



Object Oriented Programming

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Lab Assignment No.: 3

Assignment Title: Library Management System

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OVERVIEW

Registration: The registration process first comes in. Data is unavailable in the database without registration (CSV File). So when someone tries to log in without registration, he will be displayed a message for the same.

In this Assignment, we are reading, writing and updating data from Files only.

Admin: Admin can add book information and calculate fine if the difference between issue and return day is greater than 15 days, which is five rupees.

He can show books which are added to book catalog.

Student: Student can perform many task like forgot password(admin also can), show book catalog with availability of each book. They can issue book as many as available, return book, and can show own profile.

Profile section will display all history that how many book he borrowed and returned with issue and returned date.

They also can show fine calculated for each book in profile section.

+Screenshots:

Home page:

```
PS E:\202212024\Sem 2\OOPS\Assignment 3\src> javac Main.java
PS E:\202212024\Sem 2\OOPS\Assignment 3\src> java Main

+-----+
|      Welcome to Library management system |
+-----+

+-----+
|      Main Menu                         |
+-----+
| 1. Sign in                            |
| 2. Register                           |
| 3. Exit                               |
+-----+
Enter your choice: 
```

InputMismatchException checked:

User Name validation

```
+-----+  
|      Main Menu      |  
+-----+  
| 1. Sign in          |  
| 2. Register         |  
| 3. Exit             |  
+-----+  
Enter your choice: 1  
Enter username : laxminarayan  
  
Enter Your Password -  
*****  
  
UserName doesn't exist..try again  
+-----+  
|      Main Menu      |  
+-----+  
| 1. Sign in          |  
| 2. Register         |  
| 3. Exit             |  
+-----+  
Enter your choice: 1
```

```
| 2. Register           |
| 3. Exit               |
+-----+
Enter your choice: 2

|*****|
| Register as? |
|*****|
| 1. Student |
| 2. Admin   |
|*****|
Enter Choice : 2
Enter your full name: laxminarayan
Enter username : laxmi!@

! No special characters allowed in username !

+-----+
|      Main Menu      |
+-----+
| 1. Sign in          |
| 2. Register         |
| 3. Exit             |
+-----+
Enter your choice: |
```

A screenshot of a Java IDE (Assignment 3 - Operations.java) showing a terminal window. The terminal displays a menu with options 1, 2, and 3. The user enters choice 2, which leads to a registration submenu. The user enters their full name as 'Jay' and username as 'laxmi'. An error message indicates that the username is already taken. The user then enters choice 1, which is the sign-in option.

```
| 3. Exit
+-----
Enter your choice: 2

|*****| | Register as? | |*****|
|*****| | 1. Student | | 2. Admin | |*****|
Enter Choice : 2
Enter your full name: Jay
Enter username : laxmi

! Username already taken..
Please try for another username !

+-----+
| Main Menu |
| 1. Sign in |
| 2. Register |
| 3. Exit |
+-----+
Enter your choice:
```

Full Name Validation:

A screenshot of a Java IDE (Assignment 3 - Operations.java) showing a terminal window. The terminal displays a menu with options 1, 2, and 3. The user enters choice 2, which leads to a registration submenu. The user enters their full name as 'l123'. An error message indicates that only characters are allowed in the full name. The user then enters choice 1, which is the sign-in option.

```
+-----+
| Main Menu |
| 1. Sign in |
| 2. Register |
| 3. Exit |
+-----+
Enter your choice: 2

|*****| | Register as? | |*****|
|*****| | 1. Student | | 2. Admin | |*****|
Enter Choice : 2
Enter your full name: l123

! Only Characters Allowed in Full Name !

+-----+
| Main Menu |
| 1. Sign in |
| 2. Register |
+-----+
```

A screenshot of a Java IDE (Assignment 3 - Operations.java) showing a terminal window. The terminal displays a menu with options 1, 2, and 3. The user enters choice 2, which leads to a registration submenu. The user enters their full name as 'Laxminarayan' and username as 'laxmi'. They are prompted to enter a password, which they do using asterisks. A success message indicates that the registration was registered successfully. The user then enters choice 1, which is the sign-in option.

