

LIBRARY MANAGEMENT SYSTEM

PROJECT BY:

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ABSTRACT

Library management system is a project which aims in developing a computerized system to maintain all the daily work of a library. The system helps both students and library manager to keep a constant track of all the books available in the library. It allows both the admin and the student to search for the desired book. The transactions like login, register, add , search, delete, issue are provided. The Library Management System stores the details like name, address, ID number , Date Of Birth of members working in the library and users who come to library. The details of books like book name, book number, subject to which it belongs , author, edition, year of publication , the total number of books that are present in the library etc are also stored.

INTRODUCTION

The main objective of the Library Management system is organizing and managing the library tasks. Library is place where all kind of books are available. This is a web base application and only a registered user can access the application. Library Management system is developed to automate the task of entering the records of new book and retrieving the details of book available in the library. This system contains list of all the books. Using this system user can issue book to the library member, maintain their records, and can checks how many book are issued and how many books are available in the library. This system provides separate interface and login for librarian, students and faculties. Librarian can modify database. Using the library management system, user can also maintain the late fine of library member who return the issued book after the due date.

Users can search for books and renewal books online. In the proposed system, we assume that each member will be having a identity card which can be used for the library book issue, fine payment etc. They can recommend for new books by just sending messages to the librarian from any where in the college. whenever library member wish to take a book, the book issued by the library authority will be check both the book details as well as the student details and store it in library database. They can view the issue and return dates of any book and due they have to pay.

LITERATURE SURVEY

Library is regarded as the brain of any institutes, of course many institute understand the importance of the library to the growth of the institute and their esteem users which we categorically call the students.

Before the advent of computer in modern age there are different methods of keeping records in the library. Records are kept in the library on shelves and each shelf are labelled in alphabetical or numerical order, in which the categories of books available are arranged on different position on the shelves and as well are recorded on the library manuscript and when any book is to be referenced the manuscript is being referred to, to know the position of such required book by the person that requested for the book. After the invention of computer different researchers have carried out various approach on an automated library management system in which this project is as well all about

Library users expect to find everything together says Stephen Abram, vice president for innovation at SirsiDynix, the leading provider of software solutions and associated services for libraries. According to her traditionally, the library management system or integrated library system (ILS) was responsible for running libraries efficiently and effectively. Over the last few years, the role of the ILS has been expanding from meeting library needs to delivering user experience.

According to Eden (2011), views that most libraries are forced to work with fewer staff because of the having a more improved and modernized system for their library. According also to the study, the library administration need to emphasize to their staff that the organization has a vested interest in providing them with the tools and training they need to assist the organization in the new information marketplace. These may include search engines, circulation systems, and the online public access catalog.

According to Lopez (2002), University of the Philippines Mindanao when UP in Mindanao accepted its first batch of students in 1996, the Main Library collection was integrated with the core collection of the School of Management (SOM) Library at the Stanfilco Bldg., Ladislawa Avenue, Buhangin, Davao City. The Filipiniana and General References were housed together with the College of Arts and Sciences (CAS) collection in Room 2 of the Philippine Coconut Authority. In the Second Semester AY 1996-1997, the CAS Library moved to its

main campus in Bago Oshiro. Upon the recognition of UP in Mindanao by the Board of Regents (BOR) as a constituent unit (CU) of the UP System, the CAS was split into two (2), namely: College of Humanities and Social Sciences (CHSS) and the College of Science and Mathematics (CSM). The Main Library transferred to the newly renovated building where the main collection was set-up beside the books of the CHSS and the CSM.

In July 2002, the library established the Library Educational Media and Information Technology Office (LEMITO). The LEMITO handles the audio-visual services, internet and the connectivity of the library. It currently holds office at the Elias B. Lopez Hall Dormitory. Later, the Main Library collection which grew from 100 titles to 6,191 volumes at the end of May 2004, and was transferred to the Administration Bldg today, the Main Library occupies the former UP in Mindanao Cultural Center (UPMCC) building.

PROBLEM STATEMENT

The purpose of the Library Management system is to allow for storing details of a large number of books, magazines, Journals, thesis and allow for add, search, borrow, return facilities separately to administrator/Librarian, staff and students. Different privileges are given to different types of users.

