Boaz Public School

(2014-2016)

Computer Science Project

Library Management

Done by

Ashutosh Kumar P

Introduction

Library Management System is used to manage the catalog of a library. This helps to keep the records of whole transactions of the books available in the library and also helps the librarian to keep records of available books as well as issued books.

For a School library it is useful in many ways :

- ***Keep record of students .***
- ***Display,Search, Add,Delete the book.***
- ***Easy way to enter new books.***
- ***Keep record of information of a book like: Book name, Author name etc.***
- ***Automatic fine calculation for late returns.***
- ***Easy way to know how many books are issued to a particular student.***

It helps to make the work easier for the librarian with a user – friendly approach.

Project Abstract

Class: XII

Title of the project: Library management

Language: C++

Concept: Classes and Objects, Arrays, Data file handling.

Introduction:

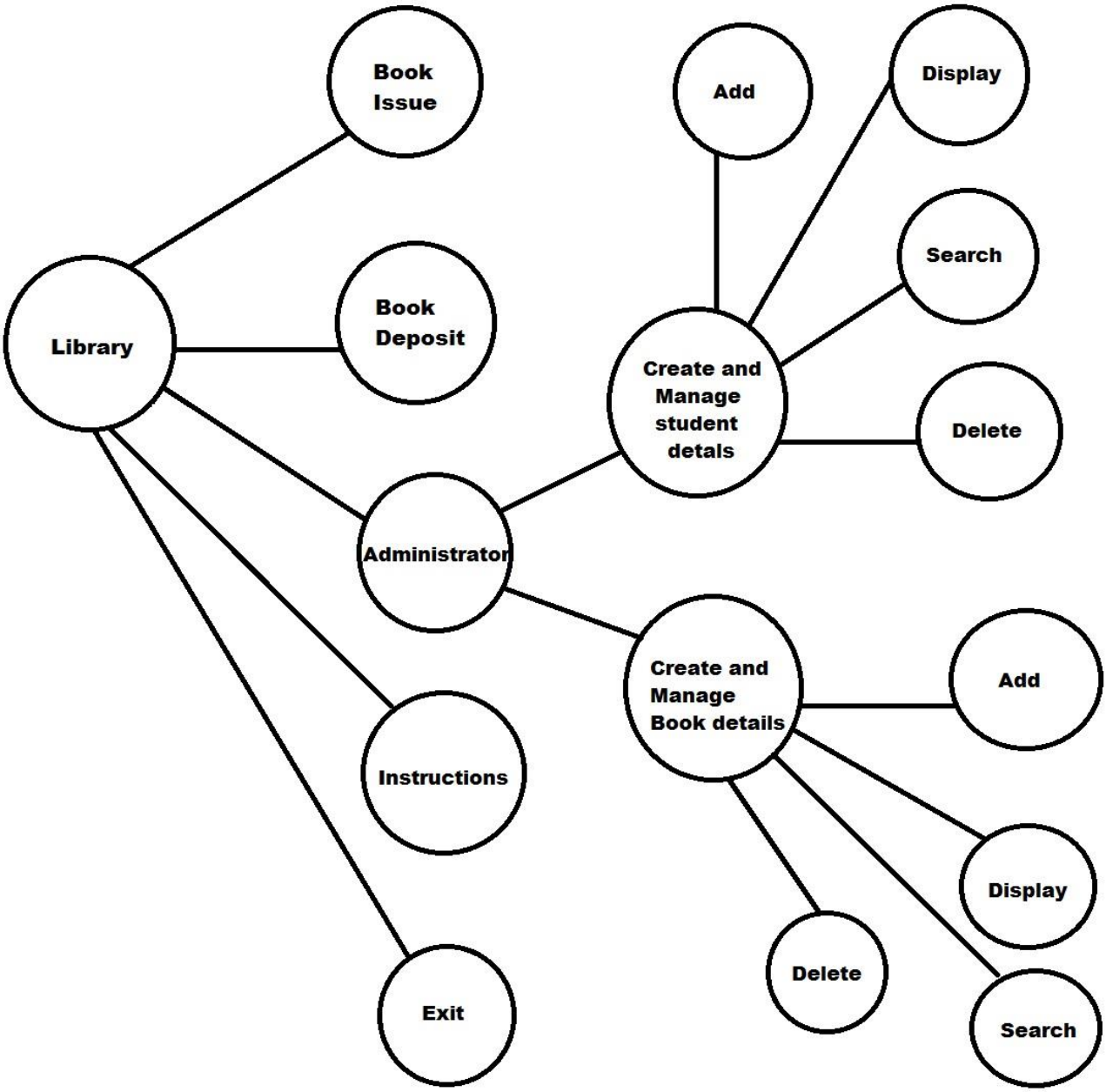
A Library Management System is an enterprise resource planning system for a library, used to track items owned, orders made, bills paid, and patrons who have borrowed. In this Library Management System project, you can enter the record of new books and retrieve the details of books available in the library. You can issue the books to the students, maintain their records and many other features like addition and deletion of books etc.