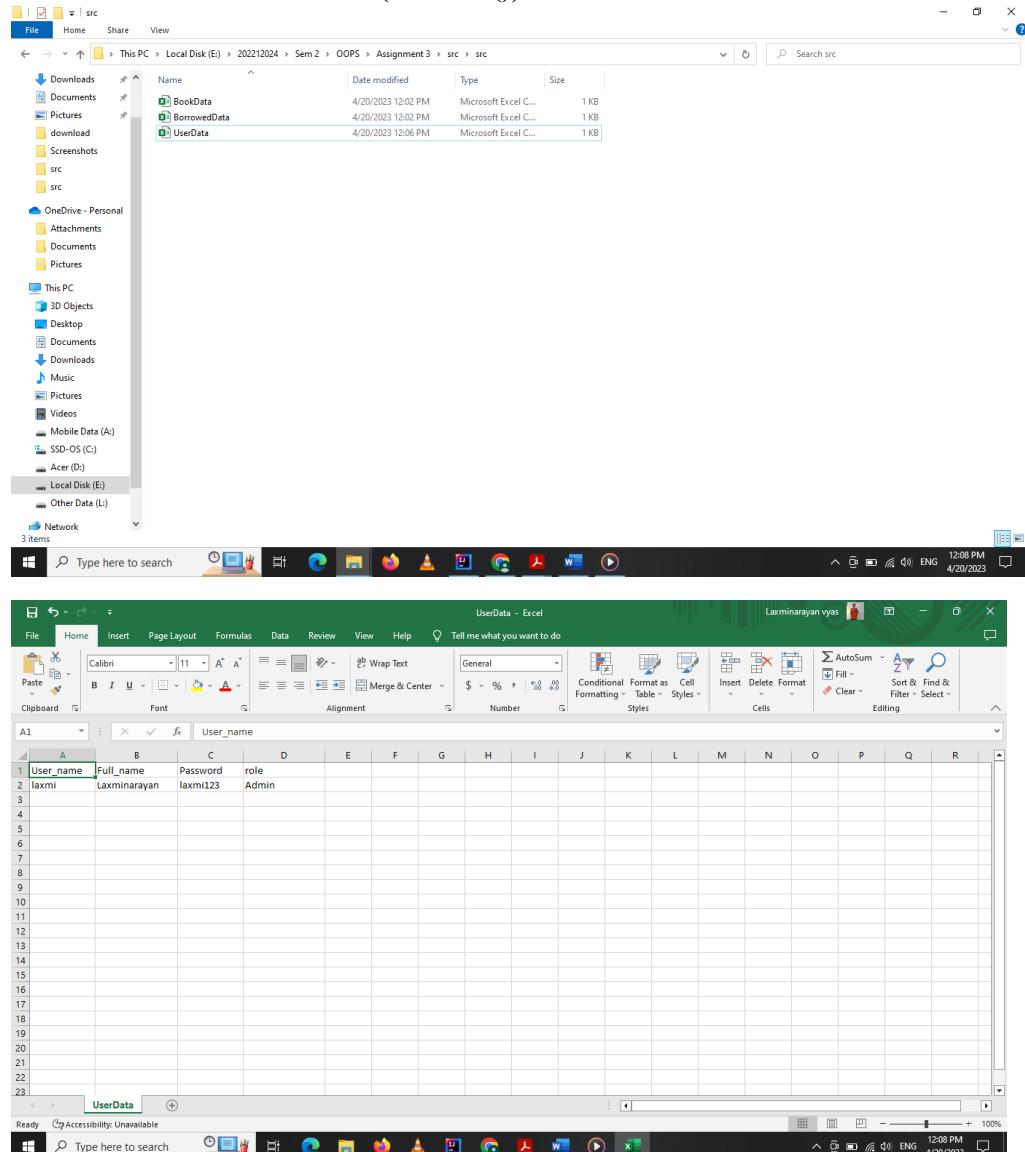
```
Enter your choice: 2

|*****| | Register as? | |*****|
|*****| | 1. Student | | 2. Admin | |*****|
Enter Choice : 2
Enter your full name: Laxminarayan
Enter username : laxmi

Enter Your Password -
*****
Registered successfully

+-----+
| Main Menu |
| 1. Sign in |
| 2. Register |
| 3. Exit |
+-----+
Enter your choice:
```

If file not exist then Created: (file.exists()):



```

File Edit View Navigate Code Refactor Build Run Tools VCS Window Help Assignment 3 - Operations.java
Assignment 3 src Operations Main.java Operations.java AdminInterface.java Admin.java Book.java BorrowedBooks.java FileOperations.java
Project Terminal Local Enter your choice: 2
Enter your choice: 2
*****
| Register as? |
| *****
| 1. Student |
| 2. Admin |
| *****
Enter Choice : 1
Enter your full name: Mukesh
Enter username : av

Enter Your Password -
*****
Registered successfully

+-----+
| Main Menu |
+-----+
| 1. Sign In |
| 2. Register |
| 3. Exit |
+-----+
Enter your choice:

```

User Data - Excel

Laxminarayan Vyas

File Home Insert Page Layout Formulas Data Review View Help Tell me what you want to do

Calibri 11 A A Wrap Text General Conditional Formatting

B I U \$ % ^ π Σ AutoSum

Font Alignment Number Styles Insert Delete Format Cells Sort & Find & Filter Select

Clipboard Merge & Center Cell Styles Fill Clear Editing

A1 User_name

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1	User_name	Full_name	Password	role													
2	laxmi	Laxminarayan	laxmi123	Admin													
3	mv	Mukesh	mukesh123	Student													
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	
16																	
17																	
18																	
19																	
20																	
21																	
22																	
23																	

