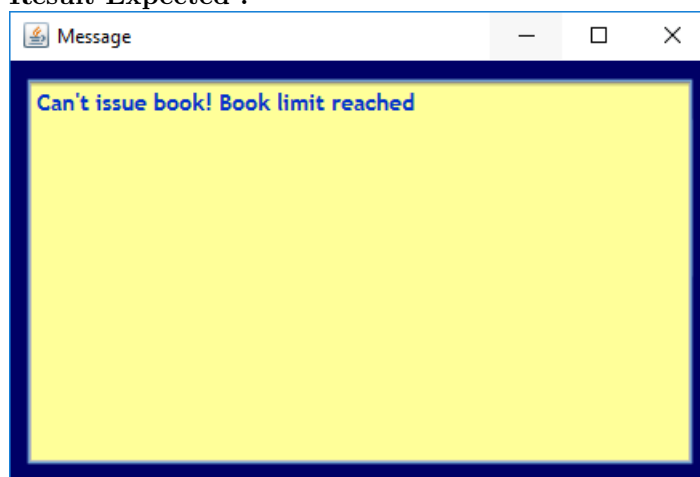
7. Book Issue limit :

- Book Limit reached for UG students :
Showing 2 books already issued

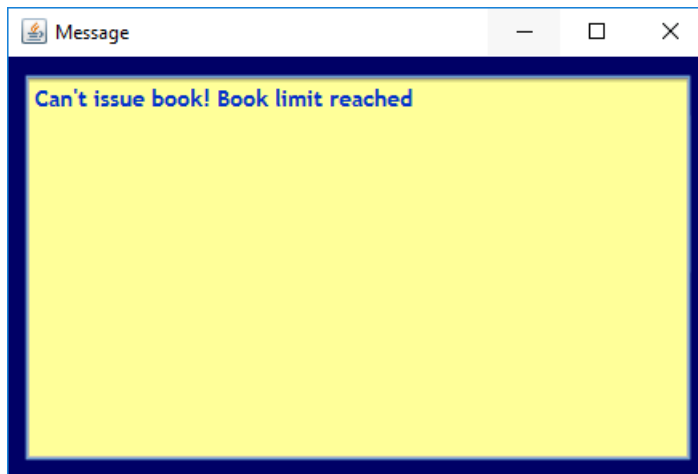


Again trying to issue,

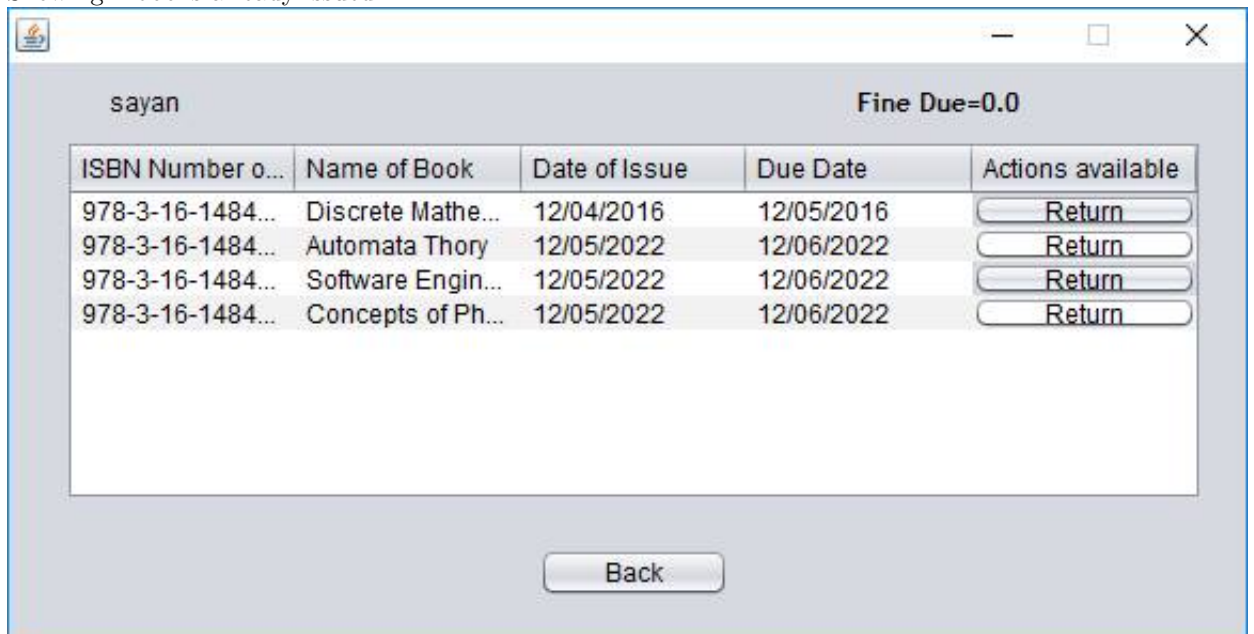
Result Expected :



