

# *Library Management System*

## *A Mini Project in C*

### *Computer Programming*

This Mini Project has been created by applying the concepts learned in C programming. This digital system will help the librarian manage his library register much more effectively.

This documentation of the project covers every element that the application can handle. We hope that the reader gets a fair idea about our work after going through this documentation.

#### **Note:**

The code needs to be run on turbo C compiler only.

Default Admin password to run the system is *P@ss* .

(Password can be changed later by the user)

#### **Group Details:**

Branch: Computer Science (Data Science)

Academic year: First Year BTech.

Division/Batch: K/K1

Student's details:

Sr. No.	Name	SAP ID
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## Welcome Page

```
Sun Jul 31 11:07:16 2022
-----
LIBRARY MANAGEMENT SYSTEM
-----
=====
WELCOME
=====

1. Login
2. Quit application

Enter Choice:1
```

On entering 1, it is directed to Login page.

On entering 2, it is directed to Quit page.

### Error Handling:

On entering anything apart from 1 or 2, error message is seen.

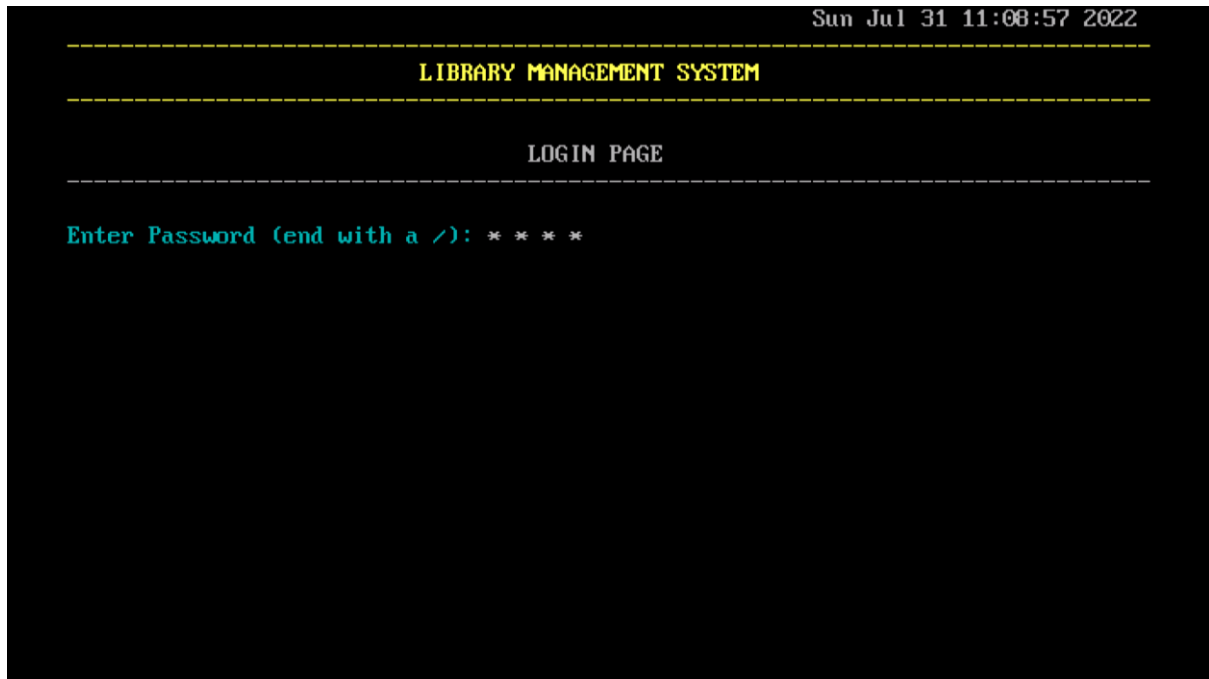
```
Sun Jul 31 11:15:35 2022
-----
LIBRARY MANAGEMENT SYSTEM
-----
=====
WELCOME
=====

1. Login
2. Quit application

Enter Choice:3

Invalid option chosen.
Press any key to try again._
```