User Data

Ready Accessibility: Unavailable

Type here to search

12:11 PM 4/20/2023 ENG 100%

Forgot password:

```
|*****  
| Enter Choice : 1  
| Enter your Full name: Mukesh  
| Enter username : mv  
  
| Enter Your Password -  
| *****  
  
| Registered successfully  
  
+-----+  
|      Main Menu      |  
+-----+  
| 1. Sign in          |  
| 2. Register         |  
| 3. Exit             |  
+-----+  
  
| Enter your choice: 1  
| Enter username : mv  
  
| Enter Your Password -  
| *****  
  
| !!Password or userName not valid  
| Forgot password?(y/n)  
  
Version Control  TODO  problems  Terminal  Services
```

```
File Edit View Navigate Code Refactor Build Run Tools VCS Window Help Assignment 3 - Operations.java
Assignment 3 src Operations showMenu
Project Main Operations.java AdminInterface.java Admin.java Book.java BorrowedBooks.java FileOperations.java
Terminal Local +
+-----+
| 1. Sign in
| 2. Register
| 3. Exit
+-----+
Enter your choice: 1
Enter username : mv

Enter Your Password -
*****
***** !Password or userNName not valid
Forgot password?(y/n)

Enter Your Password -
*****
+-----+
|      Main Menu
+-----+
| 1. Sign in
| 2. Register
| 3. Exit
+-----+
Enter your choice: 1
Main
File
Edit
View
Navigate
Code
Refactor
Build
Run
Tools
VCS
Window
Help
Assignment 3 - Operations.java
Version Control
Microsoft Defender configuration: The IDE has detected Microsoft Defender with Real-Time Protection enabled. It might severely degrade IDE performance. It is recommended to add follow... (today 11:08 AM)
24/91 CRLF UTF-8 4 spaces
Type here to search
Windows Taskbar icons
```

If no book added by admin:

The screenshot shows a Java IDE interface with a terminal window displaying a menu for a library system. The menu includes options for issuing and returning books, displaying profiles, and returning to the main menu. The terminal also shows some book data and copy counts.

```
=====
Books =====
Book id      Book Name      Copies
=====
=====
=====
Books =====
Book id      Book Name      Copies
=====
=====
=====
| ***** Library Operation | 
| ***** 
| 1. Issue book           |
| 2. Return book          |
| 3. Display Profile      |
| 4. Back to main menu    |
| ***** 
Enter your choice:
```

The screenshot shows an Excel spreadsheet titled "UserData" containing three rows of user information: User_name, Full_name, Password, and role. The data is as follows:

User_name	Full_name	Password	role
laxmi	Laxminarayan	laxmi123	Admin
mv	Mukesh	hi12345	Student

Admin Login:

```
+-----+
|      Main Menu      |
+-----+
| 1. Sign in          |
| 2. Register         |
| 3. Exit             |
+-----+
Enter your choice: 1
Enter username : laxmi

Enter Your Password -
*****
...Valid user name...

Welcome Admin

=====Menu=====
| 1. Add book info   |
| 2. Show all books  |
| 3. Back to Main Menu|
=====

Enter your choice: 1
Enter book id: 101
Enter name of book: Java
Enter number of copies: 2

Book added successfully
```

```
...Valid user name...

Welcome Admin

=====Menu=====
| 1. Add book info   |
| 2. Show all books  |
| 3. Back to Main Menu|
=====

Enter your choice: 1
Enter book id: 101
Enter name of book: Java
Enter number of copies: 2

Book added successfully
```

Book_id	Book_name	Copies
101	Java	2

```

Assignment 3 | src | Operations | showMenu
File Edit View Navigate Code Refactor Build Run Tools VCS Window Help Assignment 3 - Operations.java
Project Terminal Local + v
Enter your choice: 1
Enter book id: 101
Enter name of book: Java
Enter number of copies: 2
Book added successfully
=====
|       Menu |
| 1. Add book info |
| 2. Show all books |
| 3. Back to Main Menu |
=====
Enter your choice: 1
Enter book id: 101
Book id already registered...
=====
|       Menu |
| 1. Add book info |
| 2. Show all books |
| 3. Back to Main Menu |
=====
Enter your choice: 1

```

Microsoft Defender configuration: The IDE has detected Microsoft Defender with Real-Time Protection enabled. It might severely degrade IDE performance. It is recommended to add follow... (today 11:08 AM) 24/91 CRLF UTF-8 4 spaces

After adding some book:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
1	Book_id	Book_name	Copies																
2	101	Java	2																
3	102	C++	3																
4	103	#	1																
5	104	Ubuntu	5																
6																			
7																			
8																			
9																			
10																			
11																			
12																			
13																			
14																			
15																			
16																			
17																			
18																			
19																			
20																			
21																			
22																			
23																			

Users:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
1	User_name	Full_name	Password	role															
2	laxmi	Laxminarayan	laxmi123	Admin															
3	mv	Mukesh	hil12345	Student															
4	ps	Poojan	ps123456	Student															
5	hetshah	Het	het12345	Student															
6																			
7																			
8																			
9																			
10																			
11																			
12																			
13																			
14																			
15																			
16																			
17																			
18																			
19																			
20																			
21																			
22																			
23																			

Login with user “hetshah”:

```
Main Menu
1. Sign in
2. Register
3. Exit

Enter your choice: 1
Enter username : hetshah

Enter Your Password -
*****


...Valid user name....
Welcome hetshah

===== Books =====
Book id      Book Name      Copies
101          Java           2|
102          C++            3|
103          c#             1|
104          Ubuntu          5|



12:25 PM 24/91 CRLF UTF-8 4 spaces
```

Returning book which you don't own:

```
=====
Books
Book id      Book Name      Copies
101          Java           2|
102          C++            3|
103          c#             1|
104          Ubuntu          5|



| **** Library Operation ****|
| 1. Issue book              |
| 2. Return book             |
| 3. Display Profile         |
| 4. Back to main menu       |
| **** **** **** **** **** |

Enter your choice: 2
Enter book id to return: 101

You don't own this book ;) ..
```

Book Issue:

Assignment 3 - Operations.java

```

|***** Library Operation *****|
| 1. Issue book |
| 2. Return book |
| 3. Display Profile |
| 4. Back to main menu |
|*****|
Enter your choice: 1
Enter book id to issue: 103

Book issued successfully....
```

Books		
Book id	Book Name	Copies
101	Java	2
102	C++	3
103	c#	0
104	Ubuntu	5

BorrowedData - Excel

User_name	Book_id	Book_name	Issue_date	Return_date	fine
hetshah	103	c#	4/20/2023		

Login with UserName “ps”:

Assignment 3 - Operations.java

```

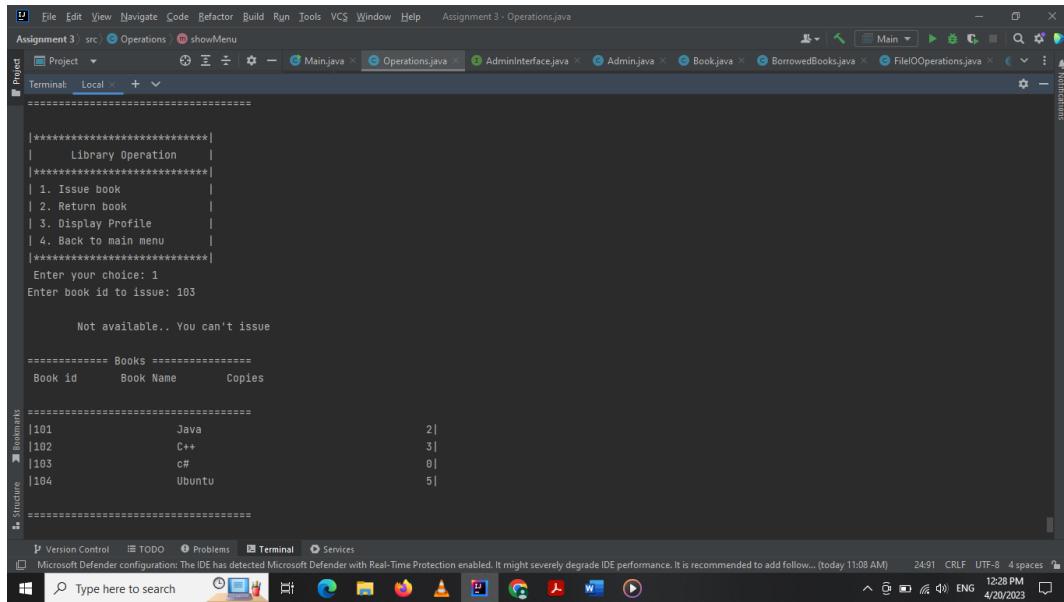
|----- Main Menu -----|
| 1. Sign in |
| 2. Register |
| 3. Exit |
|-----|
Enter your choice: 1
Enter username : ps

Enter Your Password -
*****
....Valid user name....
Welcome ps

Books
Book id      Book Name      Copies
```

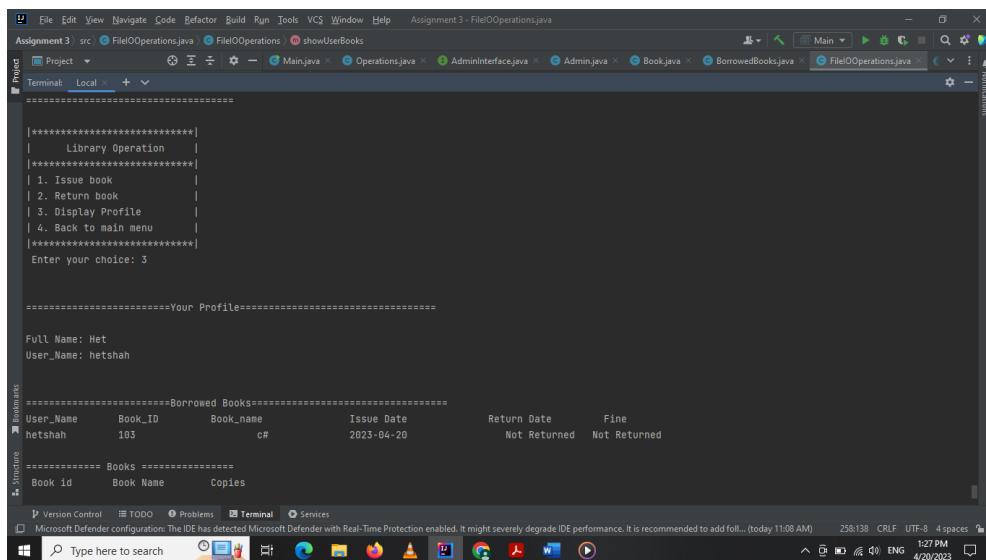
Books		
Book id	Book Name	Copies
101	Java	2
102	C++	3
103	c#	0
104	Ubuntu	5

Issuing 0 copies book(issued by “hetshah”):



```
| ****|  
| Library Operation |  
| ****|  
| 1. Issue book |  
| 2. Return book |  
| 3. Display Profile |  
| 4. Back to main menu |  
| ****|  
Enter your choice: 1  
Enter book id to issue: 103  
  
Not available.. You can't issue  
  
===== Books =====  
Book Id Book Name Copies  
  
|101 Java 2|  
|102 C++ 3|  
|103 C# 0|  
|104 Ubuntu 5|  
  
=====
```