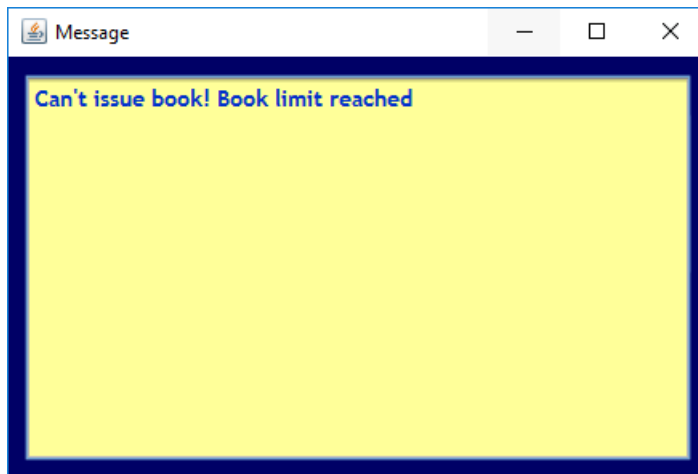
Result Obtained :



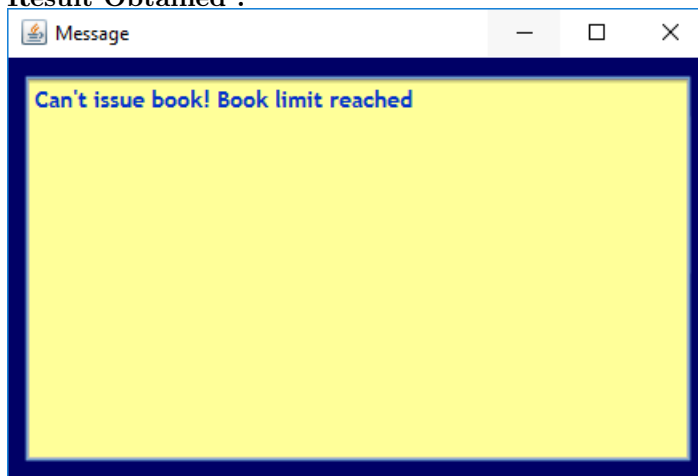
- Book Limit reached for PG students :
Showing 4 books already issued



Again trying to issue,
Result Expected :



Result Obtained :



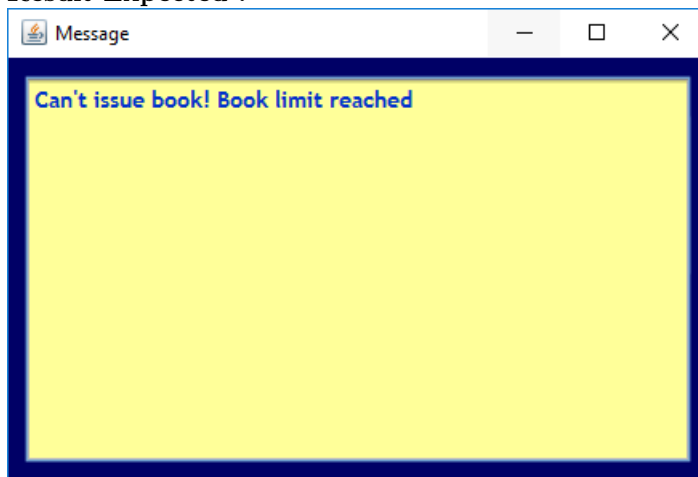
- Book Limit reached for Research Students :
Showing 6 books already issued

avim		Fine Due=0.0			
ISBN Number o...	Name of Book	Date of Issue	Due Date	Actions available	
978-3-16-1484...	Discrete Mathe...	12/04/2016	12/05/2016	Return	
978-3-16-1484...	Algorithms	12/05/2016	12/08/2016	Return	
978-3-16-1484...	Automata Thory	12/05/2016	12/08/2016	Return	
978-3-16-1484...	Software Engin...	12/05/2016	12/08/2016	Return	
978-3-16-1484...	Concepts of Ph...	12/05/2016	12/08/2016	Return	
978-3-16-1484...	Concepts of Ph...	12/05/2016	12/08/2016	Return	