Library Management System is one of the most popular projects which is created using Java. So, in this report, I will show you how to create this project using the following system requirements.

OBJECTIVE

1. The aims and objectives are as follows:
2. Online book issue. Improvement in control and performance
3. Request column for librarian for providing new books. The system is developed to cope up with the current issues and problems of library .The system can add user, validate user.
4. A separate column for digital library. Librarian is able to search record by using few clicks of mouse and few search keywords thus saving his valuable time.
5. Student login page where student can find books issued by him/her and date of return. After computerized system is implemented less human force will be required to maintain the library thus reducing the overall cost. A search column to search availability of books. A teacher login page where teacher can add any events being organized in the college and important suggestions regarding books.

PROPOSED SYSTEM

I've created this project using frames so let me break it down and explain the concept used in my project.

[1] LOGIN PAGE



Login button

```
b1 = new JButton("Login");  
b1.addActionListener(this);  
b1.setForeground(new Color(46, 139, 87));  
b1.setBackground(new Color(250, 250, 210));  
b1.setBounds(149, 181, 113, 39);  
panel.add(b1);
```

SignUp button

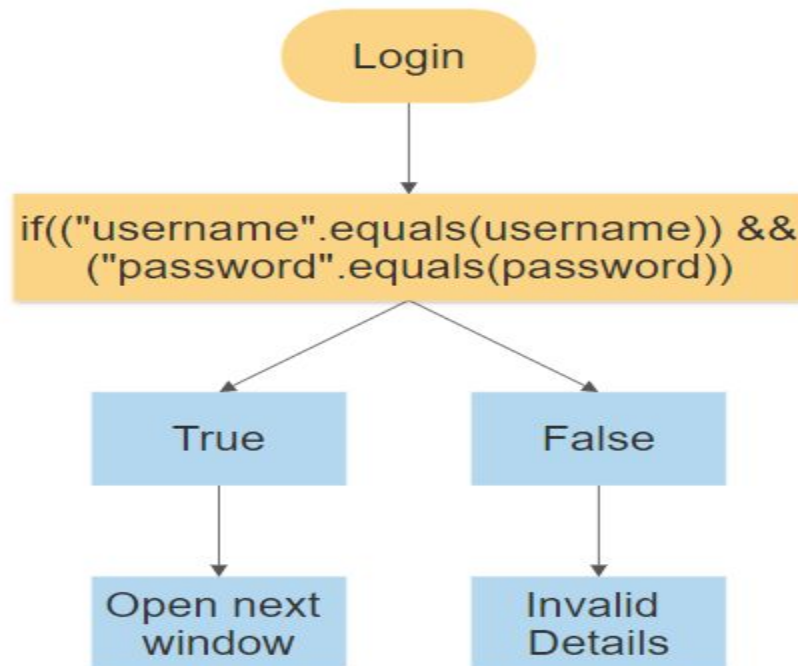
```
b2 = new JButton("SignUp");  
b2.addActionListener(this);  
b2.setForeground(new Color(139, 69, 19));  
b2.setBackground(new Color(255, 235, 205));  
b2.setBounds(289, 181, 113, 39); panel.add(b2);
```

Forgot Password Button

```
b3 = new JButton("Forgot Password");
```

```
b3.addActionListener(this);  
b3.setForeground(new Color(205, 92, 92));  
b3.setBackground(new Color(253, 245, 230));  
b3.setBounds(199, 231, 179, 39);  
panel.add(b3);
```

Action performed:



[2]

SignUp Frame

The screenshot shows a "Create Account" window with a title bar containing standard window controls. The window contains a form with the following fields and controls:

- Username :** A text input field containing the value "blackwidow".
- Name :** A text input field containing the value "Natasha".
- Password :** A text input field containing the value "12345".
- Security Question :** A dropdown menu with the selected option "Your NickName?".
- Answer :** An empty text input field.
- Create :** A black button with white text.
- Back :** A black button with white text.

