

PURBANCHAL UNIVERSITY

Biratnagar Nepal



A Project report on

“LIBRARY MANAGEMENT SYSTEM”

In the partial fulfillment for the requirement of the 2nd Semester Project-II (subject code- BIT 156CO) in the completion of **Bachelor of Information Technology (BIT)** degree at **KIST college of Information Technology**, under **Purbanchal University**.

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Submitted To: -

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KIST COLLEGE OF INFORMATION AND TECHNOLOGY

KAMALPOKHARI, KATHMANDU, NEPAL

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CERTIFICATE

This is to certify that the project work entitled “**LIBRARY MANAGEMENT SYTEM**” is carried out by **ANJAN SHRESTHA (5418), PUKAR TIWARI (5429), SANDIP SHRESTHA (5437)**, bona fide students of **KIST COLLEGE OF INFORMATION AND TECHNOLOGY** in partial fulfillment for the award of **BACHELOR IN INFORMATION AND TECHNOLOGY** of the **PURBANCHAL UNIVERSITY, BIRATNAGAR NEPAL**, during the year **2020-2021**. It is certified that all corrections indicated for internal assessment have been incorporated in the report submitted in the department library. The project report has been approved, as it satisfied the academic requirements in respect of the project work prescribed for the said degree.

The details of the students are as follows: -

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**KIST COLLEGE OF INFORMATION AND
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Examiner's Certification

The Project Report
On
“LIBRARY MANAGEMENT SYSTEM”

Developed by

**Anjan Shrestha
Pukar Tiwari
Sandip Shrestha**

Is approved and is acceptable in qualify form.

Internal Examiner

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Designation:

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ACKNOWLEDGEMENT

It is with greatest satisfaction and euphoria that we are submitting our project report entitled “**LIBRARY MANAGEMENT SYSTEM**”. We have completed it as a part of the curriculum of **PURBANCHAL UNIVERSITY**.

We also take this opportunity to express a deep sense of gratefulness to our **BIT Lecturer Mr. Deepak Khadka** for their amiable support, valuable information and guidance which helped us in completing this task throughout its various stages. We are indebted to all members of **KIST College**, for the valuable support and suggestion provided by them using their specific fields’ knowledge. We are grateful for their cooperation during the period of our project.

Finally, we would also like to express our gratefulness towards **Purbanchal University** for designing such a wonderful course structure. It will help us to get more knowledge in the field of Information Technology & help us to have a bright future in the field of technology.

We hope our university will accept this attempt as a successful project.

Last but not the least, our sincere thanks to our parents, teaching and non-teaching staffs of our college and also my friends.

ANJAN SHRESTHA (324615)

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STUDENT'S DECLARATION

We hereby declare that the project report entitled “**LIBRARY MANAGEMENT SYTEM**” is a result of our own work. If we are found guilty of copying any other report or published information and showing as our original work, we understand that we shall be liable and punishable by **Purbanchal University**.

We further certify that this Project submitted in partial fulfillment of the requirement for the award of Bachelor in Information Technology (**BIT**) of the **Purbanchal University** is our original work and has not been submitted for award of any other degree or other similar title or prize.

S.N.	Name	Registration No.	Symbol No.
1	Anjan Shrestha	058-3-2-04716-2020	324615
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TO WHOM IT MAY CONCERN

This is to certify that **Mr. Anjan Shrestha, Mr. Pukar Tiwari, Mr. Sandip Shrestha** and **Mr. Saurav Magar** of **Bachelor in Information Technology (BIT)** has studied as per the curriculum of **BIT 2nd Semester** and completed the project entitled “**Library Management System (LMS)**”. This project is the original work of **Mr. Anjan Shrestha, Mr. Pukar Tiwari and Mr. Sandip Shrestha** and was carried out under the supervision of **Mr. Deepak Khadka** as per the guidelines provided by **Purbanchal University** and certified as per the student’s declaration that project “**Library Management System**” has not been presented anywhere as a part of any other academic work.

The detail of the student is as follows:

Name of Students : Anjan Shrestha
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Semester : 2nd
Subject Code : BIT 156C0
Project Title : **Library Management System**

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ABSTRACT

The purpose of “**Library Management System**” is to automate the existing manual system by the help of computerized equipment’s and full-fledged computer software, fulfilling their requirements, so that their valuable data/information can be stored for a longer period with easy accessing and manipulation of the same. The required software and hardware are easily available and easy to work with.

Library Management System, as declared above, can lead to error free, secure, reliable and fast management system. It can assist the user to concentrate on their other activities rather to concentrate on the record keeping. Thus, it will help organization in better utilization of resources. The organization can maintain computerized records without redundant entries. That means that one need not be distracted by information that is not relevant, while being able to reach the information.

The aim is to automate its existing manual system by the help of computerized equipment and full-fledged computer software, fulfilling their requirements, so that their valuable data/information can be stored for a longer period with easy accessing and manipulation of the same. Basically, the project describes how to manage for good performance and better services for the clients.

According’s: LMS refers to Library Management System.

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Chapter 1

INTRODUCTION

The LMS has been developed to override the problems prevailing in the practicing manual system. This software is supported to eliminate and, in some case, reduce the hardships faced by this existing system. Moreover, this system is designed for the particular need of the library departments to carry out operations in a smooth and effective manner.

Library Management System is a desktop-based application. This application is developed by using C++ language. It is an easy and time-efficient way of storing the data. These data can be easily accessed by the administration.

Library Management System (LMS) is a system which helps users to insert, name, edit, rename, issue and time & date. By using this system, it will help in control the loss of book. The library staffs can get the right information in time and make further Planning.

This system is developed by using “C++” as its backend and This application based on file handling in C++, where I have used a file-related function like fopen, fread, fwrite, etc good thing is that “Library Management System project” is password-protected, so only authorized person able to login in this application.

The project demonstrates the creation of a user interface of a system, without the use of C++ Graphics library. The project uses basic C++ function to generate menus, show message boxes and print text on the screen.

PROBLEM STATEMENT

A Library Management System has to be developed for automating the Library Management System. Our software provides following facilities: -

- More manual work and effort spent on their respective working areas.
- No backup data record of books.
- Time consuming.

OBJECTIVES

The main objectives behind the development of this project are as follows:

- To utilize the information of Books.
- To store and retrieve books items.
- To manage the particular records of student.
- To provide the details of issue books.

Thus, there are a number of objectives behind developing the “LIBRARY MANAGEMENT SYSTEM” and it reduces a lot of manual working of the department. [1]

SCOPE

The scope of this project is as follows:

- To assist the staff in capturing the effort spent on their respective working areas.
- To utilize resources in an efficient manner by increasing their productivity through automation.
- The system generates types of information that can be used for various purposes.

Thus, there are information scopes behind developing the “LIBRARY MANAGEMENT SYSTEM” and it reduces a lot of burden of the entry.

ADVANTAGES

The library management system is designed to contribute well management of library functions. It offers ease to perform day to day library operations electronically. This practice being many advantages like:

- Simple and easy to operate
- Saves time and reduces overheads
- Remove manual processes to issue books and maintain records
- Increase librarian's efficiencies
- Increase accuracy

Chapter 2

SYSTEM DESIGN

ALGORITHM

Step 1: Start

Step 2: Welcome Message. Press any key to continue

Step 3: Login! Enter login detail.

Step 4: If matches, goto step 6. Else goto step 5.

Step 5: If step 3 is repeated for many times,

 Step 5.1: Display “Login Failed”

 Step 5.2: Close the program.

Step 6: Display “Login is Successful”

Step 7: Show Main Menu

Step 8: Enter choice form menu

Step 9: If the choice is between 1 to 6, goto step 10. Else Display Invalid Choice.

Step 10: If choice is 1 “Insert Record”.

 Step 10.1: Show Enter the Book ID

 Step 10.2: Check the Book ID in Database If match found goto Step 10.3 Else goto Step

10.4

 Step 10.3 Display Enter Unique Book ID. Goto step 10.1

 Step 10.4: Enter the Detail of Book and Student

 Step 10.5: Display “Do you want to insert record of another book” if yes goto step 10.1.

Else goto step 7.

Step 11: If choice is 2 “Display Record”.

 Step 11.1: Display the List of Books.

 Step 11.2: goto step 7.

Step 12: If choice is 3 “Update Record”.

 Step 12.1: Enter the Book ID which you want to update. If Book ID matched with database record goto step 12.2. else display “Record not found” goto step 12.

 Step 12.2: Display the existing data and Display Enter the New data.

 Step 12.3: Display “The record has been successfully updated in the data file”

 Step 12.4: goto step 7.

Step 13: If choice is 4 “Delete Record”.

 Step 13.1: Display “Enter the Book ID which you want to delete”.

 Step 13.2: If record found goto step 13.3. Else display “No record found” goto step

13.1.

 Step 13.2: Display “The record has been successfully deleted form the data file”

 Step 13.3: goto step 7.

Step 14: If choice is 5 “Search Record”

 Step 14.1: Display Search Menu.

Step 14.2: Enter a number between 1 to 4.
 Step 14.3: If choice is 1
 Step 14.3.1: Enter the Book ID.
 Step 14.3.2: If record found Display the record. Else Display no record found
 goto step 14.1
 Step 14.3.3: goto step 7.
 Step 14.4: If choice is 2.
 Step 14.4.1: Enter the Student Name
 Step 14.4.2: If record found Display the desire record. Else Display no record
 found got to step 14.1
 Step
 Step 14.5: If choice is 3.
 Step 14.5.1 Enter the Book Name
 Step 14.6: If choice is 4.
 Step 14.6.1: goto step 7.
 Step 15: If choice is 6 “Quit”;
 Step 15.1: Display “Thank you!”
 Step 15.2: Close the program. Else Display “Invalid choice”
 Step 15.3: goto step 7.

