Assignment 2&3
University Library System

BY:

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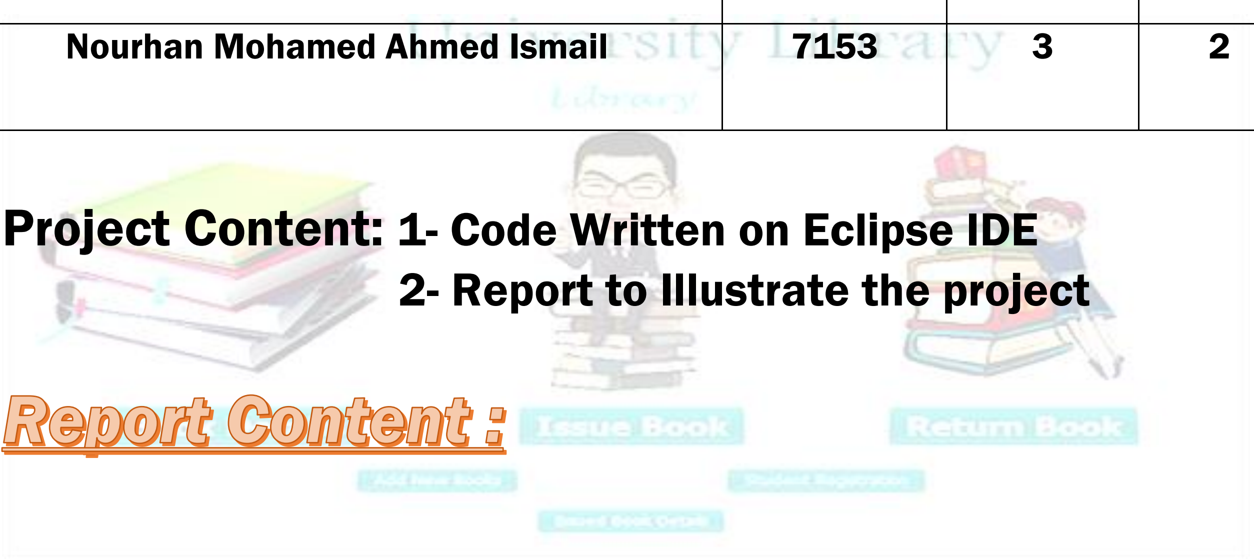


Project Content: 1- Code Written on Eclipse IDE
2- Report to Illustrate the project

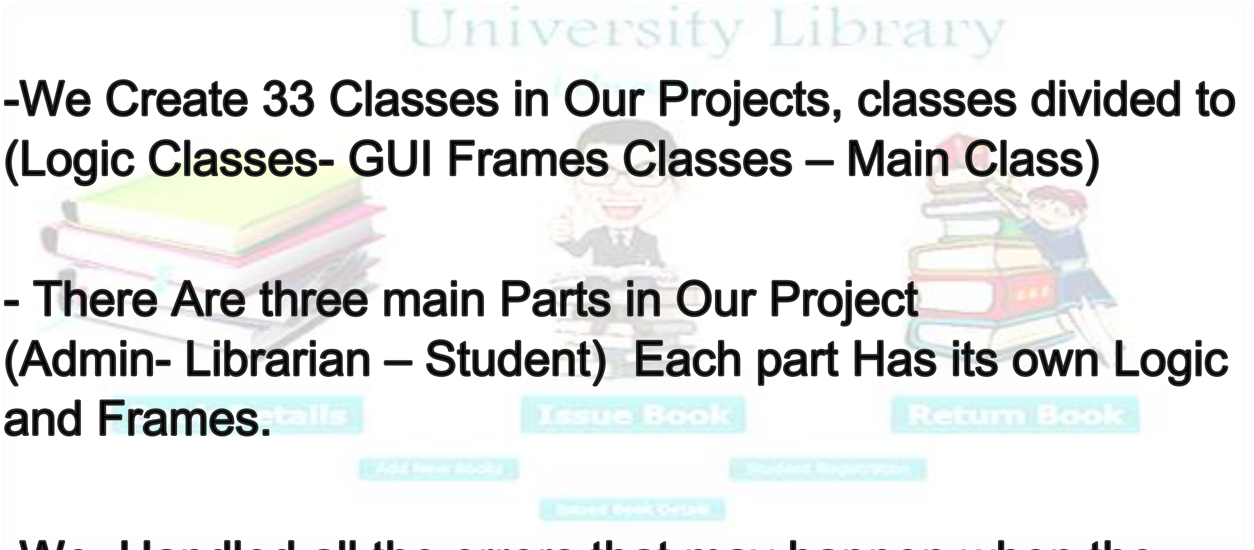
Report Content :

Methods & Algorithms

-In Our Project we Used Java Language Using Object Oriented Programming (OOP)

- We Create Our Project On Eclipse IDE & We install Window Builder from Eclipse Market To Use GUI with Swing .

- Our project is about Creating University Library System Using GUI .



-We Create 33 Classes in Our Projects, classes divided to (Logic Classes- GUI Frames Classes – Main Class)

- There Are three main Parts in Our Project (Admin- Librarian – Student) Each part Has its own Logic and Frames.

-We Handled all the errors that may happen when the user entered the data .

-Also We made validations on the user data.

- We Used files in our project to Read & Save the data of the user.

Validations & Constrains & Handling Errors:

FEATURES:

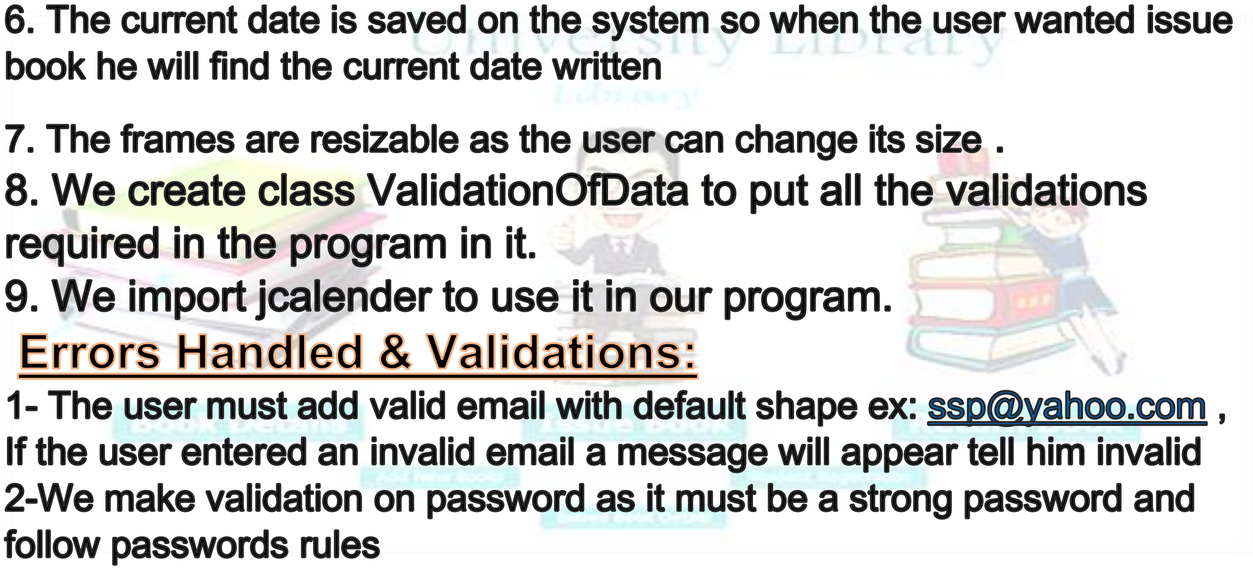
1- when the user runs the program he will find three sections (Admin-Librarian-Student) he must choose each of them to enter one section of them.