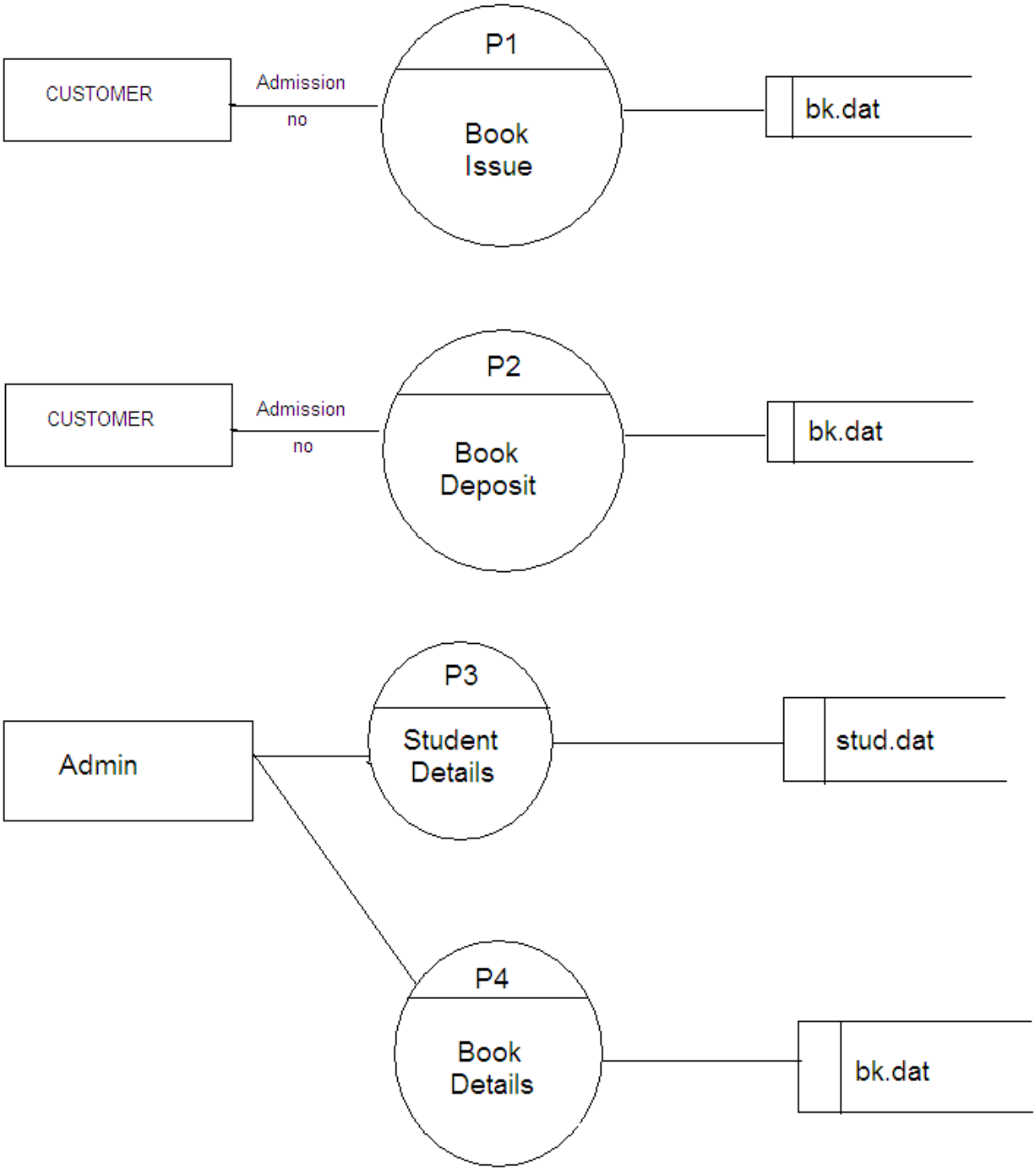
Members: 3

Enhancement / Limitation:

customerno and bookid can be automatically generated and validation of data can be made.