Create Button

```
b1 = new JButton("Create");  
b1.addActionListener(this);  
b1.setFont(new Font("Tahoma", Font.BOLD, 13));  
b1.setBounds(140, 289, 100, 30);  
b1.setBackground(Color.BLACK);  
b1.setForeground(Color.WHITE);  
contentPane.add(b1);
```

Back Button

```
b2 = new JButton("Back");  
b2.addActionListener(this);  
b2.setFont(new Font("Tahoma", Font.BOLD, 13));  
b2.setBounds(300, 289, 100, 30);  
b2.setBackground(Color.BLACK);  
b2.setForeground(Color.WHITE);  
contentPane.add(b2);
```

Action performed:

Here we can add a username, name and password in the given textbox and choose a security question from the dropbox and write the answer in tesxtbos. Then we have a create button which creates the account of given details and the back button takes you to the previous frame.

[3] ForgotPassword Frame



The screenshot shows a Java Swing window titled "Forgot-Panel". Inside the window is a form with the following fields and controls:

- Username:** A text box containing "blackwidow".
- Name:** A text box containing "Natasha".
- Your Security Question:** A dropdown menu showing "Your child SuperHero?".
- Answer:** A text box containing "ninja hathori".
- Password:** A text box containing "12345".
- Search:** A black button with white text, located next to the Username field.
- Retrieve:** A black button with white text, located next to the Answer field.
- Back:** A black button with white text, located at the bottom center of the form.

Search button

```
b1 = new JButton("Search");  
b1.addActionListener(this);  
b1.setFont(new Font("Tahoma", Font.BOLD, 12));  
b1.setBounds(428, 83, 80, 29);  
b1.setBackground(Color.BLACK);  
b1.setForeground(Color.WHITE);  
contentPane.add(b1);
```

Retrieve button

```
b2 = new JButton("Retrieve");  
b2.addActionListener(this);  
b2.setFont(new Font("Tahoma", Font.BOLD, 12));  
b2.setBounds(426, 188, 85, 29);  
b2.setBackground(Color.BLACK);  
b2.setForeground(Color.WHITE);  
contentPane.add(b2);
```

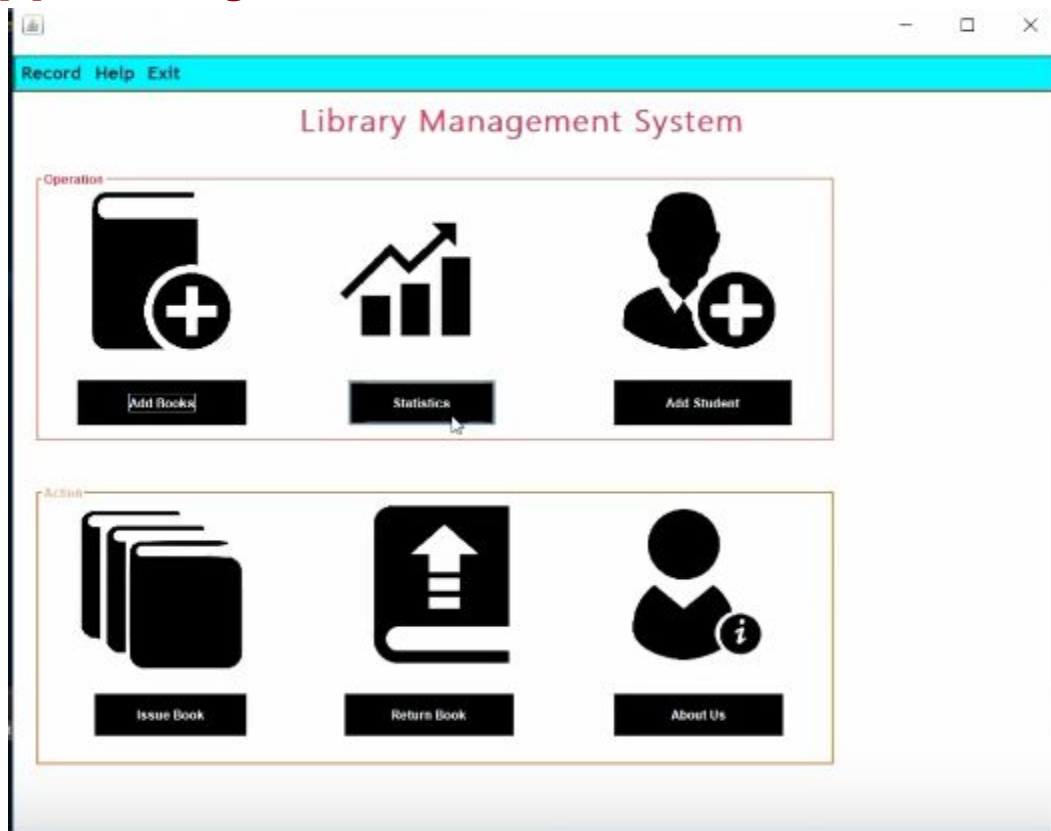
Back button

```
b3 = new JButton("Back");  
b3.addActionListener(this);  
b3.setFont(new Font("Tahoma", Font.BOLD, 13));  
b3.setBounds(233, 270, 101, 29);  
b3.setBackground(Color.BLACK);  
b3.setForeground(Color.WHITE);  
contentPane.add(b3);
```