2- The admin have all the permissions to add or delete or view a librarian or student

3- Librarian can add, view, issue and return a book

4. Student can view all the books in library or his books.

5. When the user click logout all the actions he done in the library will be saved



6. The current date is saved on the system so when the user wanted issue book he will find the current date written

7. The frames are resizable as the user can change its size .

8. We create class ValidationOfData to put all the validations required in the program in it.

9. We import jcalender to use it in our program.

Errors Handled & Validations:

1- The user must add valid email with default shape ex: ssp@yahoo.com , If the user entered an invalid email a message will appear tell him invalid

2-We make validation on password as it must be a strong password and follow passwords rules

3. We make validations on name as it must consist of characters only

4. We make validation on date as the user can't add a wrong date

5.We handled the error that the user can't enter two different books with the same call number

6. We handled the error of the quantity that when the library contains more than one similar book the quantity will increase and when the user issue a book the quantity will decrease and will increase again when the user return the book.

7. We make a validation that the user can't borrow more than 3 books

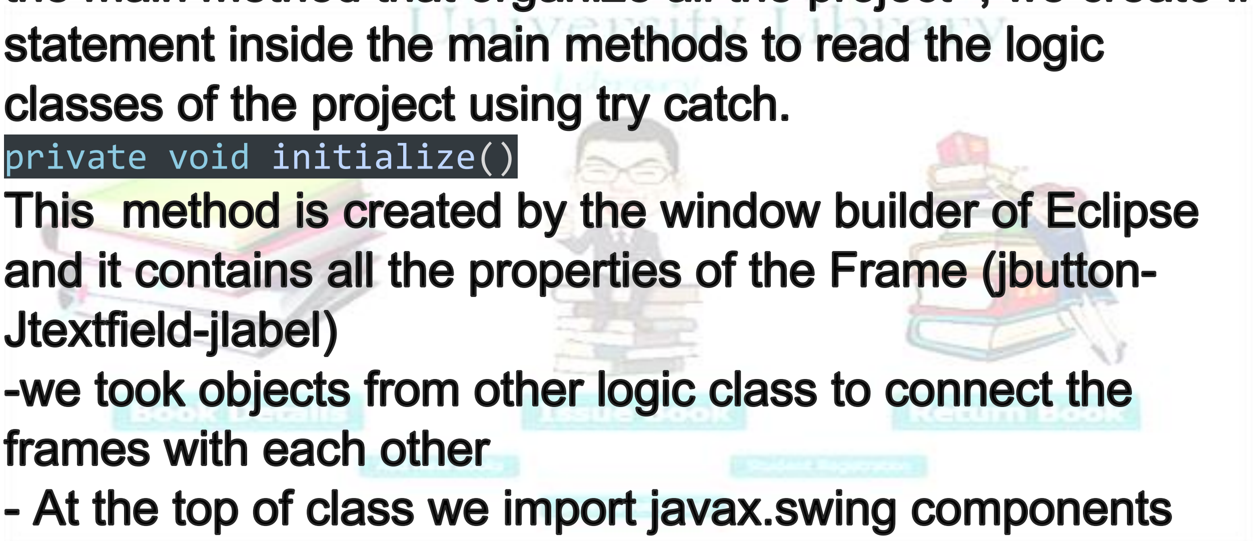
8.We create validations for contact number.

Methods & Algorithms :

We will Illustrate Each Class and Illustrate methods and algorithms inside each class.

1.LibraryManagment.java:

This Class is the main class of the project which contains the main method that organize all the project , we create if statement inside the main methods to read the logic classes of the project using try catch.



```
private void initialize()
```

This method is created by the window builder of Eclipse and it contains all the properties of the Frame (jbutton-Jtextfield-jlabel)

-we took objects from other logic class to connect the frames with each other

- At the top of class we import javax.swing components before using them.

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2.Admins.java:

In this class we create a constructor for admins and we made it private because it take password.

```
public Admins(String name, String password)
```

3.AdminSection.java:

- At the top of class we import javax.swing components before using them.

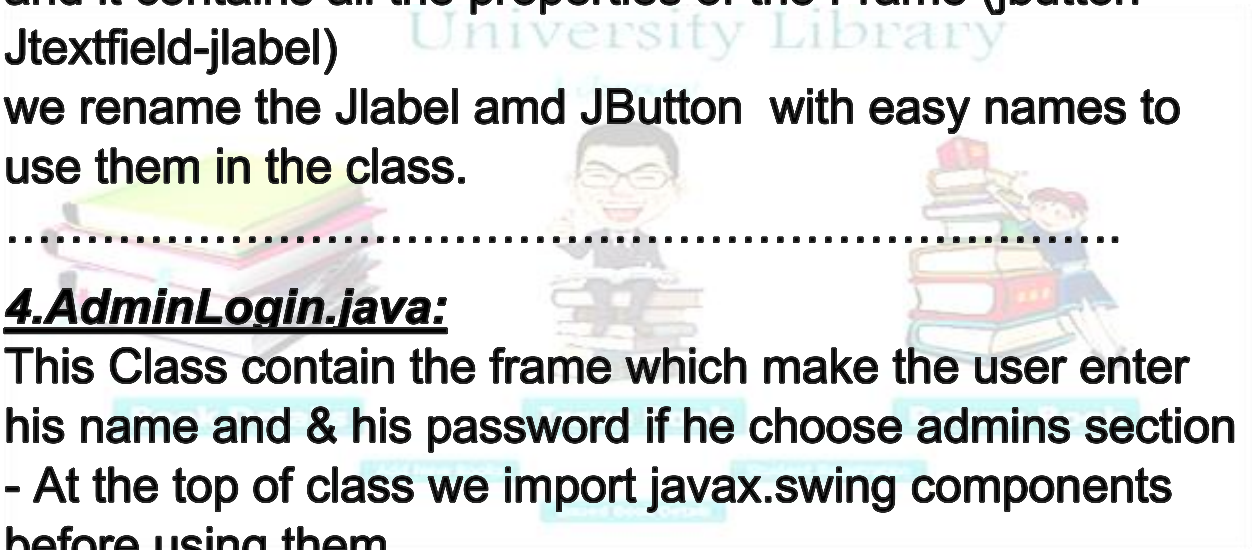
```
public static void newScreen()
```

we create this method to launch the frame and we used try catch inside it .

Then we called the constructor of admins class.

```
private void initialize()
```

This method is created by the window builder of Eclipse and it contains all the properties of the Frame (jbutton-Jtextfield-jlabel)
we rename the Jlabel amd JButton with easy names to use them in the class.