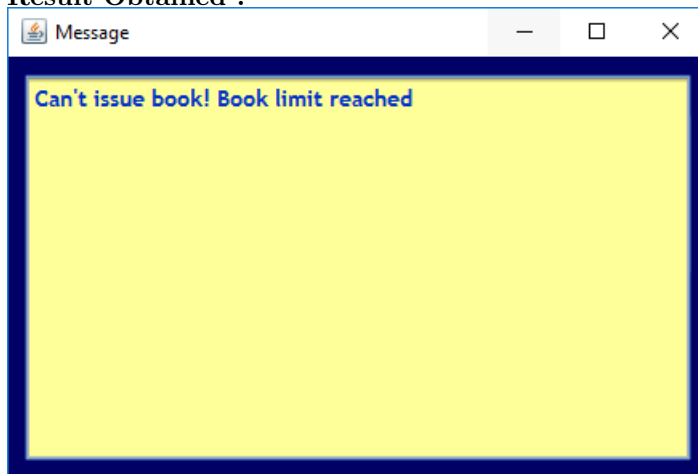
Back

Again trying to issue,

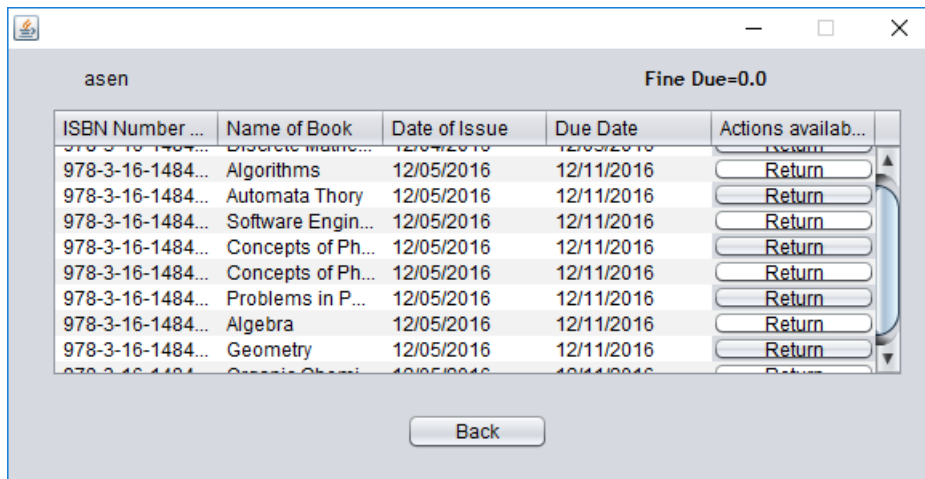
Result Expected :



Result Obtained :