Action performed:

Here when we enter the username the req box and click search button we will get the data for name and the filled in security question which can be answered by the user and then can create a new password.

[4] Home Page Frame



AddBook button

```
b1 = new JButton("Add Books");  
b1.addActionListener(this);  
b1.setBackground(Color.BLACK);  
b1.setForeground(Color.WHITE);  
b1.setBounds(60, 320, 159, 44);  
contentPane.add(b1);
```

Action performed:

```
public void actionPerformed(ActionEvent ae){  
    String msg = ae.getActionCommand();  
    if(msg.equals("Logout")){  
        setVisible(false);  
        new Login_user().setVisible(true);  
    }else if(msg.equals("Exit")){  
        System.exit(ABORT);  
  
    }else if(msg.equals("Read Me")){
```


```
}else if(msg.equals("About Us")){
    setVisible(false);
    new aboutUs().setVisible(true);

}else if(msg.equals("Book Details")){
    setVisible(false);
    new BookDetails().setVisible(true);
}else if(msg.equals("Student Details")){
    setVisible(false);
    new StudentDetails().setVisible(true);

}

if(ae.getSource() == b1){
    this.setVisible(false);
    new AddBook().setVisible(true);
}
if(ae.getSource() == b2){
    this.setVisible(false);
    new Statistics().setVisible(true);
}
if(ae.getSource() == b3){
    this.setVisible(false);
    new AddStudent().setVisible(true);
}
if(ae.getSource() == b4){
    this.setVisible(false);
    new IssueBook().setVisible(true);
}
if(ae.getSource() == b5){
    this.setVisible(false);
    new ReturnBook().setVisible(true);
}
if(ae.getSource() == b6){
    this.setVisible(false);
    new aboutUs().setVisible(true);}
```

[5]AddBook Frame



The screenshot shows a window titled "Add Books" with a standard Java Swing look. Inside the window, there is a form with the following fields and values:

Field	Value
Book_id	624
Name	Crack the coding interview
ISBN	236548
Publisher	Arihant
Edition	3
Price	600
Pages	1287

At the bottom of the form, there are two buttons: "Add" and "Back".

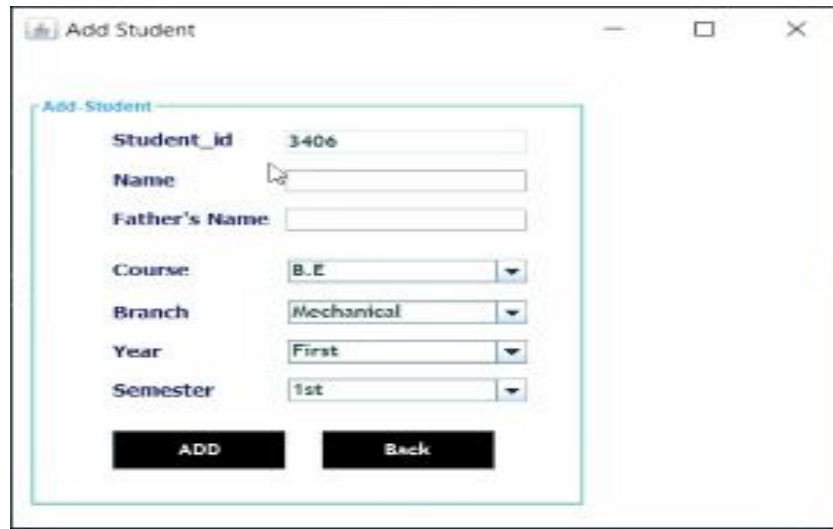
Add button

```
b1 = new JButton("Add");  
b1.addActionListener(this);  
b1.setBorder(new CompoundBorder(new LineBorder(new Color(128, 128, 128)), null));  
b1.setFont(new Font("Trebuchet MS", Font.BOLD, 15));  
b1.setBounds(102, 300, 100, 33);  
b1.setBackground(Color.BLACK);  
b1.setForeground(Color.WHITE);  
contentPane.add(b1);
```