 Step 16: Stop

FLOWCHART

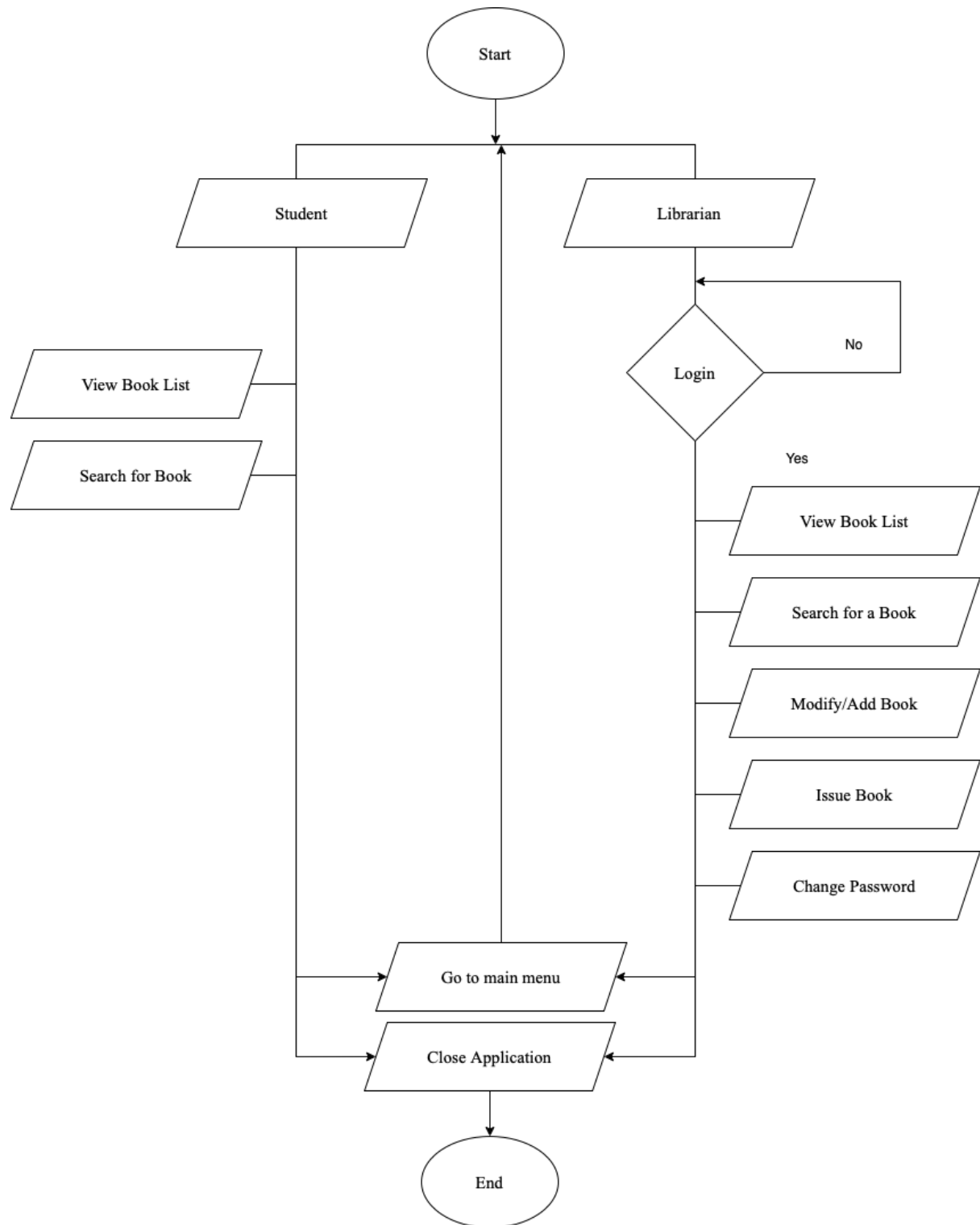


Figure 1 Flow Chart

Chapter 3

REQUIREMENTS ANALYSIS & SYSTEM IMPLEMENTATION

Following hardware and software requirement should be met for flawless running of this system:

Hardware: Hardware is the collection of physical parts of a computer system. This includes the computer case, monitor, keyboard, and mouse. It also includes all the parts inside the computer case, such as the hard disk drive, motherboard, video card, and many others. Computer hardware is what you can physically touch.

MINIMUM REQUIREMENTS:

PROCESSOR: PENTIUM-II

SPEED: 1.5Hz

RAM: 32MB

HARDDISK: 20MB (At least 80MB of free space)

MONITOR: VGA COLOR MONITOR

Software: Software is a set of instructions, data or programs used to operate computers and execute specific tasks. It is the opposite of hardware, which describes the physical aspects of a computer.

OPERATING SYSTEM: WINDOWS XP, 2000 Professional

COMPILER: DEV C++

SYSTEM METHODOLOGY

WATERFALL MODEL

The waterfall model is a classical model used in system development life cycle to create a system with linear and sequential approach. It is termed as waterfall because the model develops systematically from one phase to another in a downward fashion. This model is divided into different phase and the output of one phase is used as the input of the next phase starts and there is no overlapping of the phase. [2]

The sequential phases described in the Waterfall model are:

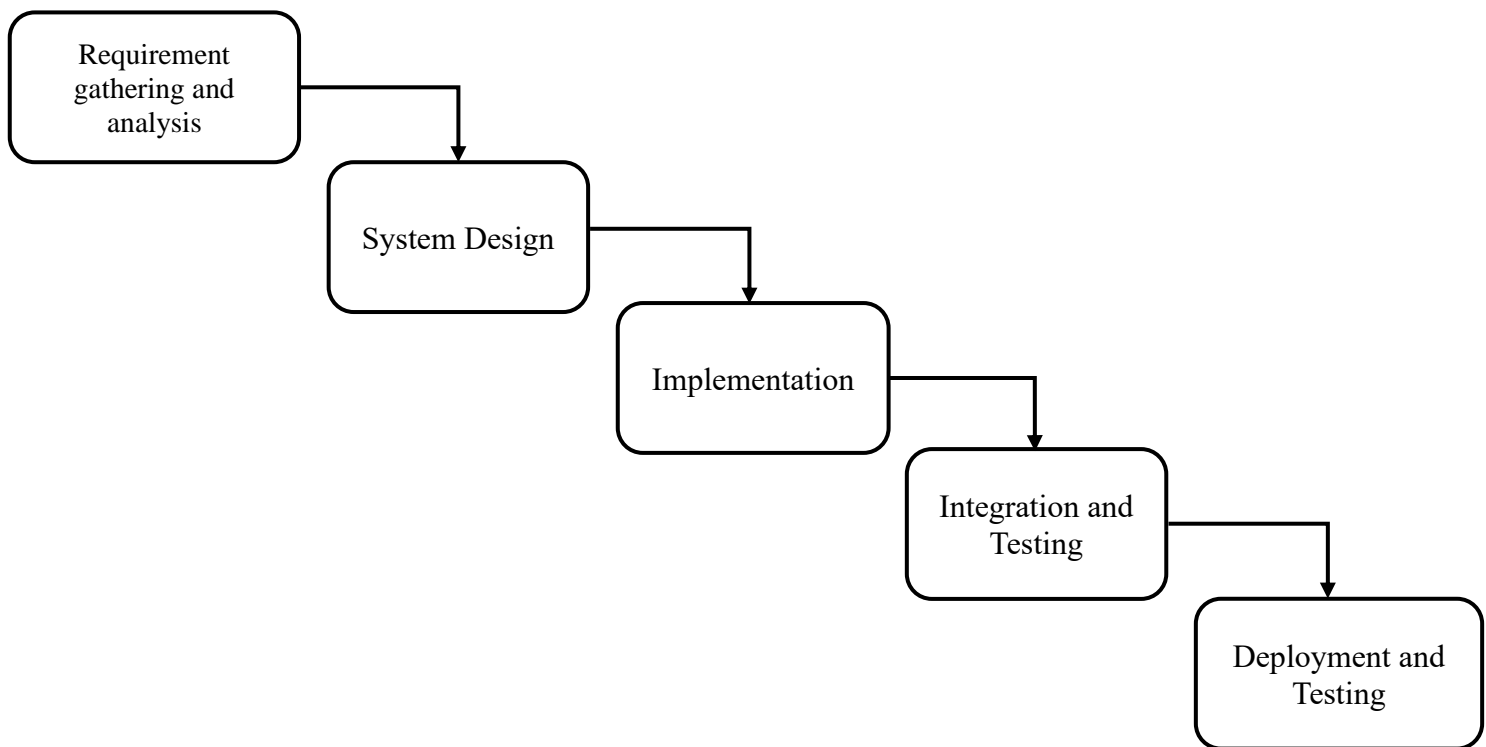


Figure 2 Waterfall Model

3.1.1 Requirement and Gathering Analysis

FUNCTIONAL REQUIREMENT

In software and system engineering, a functional requirement defines a function of a system or its component, where a function is described as a specification of behavior between input and outputs