“hetshah” profile:



```
| ****|  
| Library Operation |  
| ****|  
| 1. Issue book |  
| 2. Return book |  
| 3. Display Profile |  
| 4. Back to main menu |  
| ****|  
Enter your choice: 3  
  
=====Your Profile=====  
Full Name: Het  
User_Name: hetshah  
  
=====Borrowed Books=====  
User_Name Book_ID Book_name Issue Date Return Date Fine  
hetshah 103 C# 2023-04-20 Not Returned Not Returned  
  
===== Books =====  
Book Id Book Name Copies  
  
Project Version Control TODO Problems Terminal Services  
Microsoft Defender configuration: The IDE has detected Microsoft Defender with Real-Time Protection enabled. It might severely degrade IDE performance. It is recommended to add follow... (today 11:08 AM) 2491 CRLF UTF-8 4 spaces  
Type here to search 12:28 PM ENG 4/20/2023
```

Return book id 103 from user “hetshah”:

```

=====
|***** Library Operation *****|
|*****| 1. Issue book      | | | |
|*****| 2. Return book     |
|*****| 3. Display Profile |
|*****| 4. Back to main menu|
|*****|*****|*****|*****|*****|
Enter your choice: 2
Enter book id to return: 103

===== Books =====
Book Id     Book Name     Copies
-----|-----|-----|-----|
101       Java           2|
102       C++            3|
103       c#             1|
104       Ubuntu          5|
-----|-----|-----|-----|

```

Display profile:

```

=====
| 2. Return book      |
| 3. Display Profile |
| 4. Back to main menu|
|*****|*****|*****|*****|
Enter your choice: 3

=====Your Profile=====
Full Name: Het
User_Name: hetshaw

=====Borrowed Books=====
User_Name   Book_ID   Book_name   Issue Date   Return Date   Fine
hetshaw    103       c#         2023-04-20   2023-04-20   0

===== Books =====
Book Id     Book Name     Copies
-----|-----|-----|-----|
101       Java           2|
102       C++            3|
103       c#             1|
104       Ubuntu          5|
-----|-----|-----|-----|

```

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
User_name	Book_id	Book_name	Issue_date	Return_date	fine													
hetshaw	103	c#	4/20/2023	4/20/2023	0													

Returning book you returned:

```

File Edit View Navigate Code Refactor Build Run Tools VCS Window Help Assignment 3 - FileOperations.java
Assignment 3 src FileOperations.java FileOperations showUserBooks
Project Local Terminal Ubuntu 5|
=====
|***** Library Operation |
|***** |
| 1. Issue book |
| 2. Return book |
| 3. Display Profile |
| 4. Back to main menu |
|***** |
Enter your choice: 2
Enter book id to return: 103

You don't own this book ;).|.

===== Books =====
Book Id Book Name Copies
=====
|101 Java 2|
|102 C++ 3|
|103 c# 1|
|104 Ubuntu 5|

```

New login:

```

File Edit View Navigate Code Refactor Build Run Tools VCS Window Help Assignment 3 - FileOperations.java
Assignment 3 src FileOperations.java FileOperations showUserBooks
Project Local Terminal Ubuntu 5|
=====
| Main Menu |
|-----+
| 1. Sign in |
| 2. Register |
| 3. Exit |
|-----+
Enter your choice: 1
Enter username : ps

Enter Your Password -
*****
...Valid user name...
Welcome ps

===== Books =====
Book Id Book Name Copies
=====
|101 Java 2|
|102 C++ 3|
|103 c# 1|
|104 Ubuntu 5|

```

Issued diff books:

```

File Edit View Navigate Code Refactor Build Run Tools VCS Window Help Assignment 3 - FileOperations.java
Assignment 3 src FileOperations.java FileOperations showUserBooks
Project Local Terminal Ubuntu 5|
=====
|***** Library Operation |
|***** |
| 1. Issue book |
| 2. Return book |
| 3. Display Profile |
| 4. Back to main menu |
|***** |
Enter your choice: 3

=====Your Profile=====
Full Name: Poojan
User_Name: ps

=====Borrowed Books=====
User_Name Book_ID Book_name Issue Date Return Date Fine
ps 102 C++ 2023-04-20 Not Returned Not Returned
ps 101 Java 2023-04-20 Not Returned Not Returned
ps 102 C++ 2023-04-20 Not Returned Not Returned
ps 104 Ubuntu 2023-04-20 Not Returned Not Returned

===== Books =====
Book Id Book Name Copies

```

User_name	Book_id	Book_name	Issue_date	Return_date	fine
hetshah	103	c#	4/20/2023	4/20/2023	0
ps	102	C++	4/20/2023		
ps	101	Java	4/20/2023		
ps	102	C++	4/20/2023		
ps	104	Ubuntu	4/20/2023		

Book catalog after issuing some books:

```
=====
Books =====
Book id      Book Name      Copies
=====
|101          Java           1|
|102          C++            1|
|103          c#             1|
|104          Ubuntu          4|
=====
```

Return only one C++ book from user "PS":

```
=====
*****
| Library Operation |
|*****|
| 1. Issue book   |
| 2. Return book  |
| 3. Display Profile |
| 4. Back to main menu |
|*****|
Enter your choice: 2
Enter book id to return: 102

=====
Books =====
Book id      Book Name      Copies
=====
|101          Java           1|
|102          C++            2|
|103          c#             1|
|104          Ubuntu          4|
=====
```