Action performed:

Here in the Addbook frame first we have a book_id label in which we generate unique random id number automatically a name label which has a textbox for book name similarly we have further we have ISBN, Publisher, Price, Pages labels with a textbox to fill the req data then we also have a label called Edition which has a dropbox to select the number. We have two buttons here, The add button adds the new book in the data and the Back button simple goes back to the prev frame.

[6]AddStudent Frame



The screenshot shows a window titled "Add Student". Inside the window, there is a form titled "Add-Student". The form contains the following fields and controls:

- Student_id**: A text box containing the value "3406".
- Name**: A text box with a mouse cursor over it.
- Father's Name**: A text box.
- Course**: A dropdown menu showing "B.E".
- Branch**: A dropdown menu showing "Mechanical".
- Year**: A dropdown menu showing "First".
- Semester**: A dropdown menu showing "1st".
- Buttons**: Two buttons at the bottom, "ADD" and "Back", both with black backgrounds and white text.

Add Button

```
b1 = new JButton("ADD");  
b1.addActionListener(this);  
b1.setFont(new Font("Trebuchet MS", Font.BOLD, 14));  
b1.setBounds(64, 321, 111, 33);  
b1.setBackground(Color.BLACK);  
b1.setForeground(Color.WHITE);
```

Action performed:

Here in the Addbook frame first we have a student_id label in which we generate unique random id number automatically further we have a a name label which has a textbox for book name similarly we have father's name as well we also have labels course, Branch, Year and Semester for which there are dropbox with fixed choices to select from. The add button adds the newstudent in the data and the Back button simple goes back to the prev frame.

[7]IssueBook Frame

The screenshot shows a Java Swing window titled "IssueBook" with two main panels. The left panel, titled "Issue-Book", contains a "Search" button and input fields for "Book_id", "Name", "ISBN", "Publisher", "Edition", "Price", and "Pages". Below these fields is a "Date of Issue" label with a date picker. At the bottom of this panel are "Issue" and "Back" buttons. The right panel, titled "Student Details", contains a "Search" button and input fields for "Student_id", "Name", "Father's Name", "Course", "Branch", "Year", and "Semester".

Search Button

```
b1 = new JButton("Search");
b1.addActionListener(this);
b1.setBorder(new LineBorder(new Color(192, 192, 192), 1, true));
b1.setBackground(Color.BLACK);
b1.setForeground(Color.WHITE);
b1.setFont(new Font("Trebuchet MS", Font.BOLD, 14));
b1.setBounds(234, 59, 100, 30);
contentPane.add(b1);
```

Issue Button

```
b3 = new JButton("Issue");
b3.addActionListener(this);
b3.setFont(new Font("Trebuchet MS", Font.BOLD, 14));
b3.setBorder(new LineBorder(new Color(192, 192, 192), 1, true));
b3.setBounds(47, 377, 118, 33);
b3.setBackground(Color.BLACK);
b3.setForeground(Color.WHITE);
contentPane.add(b3);
```

Action performed:

Here in IssueBook fram what happens is when we add our book_id it automatically shows the data of the book as we have added it already in addBook frame similarly in student database when id is entered the details of that student are shown then we enter the date in the date lable.We have two buttons here, The Issue button issues the book to the added student and the Back button simple goes back to the prev frame.