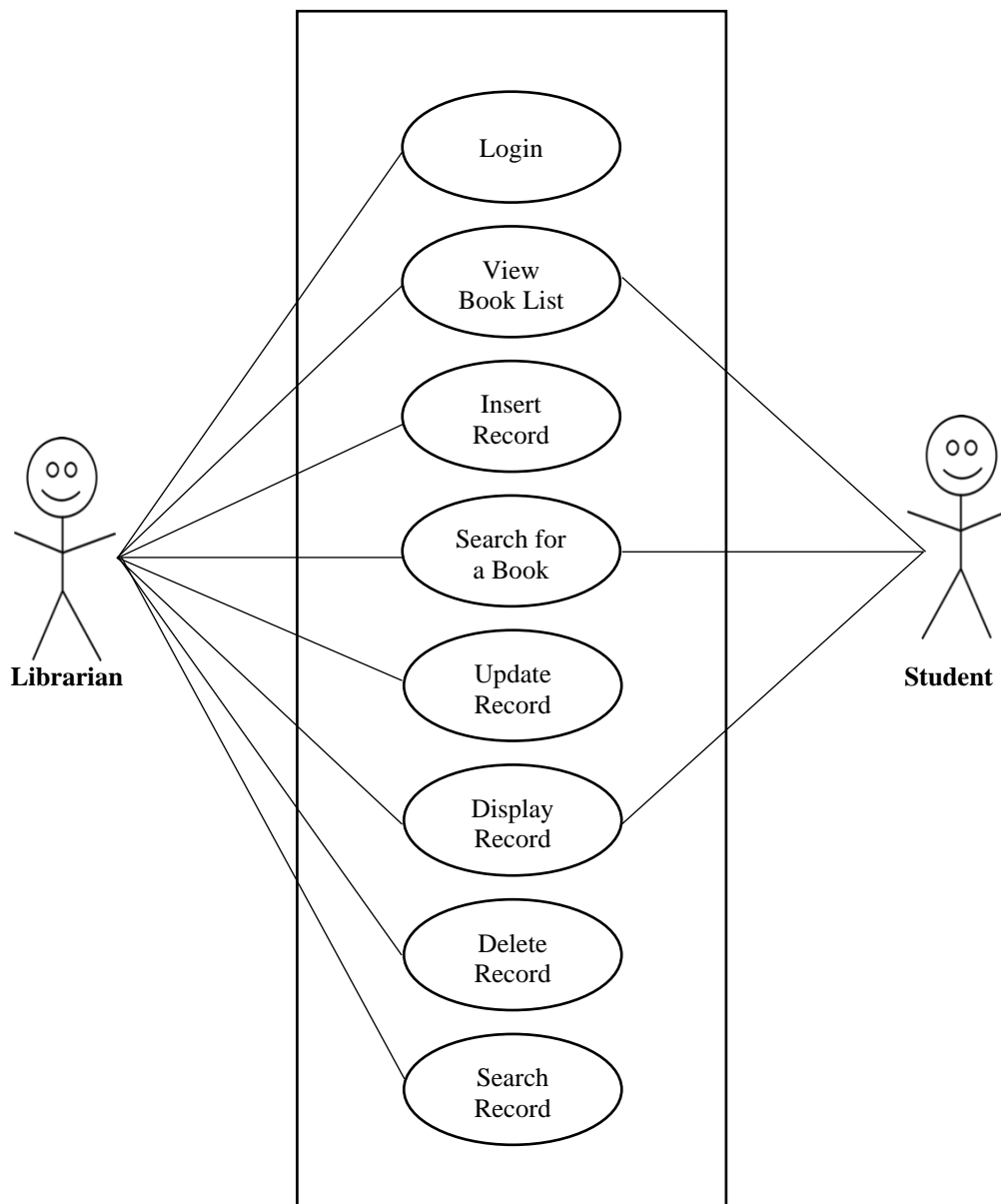


Figure 3 User case diagram

3.1.2 System Design

In this phase we designed the algorithm and flowchart required for the development of the system.

System design is the process of designing the architecture, components, and interfaces for a system so that it meets the end-user requirements. A good system design is to organize the program modules in such a way that are easy to develop and change. There are many strategies or techniques for performing system design.

- **Importance:**
 - If any pre-existing code need to be understood, organized, and pieced together.
 - It is common for the project team to have to write some code and produce original programs that support the application logic of the system.

3.1.2.1 Functional Analysis

No.	Function module	Function Description
1.	login ()	This function is for security purpose so that person other than admin cannot manipulate the system or program.
2.	insertData ()	This function opens the binary file in append mode and writes the book and the details.
3.	searchData ()	This function opens the binary file in reading mode and asks the user to enter the book name which wants to search.
4.	displayData ()	It opens the file in reading mode and read and display all the stored book details.
5.	deleteData ()	This function asks the book id form the user for the book want to delete. In this function, I am creating a temporary binary file and copy all the data from the existing file except the book whose book id entered by the user. In the last renamed the temporary bin file with a existing binary file.
6.	updateData ()	This function opens the file in rb+ mode (reading and writing). It asks the user for the new data
7.	checkBookNo ()	This function compares the old book id to new book id. if the book id match, then display the book id which you typed just now, is already exists.
8.	findlastBookNo ()	This function displays the last duplicate book id. and asks to enter a unique book id no.

3.1.3 Implementation

It is the process of using the project in client's computer. After the executive file has been created, this project can be copied from saved source to any secondary storage device and pasted to the required system. The project can be operated by opening it, completely replacing the existing manual system.

3.1.4 Integration and testing

Testing in a project development is a very important task to find out the possible mistakes made by the developers. The system cannot give the correct output until the project contains no errors at all. This project has checked the possible errors by using the following approaches:

- Black Box Testing Approach:** This approach concentrates on the basic requirements of the project. It simply checks direct matching of records of particular book, after we select a book no of a particular student.
- White Box Testing Approach:** This approach concentrates on the actual codes written during the development of the project. It checks every line of codes in all the functions of the program.

This project has fully tested by using both approach's and ensures the correct output

3.1.5 DEPELOYMNET AND MAINTANANCE

When time changes, the requirements of the organization also changes and this project can no longer fulfill its requirements. The changes are necessary to keep the project running and useful to college. Maintenance may be required when the college changes its requirements.

Chapter 4

CONCLUSION & FUTURE SCOPE

CONCLUSION:

Our project is only a humble venture to satisfy the needs to manage the project work. Several user-friendly coding has also adopted. This package shall prove to be a powerful package in satisfying all the requirements of the school and college. The objective of software planning is to provide a frame work that enables the librarian to keep the record of the book within a limited time.

Our project provides a computerized version of library management system which will be beneficial for the students as well as the staff of the library. It makes entire process easy where student can search books, staff can generate reports and do book transactions. It also has a facility for login where library staff can login and can see status of books issued.

FUTURE SCOPE:

There is a future scope of the project with addition to the facilities as follows:-

1. We can provide online facilities for ordering and searching the availability of books.
2. We can add login page for individual students.
3. User interfaced can be made attractive.

References

- [1] FREEPROJECT, "freeprojectz," 20 2 2015. [Online]. Available: freeprojectz.com/projects/.
- [2] R. S. PRESSMAN, SOFTWARE ENGINEERING, McGraw-Hill Companies, 1997.