His profile:

```

File Edit View Navigate Code Refactor Build Run Tools VCS Window Help Assignment 3 - FileOperations.java
Assignment 3 - src - Main.java - Operations.java - AdminInterface.java - Admin.java - Book.java - BorrowedBooks.java - FileOperations.java
Project Terminal Local + -----
|*****Your Profile*****
Enter your choice: 3

=====Your Profile=====
Full Name: Poojan
User_Name: ps

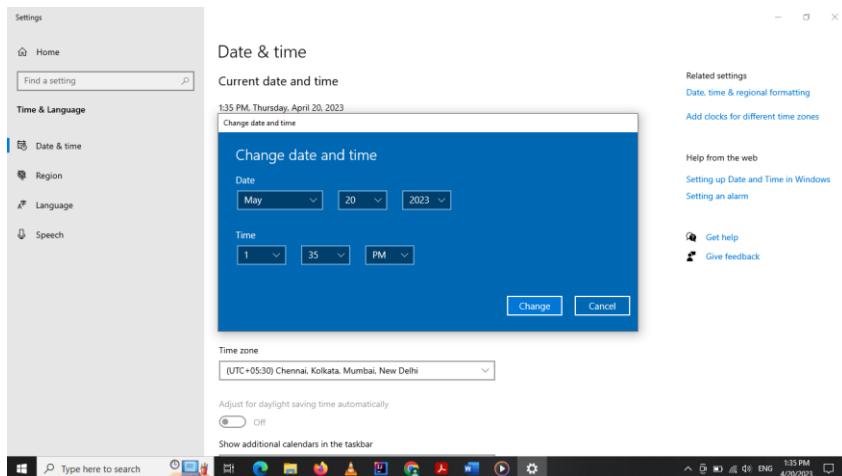
=====Borrowed Books=====
User_Name Book_ID Book_name Issue Date Return Date Fine
ps 102 C++ 2023-04-20 2023-04-20 0
ps 101 Java 2023-04-20 Not Returned Not Returned
ps 102 C++ 2023-04-20 Not Returned Not Returned
ps 104 Ubuntu 2023-04-20 Not Returned Not Returned

===== Books =====
Book id Book Name Copies
=====
|101 Java 1|
|102 C++ 2|
|103 C# 1|
|104 Ubuntu 4|

```

Microsoft Defender configuration: The IDE has detected Microsoft Defender with Real-Time Protection enabled. It might severely degrade IDE performance. It is recommended to add foll... (today 11:08 AM) 238:138 CRLF UTF-8 4 spaces

Returning book after changing day :



Return c++ book after 30 days:

```

File Edit View Navigate Code Refactor Build Run Tools VCS Window Help Assignment 3 - Admin.java
Assignment 3 - src - Admin - calculateFine - Main.java - Operations.java - AdminInterface.java - Admin.java - Book.java - BorrowedBooks.java - FileOperations.java
Project Terminal Local + -----
|*****|
Enter your choice: 2
Enter book id to return: 102

===== Books =====
Book id Book Name Copies
=====
|101 Java 1|
|102 C++ 2|
|103 C# 1|
|104 Ubuntu 4|


|***** Library Operation |
|*****|
| 1. Issue book |
| 2. Return book |
| 3. Display Profile |
| 4. Back to main menu |
|*****|
Enter your choice: 3


```

Microsoft Defender configuration: The IDE has detected Microsoft Defender with Real-Time Protection enabled. It might severely degrade IDE performance. It is recommended to add foll... (4/20/2023 11:08 AM) 59:11 CRLF UTF-8 4 spaces

```

File Edit View Navigate Code Refactor Build Run Tools VCS Window Help Assignment 3 - Admin.java
Assignment 3 src Admin calculateFine
Project Terminal Local + v
Main.java Operations.java AdminInterface.java Admin.java Book.java BorrowedBooks.java FileOperations.java
-----Your Profile-----
Full Name: Poojan
User_Name: ps

-----Borrowed Books-----
User_Name Book_ID Book_name Issue Date Return Date Fine
ps 102 C++ 2023-04-20 2023-04-20 0
ps 101 Java 2023-04-20 Not Returned Not Returned
ps 102 C++ 2023-04-20 2023-05-20 75
ps 104 Ubuntu 2023-04-20 Not Returned Not Returned

----- Books -----
Book Id Book Name Copies
101 Java 1
102 C++ 2
103 c# 1
104 Ubuntu 4
-----
```

Microsoft Defender configuration: The IDE has detected Microsoft Defender with Real-Time Protection enabled. It might severely degrade IDE performance. It is recommended to add to... (4/20/2023 11:08 AM) 59:11 CRLF, UTF-8 4 spaces 5/20/2023 207 PM