[8]ReturnBook Frame

Return-Panel

Book_id 624 Student_id 709 Search

Book Crack the coding interview Name Ayushmaan Khurana

Course B.Tech Branch CSE

Date of Issue 10 Dec, 2019 Return

Date of Return 10 Dec, 2019 Back

Search Button

```
b1 = new JButton("Search");
b1.addActionListener(this);
b1.setBounds(443, 52, 105, 29);
b1.setBackground(Color.BLACK);
b1.setForeground(Color.WHITE);
contentPane.add(b1);
```

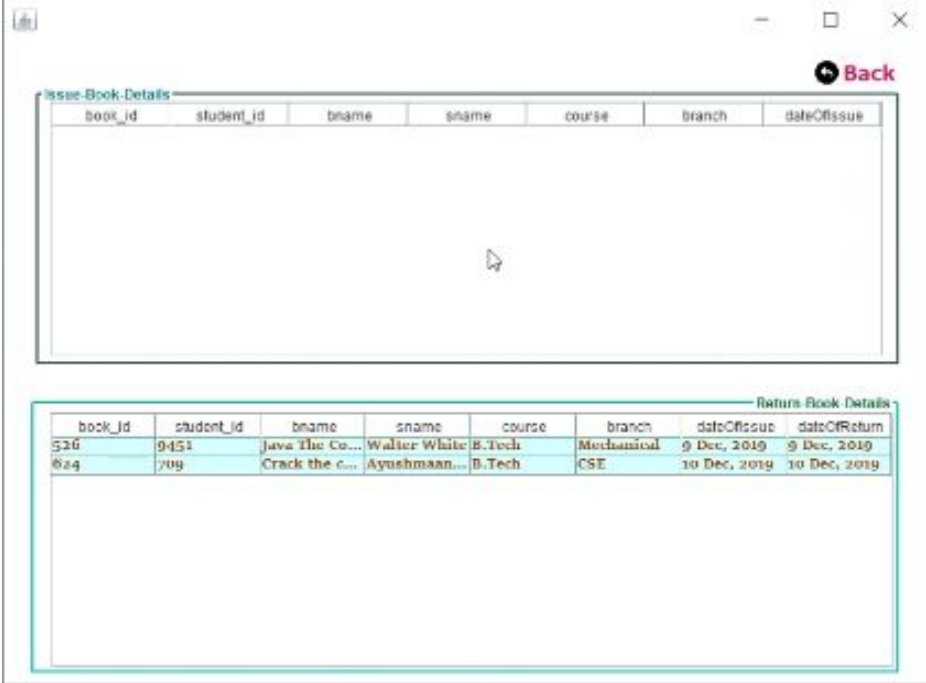
Return Button

```
b2 = new JButton("Return");
b2.addActionListener(this);
b2.setFont(new Font("Trebuchet MS", Font.BOLD, 15));
b2.setBorder(new LineBorder(new Color(0, 0, 0), 0, true));
b2.setBounds(369, 179, 149, 30);
b2.setBackground(Color.BLACK);
b2.setForeground(Color.WHITE);
```

Action performed:

Here in ReturnBook Frame when we click search button book_id and student_id the book name and student name, Course , Branch automatically shows up and also the issue date then we can feed in the current date. There is a button called return date which feeds in the data that the book is returned and back button takes us to previous frame.

[9]Statistics Frame



The screenshot shows a software window titled "Issue Book Details" with a "Back" button in the top right corner. The window contains two tables. The top table, titled "Issue Book Details", has columns: book_id, student_id, bname, sname, course, branch, and dateOfIssue. The bottom table, titled "Return Book Details", has columns: book_id, student_id, bname, sname, course, branch, dateOfIssue, and dateOfReturn. The bottom table contains two rows of data.

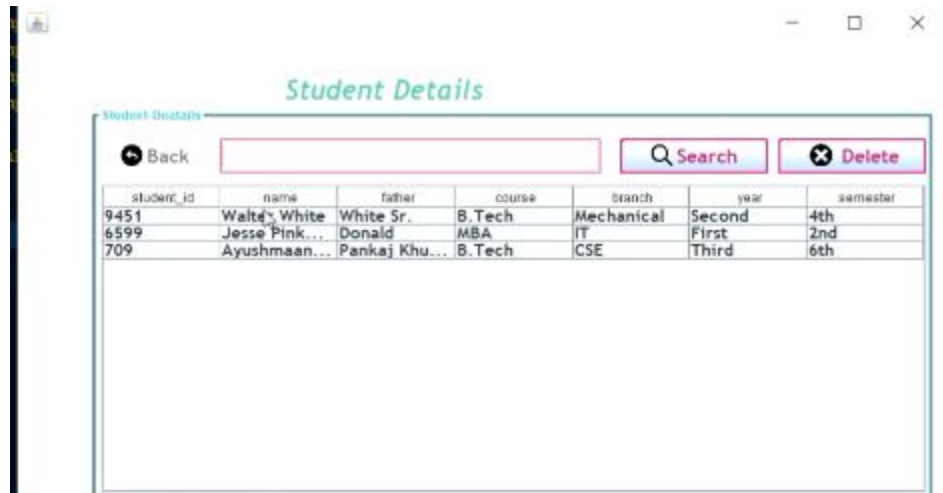
book_id	student_id	bname	sname	course	branch	dateOfIssue	dateOfReturn
526	9451	Java The Co...	Walter White	B.Tech	Mechanical	9 Dec, 2019	9 Dec, 2019
624	709	Crack the c...	Ayushmaan...	B.Tech	CSE	10 Dec, 2019	10 Dec, 2019