Appendices

4.1.1 Screenshots



Figure 4 Welcome Screen



Figure 5 Login Menu

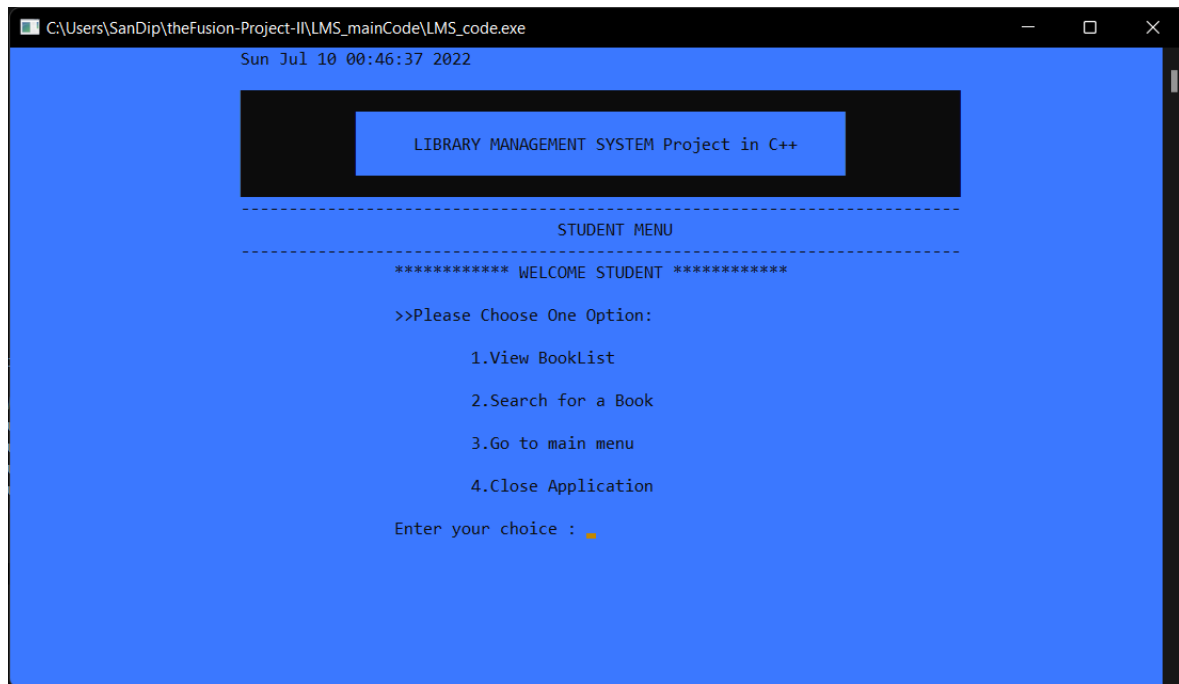


Figure 6 Student Menu

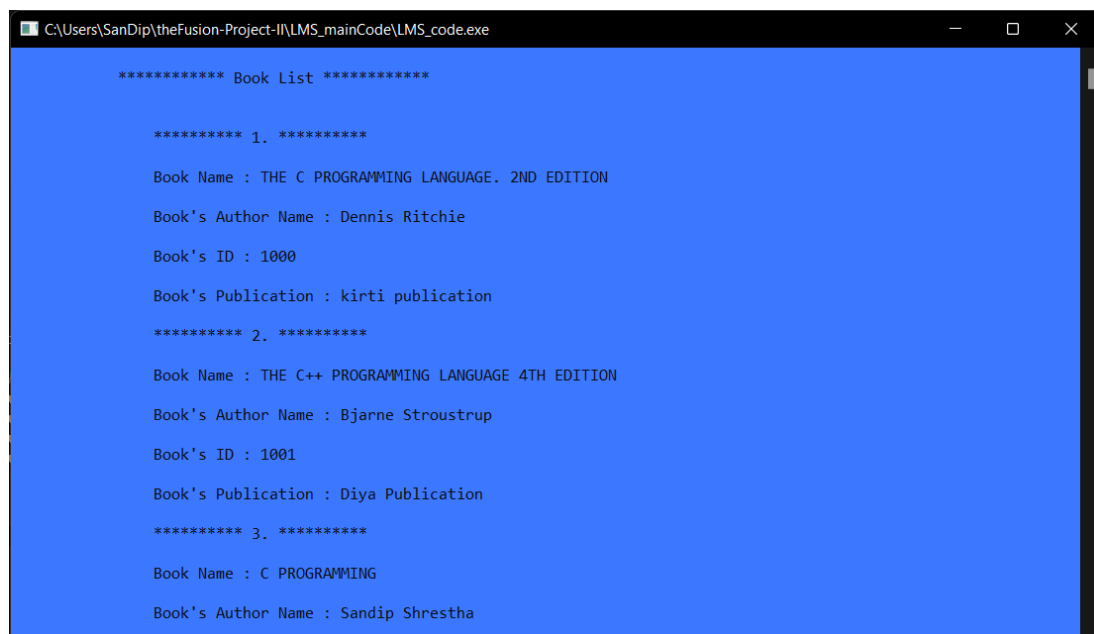


Figure 8 View Book List

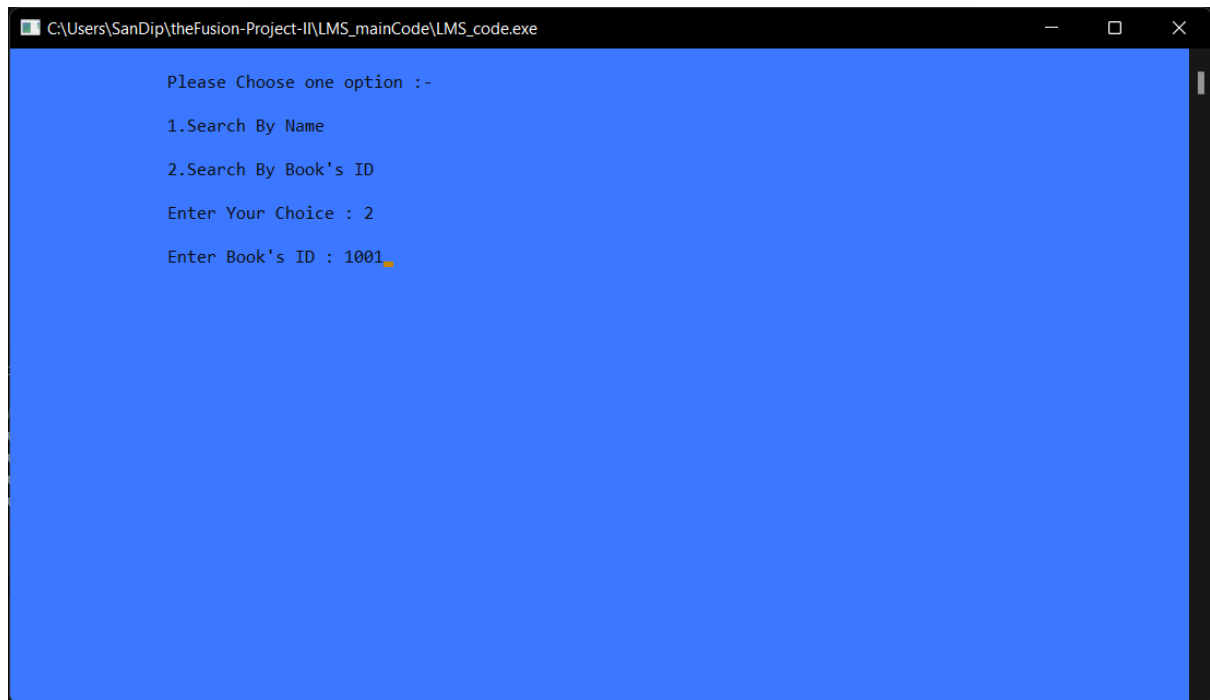


Figure 9 Search Book

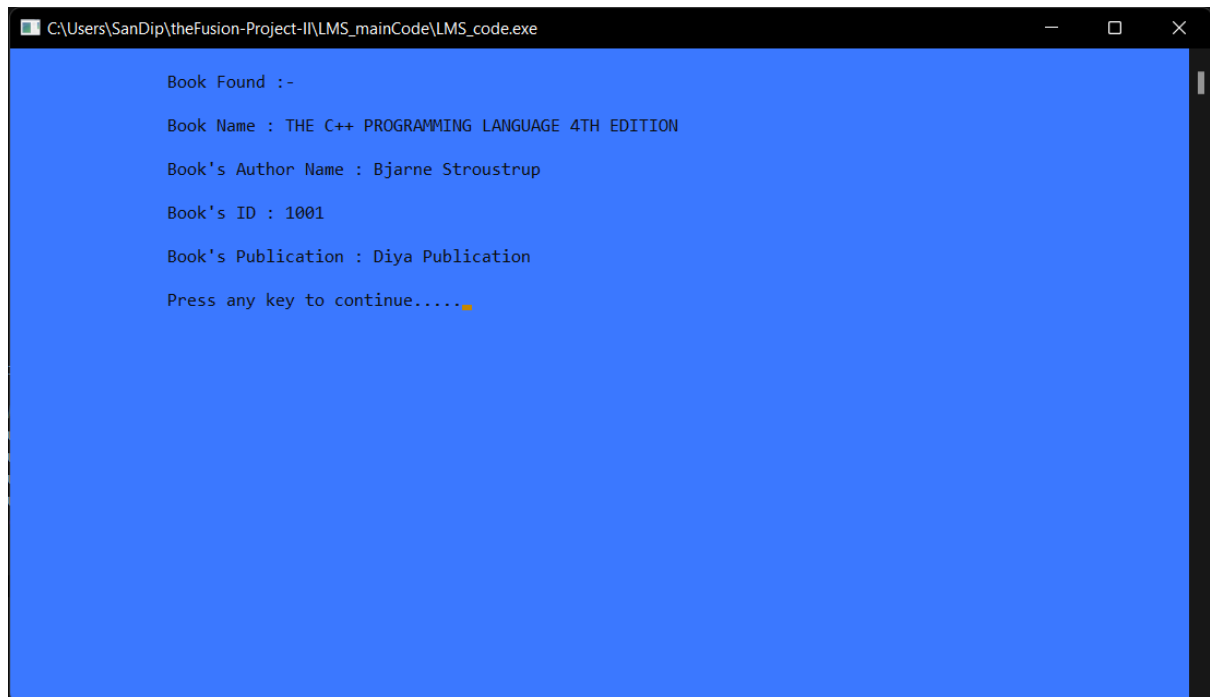


Figure 10 Book Found

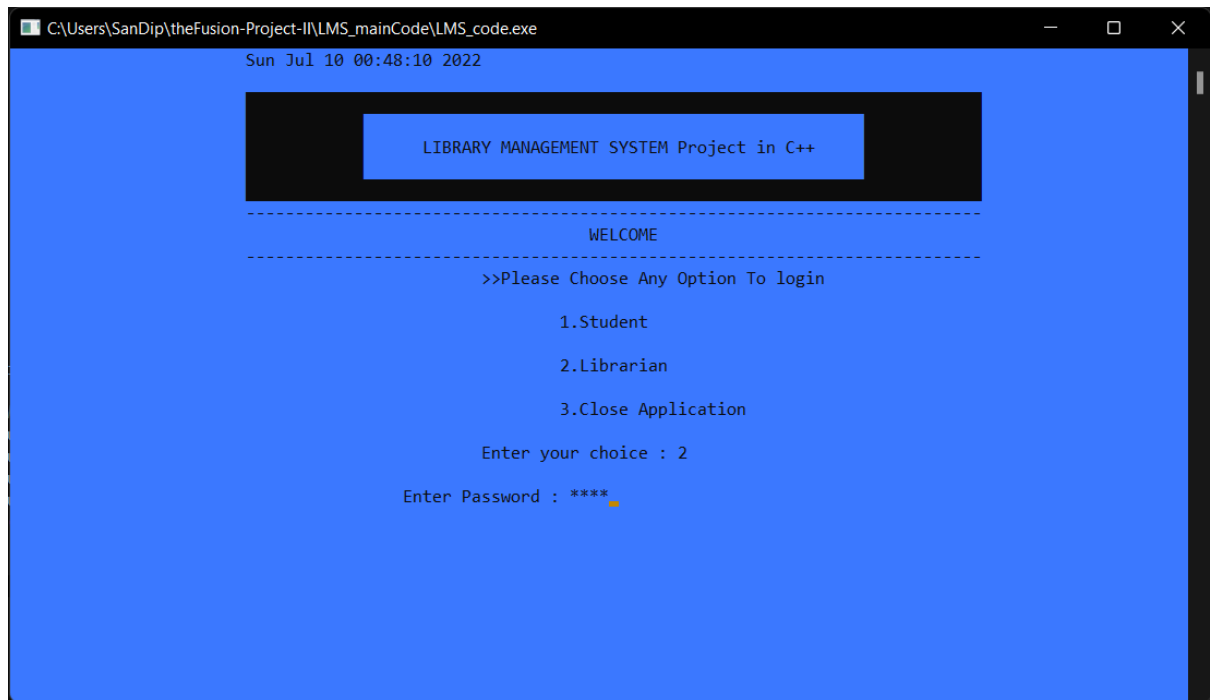


Figure 11 Librarian Login



Figure 12 Librarian Menu

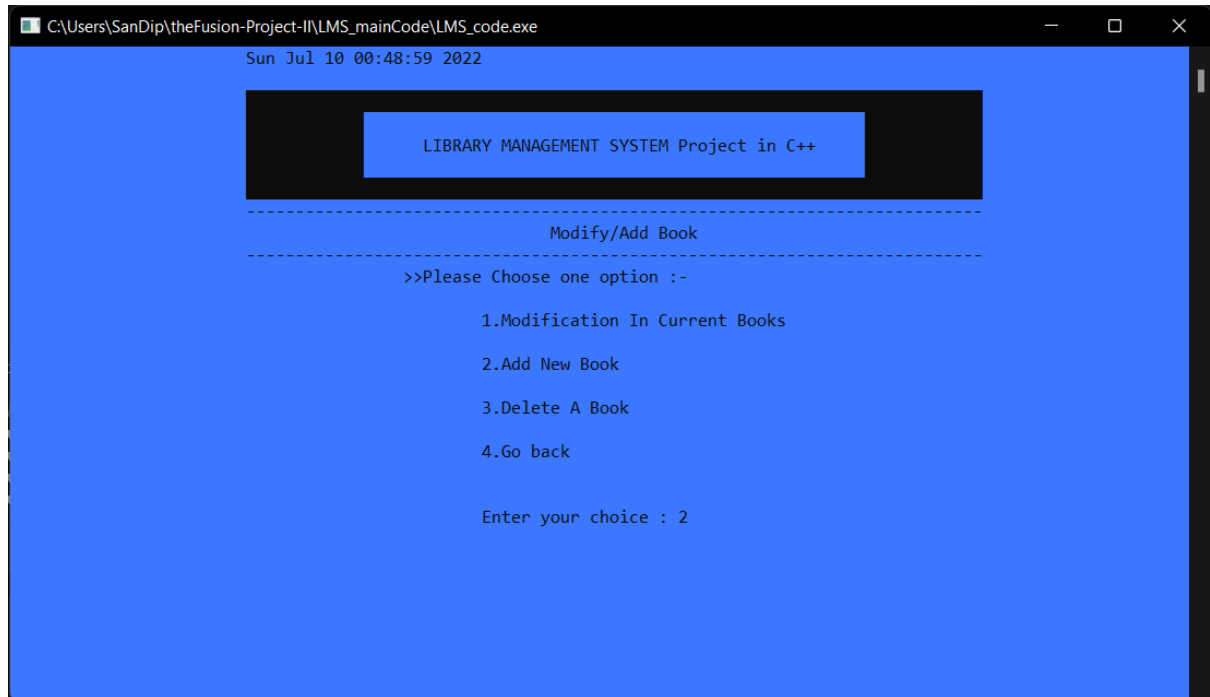


Figure 13 Modify/Add Book



Figure 14 Choose one Branch

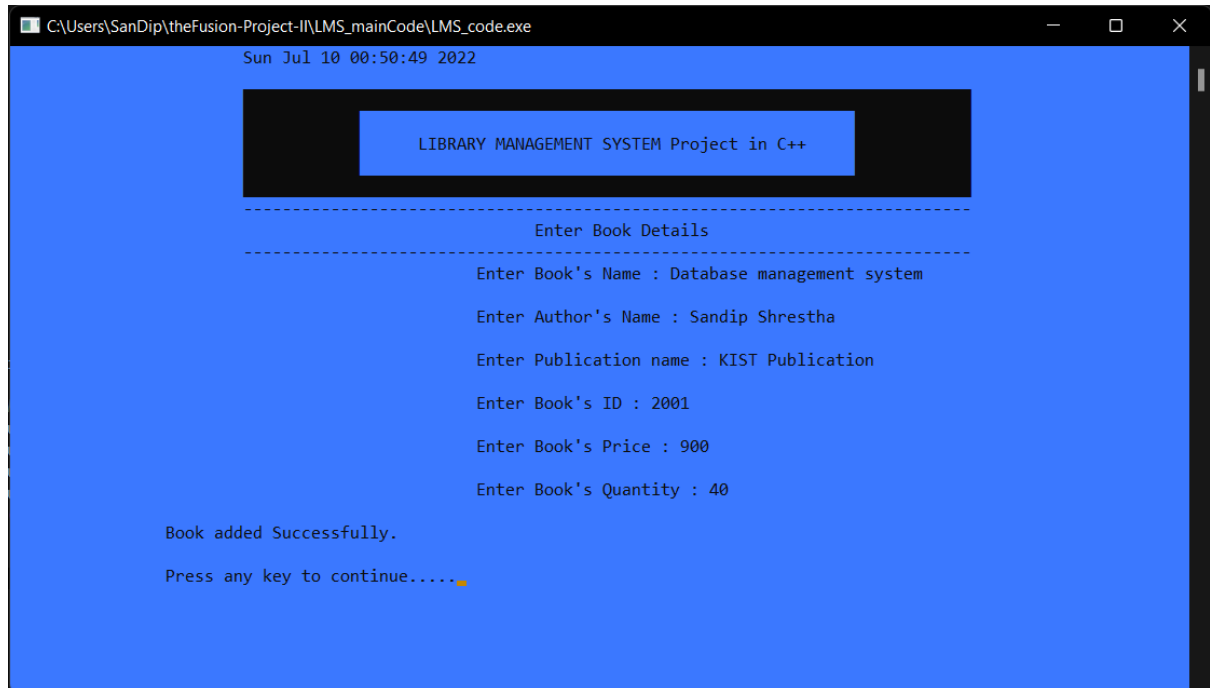


Figure 15 Add Book Details



Figure 16 Issue Books



Figure 17 Select Department

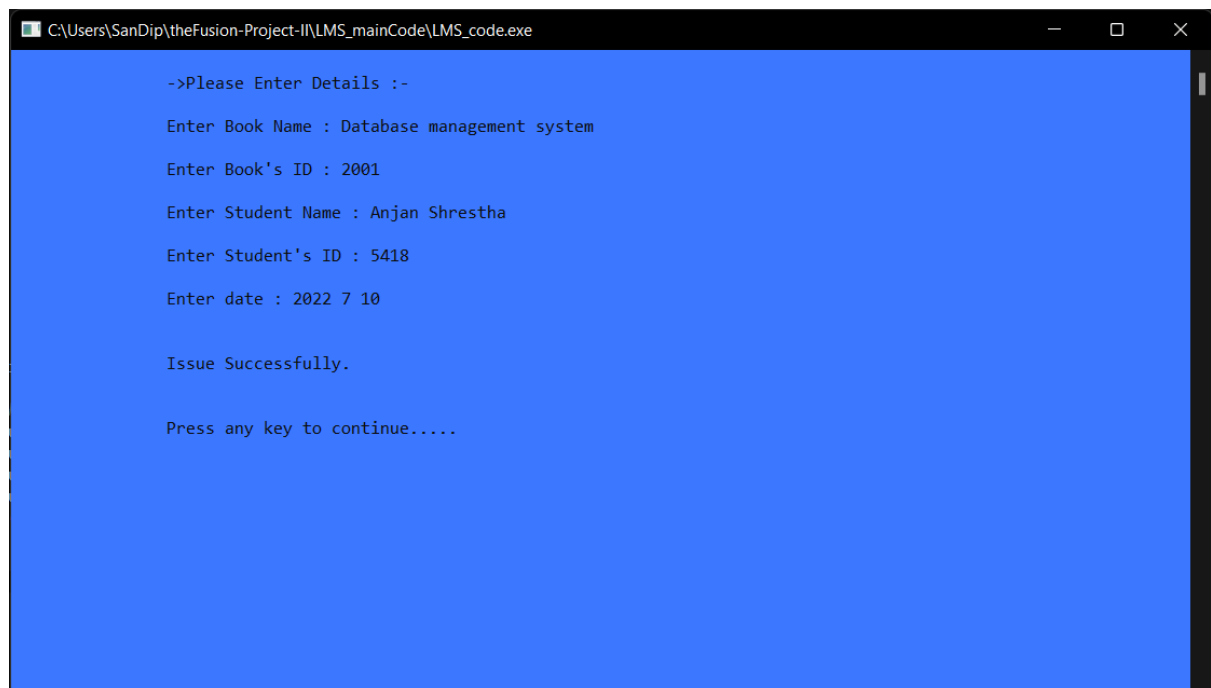


Figure 18 Enter Details of Student and Book

```
C:\Users\Sandip\theFusion-Project-II\LMS_mainCode\LMS_code.exe

->The Details are :-

***** 1. *****

Student Name : Sandip Shrestha
Student's ID : 5437
Book Name : THE C PROGRAMMING LANGUAGE, 2ND EDITION
Book's ID : 1000
Date : 2022/7/9

***** 2. *****

Student Name : Anjan Shrestha
Student's ID : 5418
Book Name : DATABASE MANAGEMENT SYSTEM
Book's ID : 2001
Date : 2022/7/10

Press any key to continue.....
```

Figure 19 Display Issued Books

```
C:\Users\Sandip\theFusion-Project-II\LMS_mainCode\LMS_code.exe

->Please Enter Details :-

Enter Book's ID : 2001

Enter Student's ID : 5418

Enter Present date : 2022 8 30

The Total Fine is : 7321
Returned successfully.
```