Data Flow


Book Issue
Add
Display
Search
Library
Book Deposit
Create and Manage student detals
Delete
Administrator
Create and Manage Book details
Add
Instructions
Display
Delete
Search
Exit


CUSTOMER
Admission
no
P1
Book
Issue
bk.dat
CUSTOMER
Admission
no
P2
Book
Deposit
bk.dat
Admin
P3
Student
Details
stud.dat
P4
Book
Details
bk.dat

Source Code

```
#include<fstream.h>
#include<iostream.h>
#include<conio.h>
#include<stdio.h>
#include<process.h>
#include<string.h>
#include<iomanip.h>
#include<graphics.h>
#include<dir.h>
#include<dos.h>
class book{
public:
char bno[6];
char bookName[50]; //title of book
char authName[20]; //author of book

void create_book(){
cout<<"\n NEW BOOK ENTRY...\n";
cout<<"\n Enter Book Number: ";
cin>>bno;
cout<<"\n\n Enter Name of the Book: ";
gets(bookName);
cout<<"\n\n Enter Author's name: ";
gets(authName);
cout<<"\n\n\n Book Created...";
}

void show_book(){
cout<<"\n Book number:"<< bno;
cout<<"\n Book Name: ";
puts(bookName);
cout<<"Author Name: ";
puts(authName);
}
```

```
char* retbno(){ return bno; }

void report(){cout<<"
"<<bno<<setw(29)<<bookName<<setw(19)<<authName<<"\t\t"<<endl;}

}; //end of class book
class student{
public:
char admno[6]; //Admission number
char name[20]; //Name of the student
char stbno[6]; //Student Book number
int token;

void create_student(){
clrscr();
cout<<"\nNEW STUDENT ENTRY...\n";
cout<<"\nEnter Admission number: ";
cin>>admno;
cout << "\n\nEnter Name of Student: ";
gets(name);
token=0;
stbno[0]='/0';
cout<<"\n\nStudent Record Created..";
}

void show_student(){
cout<<"\nAdmission number: "<<admno;
cout<<"\nStudent Name: ";
puts(name);
cout<<"\nNumber of Book(s) issued: "<<token;
if(token==1) cout<<"\nBook No "<<stbno;
}

char* retadmno(){ return admno; }

char* retstbno(){ return stbno; }
```

```
int rettoken(){ return token; }

void addtoken(){ token=1; }

void resettoken(){ token=0; }

void getstbno(char t[]){strcpy(stbno,t);}

void
report(){cout<<"\t"<<admno<<setw(20)<<name<<setw(10)<<token<<"\t\t"<<e
ndl;}

};//end of class student


void write_student(){
char ch;
student s;
fstream f;
f.open("stud.dat",ios::binary|ios::app);
do{
s.create_student();
f.write((char*)&s,sizeof(s));
cout<<"\n\nDo you want to add more students...(y/n?)";
cin>>ch;
}while(ch=='y'||ch=='Y');
f.close();
}

void display_alls(){
clrscr();
student s;
fstream f;
f.open("stud.dat",ios::in|ios::binary);
if(!f){
cout<<"ERROR!!! FILE COULD NOT BE OPEN ";
```

```
getch();
return;
}

cout<<"\n\n\t\tSTUDENT LIST\t\t\n\n";
cout<<"========================================================\n";
cout<<"\tAdmission No."<<setw(10)<<"Name"<<setw(20)<<"Book Issued\t\n";