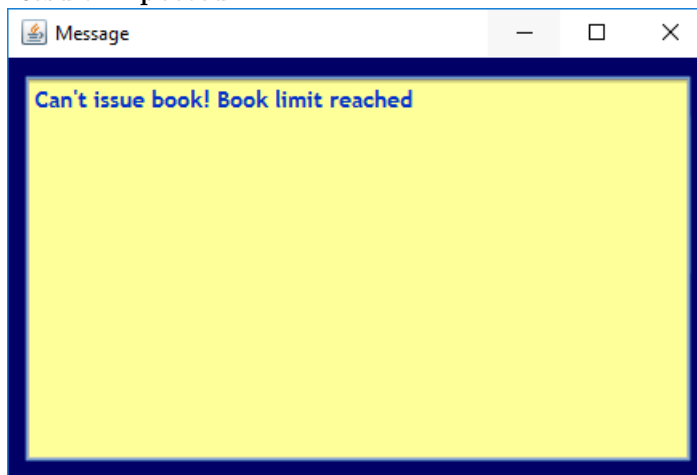


- Book Limit reached for Faculty :
Showing 10 books already issued

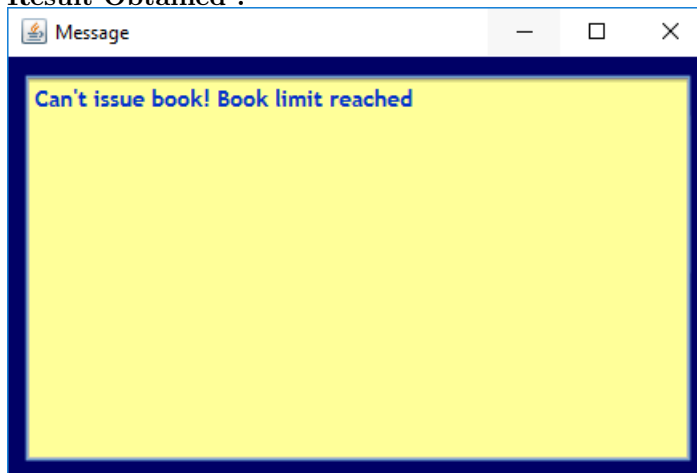


Again trying to issue,

Result Expected :



Result Obtained :



8. Pay Fine :

The user has to pay fine if any of the book is overdue.

In case of overdue the return book screen looks like this.

ISBN Number o...	Name of Book	Date of Issue	Due Date	Actions available
978-3-16-1484...	Discrete Mathe...	12/04/2016	12/05/2016	<button>Return</button>

Back

Also the user receives a notification in the Overdue Notifications pane of the Notification section of the user when user clicks on the Notifications button and then on the Overdue Notifications Button.

Library User Actions

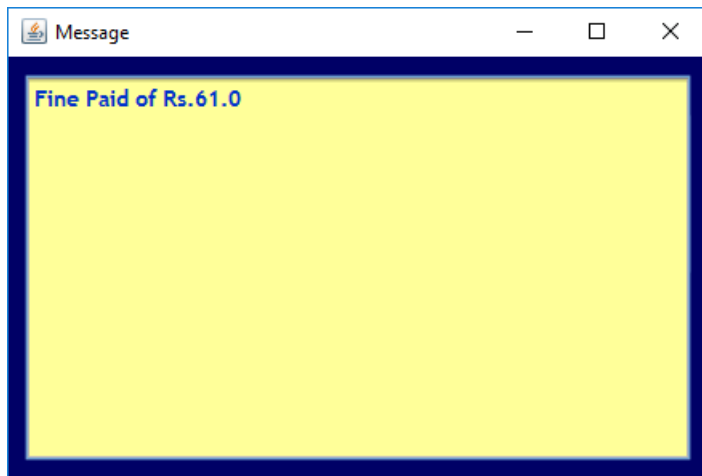
Notification Options

OVERDUE BOOK NOTIFICATIONS

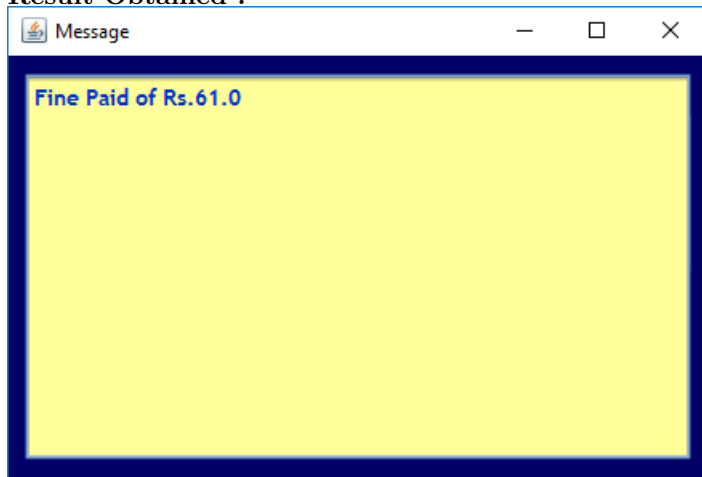
Then after the return of the books the user can pay fine by clicking on the Pay Fine button on the home screen of the user.

After clicking on that button the fine is paid.