## *Login Page*

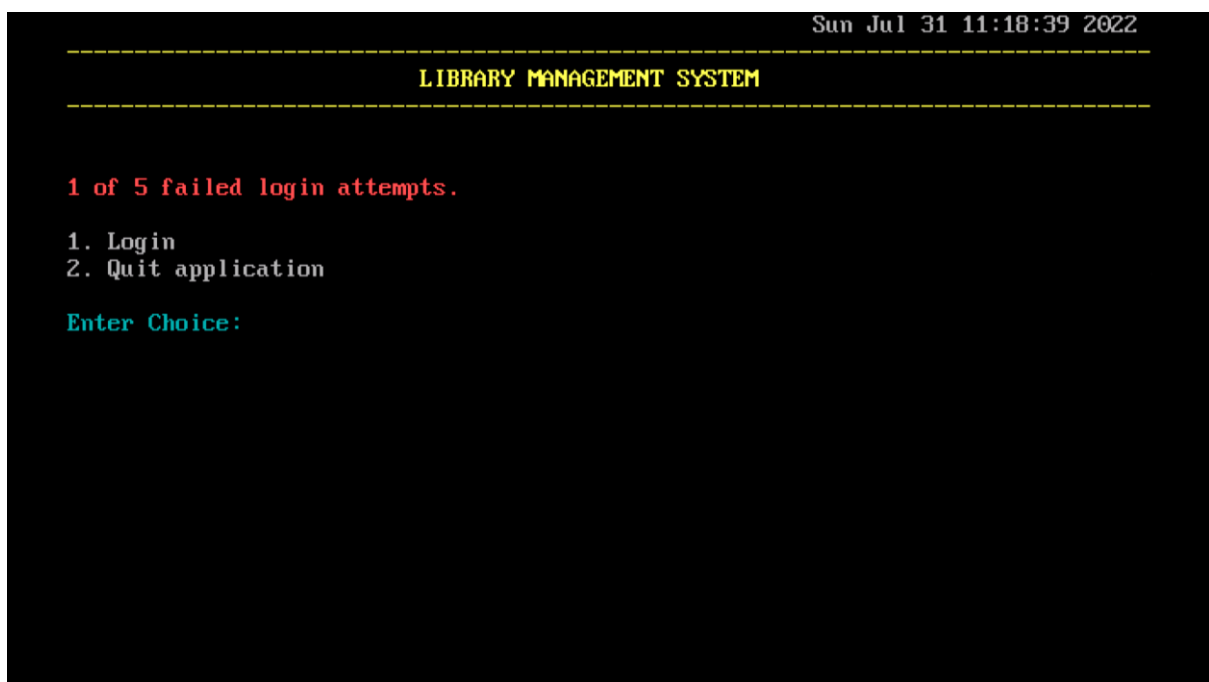


After entering password, user needs to type a / for proceeding.

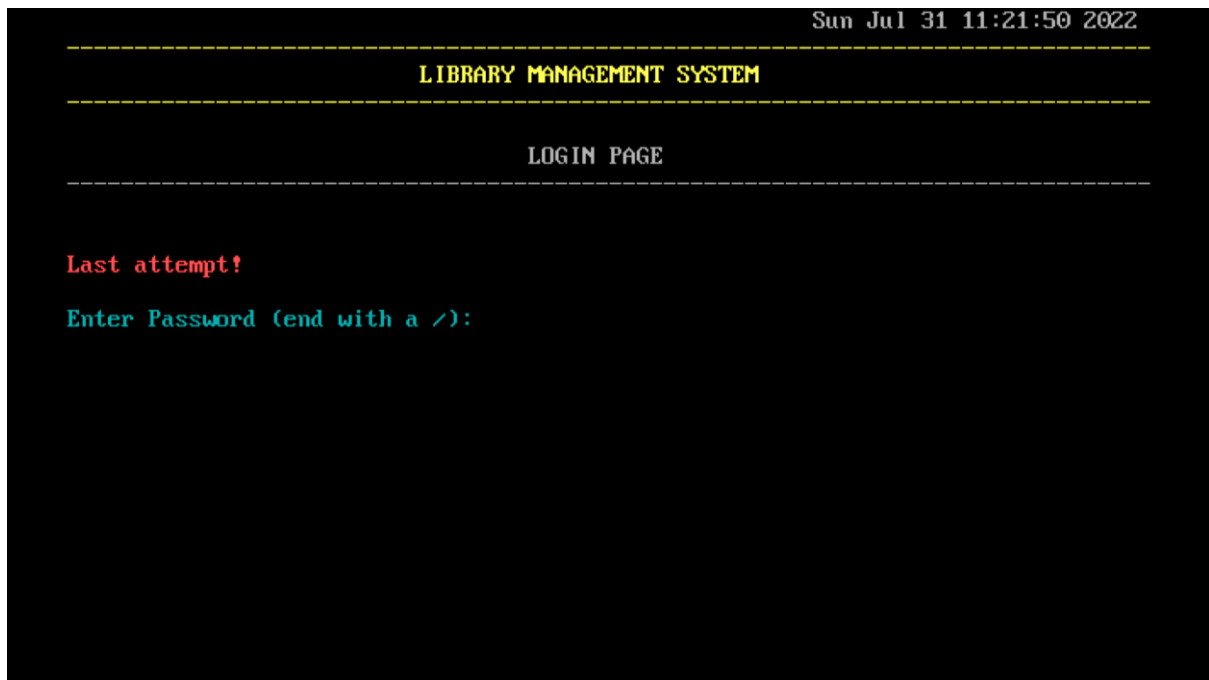
If the password entered is correct, it directs to the Menu page.