Type here to search

BorrowedData - Excel

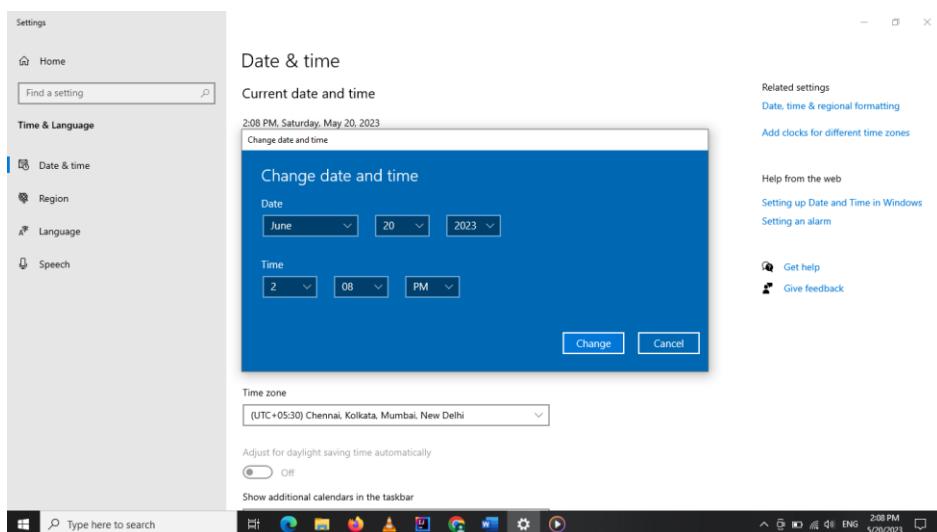
Home Insert Page Layout Formulas Data Review View Tell me what you want to do

User_name	Book_Id	Book_name	Issue_date	Return_date	Fine
1 hetsihah	103	c#	4/20/2023	4/20/2023	0
2 ps	102	C++	4/20/2023	4/20/2023	0
3 ps	101	Java	4/20/2023		
4 ps	102	C++	4/20/2023	5/20/2023	75
5 ps	104	Ubuntu	4/20/2023		
6 ps					

Ready Accessibility: Unavailable

Type here to search

Returning c# at June:



```

Assignment 3 - Admin.java
=====
|***** Library Operation *****|
|***** 1. Issue book        |
|***** 2. Return book       |
|***** 3. Display Profile   |
|***** 4. Back to main menu |
|***** Enter your choice: 2 |
Enter book id to return: 104

===== Books =====
Book id      Book Name      Copies
=====
1|101          Java           1|
1|102          C++            3|
1|103          C#             1|
1|104          Ubuntu          5|
=====

Project  Local + 
Terminal  Microsoft Defender configuration: The IDE has detected Microsoft Defender with Real-Time Protection enabled. It might severely degrade IDE performance. It is recommended to add fo... 4/20/2023 11:09 AM 59:11 CRLF UTF-8 4 spaces
File Version Control TODO Problems Terminal Services
Type here to search  2:09 PM 4/20/2023

```

```

Assignment 3 - Admin.java
=====
|***** Library Operation *****|
|***** 1. Issue book        |
|***** 2. Return book       |
|***** 3. Display Profile   |
|***** 4. Back to main menu |
|***** Enter your choice: 3 |
Enter your choice: 3

=====Your Profile=====

Full Name: Poojan
User_Name: ps

=====Borrowed Books=====
User_Name  Book_ID  Book_name  Issue Date  Return Date  Fine
ps         102      C++        2023-04-20  2023-04-20    0
ps         101      Java       2023-04-20  Not Returned  Not Returned
ps         102      C++        2023-04-20  2023-05-20    75
ps         104      Ubuntu     2023-04-20  2023-06-20    230

===== Books =====
Book id      Book Name      Copies
=====
Project  Local + 
Terminal  Microsoft Defender configuration: The IDE has detected Microsoft Defender with Real-Time Protection enabled. It might severely degrade IDE performance. It is recommended to add fo... 4/20/2023 11:08 AM 59:11 CRLF UTF-8 4 spaces
File Version Control TODO Problems Terminal Services
Type here to search  2:10 PM 4/20/2023

```

BorrowedData - Excel

File Home Insert Page Layout Formulas Data Review View Help Tell me what you want to do

User_name Book_id Book_name Issue_date Return_date fine

User_name	Book_id	Book_name	Issue_date	Return_date	fine
hetsnah	103	C#	4/20/2023	4/20/2023	0
ps	102	C++	4/20/2023	4/20/2023	0
ps	101	Java	4/20/2023		
ps	102	C++	4/20/2023	5/20/2023	75
ps	104	Ubuntu	4/20/2023	6/20/2023	230

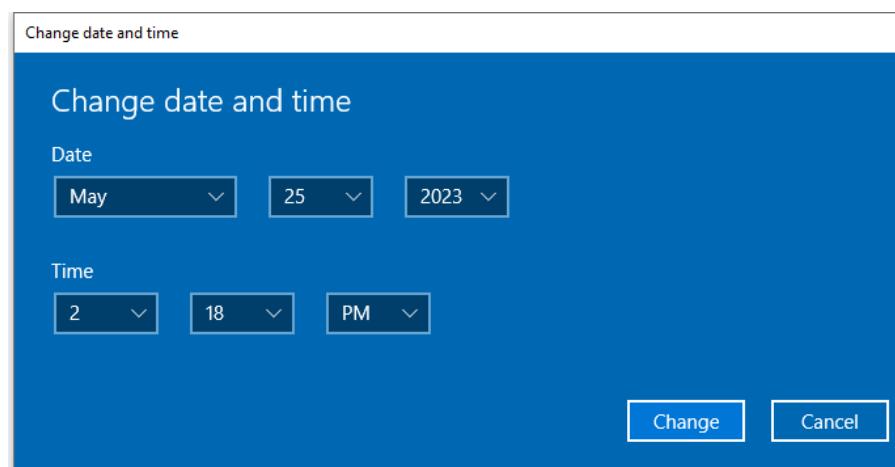
Ready Accessibility: Unavailable Type here to search 2:11 PM 4/20/2023