Result Expected :

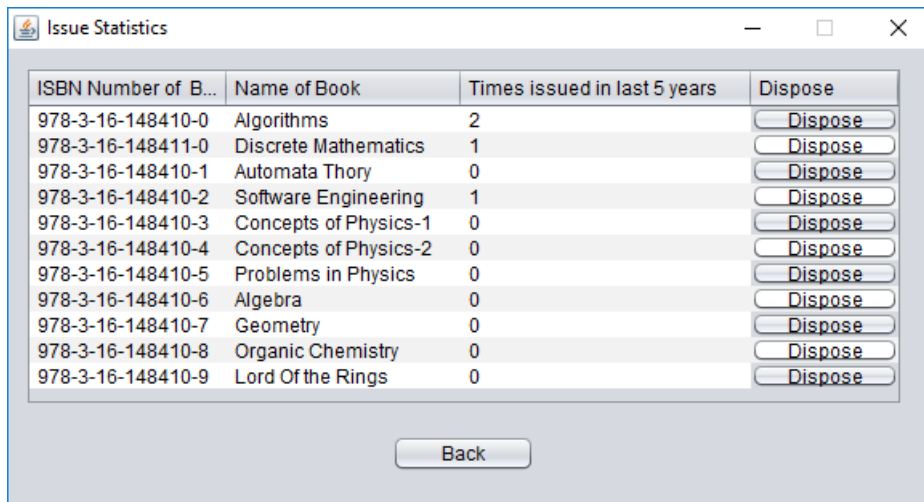


Result Obtained :



9. Issue Statistics:

The librarian can view the statistics of the books present in the library.

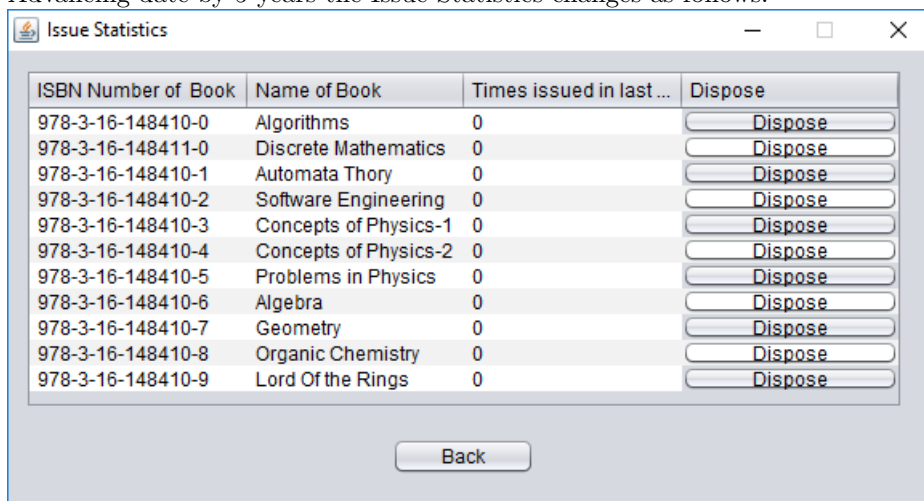


The 'Issue Statistics' window displays a table with four columns: 'ISBN Number of B...', 'Name of Book', 'Times issued in last 5 years', and 'Dispose'. It lists ten books with their respective issue counts. Each row has a 'Dispose' button. A 'Back' button is at the bottom.

ISBN Number of B...	Name of Book	Times issued in last 5 years	Dispose
978-3-16-148410-0	Algorithms	2	Dispose
978-3-16-148411-0	Discrete Mathematics	1	Dispose
978-3-16-148410-1	Automata Thory	0	Dispose
978-3-16-148410-2	Software Engineering	1	Dispose
978-3-16-148410-3	Concepts of Physics-1	0	Dispose
978-3-16-148410-4	Concepts of Physics-2	0	Dispose
978-3-16-148410-5	Problems in Physics	0	Dispose
978-3-16-148410-6	Algebra	0	Dispose
978-3-16-148410-7	Geometry	0	Dispose
978-3-16-148410-8	Organic Chemistry	0	Dispose
978-3-16-148410-9	Lord Of the Rings	0	Dispose

Back

Advancing date by 5 years the Issue Statistics changes as follows:



The 'Issue Statistics' window shows the same table as before, but all 'Times issued in last 5 years' values are now 0, reflecting the date advancement. The 'Dispose' buttons and 'Back' button remain.