### **Error Handling:**

Entering incorrect password results in a countdown.



After 4 of 5 attempts, if user chooses to try logging in again,



When all 5 attempts are exhausted, it is directed to the Quit Page.

## Main Menu

```
Sun Jul 31 11:12:47 2022
-----
LIBRARY MANAGEMENT SYSTEM
-----
MAIN MENU
-----
1. Add book
2. Book list
3. Delete book
4. Issue book
5. Return book
6. List of issues
7. Update password
8. Logout

Enter option:
```

### Error Handling:

```
Sun Jul 31 11:12:47 2022
-----
LIBRARY MANAGEMENT SYSTEM
-----
MAIN MENU
-----
1. Add book
2. Book list
3. Delete book
4. Issue book
5. Return book
6. List of issues
7. Update password
8. Logout

Enter option:9

Invalid option chosen.
Press any key to try again._
```

## *Add Books*

When user enters option 1,

```
Mon Aug 01 13:02:58 2022
-----
LIBRARY MANAGEMENT SYSTEM
-----
MAIN MENU
-----
1. Add book
2. Book list
3. Delete book
4. Issue book
5. Return book
6. List of issues
7. Update password
8. Logout
Enter option:1_
```

```
Mon Aug 01 13:02:27 2022
-----
LIBRARY MANAGEMENT SYSTEM
-----
ADD BOOKS
-----
Enter Book ID:67
Enter the book name: Emma
Enter the book author: JA
Enter the book subject: novel
Enter the number of copies: 1
Press any key to go back to main menu.
```

After pressing any key, the user can add as many books as they want by repeating the process again and again.

```
Mon Aug 01 13:04:18 2022
-----
LIBRARY MANAGEMENT SYSTEM
-----
ADD BOOKS
-----

Enter Book ID:92
Enter the book name: Matilda
Enter the book author: RD
Enter the book subject: novel
Enter the number of copies: 3
Press any key to go back to main menu.
```

#### Error Handling:

If a book is already added once, you can add the number of copies you want to it.

```
Mon Aug 01 13:25:13 2022
-----
LIBRARY MANAGEMENT SYSTEM
-----
ADD BOOKS
-----

Enter Book ID:92
Book is already present in database.
Enter no. of copies to be added:2
Copies added successfully!
Press any key to go back to main menu._
```

Copies added can be viewed by the user in the List of books by entering option 2

Mon Aug 01 13:36:28 2022

---

LIBRARY MANAGEMENT SYSTEM

---

BOOK LIST

---

Sr.No.	Book ID	Name	Author	Subject	Copies
1	67	Emma	JA	novel	1
2	75	Dracula	BS	novel	2
3	92	Matilda	RD	novel	5
4	35	Carrie	SK	novel	1

Press any key to go back to main menu.\_



## *List of books*

After adding books, the user can view them here by entering option 2

```
Mon Aug 01 13:05:39 2022
-----
LIBRARY MANAGEMENT SYSTEM
-----
MAIN MENU
-----
1. Add book
2. Book list
3. Delete book
4. Issue book
5. Return book
6. List of issues
7. Update password
8. Logout

Enter option:2_
```

```
Mon Aug 01 13:05:30 2022
-----
LIBRARY MANAGEMENT SYSTEM
-----
BOOK LIST
-----
Sr.No.  Book ID  Name  Author  Subject  Copies
-----
1       67       Emma  JA      novel    1
2       75       Dracula BS     novel    2
3       79       Kim    RK      novel    1
4       92       Matilda RD    novel    3
5       35       Carrie SK     novel    1

Press any key to go back to main menu._
```

## *Book Deletion*

If the user wants to delete a book, they can enter option 3

```
Mon Aug 01 13:05:39 2022
-----
LIBRARY MANAGEMENT SYSTEM
-----
MAIN MENU
-----
1. Add book
2. Book list
3. Delete book
4. Issue book
5. Return book
6. List of issues
7. Update password
8. Logout

Enter option:3
```