Action performed:

It refers to a method of dealing with quantitative information involving collection, analysis, presentation and interpretation of data. Here in statistics Frame we show book issued details as well as the stats of issue and return of a particular book. It contains all the data as well as a back button to return to the previous frame.

[10]Record Frame-student details

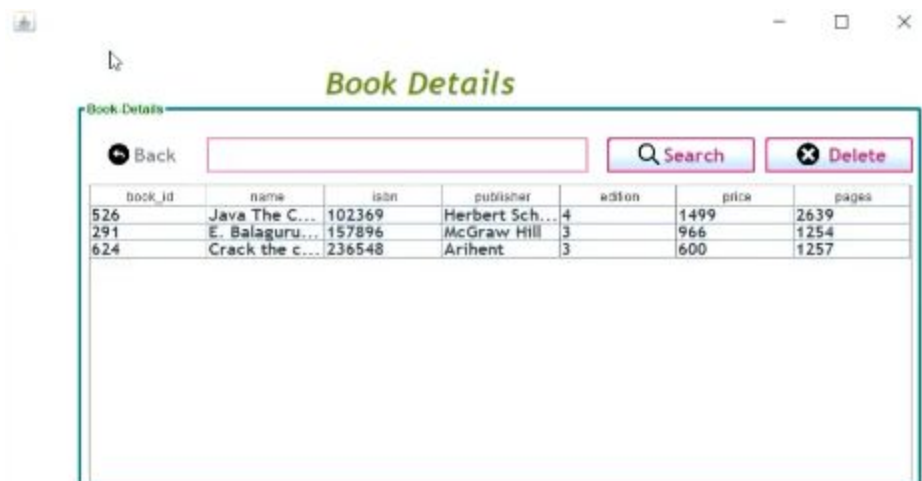
This table contains all the student details which have been entered in the system using the portal. We have stored this using wamp server Mysql editor which is connected to our IDE



student_id	name	father	course	branch	year	semester
9451	Walter White	White Sr.	B.Tech	Mechanical	Second	4th
6599	Jesse Pink...	Donald	MBA	IT	First	2nd
709	Ayushmaan...	Pankaj Khu...	B.Tech	CSE	Third	6th

[11]Record Frame-Book details

This table contains all the Book details which have been entered in the system using the portal. We have stored this using wamp server Mysql editor which is connected to our IDE



book_id	name	isbn	publisher	edition	price	pages
526	Java The C...	102369	Herbert Sch...	4	1499	2639
291	E. Balaguru...	157896	McGraw Hill	3	966	1254
624	Crack the c...	236548	Arihent	3	600	1257

CONCLUSION

NetBeans IDE is a really powerful tool to make Java,HTML,CSS applications really fast.The IDE is designed to limit coding errors and facilitate error correction with tools such as NetBeans find bugs to locate and fix common java coding problems and debugger to manage complex code with watch field watches, breakpoints and execution monitoring.

WHAT DID I LEARN IN THROUGH THIS PROJECT :-

[1] Developing a user interface within the java GUI Application using NetBeans IDE with components such as TextBox,Lable,Buttons,Table, MessageBox, etc...

[2] Parading between multiple form applications

FUTURE SCOPE OF THE PROJECT :-

We can consider much future scope to this application. The following are some of there.

- Online use of the library can be good feature for the Library Management system.
- Advanced fine payment system can be added.
- Inventory system can be used to maintain the books of the library.

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