cout<<"========================================================\n";

while(f.read((char*)&s,sizeof(s)))s.report();

f.close();
getch();
}
void display_sps(char n[]){
cout<<"\nSTUDENT DETAILS\n";
int flag=0;
student s;
fstream f;
f.open("stud.dat",ios::in|ios::binary);
while(f.read((char*)&s,sizeof(s))){
if((strcmp(s.retadmno(),n)==0)){
s.show_student();
flag=1;
}
}
f.close();
if(flag==0)cout<<"\n\nStudent does not exist";
getch();
}

void delete_student(){
char n[6];
int flag=0;
clrscr();
cout<<"\n\n\n\tDELETE STUDENT...";
cout<<"\n\nEnter The admission no. of the Student You Want To Delete : ";
```

```
cin>>n;
student s;
fstream f;
f.open("stud.dat",ios::in|ios::out|ios::binary);
fstream f2;
f2.open("Temc.dat",ios::out|ios::binary);
f.seekg(0,ios::beg);
while(f.read((char*)&s,sizeof(s))){
if(strcmp(s.retadmno(),n)!=0)f2.write((char*)&s,sizeof(s));
else flag=1;
}

f2.close();
f.close();
remove("stud.dat");
rename("Temc.dat","stud.dat");
if(flag==1)cout<<"\n\n\tRecord Deleted ..";
else {cout<<"\n\nRecord not found";  }
getch();

}

//BOOK


void write_book(){
char ch;
book b;
fstream f;
f.open("bk.dat",ios::binary|ios::app);
do{
clrscr();
b.create_book();
f.write((char*)&b,sizeof(b));
cout<<"\n\nDo you want to add more books...(y/n?)";
cin>>ch;
}while(ch=='y'||ch=='Y');
```

```
f.close();
}

void display_allb(){
clrscr();
book b;
fstream f;
f.open("bk.dat",ios::in|ios::binary);
if(!f){
cout<<"ERROR!!! FILE COULD NOT BE OPEN ";
getch();
return;
}
cout<<"\n\n\t\tBook LIST\t\t\n\n";
cout<<"==========================================================
====\n";
cout<<"  Book Number"<<setw(20)<<"Book
Name"<<setw(22)<<"Author\t\t\n";
cout<<"==========================================================
====\n";
while(f.read((char*)&b,sizeof(b)))b.report();
f.close();
getch();
}
void display_spb(char n[]){
cout<<"\nBOOK DETAILS\n";
int flag=0;
book b;
fstream f;
f.open("bk.dat",ios::in|ios::binary);
while(f.read((char*)&b,sizeof(b))){
if(strcmp(b.retbno(),n)==0){
b.show_book();
flag=1;
}
}
```

```
f.close();
if(flag==0)cout<<"\n\nBook does not exist";
getch();
}

void delete_book(){
char n[6];
clrscr();
cout<<"\n\n\n\tDELETE BOOK ...";
cout<<"\n\nEnter Book number of Book to Delete : ";
cin >> n;
book b;
fstream f;
f.open("bk.dat",ios::in|ios::app|ios::binary);
fstream f2;
f2.open("Te.dat",ios::app);
f.seekg(0,ios::beg);
while(f.read((char*)&b,sizeof(b)))if(strcmp(b.retbno(),n)!=0)
f2.write((char*)&b, sizeof(b));
f2.close();
f.close();
remove("bk.dat");
rename("Te.dat","bk.dat");
cout<<"\n\n\tRecord Deleted ..";
getch();
}

void book_issue(){
char sn[6], bn[6];
int found=0,flag=0;
clrscr();
student s;
book b;