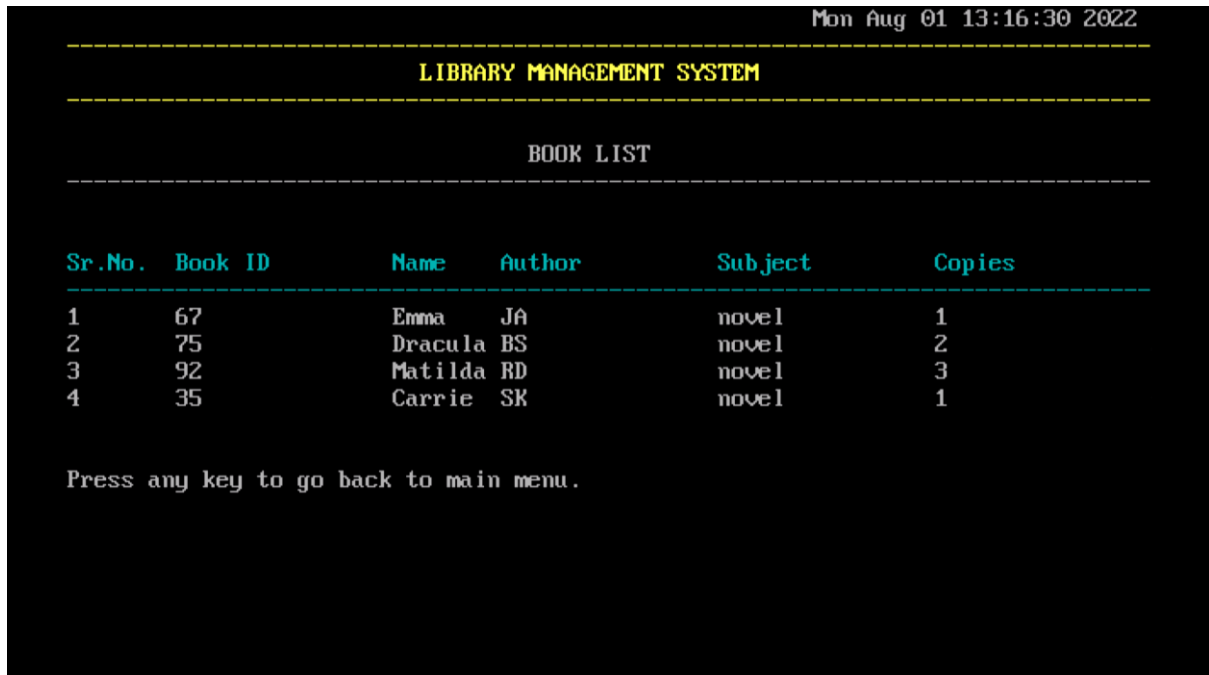
After the user enters the book id, the book will be deleted from the database.

```
Mon Aug 01 20:30:59 2022
-----
LIBRARY MANAGEMENT SYSTEM
-----
BOOK DELETION
-----

Enter the book id:79

The book has been deleted successfully!
Press any key to return to main menu._
```