4.AdminLogin.java:

This Class contain the frame which make the user enter his name and & his password if he choose admins section
- At the top of class we import javax.swing components before using them.

public static void newScreen()
we create this method to launch the frame and we used try catch inside it .

Then we called the constructor of admins class.
private void initialize()
This method is created by the window builder of Eclipse and it contains all the properties of the Frame (jbutton-Jtextfield-jlabel)

5.Librarian.java:

In this Class we inheritance the data of the Librarian

```
public class Librarian extends Persons {

	public Librarian(String id ,String name, String password, String em, String address, String city, String contactNo) {
		super(id,name, password, em, address, city, contactNo);
	}
	}
```

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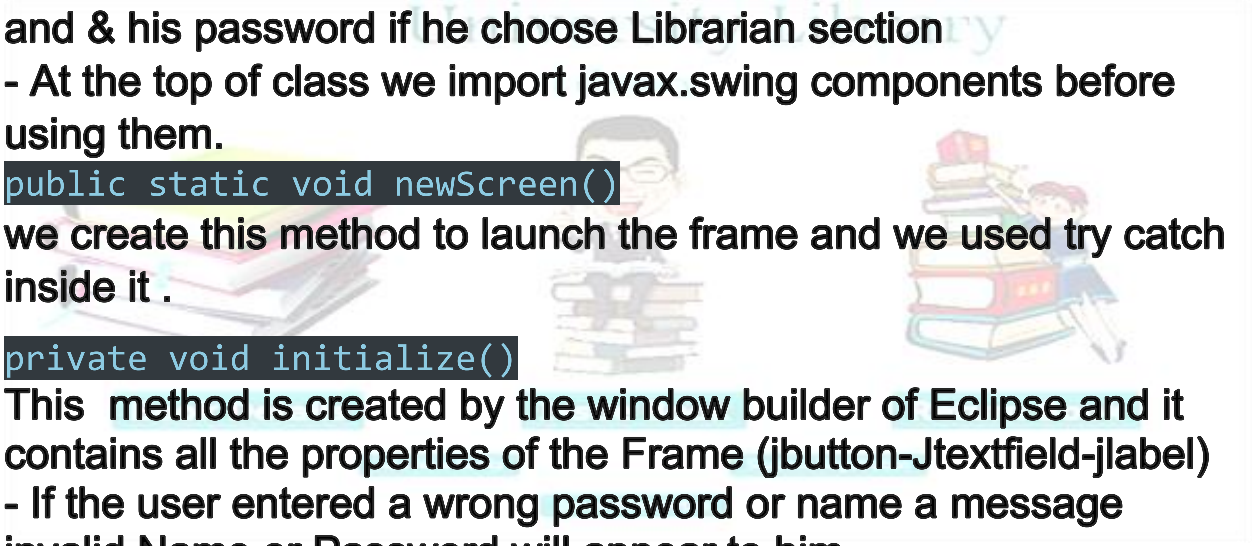
6.LibrarianLoginForm.java:



This Class contain the frame which make the user enter his name and & his password if he choose Librarian section

- At the top of class we import javax.swing components before using them.

```
public static void newScreen()
```

we create this method to launch the frame and we used try catch inside it .

```
private void initialize()
```

This method is created by the window builder of Eclipse and it contains all the properties of the Frame (jbutton-Jtextfield-jlabel)

- If the user entered a wrong password or name a message invalid Name or Password will appear to him

7.LibrarianSection.java:

- At the top of class we import javax.swing components before using them.

```
public static void newScreen()
```

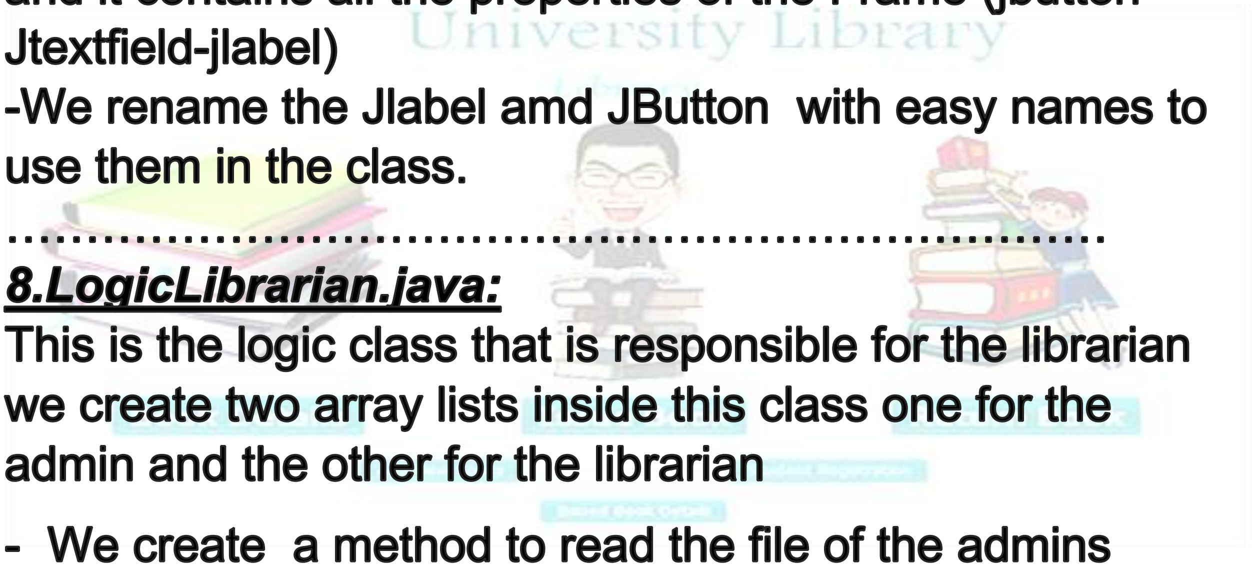
we create this method to launch the frame and we used try catch inside it .

Then we called the constructor of admins class.

```
private void initialize()
```

This method is created by the window builder of Eclipse and it contains all the properties of the Frame (jbutton-Jtextfield-jlabel)

-We rename the Jlabel amd JButton with easy names to use them in the class.