ISBN Number of Book	Name of Book	Times issued in last ...	Dispose
978-3-16-148410-0	Algorithms	0	Dispose
978-3-16-148411-0	Discrete Mathematics	0	Dispose
978-3-16-148410-1	Automata Thory	0	Dispose
978-3-16-148410-2	Software Engineering	0	Dispose
978-3-16-148410-3	Concepts of Physics-1	0	Dispose
978-3-16-148410-4	Concepts of Physics-2	0	Dispose
978-3-16-148410-5	Problems in Physics	0	Dispose
978-3-16-148410-6	Algebra	0	Dispose
978-3-16-148410-7	Geometry	0	Dispose
978-3-16-148410-8	Organic Chemistry	0	Dispose
978-3-16-148410-9	Lord Of the Rings	0	Dispose

Back

5 Interface Testing

Upon clicking a button a new window pops up whenever required. Care is taken that the program doesn't shut down abruptly if some intermediate window is closed.

In order to reduce the number of windows displayed on the screen care has been taken to show only one window on the screen wherever possible and the transition between the windows is fast.

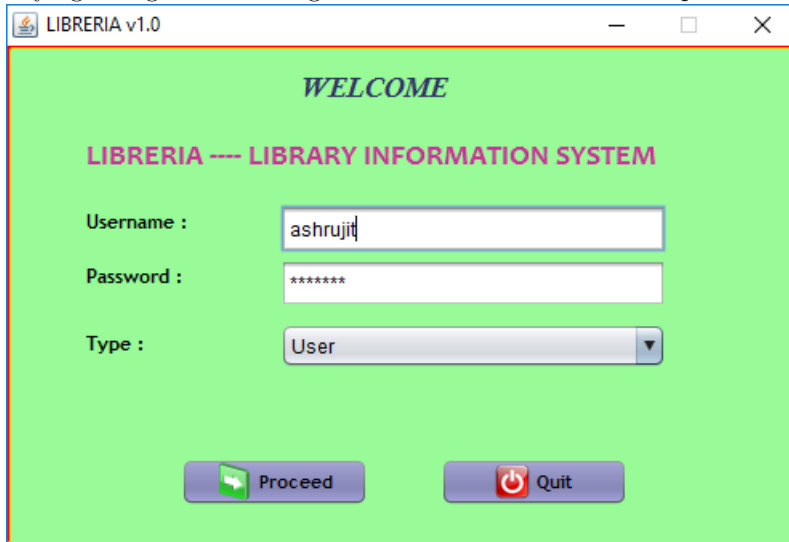
When the user or the clerk home screen is closed he/she is automatically logged out of the system and the main window is displayed again.

When closing the main window a confirmation dialog box opens up asking the user to confirm if he/she wants to exit from the software.

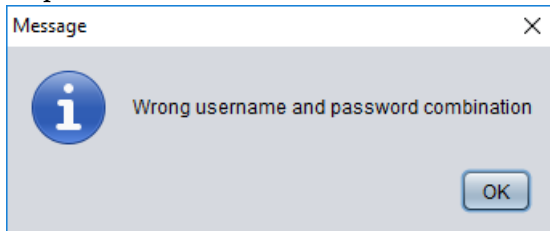
6 Security Testing

If a person tries to access the software using invalid usernames and passwords then an alert is raised. Also during the disposal of a book the clerk has to receive a notification to do the same otherwise the book will not be disposed. So in other words, the librarian has the sole authority to give an order to dispose the books, the clerk is only performing the action.
Now showing below the test results :

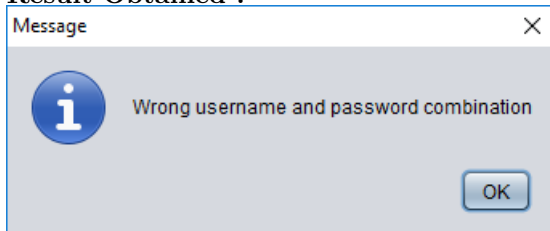
- Trying to login with wrong combination of username and password:



Expected result :



Result Obtained :



7 Regression Testing

For this problem specification no regression testcases are present and hence no regression testing has been done.