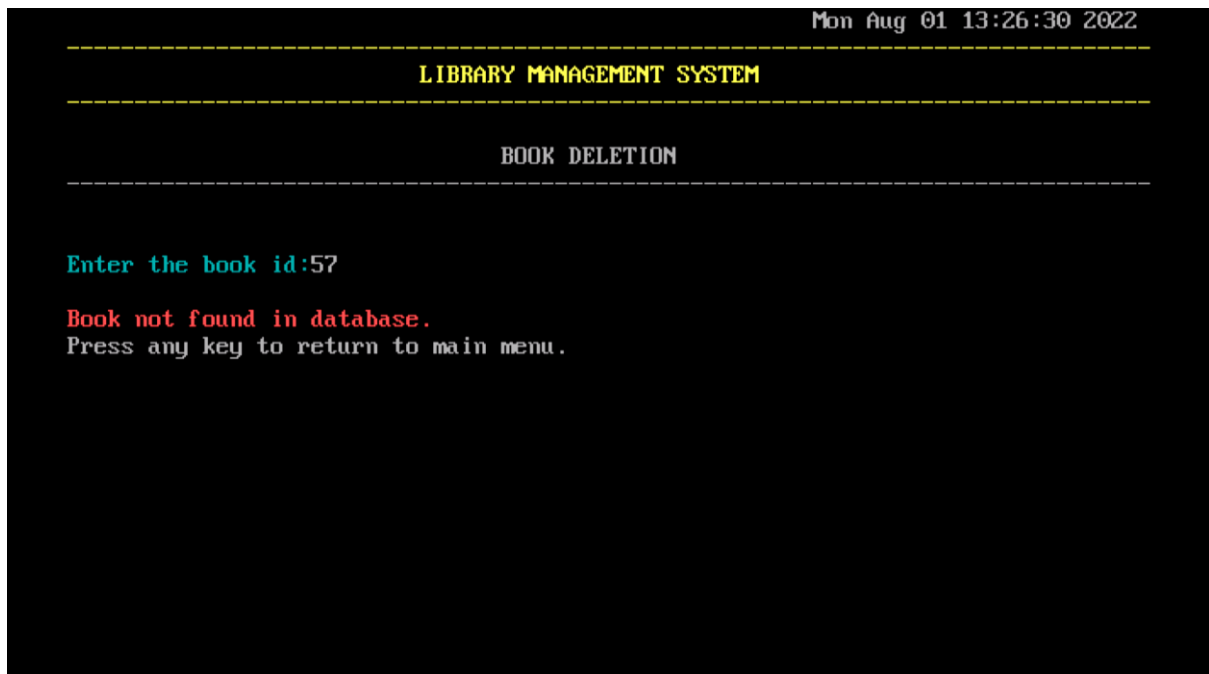
The user can later view the updated book list by enter option 2 again in the Main Menu.



```
Mon Aug 01 13:16:30 2022
LIBRARY MANAGEMENT SYSTEM
BOOK LIST
Sr.No.  Book ID  Name  Author  Subject  Copies
1       67      Emma  JA      novel    1
2       75      Dracula BS     novel    2
3       92      Matilda RD    novel    3
4       35      Carrie SK     novel    1
Press any key to go back to main menu.
```

#### Error Handling:

If the book ID of the book the user wants to delete is wrong, they can go back to the main menu.



```
Mon Aug 01 13:26:30 2022
LIBRARY MANAGEMENT SYSTEM
BOOK DELETION
Enter the book id:57
Book not found in database.
Press any key to return to main menu.
```

## *Issue Book*

When user enters option 4,

```
Tue Aug 02 01:25:26 2022
-----
LIBRARY MANAGEMENT SYSTEM
-----
MAIN MENU
-----
1. Add book
2. Book list
3. Delete book
4. Issue book
5. Return book
6. List of issues
7. Update password
8. Logout

Enter option:4
```

The user is required to fill necessary details, and then the book gets issued.

```
Tue Aug 02 01:46:41 2022
-----
LIBRARY MANAGEMENT SYSTEM
-----
ISSUE BOOKS
-----

Enter the book id:67
Enter the student's name:Riya
Enter the student ID:897
Enter the department name:DS
Book issued successfully!
Press any key to go back to main menu.
```

After pressing any key, the user can issue as many books as they want by repeating the process again and again. User can check the updated list of issues.

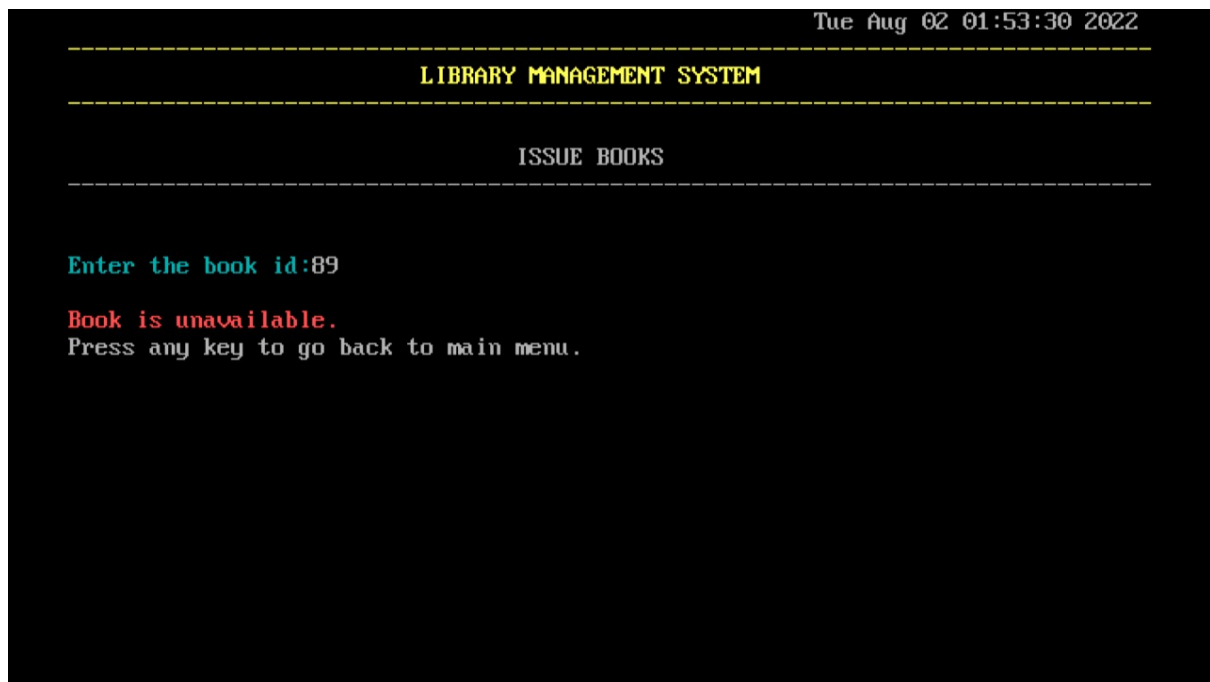
The date of issue along with the time and day is stored in the database automatically.