cout<<"\n\nBOOK ISSUE ...";
cout<<"\n\n\tEnter Student's Admission number : ";
cin>>sn;
fstream f;
```

```
fstream f1;
f.open("stud.dat",ios::in|ios::out|ios::binary);
f1.open("bk.dat", ios::in|ios::out|ios::binary);
while(f.read((char*)&s,sizeof(s))&&(found==0)){
if(strcmp(s.retadmno(),sn)==0){
found=1;
if(s.rettoken()==0){
cout<<"\n\n\tEnter Book number : ";
cin>>bn;
while(f1.read((char*)&b,sizeof(b))&&(flag==0)){
if(strcmpi(b.retbno(),bn)==0){
b.show_book();
flag=1;
s.addtoken();
s.getstbno(b.retbno());
int pos=-1*sizeof(s);
f.seekp(pos,ios::cur);
f.write((char*)&s,sizeof(s));
cout<<"\n\n\t Book issued successfully\n\nPlease Note: Write the current date
in backside of your book \n and submit within 15 days. Fine Rs.10 for each day
\n after 15 days period";
}
}
if(flag==0)cout<<"Book number does not exist";
}
else cout<<"You have not returned the last book ";

}
}
if(found==0)cout<<"Student record not exist...";
getch();
f.close();
f1.close();
}

void book_deposit()
{
```

```
char sn[6],bn[6];
int found=0,flag=0,day,fine;
clrscr();
student s;
book b;
cout<<"\n\nBOOK DEPOSIT ...";
cout<<"\n\n\tEnter Students Admission number : ";
cin>>sn;
fstream f;
f.open("stud.dat",ios::in|ios::out|ios::binary);
fstream f1;
f1.open("bk.dat",ios::in|ios::out|ios::binary);
while(f.read((char*)&s,sizeof(s))&&(found==0)){
if(strcmp(s.retadmno(),sn)==0){
found=1;
if(s.rettoken()==1){
while(f1.read((char*)&b,sizeof(b))&&(flag==0)){
if(strcmp(b.retbno(),s.retstbno())==0){
b.show_book();
flag=1;
cout<<"\n\nBook deposited in no. of days : ";
cin>>day;
if(day>15){
fine=(day-15)*10;
cout<<"\n\nFine to be deposited is Rs. "<<fine;
}
s.resettoken();
int pos=-1*sizeof(s);
f.seekp(pos,ios::cur);
f.write((char*)&s,sizeof(s));
cout<<"\n\n\t Book deposited successfully";
}
}
if(flag==0)cout<<"Book no does not exist";
}
else cout<<"No book is issued..please check!!";
}
```

```
}
if(found==0)cout<<"Student record not exist...";
getch();
f.close();
f1.close();
}

void admin_menu(){
clrscr();
int ch2;
cout<<"\n\n\n\tADMINISTRATOR MENU";
cout<<"\n\n\t(1) CREATE STUDENT RECORD";
cout<<"\n\n\t(2) DISPLAY ALL STUDENTS RECORD";
cout<<"\n\n\t(3) DISPLAY SPECIFIC STUDENT RECORD ";
cout<<"\n\n\t(4) DELETE STUDENT RECORD";
cout<<"\n\n\t(5) CREATE BOOK ";
cout<<"\n\n\t(6) DISPLAY ALL BOOKS ";
cout<<"\n\n\t(7) DISPLAY SPECIFIC BOOK ";
cout<<"\n\n\t(8) DELETE BOOK ";
cout<<"\n\n\t(9) BACK TO MAIN MENU";
cout<<"\n\n\tPlease Enter Your Choice (1-9) ";
cin>>ch2;
switch(ch2){
case 1:
clrscr();
write_student();
break;
case 2:
display_alls();
break;
case 3:
char nume[6];
clrscr();
cout<<"\n\n\tPlease Enter The Admission No. ";
cin>>nume;
display_sps(nume);
break;
```

