Visvesvaraya Technological University

Belagavi-590018, Karnataka

A MINI PROJECT REPORT ON

"Library Management System"

Mini Project Report Submitted in partial fulfilment of the requirement for the File Structures Laboratory With Mini Project [17ISL68]

Bachelor of Engineering

In

Information Science and Engineering

Submitted by

HARSHA S [1JT17IS012]

Under the Guidance of

Mr. Vadiraja A

Asst. Professor, Department of ISE

Department of Information Science and Engineering

Jyothy Institute of Technology

Tataguni, Bengaluru-560082

Jyothy Institute of Technology

Tataguni, Bengaluru-560082

Department of Information Science and Engineering

CERTIFICATE

Certified that the mini project work entitled **Library Management System** carried out by **Harsha S [1JT17IS012]** is a bonafide student of **Jyothy Institute of Technology**, in partial fulfilment for the award of **Bachelor of Engineering** in **Information Science and Engineering** department of the **Visvesvaraya Technological University, Belagavi** during the year **2020-2021**. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the Report deposited in the departmental library. The mini project report has been approved as it satisfies the academic requirements in respect of Mini Project work prescribed for the said Degree.

Mr. Vadiraja A

Guide, Asst .Professor

Dept. Of ISE

Dr. Harshvardhan Tiwari

Associate Professor and HOD

Dept. Of ISE

External Viva Examiner

1.

2.

Signature with Date :

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Firstly, i am very grateful to this esteemed institution **Jyothy Institute of Technology** for providing me an opportunity to complete my project.

I express my sincere thanks to our Principal **Dr. Gopalakrishna K for** providing us with adequate facilities to undertake this project.

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Finally, I would thank all our friends who have helped us directly or indirectly in this project.

Harsha.S [1JT17IS012]

ABSTRACT

This project is aimed at developing an online Library Management System for the college library and developing a computerized system to maintain all the daily work of library. This project mainly focuses on basic operations in a library like adding new member, new books, and updating new information, searching books and members, issuing books, deleting books and facility to borrow and return books. This application is password protected so that only authorized persons can have access to the system. This project has many features which are generally not availiable in normal library management systems like facility of user login and a facility of admin login through which the admin can monitor the whole system. It has also a facility where we can see the list of books issued. It also has different categories like Computer, Electroincs, Electricals, Civil, Mechanical and Architecture. The add book module contains separate divisions like book ID, book name, author name, quantity, price and rack number. Both deleting and searching of books is based on two different parameters like search by ID and search by name so we conveniently perform the operations. Overall this project of mine is being developed to help the students as well as staff of library to maintain the library in the best way possible and also reduce the human efforts.

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CHAPTER 1

INTRODUCTION

INTRODUCTION

1.1 INTRODUCTION TO FILE STRUCTURES

In simple terms, a file is a collection of data stored on mass storage (e.g, disk or tape).But there is one important distinction that must be made at the outset when discussing file structures. And that is the difference between the logical and physical organization of the data. On the whole a file structure will specify the logical structure of the data, that is the relationships that will exist between data items independently of the way in which these relationships may actually be realized within any computer. It is this logical aspect that we will concentrate on. The physical organization is much more concerned with optimizing the use of the storage medium when a particular logical structure is stored on, or in it. Typically for every unit of physical store there will be a number of units of the logical structure (probably records) to be stored in it. For example, if we were to store a tree structure on a magnetic disk, the physical organization would be concerned with the best way of packing the nodes of the tree on the disk given the access characteristics of the disk. Like all subjects in computer science the terminology of file structures has evolved higgledy-piggledy without much concern for consistency, ambiguity, or whether it was possible to make the kind of distinctions that were important. It was only much later that the need for a well-defined, unambiguous language to describe file structures became apparent. In particular, there arose a need to communicate ideas about file structures without getting bogged down by hardware considerations.

1.2 INTRODUCTION TO FILE SYSTEM

In computing, a file system or file system controls how data is stored and retrieved. Without a file system, information placed in a storage medium would be one large body of data with noway to tell where one piece of information stops and the next begins. By separating the data into pieces and giving each piece a name, the information is easily isolated and identified. Taking its name from the way paper-based information systems are named, each groups of data is called a “file”. The structure and logic rules used to manage the groups of information and their names is called a “file system”. There are many different kinds of file systems. Each one has different structure and logic, properties of speed, flexibility, security, size and more. Some file systems have been designed to be used for specific applications. For example, the ISO 9660

file system is designed specifically for optical discs. File systems can be used on numerous different types of storage devices that use different kinds of media. The most common storage device in use today is a hard disk drive. Other kinds of media that are used include flash memory, magnetic tapes, and optical discs. In some cases, such as with tmpfs, the computer's main memory (random-access memory, RAM) is used to create a temporary file system for short-term use. Some file systems are used on local data storage devices; others provide file access via a network protocol(for example, NFS, SMB, or 9P clients). Some file systems are "virtual". Meaning that the supplied "files" (called virtual files) are computed on request (e.g. procfs) or are merely a mapping into a different file system used as a blacking store. The file system manages access to both the content of files and the metadata about those files. It is responsible for arranging storage space; reliability, efficiency, and tuning with regard to the physical storage medium are important design considerations .

1.3 INTRODUCTION TO PRIMARY INDEXING

Defined on an ordered data file The data file is ordered on a key field Includes one index entry for each block in the data file the index entry has the key field value for the first record in the block, which is called the block anchor A similar scheme can use the last record in a block. A primary index is a non-dense (sparse) index, since it includes an entry for each disk block of the data file and the keys of its anchor record rather than for every search value. There is one index entry in the index file for each block in the data file. Indexes can also be characterised as dense or sparse.

Dense index: A dense index has an index entry for every search key valuein the data file.

Sparse index: A sparse index, on the other hand has index entries for only some of the search values, specifically one for each block.

It is built over ordered and key field of the given table. We know that data is stored in the form of records. Every record has a key field, which helps it to be recognised uniquely. It is a technique to efficiently retrieve records from the database files based on some attributes on which the indexing has been done. Indexing in file structures is similar to what we see in books. The key field is generally the primary key of the relation.

1.4 INTRODUCTION TO LIBRARY MANAGEMENT SYSTEM

The project aims and objectives that will be achieved after completion of this project are discussed in this subchapter. The aims and objectives are as follows:

- Online book issue
- Add books
- Delete books
- Search book
- Modify books details
- View book list
- A separate column for digital library
- Admin login page where they can find books issued and date of return.

Library Management System is an application which refers to library systems which are generally small or medium in size. It is used by librarian to manage the library using a computerized system where he/she can record various transactions like issue of books, return of books, addition of new books, addition of new students etc. Books and student maintenance modules are also included in this system which would keep track of the students using the library and also a detailed description about the books a library contains. With this computerized system there will be no loss of book record or member record which generally happens when a non computerized system is used. In addition, report module is also included in Library Management System. If user's position is admin, the user is able to generate different kinds of reports like lists of students registered, list of books, issue and return reports. All these modules are able to help librarian to manage the library with more convenience and in a more efficient way as compared to library systems which are not computerized.

CHAPTER 2
REQUIREMENT ANALYSIS AND DESIGN

2.1 SOFTWARE REQUIREMENT SPECIFICATION

GENERAL DESCRIPTION

Library Management System is a computerized system which helps user(librarian) to manage the library daily activity in electronic format. It reduces the risk of paper work such as file lost, file damaged and time consuming. It can help user to manage the transaction or record more effectively and time saving.

2.2 SYSTEM REQUIREMENTS

NON FUNCTIONAL REQUIREMENTS

Product Requirements

EFFICIENCY REQUIREMENT

When a library management system will be implemented librarian and user will easily acess library as searching and book transaction will be very faster .

RELIABILITY REQUIREMENT

The system should accurately performs member registration ,member validation , report generation, book transaction and search

USABILITY REQUIREMENT

The system is designed for a user friendly environment so that student and staff of library can perform the various tasks easily and in an effective way.

IMPLEMENTATION REQUIREMNTS

In implementing whole system it uses html in front end with php as server side scripting language which will be used for database connectivity and the backend ie the database part is developed using mysql.