The issued book's number of copies is seen to be decremented in the list of books.

The same book can be issued by multiple students if the copies are available.

#### Error Handling:

If the book whose book ID is entered is not present in the database, the following message is displayed.



```
Tue Aug 02 01:53:30 2022
-----
LIBRARY MANAGEMENT SYSTEM
-----
ISSUE BOOKS
-----

Enter the book id:89
Book is unavailable.
Press any key to go back to main menu.
```

## *Return book*

When user enters option 5,

```
Tue Aug 02 02:08:24 2022
-----
LIBRARY MANAGEMENT SYSTEM
-----
MAIN MENU
-----
1. Add book
2. Book list
3. Delete book
4. Issue book
5. Return book
6. List of issues
7. Update password
8. Logout

Enter option:5
```

The user is required to enter the book ID and student ID, then the book gets returned.

```
Tue Aug 02 09:51:49 2022
-----
LIBRARY MANAGEMENT SYSTEM
-----
RETURN BOOK
-----

Enter the book id:67
Enter Student ID:897

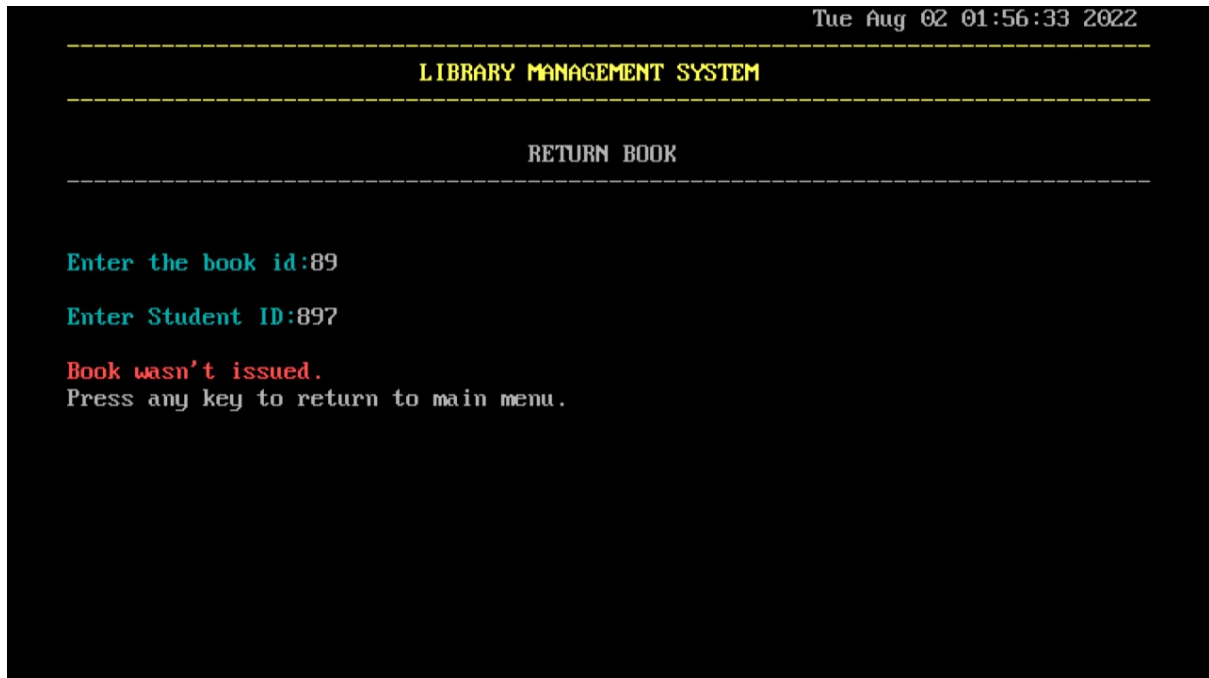
The book has been returned successfully!
Press any key to return to main menu.
```

The list of issues is updated accordingly. The no. of copies in the main book list is also updated.