Now java copies are 0:

```
|***** Library Operation *****|
| 1. Issue book           |
| 2. Return book          |
| 3. Display Profile      |
| 4. Back to main menu    |
|*****|
Enter your choice: 1
Enter book id to issue: 101
Book issued successfully.....
===== Books =====
Book id     Book Name     Copies
=====
|101        Java          0|
|102        C++           3|
|103        C#            1|
|104        Ubuntu         5|
=====
```

```
|***** Library Operation *****|
| 1. Issue book           |
| 2. Return book          |
| 3. Display Profile      |
| 4. Back to main menu    |
|*****|
Enter your choice: 1
Enter book id to issue: 101
Not available.. You can't issue
===== Books =====
Book id     Book Name     Copies
=====
|101        Java          0|
|102        C++           3|
|103        C#            1|
|104        Ubuntu         5|
=====
```

Changing return date for java:



Assignment 3 - Admin.java

```
| 3. Display Profile      |
| 4. Back to main menu   |
|*****|
Enter your choice: 3

=====Your Profile=====
Full Name: Poojan
User_Name: ps

=====Borrowed Books=====
User_Name Book_ID Book_name Issue Date Return Date Fine
ps 102 C++ 2023-04-20 2023-04-20 0
ps 101 Java 2023-04-20 2023-05-25 100
ps 102 C++ 2023-04-20 2023-05-20 75
ps 104 Ubuntu 2023-04-20 2023-06-20 230
ps 101 Java 2023-04-20 Not Returned Not Returned

===== Books =====
Book id Book Name Copies
101 Java 1|
```

Microsoft Defender configuration: The IDE has detected Microsoft Defender with Real-Time Protection enabled. It might severely degrade IDE performance. It is recommended to add follow... (today 11:08 AM) 5911 CRLF, UTF-8, 4 spaces

BorrowedData - Excel

User_name	Book_id	Book_name	Issue_date	Return_date	Fine
1 heetsah	103 C#		4/20/2023	4/20/2023	0
3 ps	102 C++		4/20/2023	4/20/2023	0
4 ps	101 Java		4/20/2023	5/25/2023	100
5 ps	102 C++		4/20/2023	5/20/2023	75
6 ps	104 Ubuntu		4/20/2023	6/20/2023	230
7 ps	101 Java		4/20/2023		

CONCEPTS AND METHODS USED

Main class: Calling menu method of Operations class.

Operations class: This class is for basic operation like showing menu,

Signin, Registration, Student Action, Admin action, forgot password, validation for username, display books

FileIOOperations class : this class is for file input output operation which read, write and update data in file(CSV File)

- We have checked all possible condition for right input and output.
- i.e, IF file exist then dont create new one, check if book id valid,
- Creating user defined exception class for wrong book id
- Functions: adduser, readuser, update password, show books, get book, etc.(All function name with valid understandable language)

We are checking all type of exception while opening to closing file.

BufferedReader class:

- BufferedReader is a Java class that provides efficient reading of characters from a character-based input stream, such as a file or a socket. Some advantages of using BufferedReader over other methods of reading input include:
- Improved Performance: BufferedReader provides better performance when compared to other methods of reading input because it buffers the input and reads it in larger chunks rather than one character at a time. This reduces the number of system calls required and improves performance.
- Reduced Resource Usage: By using BufferedReader, you can reduce the number of I/O operations, which in turn reduces the amount of system resources required for I/O. This makes it ideal for reading large files or streams.
- Increased Flexibility: BufferedReader provides a flexible way to read input, allowing you to read data in multiple ways, including reading lines, characters, or blocks of data. This makes it easy to parse and manipulate the input as needed.
- Convenient Methods: BufferedReader provides convenient methods such as "readLine()" to read lines of text from an input stream and "skip()" to skip a specified number of characters in the input stream. These methods make it easy to perform common input operations.
- Exception Handling: BufferedReader throws exceptions when there is an error reading input, which allows you to handle errors gracefully and take appropriate action, such as logging the error or notifying the user.

FileWriter class:

- The FileWriter class is a part of the Java I/O package that provides functionality for writing character data to a file. Some of the advantages of using the FileWriter class include:
- Easy to use: The FileWriter class provides an easy-to-use interface for writing character data to a file. It allows you to write text to a file using the write() method.
- High-performance: The FileWriter class is designed for high-performance writing to files. It uses a buffer to improve performance and reduce the number of system calls required to write data to the file.
- Character encoding support: The FileWriter class supports character encoding, which allows you to write text in different character sets such as UTF-8, UTF-16, ASCII, and others

- Appending to files: The FileWriter class provides a constructor that allows you to specify if you want to append data to an existing file. This is useful when you need to add new data to an existing file without overwriting the previous data.

BorrowedBooks: it is child class of FileIOOperations, which issues books, return books, check if isBookBorrowed. It is called when student sign in and if they want to issue book and return book.

Admin: it is implementation of Admin Interface, which implement add book info, and calculate fine for students.