Figure 20 Return Book

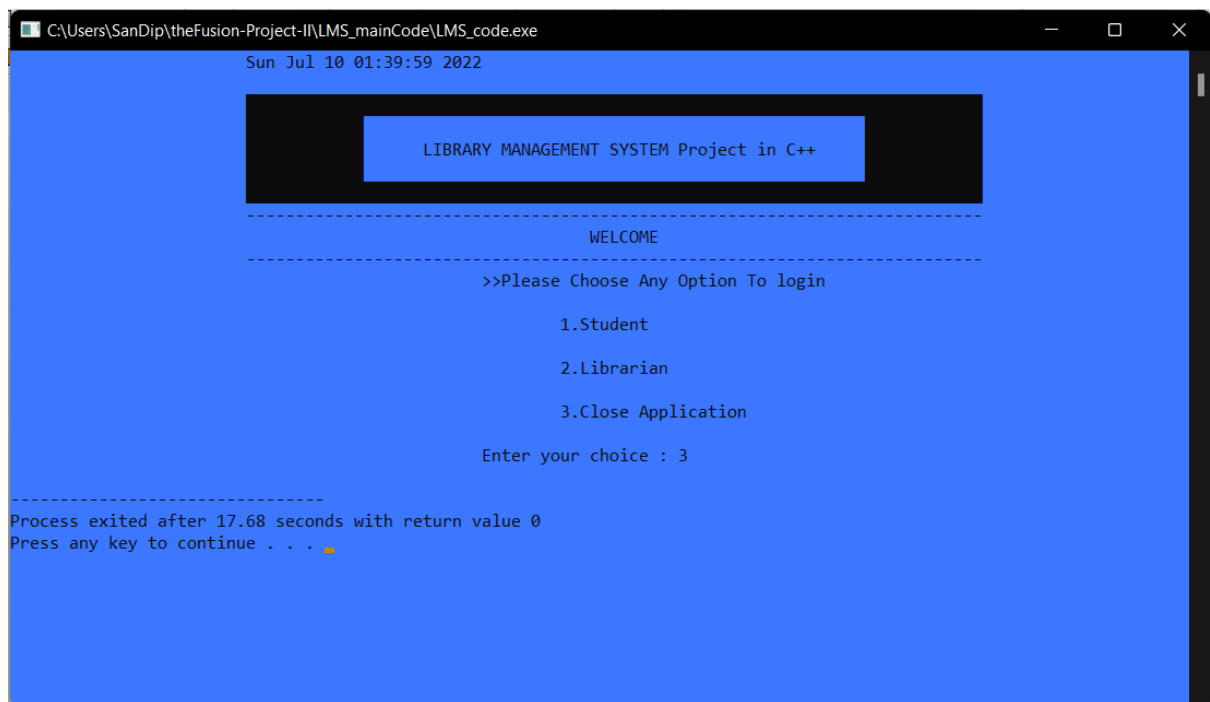


Figure 21 Closing Application

[illegible]


```

void pass();
void librarian();
void password();
void getdata();
void show(int);
void booklist(int);
void modify();
void see(int);
int branch(int);
void issue();
void der(char[],int,int);
void fine(int,int,int,int,int,int);
};

void Lib::getdata()
{
    int i;
    fflush(stdin);
    headMessage("Enter Book Details");
    //cout<<"\n\t\tEnter the details :-\n";
    cout<<"\n\t\t\t\t\tEnter Book's Name : ";
    cin.getline(bookname,100);
    for(i=0;bookname[i]!='\0';i++)
    {
        if(bookname[i]>='a'&&bookname[i]<='z')
            bookname[i]-=32;
    }
    cout<<"\n\t\t\t\t\tEnter Author's Name : ";
    cin.getline(auname,50);
    cout<<"\n\t\t\t\t\tEnter Publication name : ";
    cin.getline(sc1,50);
    cout<<"\n\t\t\t\t\tEnter Book's ID : ";
    cin.getline(sc,20);
    cout<<"\n\t\t\t\t\tEnter Book's Price : ";
    cin>>p;
    cout<<"\n\t\t\t\t\tEnter Book's Quantity : ";
    cin>>q;
}

void Lib::show(int i)
{
    //headMessage("Book Details");
    cout<<"\n\t\tBook Name : "<<bookname<<endl;
    cout<<"\n\t\tBook's Author Name : "<<auname<<endl;
    cout<<"\n\t\tBook's ID : "<<sc<<endl;
    cout<<"\n\t\tBook's Publication : "<<sc1<<endl;
    if(i==2)
    {
        cout<<"\n\t\tBook's Price : "<<p<<endl;
        cout<<"\n\t\tBook's Quantity : "<<q<<endl;
    }
}

```

```

}
void Lib::booklist(int i)
{
    int b,r=0;
    system("cls");

    b=branch(i);
    system("cls");
    ifstream intf("Booksdata.txt",ios::binary);
    if(!intf)

        cout<<"\n\t\tFile Not Found.";
    else
    {
        //headMessage("Book List");
        cout<<"\n\t ***** Book List ***** \n\n";
        intf.read((char*)this,sizeof(*this));
        while(!intf.eof())
        {
            if(b==B)
            {
                if(q==0 && i==1)
                {

                }
            }
            else
            {
                r++;
                cout<<"\n\t\t***** "<<r<<". ***** \n";
                show(i);
            }
        }
        intf.read((char*)this,sizeof(*this));
    }
}
cout<<"\n\t\tPress any key to continue.....";
getch();
system("cls");
if(i==1)
    student();
else
    librarian();
}
void Lib::modify()
{
    char ch,st1[100];
    int i=0,b,cont=0;
    system("cls");
    headMessage("Modify/Add Book");
    cout<<"\n\t\t\t\t>Please Choose one option :-\n";

```

```

    cout<<"\n\t\t\t\t\t1.Modification In Current Books\n\n\t\t\t\t\t2.Add New
Book\n\n\t\t\t\t\t3.Delete A Book\n\n\t\t\t\t\t4.Go back\n";
    cout<<"\n\n\t\t\t\t\tEnter your choice : ";
    cin>>i;
    if(i==1)
    {
        system("cls");
        b=branch(2);
        ifstream intf1("Booksdata.txt",ios::binary);
        if(!intf1)
        {
            cout<<"\n\t\t\t\t\tFile Not Found\n";
            cout<<"\n\t\t\t\t\tPress any key to continue.....";
            getch();
            system("cls");
            librarian();
        }
        intf1.close();
        system("cls");
        cout<<"\n\t\tPlease Choose One Option :-\n";
        cout<<"\n\t\t1.Search By Book Name\n\n\t\t2.Search By Book's ID\n";
        cout<<"\n\t\tEnter Your Choice : ";
        cin>>i;
        fflush(stdin);
        if(i==1)
        {
            system("cls");
            cout<<"\n\t\tEnter Book Name : ";
            cin.getline(st1,100);
            system("cls");
            fstream intf("Booksdata.txt",ios::in|ios::out|ios::ate|ios::binary);
            intf.seekg(0);
            intf.read((char*)this,sizeof(*this));
            while(!intf.eof())
            {
                for(i=0;b==B&&bookname[i]!='\0'&&st1[i]!='\0'&&(st1[i]==bookname[i]||st1[i]==booknam
e[i]+32);i++);
                if(bookname[i]=='\0'&&st1[i]=='\0')
                {
                    cont++;
                    getdata();
                    intf.seekp(intf.tellp()-sizeof(*this));
                    intf.write((char*)this,sizeof(*this));
                    break;
                }
                intf.read((char*)this,sizeof(*this));
            }
            intf.close();
        }
    }

```

```

else if(i==2)
{
    cout<<"\n\t\tEnter Book's ID : ";
    cin.getline(st1,100);
    system("cls");
    fstream intf("Booksdata.txt",ios::in|ios::out|ios::ate|ios::binary);
    intf.seekg(0);
    intf.read((char*)this,sizeof(*this));
    while(!intf.eof())
    {
        for(i=0;b==B&&sc[i]!='\0'&&st1[i]!='\0'&&st1[i]==sc[i];i++);
        if(sc[i]=='\0'&&st1[i]=='\0')
        {
            cont++;
            getdata();
            intf.seekp(intf.tellp()-sizeof(*this));
            intf.write((char*)this,sizeof(*this));
            break;
        }
        intf.read((char*)this,sizeof(*this));
    }

    intf.close();
}
else
{
    cout<<"\n\t\tIncorrect Input.....:\n";
    cout<<"\n\t\tPress any key to continue.....";
    getch();
    system("cls");
    modify();
}
if(cont==0)
{
    cout<<"\n\t\tBook Not Found.\n";
    cout<<"\n\t\tPress any key to continue.....";
    getch();
    system("cls");
    modify();
}
else
    cout<<"\n\t\tUpdate Successful.\n";

}
else if(i==2)
{
    system("cls");
    B=branch(2);
    system("cls");

```

```

        getdata();
        ofstream outf("Booksdata.txt",ios::app|ios::binary);
        outf.write((char*)this,sizeof(*this));
        outf.close();
        cout<<"\n\t\tBook added Successfully.\n";
    }
    else if(i==3)
    {
        system("cls");
        b=branch(2);
        ifstream intf1("Booksdata.txt",ios::binary);
        if(!intf1)
        {
            cout<<"\n\t\tFile Not Found\n";
            cout<<"\n\t\tPress any key to continue.....";
            getch();
            intf1.close();
            system("cls");
            librarian();
        }
        intf1.close();
        system("cls");
        cout<<"\n\t\tPlease Choose One Option for deletion:-\n";
        cout<<"\n\t\t1.By Book Name\n\n\t\t2.By Book's ID\n";
        cout<<"\n\t\tEnter Your Choice : ";
        cin>>i;
        fflush(stdin);
        if(i==1)
        {
            system("cls");
            cout<<"\n\t\tEnter Book Name : ";
            cin.getline(st1,100);
            ofstream outf("temp.txt",ios::app|ios::binary);
            ifstream intf("Booksdata.txt",ios::binary);
            intf.read((char*)this,sizeof(*this));
            while(!intf.eof())
            {
                for(i=0;b==B&&bookname[i]!='\0'&&st1[i]!='\0'&&(st1[i]==bookname[i]||st1[i]==bookname[i]+32);i++);

                if(bookname[i]=='\0'&&st1[i]=='\0')
                {
                    cont++;
                    intf.read((char*)this,sizeof(*this));
                }
                else
                {
                    outf.write((char*)this,sizeof(*this));
                    intf.read((char*)this,sizeof(*this));
                }
            }
        }
    }
}