After pressing any key, the user can return any issued book by repeating the process again and again.

**Error Handling:**

If the book whose ID is written is not issued by the student whose ID is mentioned, the following message is displayed.



```
Tue Aug 02 01:56:33 2022
-----
LIBRARY MANAGEMENT SYSTEM
-----
RETURN BOOK
-----

Enter the book id:89
Enter Student ID:897
Book wasn't issued.
Press any key to return to main menu.
```

## *List of Issues*

When user enters option 6,

```
Tue Aug 02 02:08:24 2022
-----
LIBRARY MANAGEMENT SYSTEM
-----
MAIN MENU
-----
1. Add book
2. Book list
3. Delete book
4. Issue book
5. Return book
6. List of issues
7. Update password
8. Logout

Enter option:6
```

The user is able to view the list of issued books.

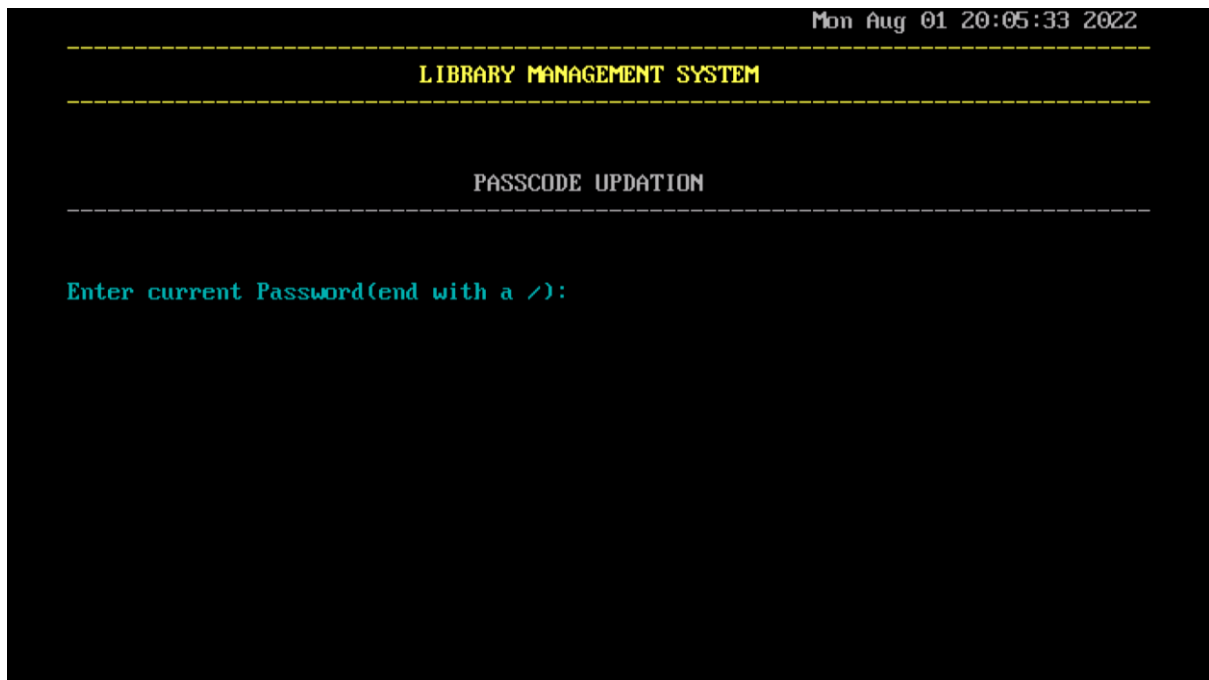
```
Tue Aug 02 11:18:11 2022
-----
LIBRARY MANAGEMENT SYSTEM
-----
LIST OF ISSUES
-----
Sr.no.  Student name  Student ID  Department  Book ID  Issue date
-----
1      Harish      897      DS      75      Tue Aug 02 11:18:06 2022
2      Riya      899      IT      67      Tue Aug 02 11:18:06 2022
3      Ravi      877      DS      75      Tue Aug 02 11:18:06 2022

Press any key to go back to main menu.
```



## *Password Updation*

The user is requested to enter the current password.



If the password entered is correct, user is allowed to change the password.



After successful password updation, user is directed to the Welcome page.