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8.LogicLibrarian.java:

This is the logic class that is responsible for the librarian we create two array lists inside this class one for the admin and the other for the librarian

- We create a method to read the file of the admins

```
public static void readFileAdmins()
```

We put The name of the file inside this method then we use scanner to scan the name and the password in the file

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-We create a method to save the file of the Librarians

```
public static void saveLibrarian()
```

We put the name of the file inside this method
we used for loop to get the data of the librarian

- We create a method to read the file of Librarians

```
public static void readFile()
```

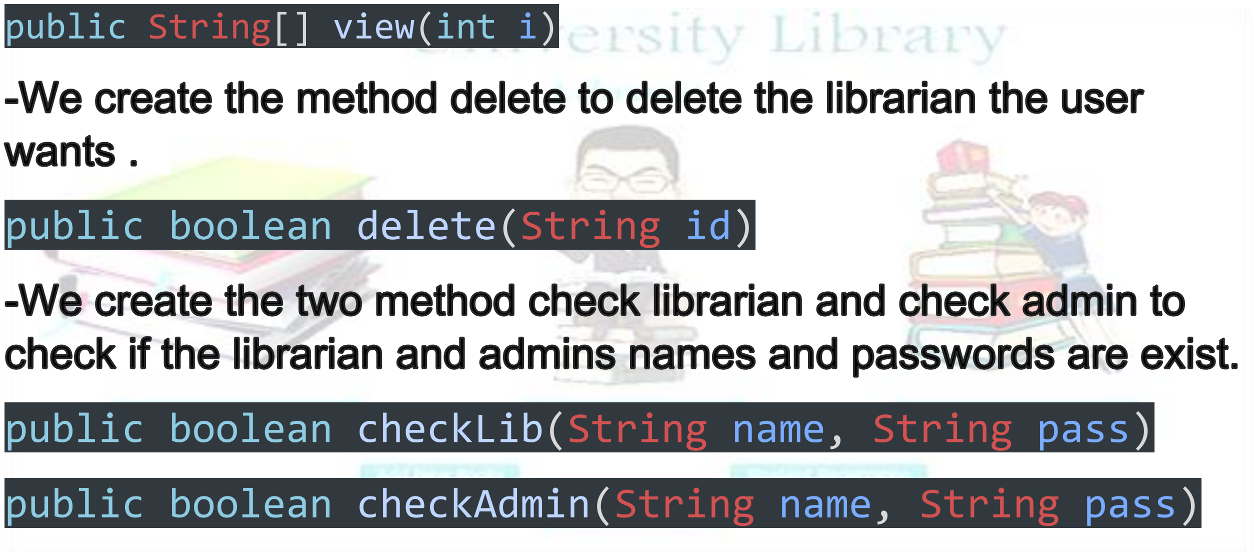
We put The name of the file inside this method then we use scanner to scan id,name,password,email,city,contactNo,address from the file.

-We create a method add to add the data of the librarian

```
public int add(String id ,String name, String password,
String em, String address, String city, String contactNo)
```

- We create the method view to view all the books of the library

```
public String[] view(int i)
```



-We create the method delete to delete the librarian the user wants .

```
public boolean delete(String id)
```

-We create the two method check librarian and check admin to check if the librarian and admins names and passwords are exist.

```
public boolean checkLib(String name, String pass)
```

```
public boolean checkAdmin(String name, String pass)
```

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9.LogicStudent.java:

-We import the libraries we want in the class

-Then We create an array list for the students

-We create a method to save the file of the Students

```
public static void saveStudents()
```

We put the name of the file inside this method
we used for loop to get the data of the Student

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- We create a method to read the file of Students

```
public static void readFile()
```

We put The name of the file inside this method then we use scanner to scan id,name,password,email,city,contactNo,address from the file.

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-We create a method add to add the data of the Student

```
public int add(String id ,String name, String password,
String em, String address, String city, String contactNo)
```

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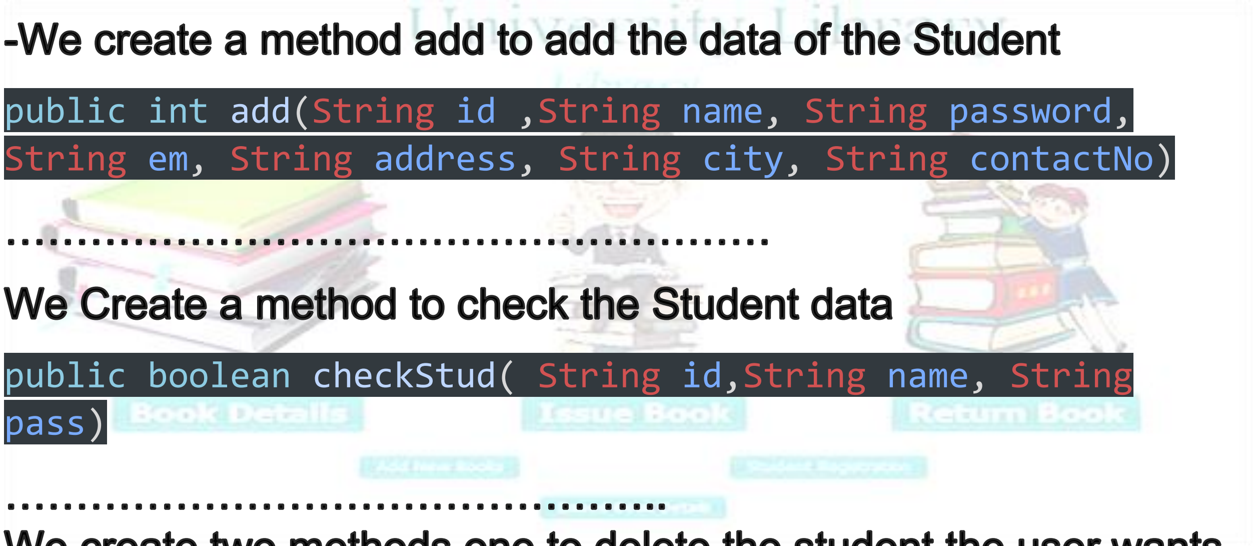
We Create a method to check the Student data

```
public boolean checkStud( String id,String name, String
pass)
```



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We create two methods one to delete the student the user wants and one to view all the students in the system

```
public boolean delete(String id)
```

```
public String[] view(int i)
```

10.Persons.java:

We Create this class to make a constructor persons which take (id,name,password,em,city,contactNo,address)

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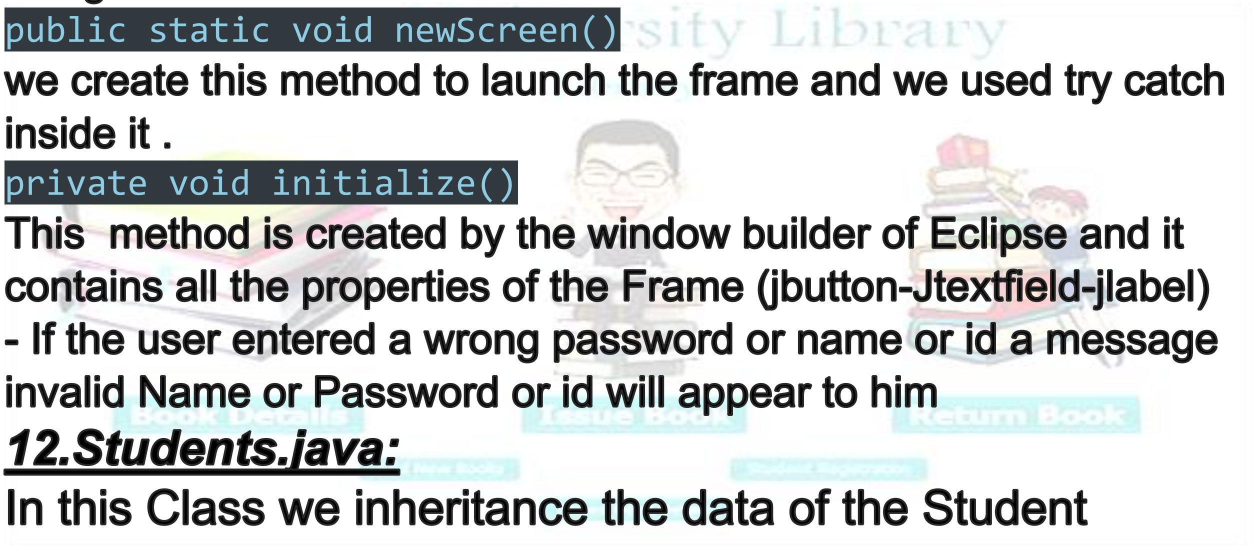
11.StudentLogin.java:

This Class contain the frame which make the user enter his name and ,id & his password if he choose Student section

- At the top of class we import javax.swing components before using them.



```
public static void newScreen()
```

we create this method to launch the frame and we used try catch inside it .

```
private void initialize()
```

This method is created by the window builder of Eclipse and it contains all the properties of the Frame (jbutton-Jtextfield-jlabel)

- If the user entered a wrong password or name or id a message invalid Name or Password or id will appear to him

12.Students.java:

In this Class we inheritance the data of the Student

```
public class Students extends Persons {

	public Students(String id,String name, String password, String em, String
address, String city, String contactNo) {
		super(id,name, password, em, address, city, contactNo);

	}}
```

13.StudentSection.java:

This class frame show the choices that the user can choose in the library.

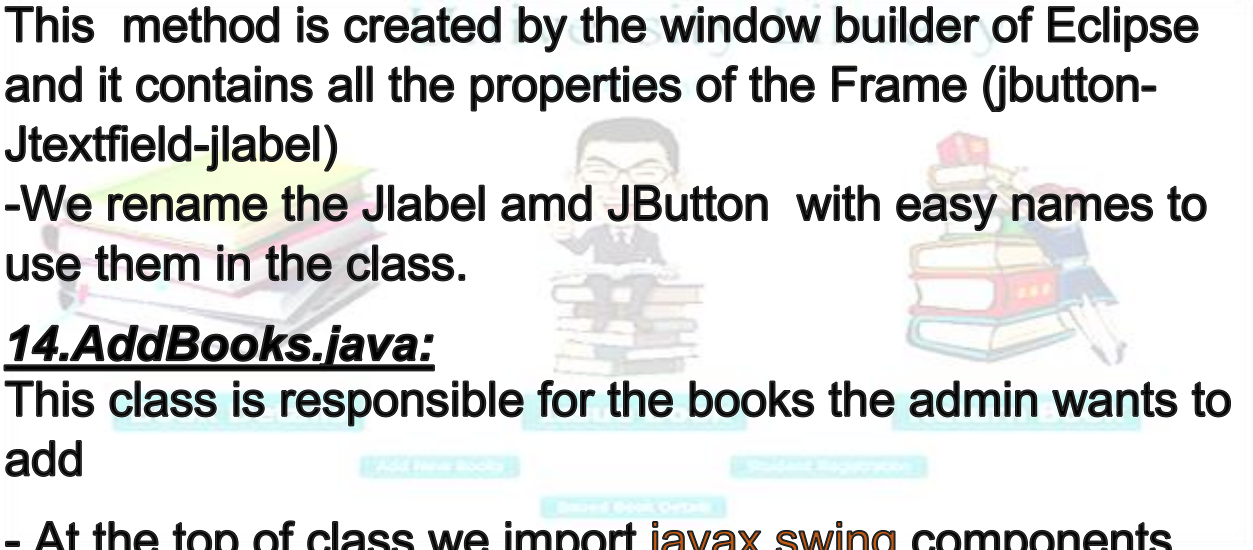
- At the top of class we import javax.swing components before using them.

```
public static void newScreen()
```

we create this method to launch the frame and we used try catch inside it .

Then we called the constructor of admins class.

```
private void initialize()
```



This method is created by the window builder of Eclipse and it contains all the properties of the Frame (jbutton-Jtextfield-jlabel)

-We rename the Jlabel amd JButton with easy names to use them in the class.

14.AddBooks.java:

This class is responsible for the books the admin wants to add

- At the top of class we import javax.swing components before using them.

```
public static void newScreen()
```

we create this method to launch the frame and we used try catch inside it .

Then we called the constructor of admins class.

```
private void initialize()
```

This method is created by the window builder of Eclipse

and it contains all the properties of the Frame

15.AddLibrarian.java:

This class is responsible for the Librarians the admin wants to add

- At the top of class we import javax.swing components before using them.

```
public static void newScreen()
```

we create this method to launch the frame and we used try catch inside it .

Then we called the constructor of admins class.

```
private void initialize()
```

This method is created by the window builder of Eclipse

and it contains all the properties of the Frame

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16.AddStudents.java:

This class is responsible for the Students the admin wants to add

- At the top of class we import javax.swing components before using them.

```
public static void newScreen()
```

we create this method to launch the frame and we used try catch inside it .

Then we called the constructor of admins class.

```
private void initialize()
```

This method is created by the window builder of Eclipse

and it contains all the properties of the Frame

-We make validation for email that the user must enter valid email.

17.Books.java:

In this class we create constructor for books

```
public Books(String callNo, String name, String author,
String publisher,String constQuantity, String
quantity,String addedDate)
```

Also we create getters to return (callNo,name,author,publisher,quantity,constQuantity,addedDate) and setters to set (quantity,constQuantity)

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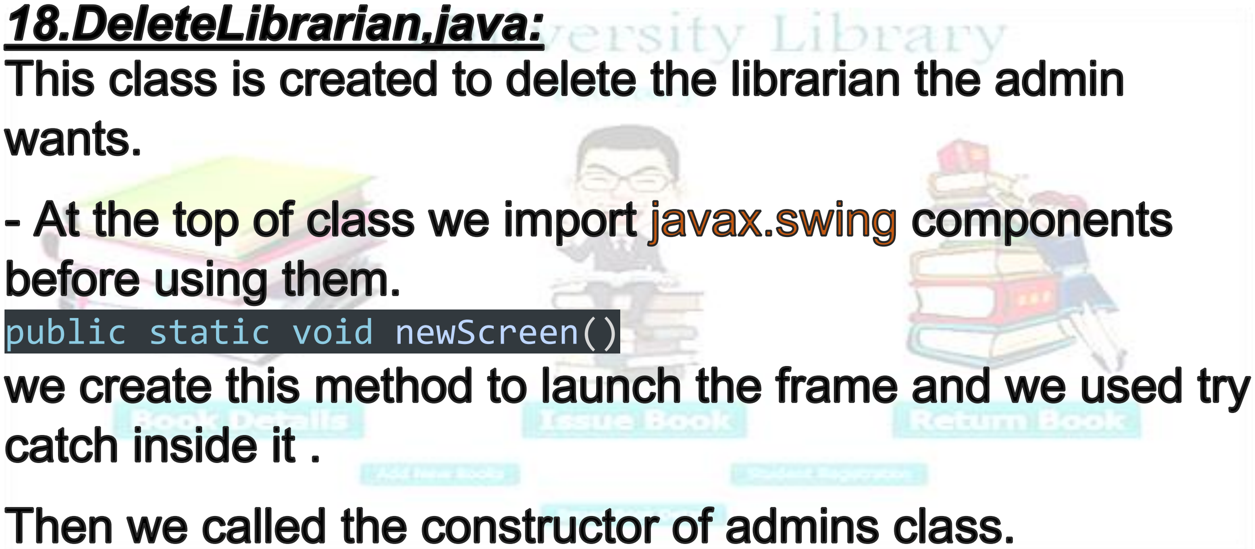
18.DeleteLibrarian.java:



This class is created to delete the librarian the admin wants.