DELIVERY REQUIREMENTS

The whole system is expected to be delivered in six months of time with a weekly evaluation by the project guide.

2.3 SOFTWARE AND HARDWARE REQUIREMENTS

SOFTWARE REQUIREMENTS

- Operating system- Windows 7 is used as the operating system as it is stable and supports more features and is more user friendly.
- Development tools and Programming language- C++ is used to write the whole code.
- Any compiler can be used to run the code here I have used DEV C++ to compile and run the code.

HARDWARE REQUIREMENTS

- Intel core i5 2nd generation is used as a processor because it is fast than other processors an provide reliable and stable and we can run our pc for longtime. By using this processor we can keep on developing our project without any worries.
- Ram 1 gb is used as it will provide fast reading and writing capabilities and will in turn support in processing.

2.4 SYSTEM ANALYSIS

When the program is compiled and executed, a separate application like window opens up and asks to enter the password and after entering the correct password the main menu page loads, in the main menu there will be about 6-7 functions including close application which is present at the last, ther we can select any function like add, delete or modify and the program will perform the specified operation.

After performing all the operations as I said earlier there is a separate function for closing the application and if the user selects that option the application will be exited in 3 seconds with a regards message.

CHAPTER 3
IMPLEMENTATION

3.1 LOGIN

Description of feature

This feature used by the user to login into system. They are required to enter password before they are allowed to enter the system .The password will be verified and if invalid password is there user is allowed to not enter the system.

Functions:

-user id is provided when they register

-The system must only allow user with valid id and password to enter the system

-The system performs authorization process which decides what user level can acess to.

-The user must be able to logout after they finished using system.

3.2 REGISTER NEW USER

Description of feature

This feature can be performed by all users to register new user to create account.

Functions:

-System must be able to verify information

-System must be able to delete information if information is wrong

3.3 REGISTER NEW BOOK

Description of feature

This feature allows to add new books to the library

Functions

-System must be able to verify information

-System must be able to enter number of copies into table.

- System must be able to not allow two books having same book id.

3.4 SEARCH BOOK

Description of feature

This feature is found in book maintenance part . we can search book based on book id , book name , publication or by author name.

Functions

- System must be able to search the list based on select search type

- System must be able to filter book based on keyword enterd

- System must be able to show the filtered book in table view

3.5 ISSUE BOOKS AND RETURN BOOKS

Description of feature

This feature allows to issue and return books and also view reports of book issued.

Functions

-System must be able to update number of books.

- System must be able to search if book is available or not before issuing books

-System should be able to enter issue and return date information

3.6 MODIFYING OF BOOKS

Description of feature

This feature allows to modify or edit the details of the book like name of the book, book_id, price etc;

Functions

-System must be able to enter Book_ID to be modified.

-System must be able to enter the new author name.

- System must be able to enter all the required credentials.

- After which the new entries will be updated accordingly.

3.7 EXISTING VS PROPOSED SYSTEM

i. Existing system does not have any facility of teachers login or student login where as proposed system will have a facility of student login as well as teacher's login

ii. Existing system does not have a facility of online reservation of books whereas proposed system has a facility of online reservation of books

iii. Existing system does not have any facility of online notice board where description of workshops happening in our college as well as nearby colleges is being provided.

iv. Existing system does not has any option of lectures notes uploaded by teachers whereas proposed system will have this facility

v. Existing system does not have any facility to generate student reports as well book issue reports whereas proposed system provides librarian with a tool to generate reports

vi. Existing system does not has any facility for book request and sugeestions where as in proposed system after logging in to their accounts student can request books as well as provide suggestions to improve library

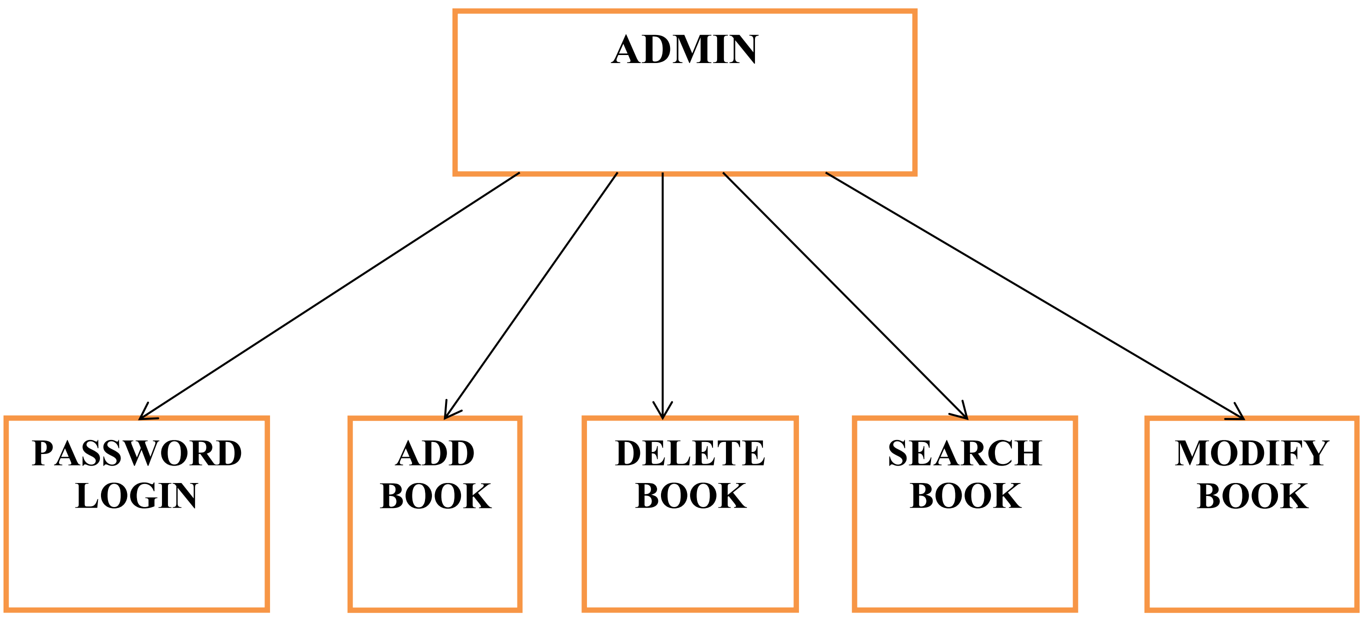
3.8 REASON FOR CHOOSING PRIMARY INDEXING

- It is very easy to use and understand
- It is very efficient and fast for using records.
- As there are two different categories data can be easily handled.
- It is good for all kind of indexes and records.
- If there are any large number of records then it can be implemented using indexing.
- Maintaining many records can be tough at times which can be overcome by this.

```
}
void mainmenu()
{
//loaderanim();
system("cls");
//    textbackground(13);
int i;
gotoxy(20,3);
printf("\xB2\xB2\xB2\xB2\xB2\xB2\xB2\xB2\xB2\xB2\xB2\xB2\xB2\xB2 MAIN MENU \xB2\xB2\xB2\xB2\xB2\xB2\xB2\xB2\xB2\xB2\xB2\xB2\xB2\xB2");
//    show_mouse();
gotoxy(20,5);
printf("\xDB\xDB\xDB\xDB\xB2 1. Add Books   ");
gotoxy(20,7);
printf("\xDB\xDB\xDB\xDB\xB2 2. Delete books");
gotoxy(20,9);
printf("\xDB\xDB\xDB\xDB\xB2 3. Search Books");
gotoxy(20,11);
printf("\xDB\xDB\xDB\xDB\xB2 4. Issue Books");
gotoxy(20,13);
printf("\xDB\xDB\xDB\xDB\xB2 5. View Book list");
gotoxy(20,15);
printf("\xDB\xDB\xDB\xDB\xB2 6. Edit Book's Record");
gotoxy(20,17);
printf("\xDB\xDB\xDB\xDB\xB2 7. Close Application");
gotoxy(20,19);
printf("\xB2\xB2\xB2\xB2\xB2\xB2\xB2\xB2\xB2\xB2\xB2\xB2\xB2\xB2\xB2\xB2\xB2\xB2\xB2\xB2\xB2\xB2\xB2\xB2\xB2\xB2\xB2\xB2\xB2\xB2\xB2\xB2\xB2\xB2\xB2\xB2\xB2\xB2\
gotoxy(20,20);
t();
gotoxy(20,21);
printf("Enter your choice:");
switch(getch())
{
case '1':
addbooks();
break;
```