**Error Handling:**

If user enters incorrect current password, following message is displayed.

```
Mon Aug 01 20:21:48 2022
-----
LIBRARY MANAGEMENT SYSTEM
-----

PASSCODE UPDATION
-----

Enter current Password(end with a /): * * * *
Incorrect password entered!
Enter 1 to try again or any other number to logout.
2
```

If the new password entered by the user is same as the current password, following options are provided.

```
Mon Aug 01 20:22:45 2022
-----
LIBRARY MANAGEMENT SYSTEM
-----

PASSCODE UPDATION
-----

Enter current Password(end with a /): * * * *
Enter new Password (end with a /): * * * *
Updated password is same as new one.
Enter 0 if u want to change the password.
Enter any other number to continue with the same one.
1

Passcode updated sucessfully!
Login again after pressing any key._
```

If the user enters 0, the page is refreshed and entry of current password is expected again before proceeding.

## *Logout*

Logout directs it to the Welcome page.

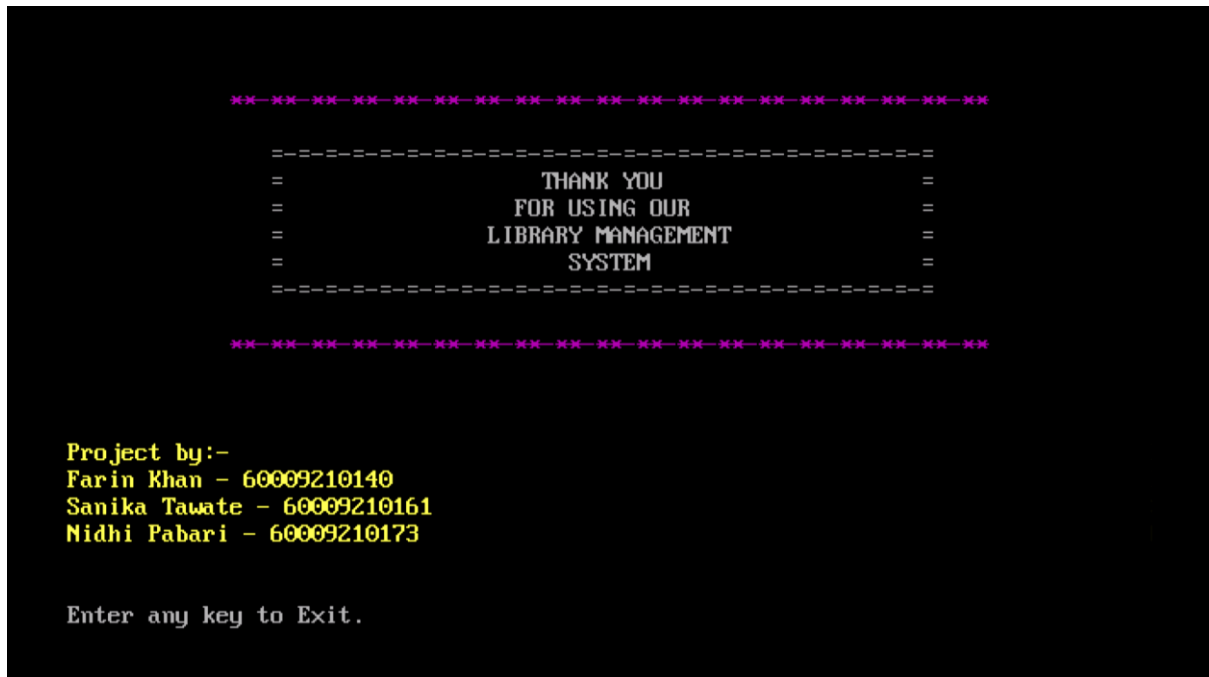
```

Sun Jul 31 11:43:51 2022
-----
LIBRARY MANAGEMENT SYSTEM
-----
+++++
WELCOME
+++++

1. Login
2. Quit application

Enter Choice:
```

## *Quit Page*



On pressing any key, Application closes.

### *Other elements handled:*

- The date, time and day on the upper right corner gets updated with every new page.
- While returning a book, if the return time exceeds a period of exactly 7 days a message to pay a fine is displayed.

Disclaimer: The output for the above case is not included in this documentation, as this requires us to keep the application running for 7 days.

Following is the code written for the same,

```
/*calculating amount of fine
if book is returned late*/
second=time(NULL);
days=(int)((difftime(second,first))/86400);
if(days>7)
{
    red();
    printf("\nFine to be paid:Rs. %d", (days-7)*10);
    resetcolor();
}
```