- At the top of class we import javax.swing components before using them.

```
public static void newScreen()
```

we create this method to launch the frame and we used try catch inside it .

Then we called the constructor of admins class.

```
private void initialize()
```

This method is created by the window builder of Eclipse

and it contains all the properties of the Frame

19.DeleteStudents,java:

This class is created to delete the Student the admin wants.

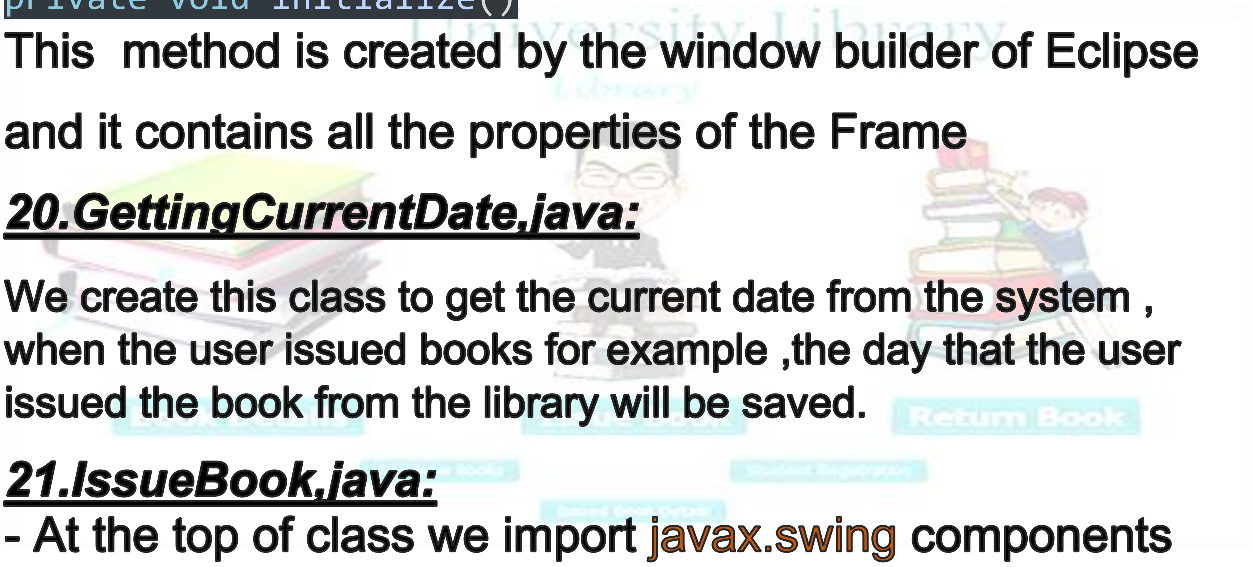
- At the top of class we import javax.swing components before using them.

```
public static void newScreen()
```

we create this method to launch the frame and we used try catch inside it .

Then we called the constructor of admins class.

```
private void initialize()
```



This method is created by the window builder of Eclipse

and it contains all the properties of the Frame

20.GettingCurrentDate,java:

We create this class to get the current date from the system , when the user issued books for example ,the day that the user issued the book from the library will be saved.

21.IssueBook,java:

- At the top of class we import javax.swing components before using them.

```
public static void newScreen()
```

we create this method to launch the frame and we used try catch inside it .

Then we called the constructor of admins class.

```
private void initialize()
```

This method is created by the window builder of Eclipse and it contains all the properties of the Frame (jbutton-Jtextfield-jlabel) we rename the Jlabel amd JButton with easy names to use them in the class.

- In this class we made a validation that the student can’t borrow more than 3 books

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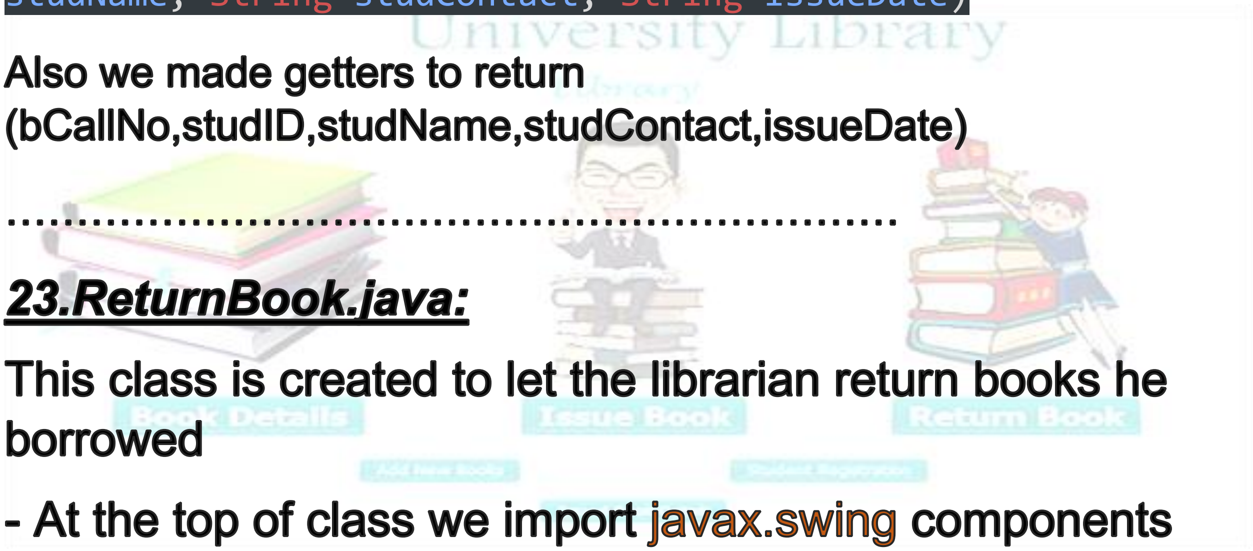
22.IssueBooksData.java:

In this class we make a constructor for issued books

```
public IssueBooksData(String bCallNo, String studID, String studName, String studContact, String issueDate)
```



Also we made getters to return (bCallNo,studID,studName,studContact,issueDate)

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23.ReturnBook.java:

This class is created to let the librarian return books he borrowed

- At the top of class we import javax.swing components before using them.

```
public static void newScreen()
```

we create this method to launch the frame and we used try catch inside it .