```

```

        }
    }

    intf.close();
    outf.close();
    remove("Booksdata.txt");
    rename("temp.txt","Booksdata.txt");
    }
    else if(i==2)
    {
        cout<<"\n\tEnter Book's ID : ";
        cin.getline(st1,100);
        ofstream outf("temp.txt",ios::app|ios::binary);
        ifstream intf("Booksdata.txt",ios::binary);
        intf.read((char*)this,sizeof(*this));
        while(!intf.eof())
        {
            for(i=0;b==B&&sc[i]!='\0'&&st1[i]!='\0'&&st1[i]==sc[i];i++);
            if(sc[i]=='\0'&&st1[i]=='\0')
            {
                cont++;
                intf.read((char*)this,sizeof(*this));
            }
            else
            {
                outf.write((char*)this,sizeof(*this));
                intf.read((char*)this,sizeof(*this));
            }
        }
    }
    outf.close();
    intf.close();
    remove("Booksdata.txt");
    rename("temp.txt","Booksdata.txt");
    }
    else
    {
        cout<<"\n\tIncorrect Input.....(\n";
        cout<<"\n\tPress any key to continue.....";
        getch();
        system("cls");
        modify();
    }
    if(cont==0)
    {
        cout<<"\n\tBook Not Found.\n";
        cout<<"\n\tPress any key to continue.....";
        getch();
        system("cls");
        modify();
    }
}

```

```

        else
            cout<<"\n\t\tDeletion Successful.\n";

    }
    else if(i==4)
    {
        system("cls");
        librarian();
    }
    else
    {
        cout<<"\n\t\tWrong Input.\n";
        cout<<"\n\t\tPress any key to continue.....";
        getch();
        system("cls");
        modify();
    }
    cout<<"\n\t\tPress any key to continue.....";
    getch();
    system("cls");
    librarian();

}
int Lib::branch(int x)
{
    int i;
    headMessage("INVENTORY");
    cout<<"\n\t\t\t\t>>Please Choose one Branch :-\n";
    cout<<"\n\t\t\t\t\t1.BIT DEPARTMENT\n\n\t\t\t\t\t2.BIM
DEPARTMENT\n\n\t\t\t\t\t3.BBA DEPARTMENT\n\n\t\t\t\t\t4.BBS
DEPARTMENT\n\n\t\t\t\t\t5.Go to menu\n";
    cout<<"\n\t\t\t\t\tEnter youur choice : ";
    cin>>i;
    switch(i)
    {
        case 1: return 1;
                break;
        case 2: return 2;
                break;
        case 3: return 3;
                break;
        case 4: return 4;
                break;
        /*
                case 5: return 5;
                break;
        case 6: return 6;
                break;
        */
        case 5: system("cls");

```



```

        if(x==1)
            student();
        else
            librarian();
        default : cout<<"\n\tPlease enter correct option :(";
                getch();
                system("cls");
                branch(x);
    }
}
void Lib::see(int x)
{
    int i,b,cont=0;
    char ch[100];
    system("cls");
    b=branch(x);
    ifstream intf("Booksdata.txt",ios::binary);
    if(!intf)
    {
        cout<<"\n\tFile Not Found.\n";
        cout<<"\n\tPress any key to continue.....";
        getch();
        system("cls");
        if(x==1)
            student();
        else
            librarian();
    }

    system("cls");
    cout<<"\n\tPlease Choose one option :-\n";
    cout<<"\n\t1.Search By Name\n\n\t2.Search By Book's ID\n";
    cout<<"\n\tEnter Your Choice : ";
    cin>>i;
    fflush(stdin);
    intf.read((char*)this,sizeof(*this));
    if(i==1)
    {
        cout<<"\n\tEnter Book's Name : ";
        cin.getline(ch,100);
        system("cls");
        while(!intf.eof())
        {
            for(i=0;b==B&&q!=0&&bookname[i]!='\0'&&ch[i]!='\0'&&(ch[i]==bookname[i]||ch[i]==bo
okname[i]+32);i++);
            if(bookname[i]=='\0'&&ch[i]=='\0')
            {
                cout<<"\n\tBook Found :-\n";
                show(x);
            }
        }
    }
}

```

```

        cont++;
        break;
    }
    intf.read((char*)this,sizeof(*this));
}
}
else if(i==2)
{
    cout<<"\n\t\tEnter Book's ID : ";
    cin.getline(ch,100);
    system("cls");
    while(!intf.eof())
    {
        for(i=0;b==B&&q!=0&&sc[i]!='\0'&&ch[i]!='\0'&&ch[i]==sc[i];i++);
        if(sc[i]=='\0'&&ch[i]=='\0')
        {
            cout<<"\n\t\tBook Found :-\n";
            show(x);
            cont++;
            break;
        }
        intf.read((char*)this,sizeof(*this));
    }
}
else
{
    cont++;
    cout<<"\n\t\tPlease enter correct option :(";
    getch();
    system("cls");
    see(x);
}
intf.close();
if(cont==0)
    cout<<"\n\t\tThis Book is not available :( \n";

cout<<"\n\t\tPress any key to continue.....";
getch();
system("cls");
if(x==1)
    student();
else
    librarian();
}
void Lib::issue()
{
    char st[50],st1[20];

```

```

int b,i,j,d,m,y,dd,mm,yy,cont=0;
system("cls");
headMessage("Issue Book ");
cout<<"\n\t\t\t\t->Please Choose one option :-\n";
cout<<"\n\t\t\t\t\t1.Issue Book\n\n\t\t\t\t\t2.View Issued Book\n\n\t\t\t\t\t3.Search
student who issued books\n\n\t\t\t\t\t4.Reissue Book\n\n\t\t\t\t\t5.Return
Book\n\n\t\t\t\t\t6.Go back to menu\n\n\t\t\t\t\tEnter Your Choice : ";
cin>>i;
fflush(stdin);
if(i==1)
{
system("cls");
b=branch(2);
system("cls");
fflush(stdin);
cout<<"\n\t\t->Please Enter Details :-\n";
cout<<"\n\t\tEnter Book Name : ";
cin.getline(bookname,100);
cout<<"\n\t\tEnter Book's ID : ";
cin.getline(sc,20);
//strcpy(st,sc);
der(sc,b,1);
cout<<"\n\t\tEnter Student Name : ";
cin.getline(auname,100);
cout<<"\n\t\tEnter Student's ID : ";
cin.getline(sc1,20);
cout<<"\n\t\tEnter date : ";
cin>>q>>B>>p;
ofstream outf("student.txt",ios::binary|ios::app);
outf.write((char*)this,sizeof(*this));
outf.close();
cout<<"\n\n\t\tIssue Successfully.\n";
}
else if(i==2)
{
ifstream intf("student.txt",ios::binary);
system("cls");
cout<<"\n\t\t->The Details are :-\n";
intf.read((char*)this,sizeof(*this));
i=0;
while(!intf.eof())
{
i++;
cout<<"\n\t\t***** "<<i<<" ***** \n";
cout<<"\n\t\tStudent Name : "<<auname<<"\n\t\t"<<"Student's ID :
"<<sc1<<"\n\t\t"<<"Book Name : "<<bookname<<"\n\t\t"<<"Book's ID :
"<<sc<<"\n\t\t"<<"Date : "<<q<<"/"<<B<<"/"<<p<<"\n";
intf.read((char*)this,sizeof(*this));
}
intf.close();

```

```

}
else if(i==3)
{
    system("cls");
    fflush(stdin);
    cout<<"\n\t\t->Please Enter Details :-\n";
    cout<<"\n\n\t\tEnter Student Name : ";
    cin.getline(st,50);
    cout<<"\n\n\t\tEnter Student's ID : ";
    cin.getline(st1,20);
    system("cls");
    ifstream intf("student.txt",ios::binary);
    intf.read((char*)this,sizeof(*this));
    cont=0;
    while(!intf.eof())
    {
        for(i=0;sc1[i]!='\0'&&st1[i]!='\0'&&st1[i]==sc1[i];i++);
        if(sc1[i]=='\0'&&st1[i]=='\0')
        {
            cont++;
            if(cont==1)
            {
                cout<<"\n\t\t->The Details are :-\n";
                cout<<"\n\t\tStudent Name : "<<auname;
                cout<<"\n\t\tStudent's ID : "<<sc1;
            }
            cout<<"\n\n\t\t***** "<<cont<<" . Book details *****\n";
            cout<<"\n\t\tBook Name : "<<bookname;
            cout<<"\n\t\tBook's ID : "<<sc;
            cout<<"\n\t\tDate : "<<q<<"/"<<B<<"/"<<p<<"\n";
        }
        intf.read((char*)this,sizeof(*this));
    }
    intf.close();
    if(cont==0)
        cout<<"\n\t\tNo record found.";
}
else if(i==4)
{
    system("cls");
    fflush(stdin);
    cout<<"\n\t\t->Please Enter Details :-\n";
    cout<<"\n\n\t\tEnter Student's ID : ";
    cin.getline(st,50);
    cout<<"\n\t\tEnter Book's ID : ";
    cin.getline(st1,20);
    fstream intf("student.txt",ios::in|ios::out|ios::ate|ios::binary);
    intf.seekg(0);
    intf.read((char*)this,sizeof(*this));
}

```

```

while(!intf.eof())
{
    for(i=0;sc[i]!='\0'&&st1[i]!='\0'&&st1[i]==sc[i];i++);
    for(j=0;sc1[j]!='\0'&&st[j]!='\0'&&st[j]==sc1[j];j++);
    if(sc[i]=='\0'&&sc1[j]=='\0'&&st[j]=='\0'&&st1[i]=='\0')
    {
        d=q;
        m=B;
        y=p;
        cout<<"\n\t\tEnter New Date : ";
        cin>>q>>B>>p;
        fine(d,m,y,q,B,p); //fn1
        intf.seekp(intf.tellp()-sizeof(*this)); //fn3
        intf.write((char*)this,sizeof(*this)); //fn5
        cout<<"\n\n\t\tReissue successfully."; //fn3
        break;
    }
    intf.read((char*)this,sizeof(*this));
}
intf.close();
}
else if(i==5)
{
    system("cls");
    b=branch(2);
    system("cls");
    fflush(stdin);
    cout<<"\n\t\t->Please Enter Details :-\n";
    cout<<"\n\t\tEnter Book's ID : ";
    cin.getline(st1,20);
    der(st1,b,2);
    cout<<"\n\n\t\tEnter Student's ID : ";
    cin.getline(st,20);
    cout<<"\n\t\tEnter Present date : ";
    cin>>d>>m>>y;
    ofstream outf("temp.txt",ios::app|ios::binary);
    ifstream intf("student.txt",ios::binary);
    intf.read((char*)this,sizeof(*this));
    while(!intf.eof())
    {
        for(i=0;sc[i]!='\0'&&st1[i]!='\0'&&st1[i]==sc[i];i++);
        for(j=0;sc1[j]!='\0'&&st[j]!='\0'&&st[j]==sc1[j];j++);
        if(sc[i]=='\0'&&sc1[j]=='\0'&&st[j]=='\0'&&st1[i]=='\0'&&cont==0)
        {
            cont++;
            intf.read((char*)this,sizeof(*this));
            fine(q,B,p,d,m,y);
            cout<<"\n\t\tReturned successfully.";
        }
    }
    else