THE ABOVE FIGURE SHOWS THE MAIN MENU CODE BEING DISPLAYED

FLOW CHART DIAGRAM OF THE PROJECT:



CHAPTER 4

SNAPSHOTS

PASSWORD LOGIN PAGE:

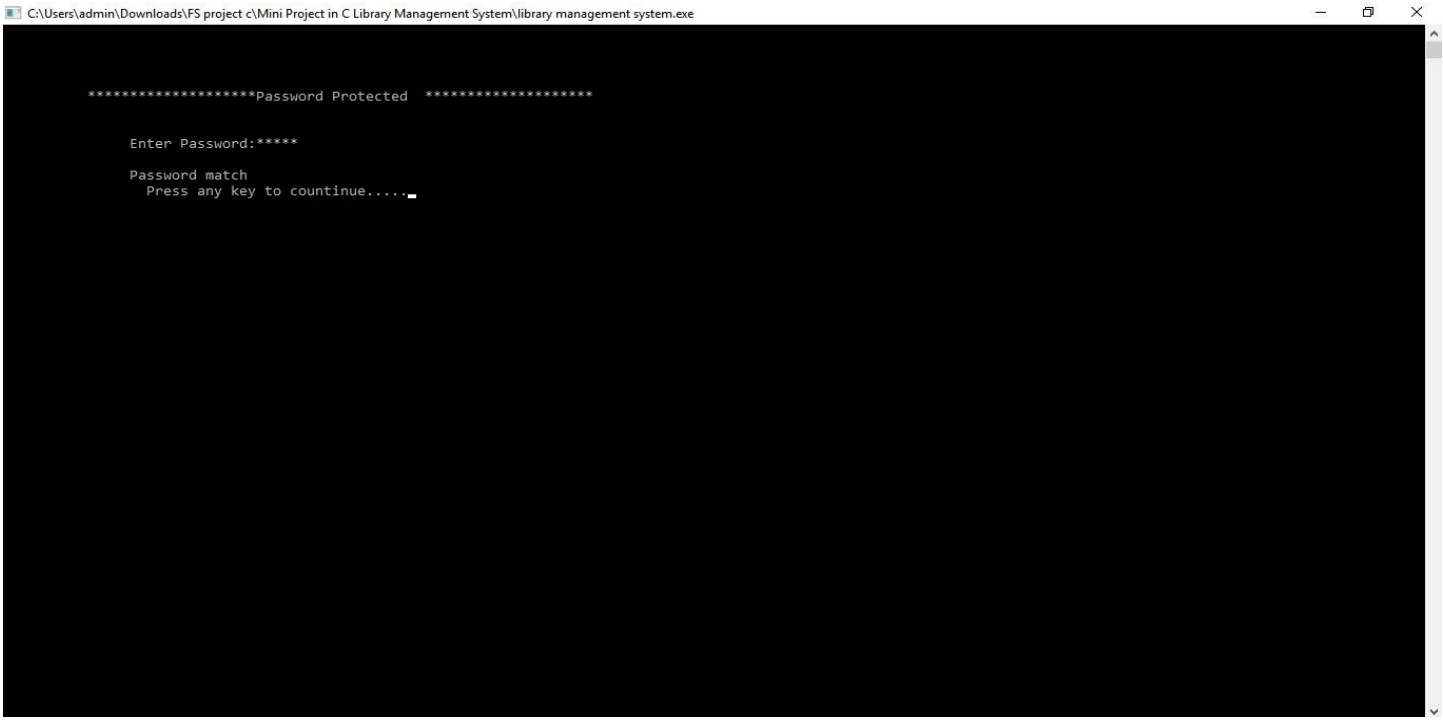


Figure 4.1

HOME PAGE (MAIN MENU):

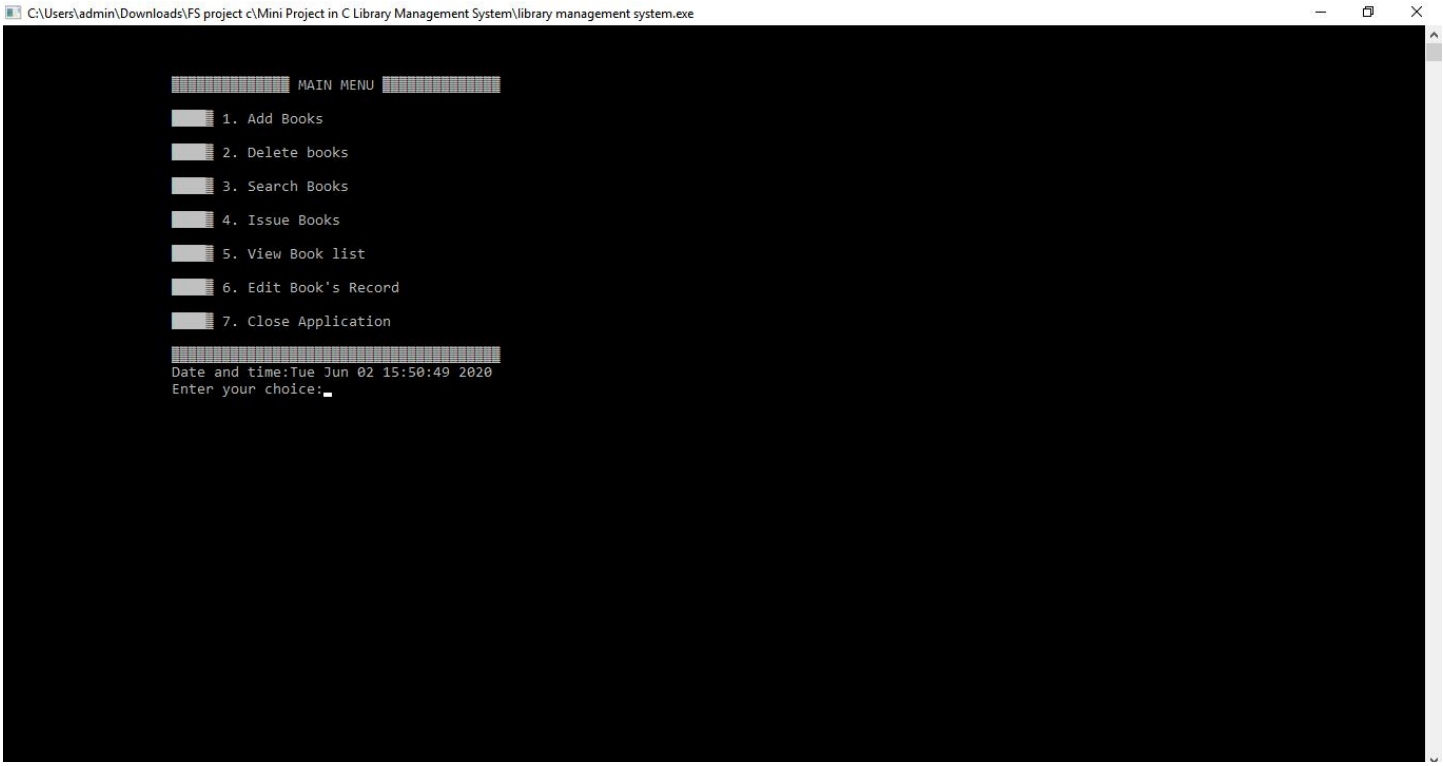


Figure 4.2

ADD BOOKS

PAGE:

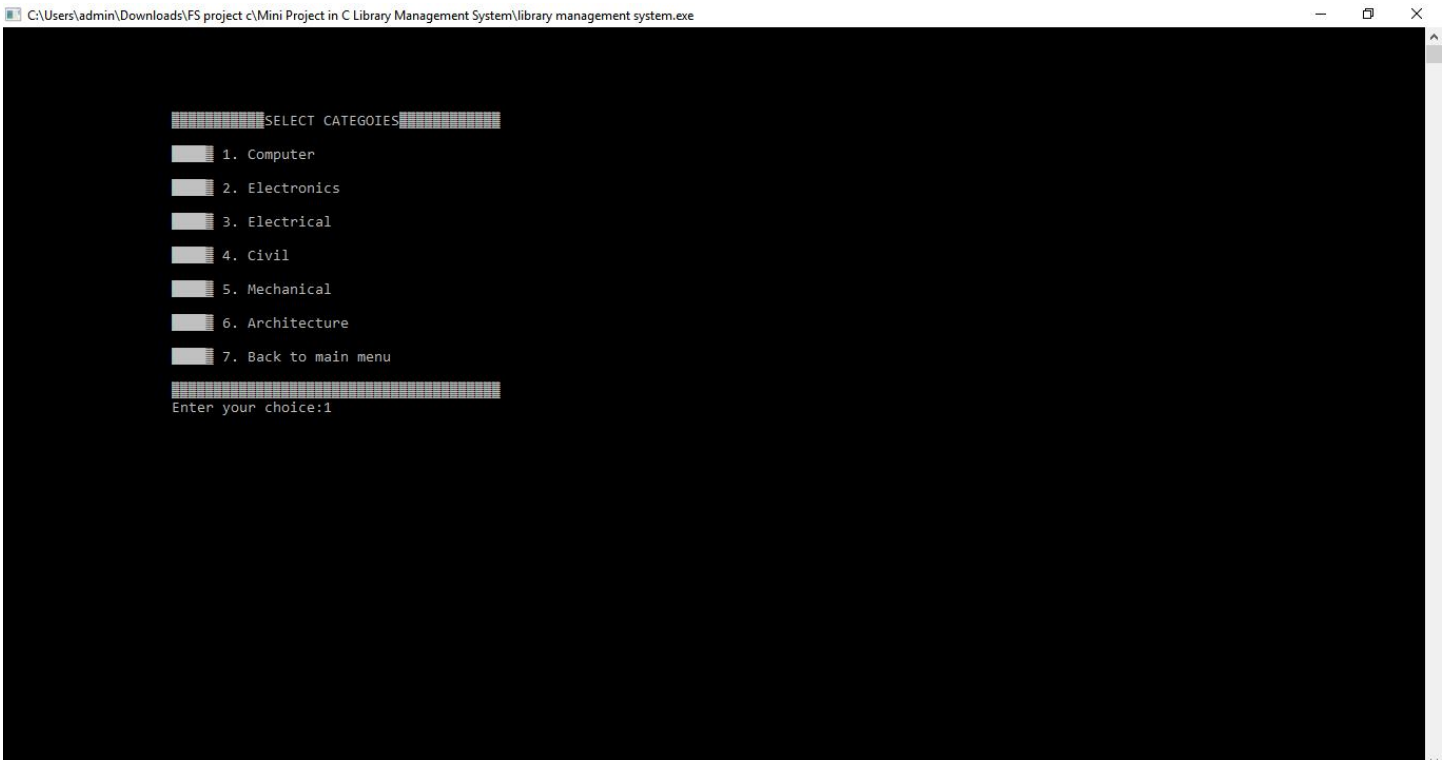


Figure 4.3

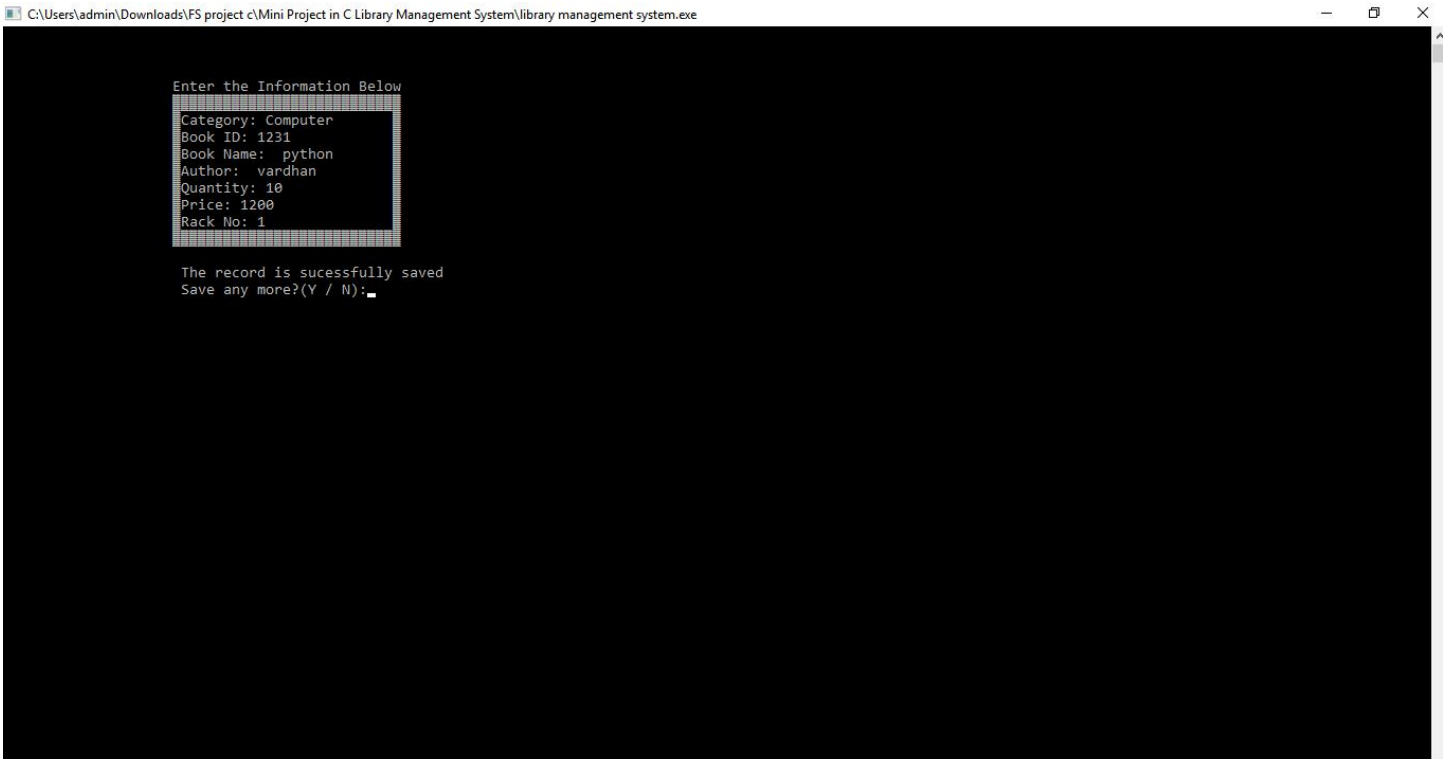


Figure 4.4

DELETE BOOK PAGE:

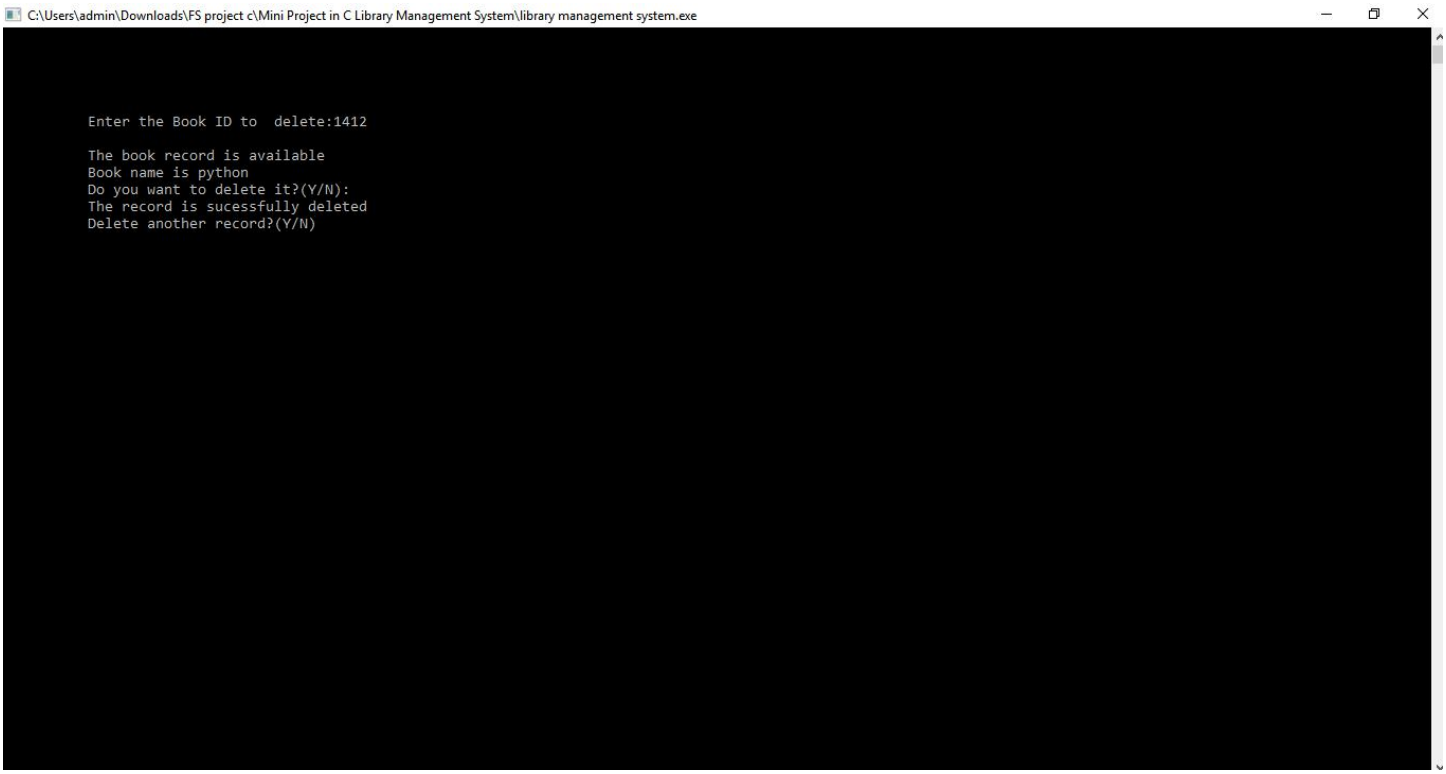


Figure 4.5

SEARCH BOOK PAGE:

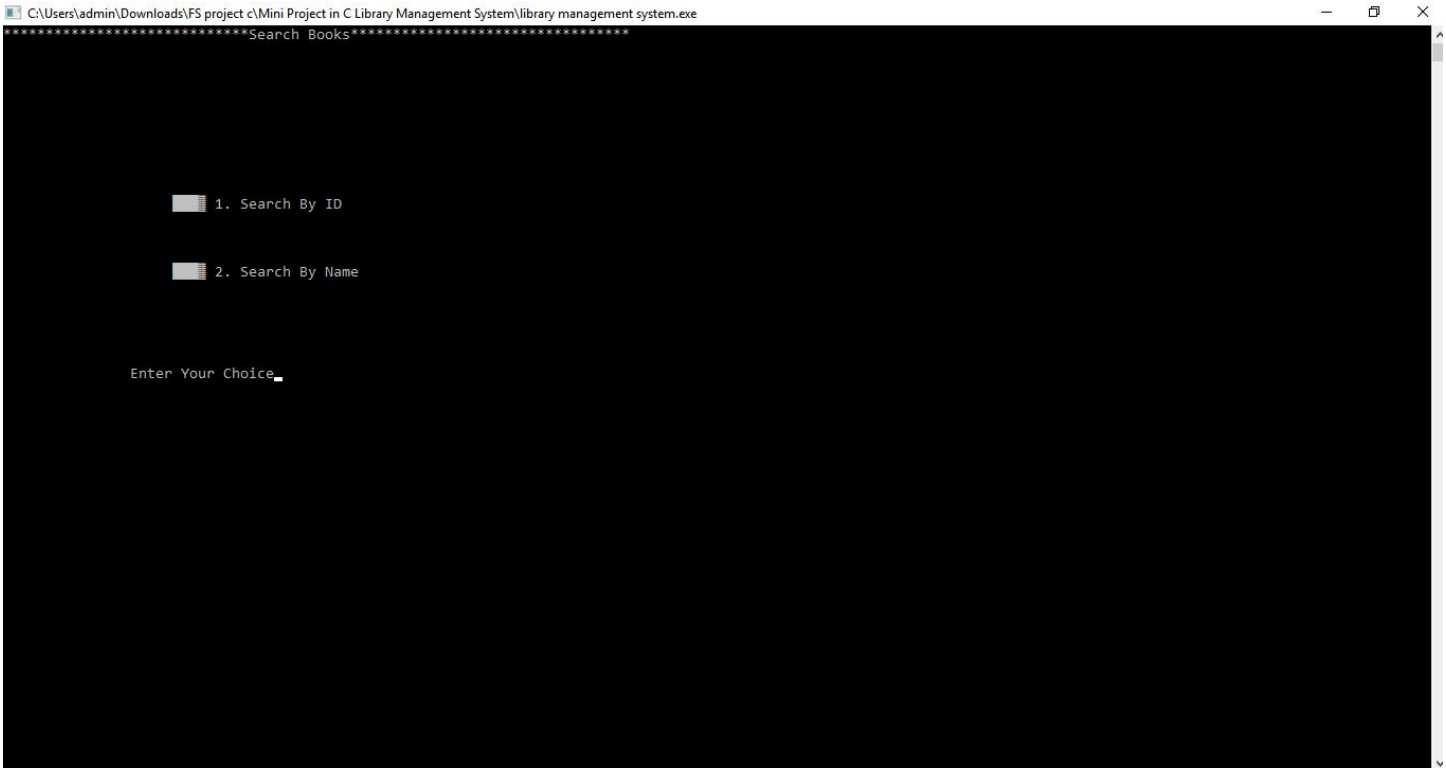


Figure 4.6

SEARCHING BOOK BY ID:

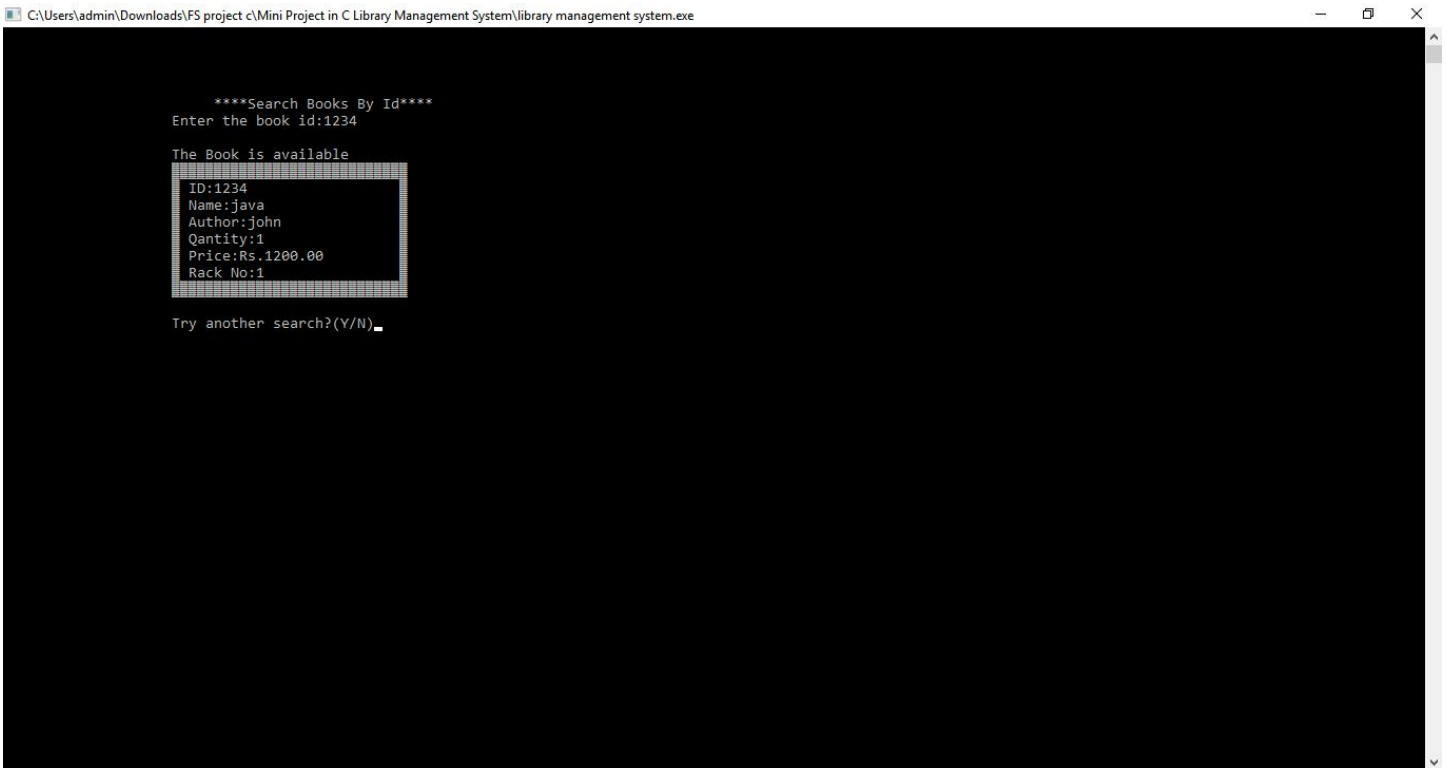


Figure 4.7

ISSUE SECTION:

Figure 4.8

ISSUING BOOKS:

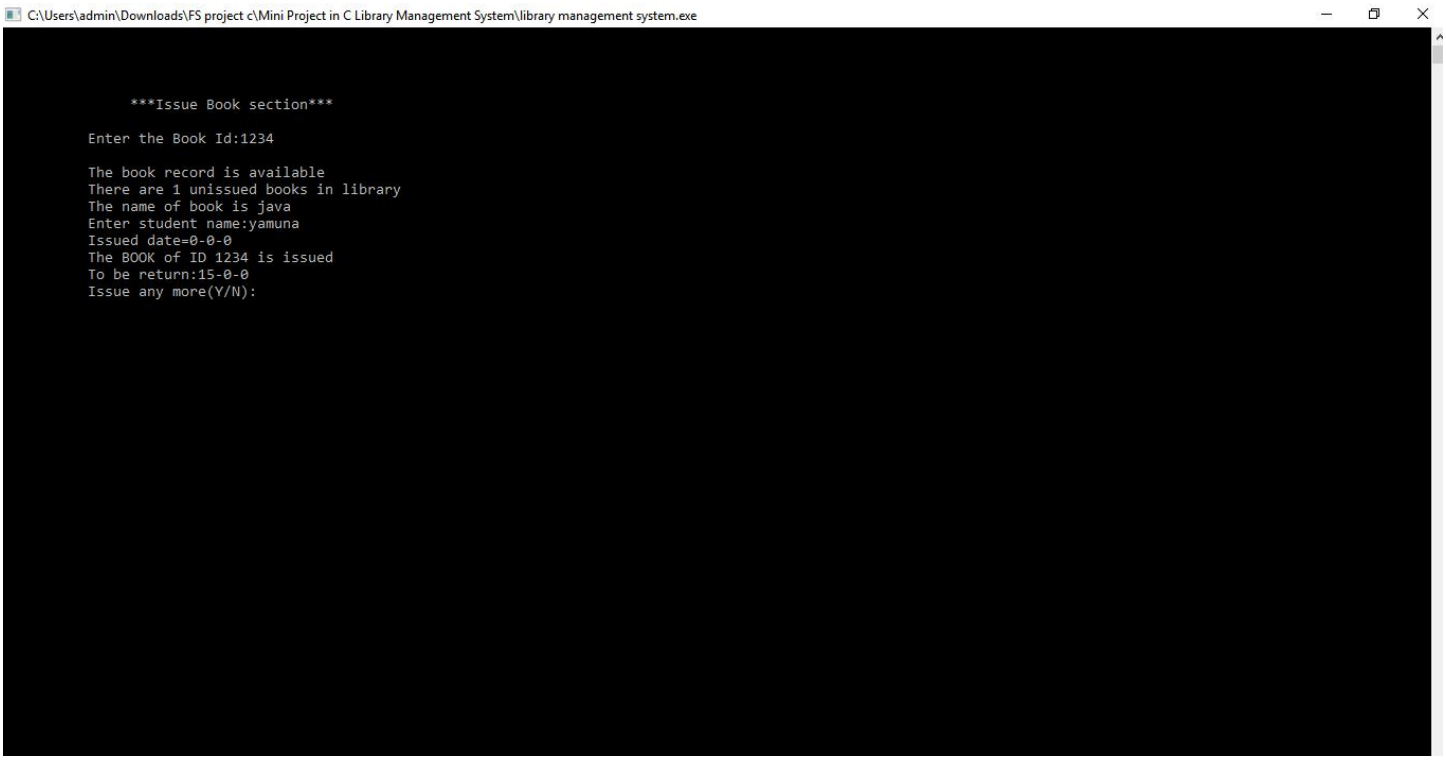


Figure 4.9

ISSUED BOOKS:

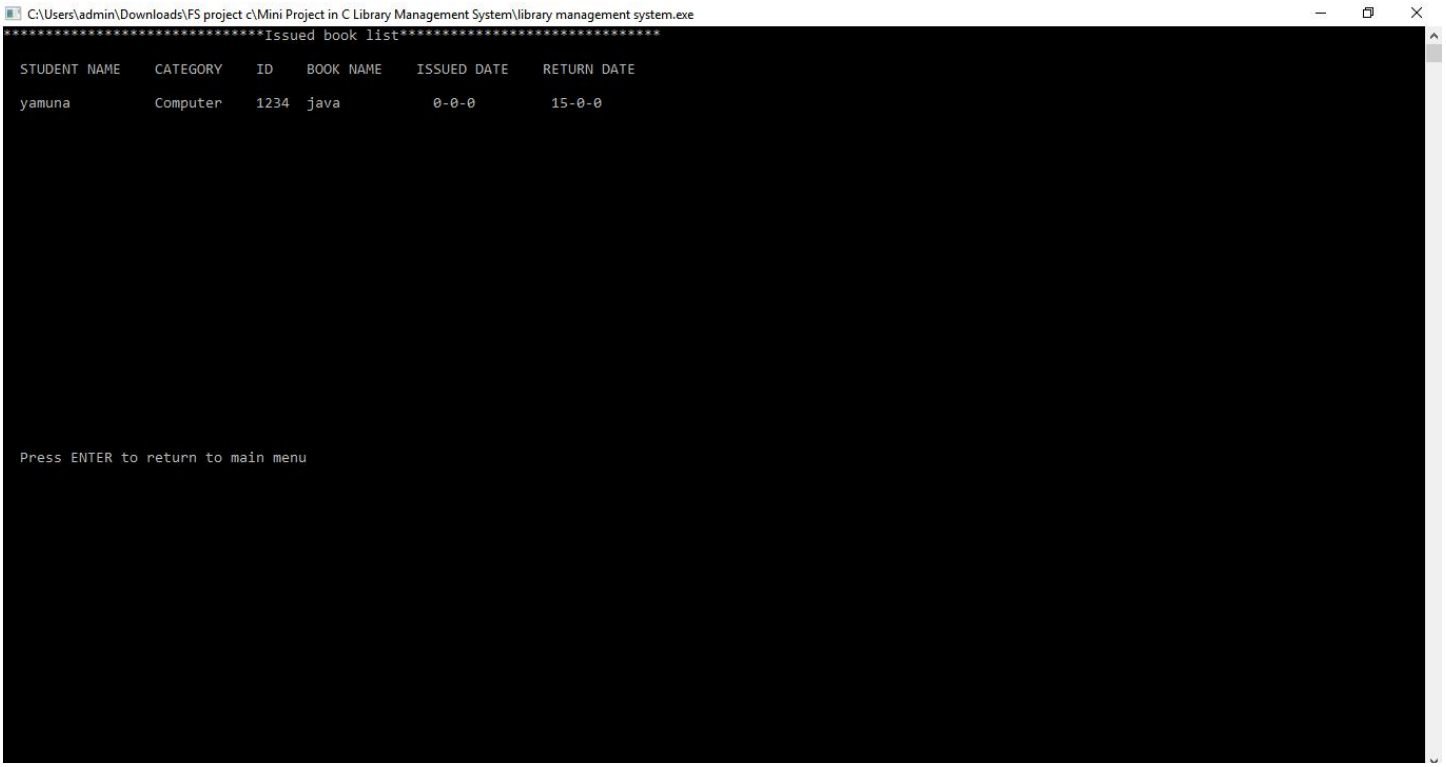


Figure 4.10

BOOKS LIST:

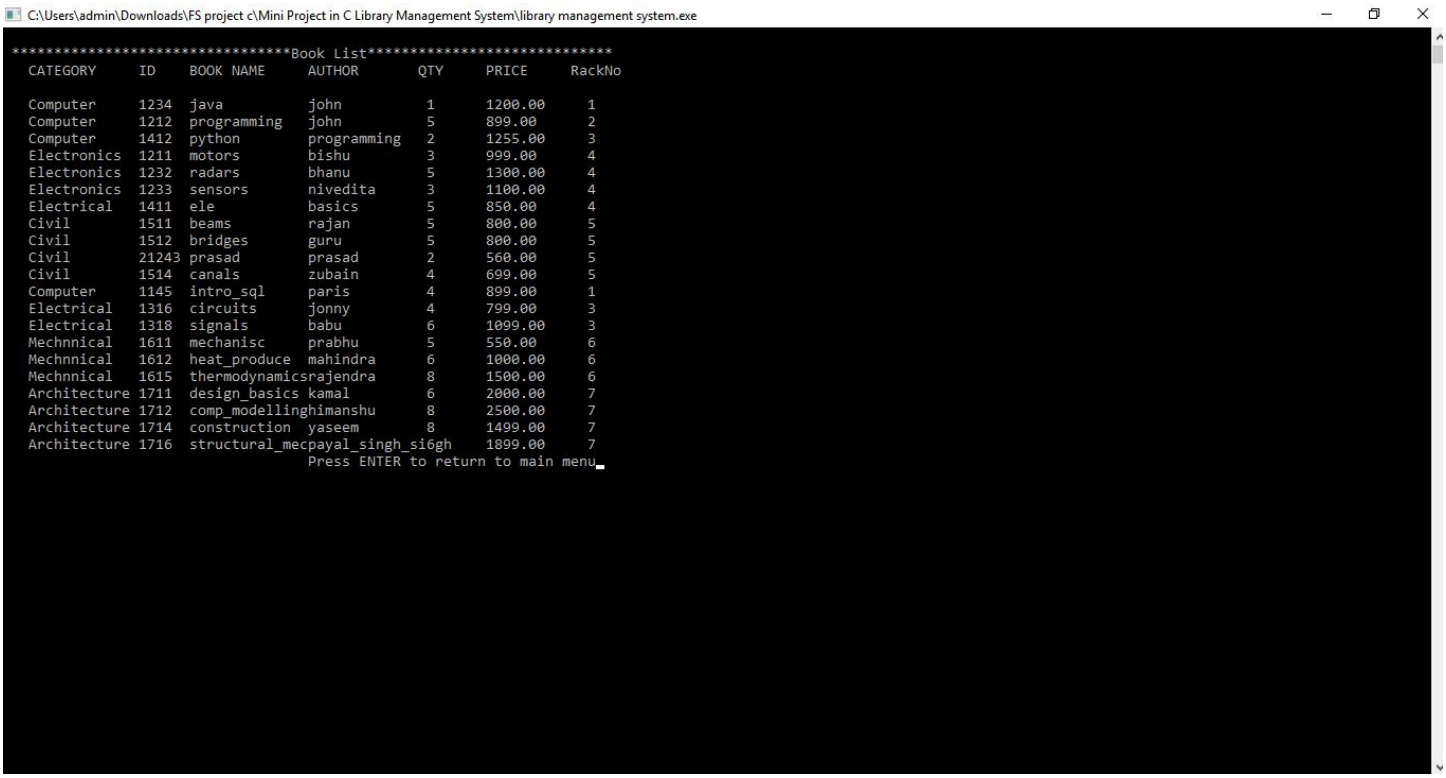


Figure 4.11

MODIFYING BOOK RECORD:

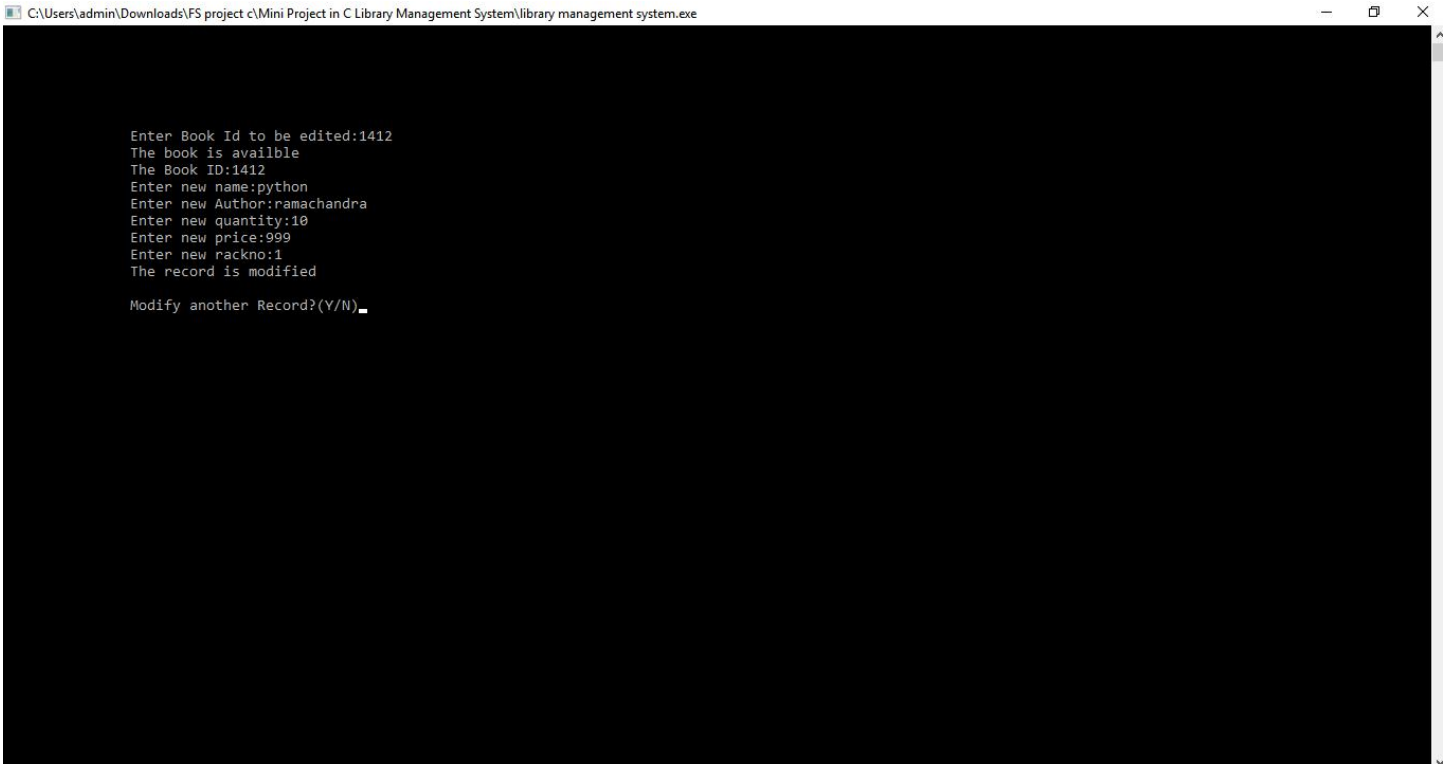


Figure 4.12

TIME TAKEN TO SEARCH THE RECORDS

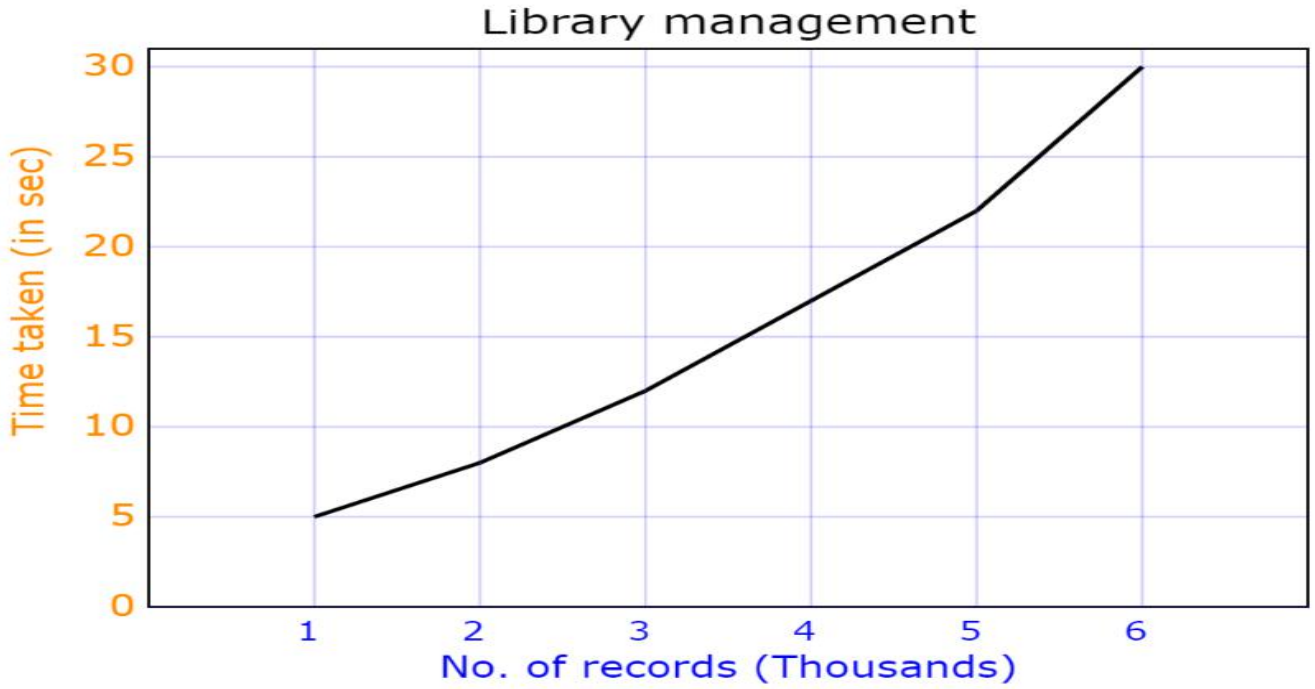


Figure 4.13

TIME TAKEN TO ADD THE RECORDS

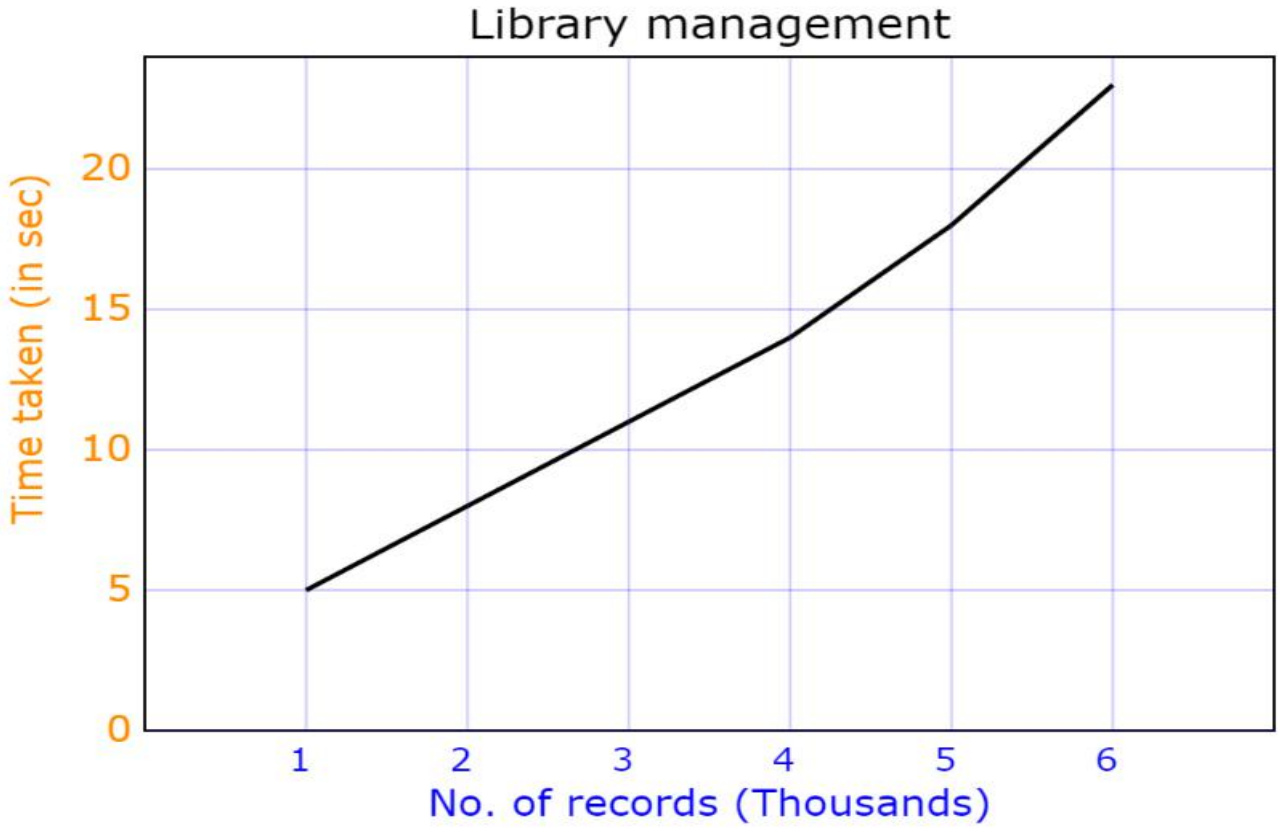


Figure 4.13

CHAPTER 5

RESULTS

5.1 Conclusion:

This website provides a computerized version of library management system which will benefit the students as well as the staff of the library. It makes entire process online where student can search books, staff can generate reports and do book transactions. It also has a facility for student where they can login and can see the status of books issued as well request for book or give some suggestions. It has a facility of admin login where they can add lectures notes and also give necessary suggestion to library and also add info about workshops or events happening in our college or nearby college in the online notice board. We can strongly say that it is technically feasible, since there will not be much difficulty in getting required resources for the development and maintaining the system as well. All the resources needed for the development of the software as well as the maintenance of the same is available in the organization here we are utilizing the resources which are available already.

5.2 Future Scope:

There is a future scope of this facility that many more features such as online lectures video tutorials can be added by teachers as well as online assignments submission facility , a feature Of group chat where students can discuss various issues of engineering can be added to this project thus making it more interactive more user friendly and project which fulfills each users need in the best way possible.

5.3 References:

- **http://www.code with c.com**
- **http://www.academia.edu/Documents/in/Library_Management_System**
- **https://www.academia.edu/32856037/An_Advanced_Library_Management_System_Using_Android_Device**
- **https://code-projects.org/library-management-system/**

https://ieeexplore.ieee.org/document/4407169/