Then we called the constructor of admins class.

```
private void initialize()
```

This method is created by the window builder of Eclipse

and it contains all the properties of the Frame

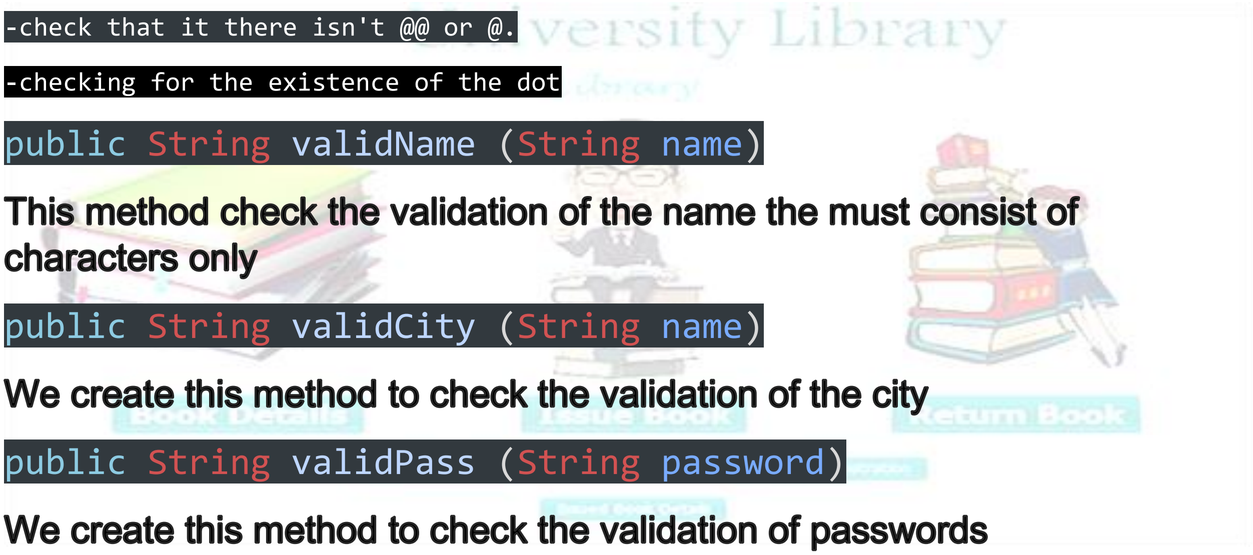
24.ValidationOfData.java:

Inside This class we create 7 methods to check the validations

```
public int validEmail(String email)
```

We create this method to check the validation of the email

```
-if the last digit or the first letter is @ or . then return invalid email

-starting from the second letter check that there is at least 1 letter before the @

-checking that the email has no spaces

-check that there isn't 2 dots after each other like name..name@domain.com

-checking that email has @

- check that the email contains only one @

-check that it there isn't @@ or @.

-checking for the existence of the dot
```



```
public String validName (String name)
```

This method check the validation of the name the must consist of characters only

```
public String validCity (String name)
```

We create this method to check the validation of the city

```
public String validPass (String password)
```

We create this method to check the validation of passwords

That the password must have:

at least one numeric character.

at least one lowercase character.

at least one uppercase character.

at least one special symbol among @#$%

Password length should be between 8 and 20.

```
public String validContactNo(String contactNo)
```

We create this method to check the validity of contact number That it must consist of numbers only

```
public String checkValidity(String id ,String name, String
password, String em, String address, String city, String
contactNo)
```

we create this method to check the validity of all previous methods together.

```
public boolean validDate(String today,String returnD)
```

We create this method to check the validity of the date

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25.ViewBooks.java:

26.ViewBooksStudents.java:

27.ViewIssuedBooks.java:

28.ViewsLibrarians.java:

29.ViewMyBooks.java:

30.ViewPenaltyDates.java:

31.ViewStudents.java:

We create the previous 7 methods to create frames contains Jtable to show (Books,IssuedBooks,Librarians,Students,PenaltyDates)

32.LogicBooks.java:

-We import the libraries we want in the class

-Then We create an array list for the Books

-We create a method to save the file of the Books

```
public static void saveBooks()
```

We put the name of the file inside this method
we used for loop to get the data of the books

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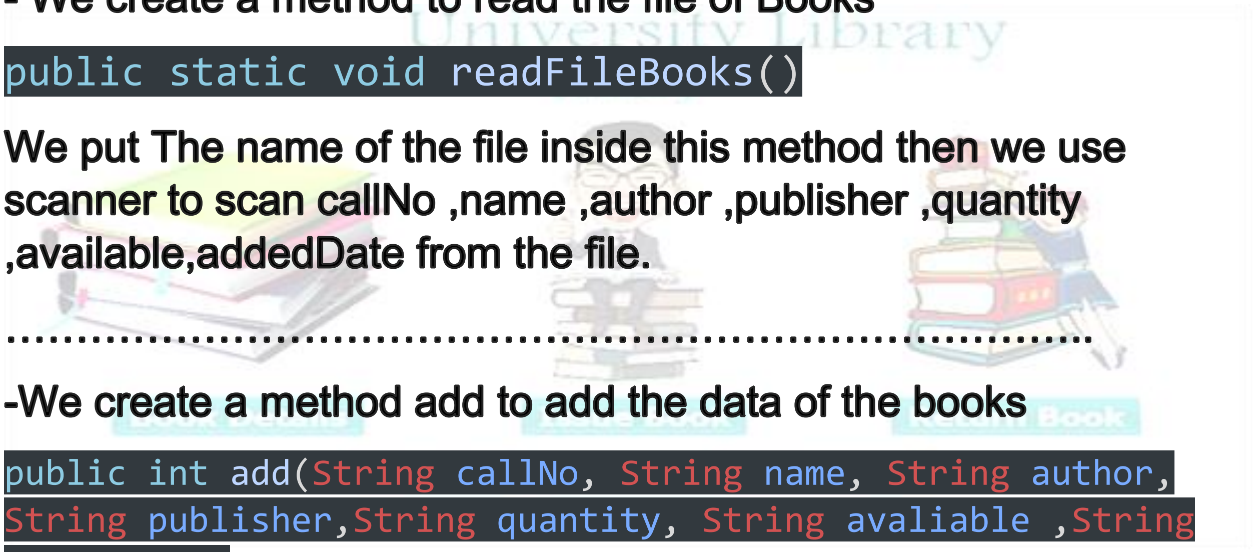
- We create a method to read the file of Books



```
public static void readFileBooks()
```

We put The name of the file inside this method then we use scanner to scan callNo ,name ,author ,publisher ,quantity ,available,addedDate from the file.