```

```

        {
            outf.write((char*)this,sizeof(*this));
            intf.read((char*)this,sizeof(*this));
        }
    }

    intf.close();
    outf.close();
    getch();
    remove("student.txt");
    rename("temp.txt","student.txt");
    }
    else if(i==6)
    {
        system("cls");
        librarian();
    }
    else
        cout<<"\n\t\tWrong Input.\n";

    cout<<"\n\n\t\tPress any key to continue.....";
    getch();
    system("cls");
    librarian();
}
//*****
*****
//FUNCTIONS RELATED FINE
//*****
*****
void Lib::fine(int d,int m,int y,int dd,int mm,int yy)
{
    long int n1,n2;
    int years,l,i;
    const int monthDays[12] = {31, 28, 31, 30, 31, 30,31, 31, 30, 31, 30, 31};
    n1 = y*365 + d;
    for (i=0; i<m - 1; i++)
        n1 += monthDays[i]; //fn1353
    years = y;
    if (m <= 2)
        years--;
    l= years / 4 - years / 100 + years / 400;
    n1 += l;
    n2 = yy*365 + dd;
    for (i=0; i<mm - 1; i++)
        n2 += monthDays[i];
    years = yy;
    if (m <= 2)
        years--;
    l= years / 4 - years / 100 + years / 400;

```

```

n2 += 1;
n1=n2-n1;
n2=n1-15;
if(n2>0)
cout<<"\n\t\tThe Total Fine is : "<<n2;

}
void Lib::der(char st[],int b,int x)
{
    int i,cont=0;
    fstream intf("Booksdata.txt",ios::in|ios::out|ios::ate|ios::binary);
    intf.seekg(0);
    intf.read((char*)this,sizeof(*this));
    while(!intf.eof())
    {
        for(i=0;b==B&&sc[i]!='\0'&&st[i]!='\0'&&st[i]==sc[i];i++);
        if(sc[i]=='\0'&&st[i]=='\0')
        {
            cont++;
            if(x==1)
            {
                q--;
            }
            else
            {
                q++;
            }
            intf.seekp(intf.tellp()-sizeof(*this));
            intf.write((char*)this,sizeof(*this));
            break;
        }
        intf.read((char*)this,sizeof(*this));
    }
    if(cont==0)
    {
        cout<<"\n\t\tBook not found.\n";
        cout<<"\n\n\t\tPress any key to continue.....";
        getch();
        system("cls");
        issue();
    }
    intf.close();
}
//*****
//*****
//FUNCTION TO DISPLAY MAIN MENU / USER LOGIN
//*****
//*****
void Lib::get()
{

```

```

int i;

        headMessage("WELCOME");
//cout<<"\n\t***** LIBRARY MANAGEMENT SYSTEM
*****\n"<<"\n\t\t L M S C++\n";
        cout<<"\n\t\t\t\t>>Please Choose Any Option To login \n";
        cout<<"\n\t\t\t\t\t1.Student\n\n\t\t\t\t\t2.Librarian\n\n\t\t\t\t\t3.Close
Application\n";
        cout<<"\n\t\t\t\t\tEnter your choice : ";
        cin>>i;
        if(i==1)
        {
            system("cls");
            student();
        }
        else if(i==2)
            pass();

        else if(i==3)
            exit(0);
        else
        {
            cout<<"\n\t\tPlease enter correct option :(";
            getch();
            system("CLS");
            get();
        }
    }
//*****
*****
//STUDENT MENU
//*****
*****
void Lib::student()
{
    int i;

        headMessage("STUDENT MENU");
        cout<<"\n\t\t\t\t***** WELCOME STUDENT *****\n";
        cout<<"\n\t\t\t\t>>Please Choose One Option:\n";
        cout<<"\n\t\t\t\t\t1.View BookList\n\n\t\t\t\t\t2.Search for a Book\n\n\t\t\t\t\t3.Go to
main menu\n\n\t\t\t\t\t4.Close Application\n";
        cout<<"\n\t\t\t\t\tEnter your choice : ";
        cin>>i;
        if(i==1)
            booklist(1);
        else if(i==2)
            see(1);
        else if(i==3)
        {
            system("cls");

```



```

        get();
    }
    else if(i==4)
        exit(0);
    else
    {
        cout<<"\n\t\t\t\tPlease enter correct option :(";
        getch();
        system("cls");
        student();
    }
}
//*****
//LOGIN PASSWORD
//*****
void Lib::pass()
{
    int i=0;
    char ch,st[21],ch1[21]="pass";
    cout<<"\n\t\t\t\tEnter Password : ";
    while(1)
    {
        ch=getch();
        if(ch==13)
        {
            st[i]='\0';
            break;
        }
        else if(ch==8&&i>0)
        {
            i--;
            cout<<"\b\b";
        }
        else
        {
            cout<<"*";
            st[i]=ch;
            i++;
        }
    }
    ifstream inf("password.txt");
    inf>>ch1;
    inf.close();
    for(i=0;st[i]==ch1[i]&&st[i]!='\0'&&ch1[i]!='\0';i++);
    if(st[i]!='\0'&&ch1[i]!='\0')
    {
        system("cls");
        librarian();
    }
}

```

```

    }
    else
    {
        cout<<"\n\n\t\t\t\t\tWrong Password.\n\n\t\ttry again.....\n";
        getch();
        system("cls");
        get();
    }
}
//*****
*****

//LIBRARIAN MENU
//*****
*****

void Lib::librarian()
{
    int i;
    headMessage("LIBRARIAN MENU");
    cout<<"\n\t\t\t\t\t***** WELCOME LIBRARIAN *****\n";
    cout<<"\n\t\t\t\t\t>Please Choose One Option:\n";
    cout<<"\n\t\t\t\t\t1.View BookList\n\n\t\t\t\t\t2.Search for a
Book\n\n\t\t\t\t\t3.Modify/Add Book\n\n\t\t\t\t\t4.Issue Book\n\n\t\t\t\t\t5.Go to main
menu\n\n\t\t\t\t\t6.Change Password\n\n\t\t\t\t\t7.Close Application\n";
    cout<<"\n\t\t\t\t\tEnter your choice : ";
    cin>>i;
    switch(i)
    {
        case 1:booklist(2);
            break;
        case 2:see(2);
            break;
        case 3:modify();
            break;
        case 4:issue();
            break;
        case 5:system("cls");
            get();
            break;
        case 6:password();
            break;
        case 7:exit(0);
        default:cout<<"\n\t\tPlease enter correct option :(";
            getch();
            system("cls");
            librarian();
    }
}
//*****
*****

//CHANGE PASSWORD MENU

```

```

//*****
*****
void Lib::password()
{
    int i=0,j=0;
    char ch,st[21],ch1[21]="pass";
    system("cls");
    headMessage("Change Password");
    cout<<"\n\n\tEnter Old Password : ";
    while(1)
    {
        ch=getch();
        if(ch==13)
        {
            st[i]='\0';
            break;
        }
        else if(ch==8&& i>0)
        {
            i--;
            cout<<"\b\b";
        }
        else
        {
            cout<<"*";
            st[i]=ch;
            i++;
        }
    }
    ifstream intf("password.txt");
    intf>>ch1;
    intf.close();
    for(i=0;st[i]==ch1[i]&&st[i]!='\0'&&ch1[i]!='\0';i++);
    if(st[i]!='\0'&&ch1[i]!='\0')
    {
        system("cls");
        cout<<"\n\t**The Password Should be less than 20 characters & don't use
spaces**\n\n";
        cout<<"\n\n\tEnter New Password : ";
        fflush(stdin);
        i=0;
        while(1)
        {
            j++;
            ch=getch();
            if(ch==13)
            {
                for(i=0;st[i]!=' ' &&st[i]!='\0';i++);
                if(j>20 || st[i]==' ')
                {

```

```

        cout<<"\n\n\t\tYou did't follow the instruction \n\n\t\tPress any key for try
again.....";
        getch();
        system("cls");
        password();
        librarian();
    }
    st[i]='\0';
    break;
}
else if(ch==8&& i>0)
{
    i--;
    cout<<"\b\b";
}
else
{
    cout<<"*";
    st[i]=ch;
    i++;
}
}
ofstream outf("password.txt");
outf<<st;
outf.close();
cout<<"\n\n\t\tYour Password has been changed Successfully.";
cout<<"\n\n\t\tPress any key to continue.....";
getch();
system("cls");
librarian();
}
else
{
    cout<<"\n\n\t\tPassword is incorrect.....\n";
    cout<<"\n\n\t\tEnter 1 for retry or 2 for menu";
    cin>>i;
    if(i==1)
    {
        system("cls");
        password();
    }
    else
    {
        system("cls");
        librarian();
    }
}
}
}
//*****
*****

```

```
//MAIN FUNCTION CALLING INTRODUCTION AND MAIN MENU
//*****
*****
int main()
{
    welcomeMessage();
    system("cls");
    Lib obj;
    obj.get();
    getch();
    return 0;
}
```