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-We create a method add to add the data of the books

```
public int add(String callNo, String name, String author,
String publisher,String quantity, String avaliable ,String
addedDate )
```

……………………………………………………

```
public boolean checkQant(String quantity)
```

we create this method to check the quantity of books

```
public boolean checkBook(String callNo)
```

we create this method to check the books in library

33.LogicIssueBooks.java:

-We import the libraries we want in the class

-Then We create an array list for the Books

-We create a method to save the file of the IssuedBooks

```
public static void saveIssuedBooks()
```

We put the name of the file inside this method
we used for loop to get the data of the Issued books

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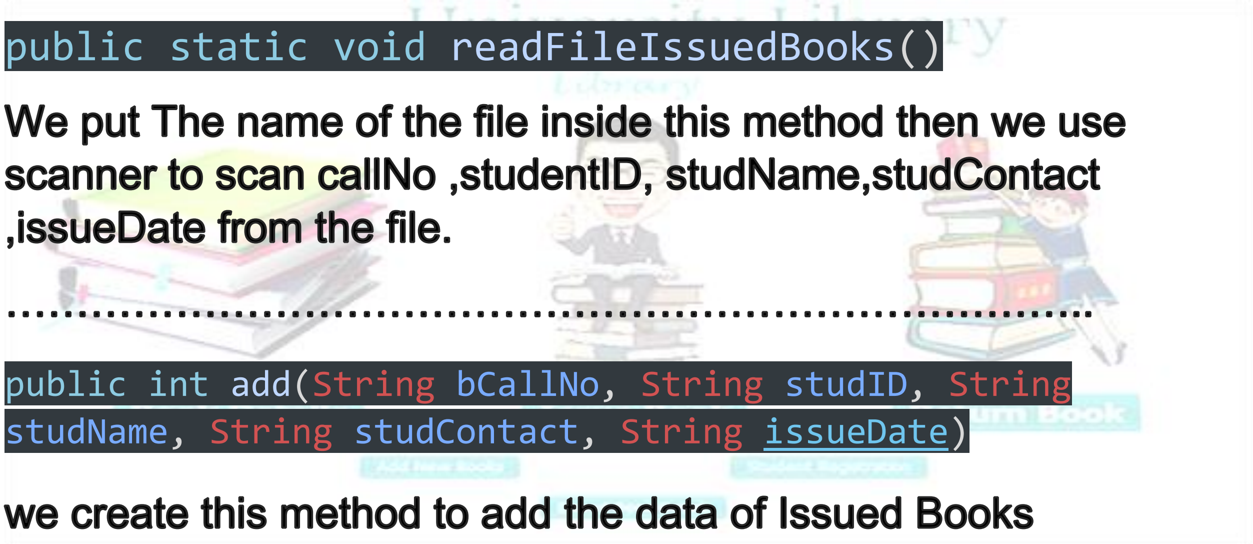
- We create a method to read the file of Issued Books



```
public static void readFileIssuedBooks()
```

We put The name of the file inside this method then we use scanner to scan callNo ,studentID, studName,studContact ,issueDate from the file.

…………………………………………………………………………

```
public int add(String bCallNo, String studID, String
studName, String studContact, String issueDate)
```

we create this method to add the data of Issued Books

```
public boolean IssueReturn(String callNo, String studID)
```

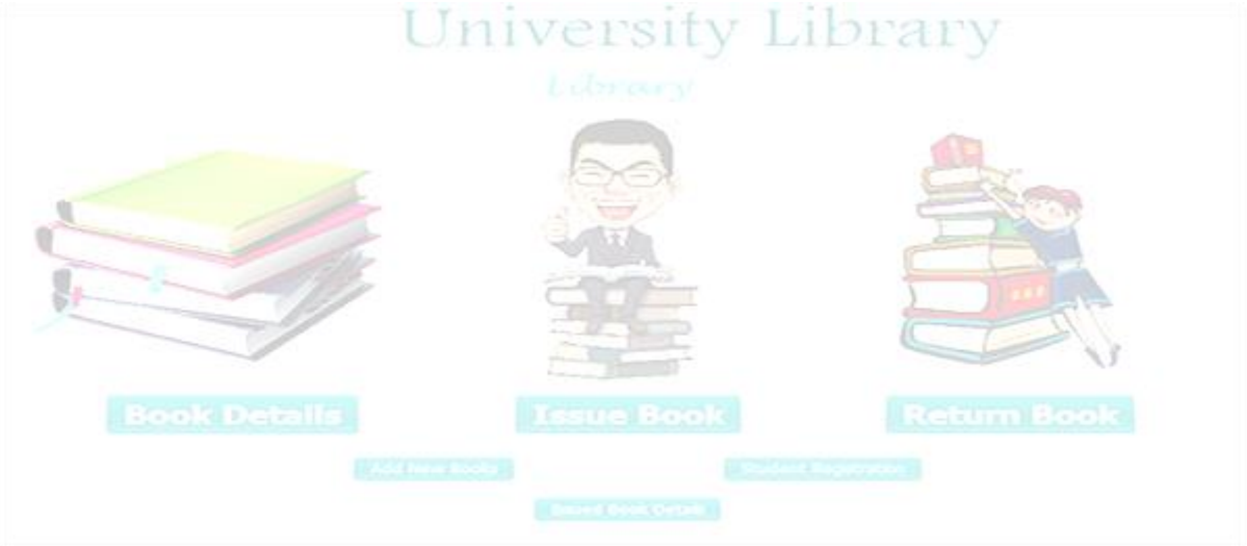
We create this method to return the issued books

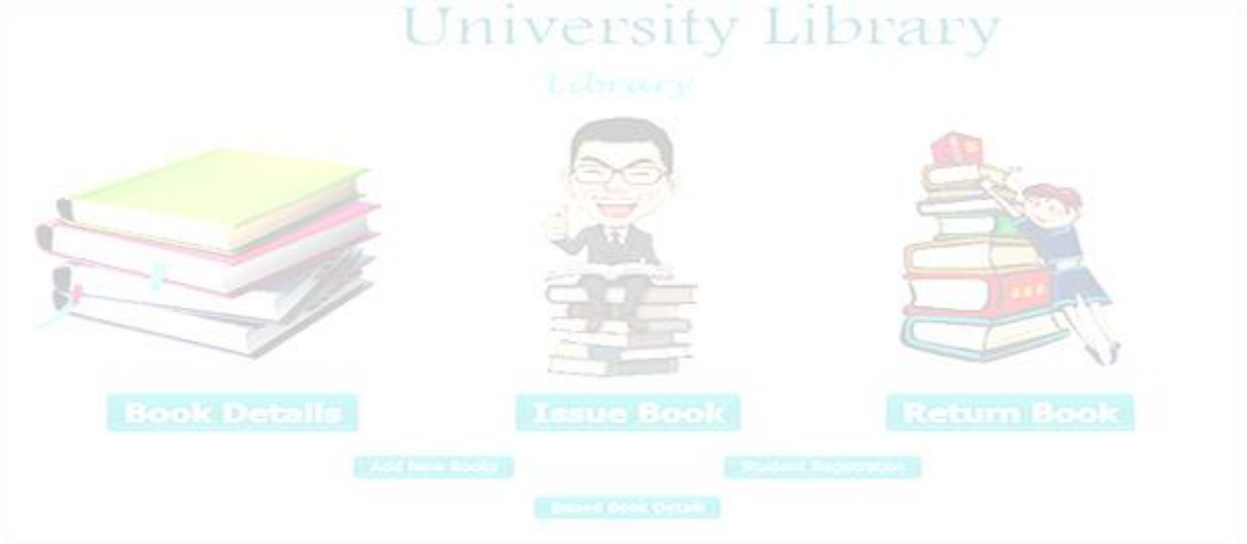
```
public boolean limit3Books(String id)
```

This method checks that the student borrowed less than or equal 3 books

```
public boolean penalty(String id,String date)
```

This method check that if the student return the book not on time it will give him a penalty .


University Library
Library
Book Details
Issue Book
Return Book
Add New Books
Student Registration
Saved Book Details


University Library
Library
Book Details
Issue Book
Return Book
Add New Books
Student Registration
Issued Book Details