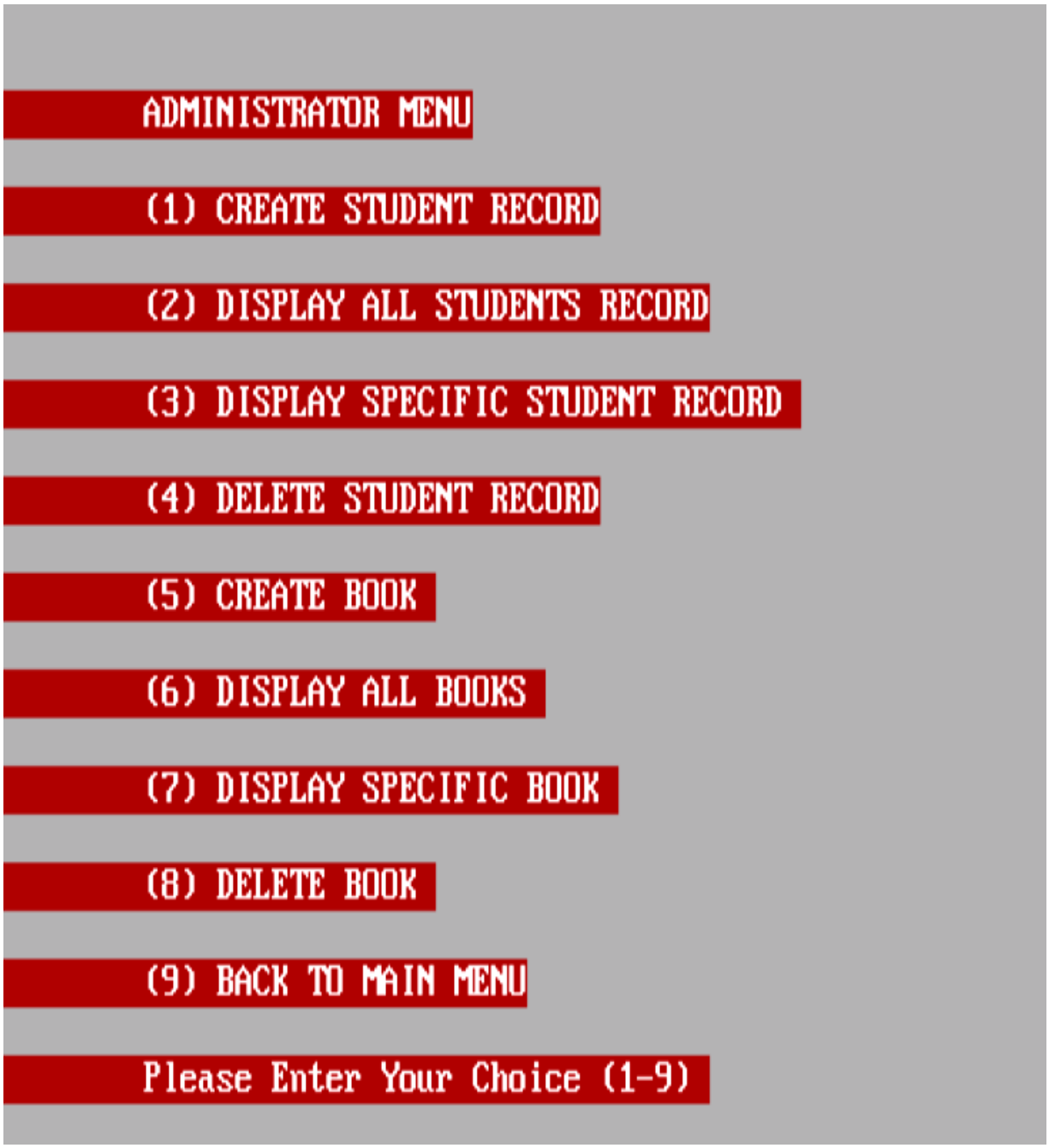
```
case 4:
delete_student();
break;
case 5:
clrscr();
write_book();
break;
case 6:
display_allb();
break;
case 7:
char num[6];
clrscr();
cout<<"\n\n\tPlease Enter The book No. ";
cin>>num;
display_spb(num);
break;
case 8:
delete_book();
break;
case 9: return;
default: cout<<"\nWrong choice!!!";
}
admin_menu(); //recursion
}
void credit()
{
 clrscr();
 cout<<"\n\n\n\t\t\t    Welcome To School Library\t\t\t\t";
getch();
 }
void menu()
{clrscr();
 char ch;
do{
clrscr();
cout<<"\n\n\n\tMAIN MENU";
```

```
cout<<"\n\n\t(1) BOOK ISSUE";
cout<<"\n\n\t(2) BOOK DEPOSIT";
cout<<"\n\n\t(3) ADMINISTRATOR MENU";
cout<<"\n\n\t(4) Instructions";
cout<<"\n\n\t(5) Exit";
cout<<"\n\n\tPlease Select Your Option (1-4) ";
ch=getch();
switch(ch){
case '1':
clrscr();
book_issue();
break;
case '2':
book_deposit();
break;
case '3':
admin_menu();
break;
case '4':{      clrscr();
cout<<"\n\t\t\t\tInstructions\t\t\t";
cout<<"\n\n\n\t1.This Program maintains a record of students who have taken
books";
cout<<"\n\t  from the library";
cout<<"\n\t2.A Student can borrow only 1 book at a time.";
cout<<"\n\t3.Student should return the book to the library within 15 days ";
cout<<"\n\t  if not they have to pay fine of Rs.10 per day.";
cout<<"\n\t4.Each book in the library contains many copies.";
cout<<"\n\t5.If the book returned is not in proper condition as before or";
cout<<"\n\t  student has lost the book then the student has to pay  the";
cout<<"\n\t  cost of the book.";
getch();
menu();

}
case '5': exit(0);
default :{  clrscr();
cout<<"\n wrong choice";
```

```
}
}//end of switch
}while(ch!='5');

getch();
}

void main()
{
clrscr();
int gdriver=DETECT,gmode;
initgraph(&gdriver,&gmode,"c:\\tc\\bgi");
setbkcolor(RED);
setcolor(RED);
clearviewport();
credit();
menu();
closegraph();
}
```

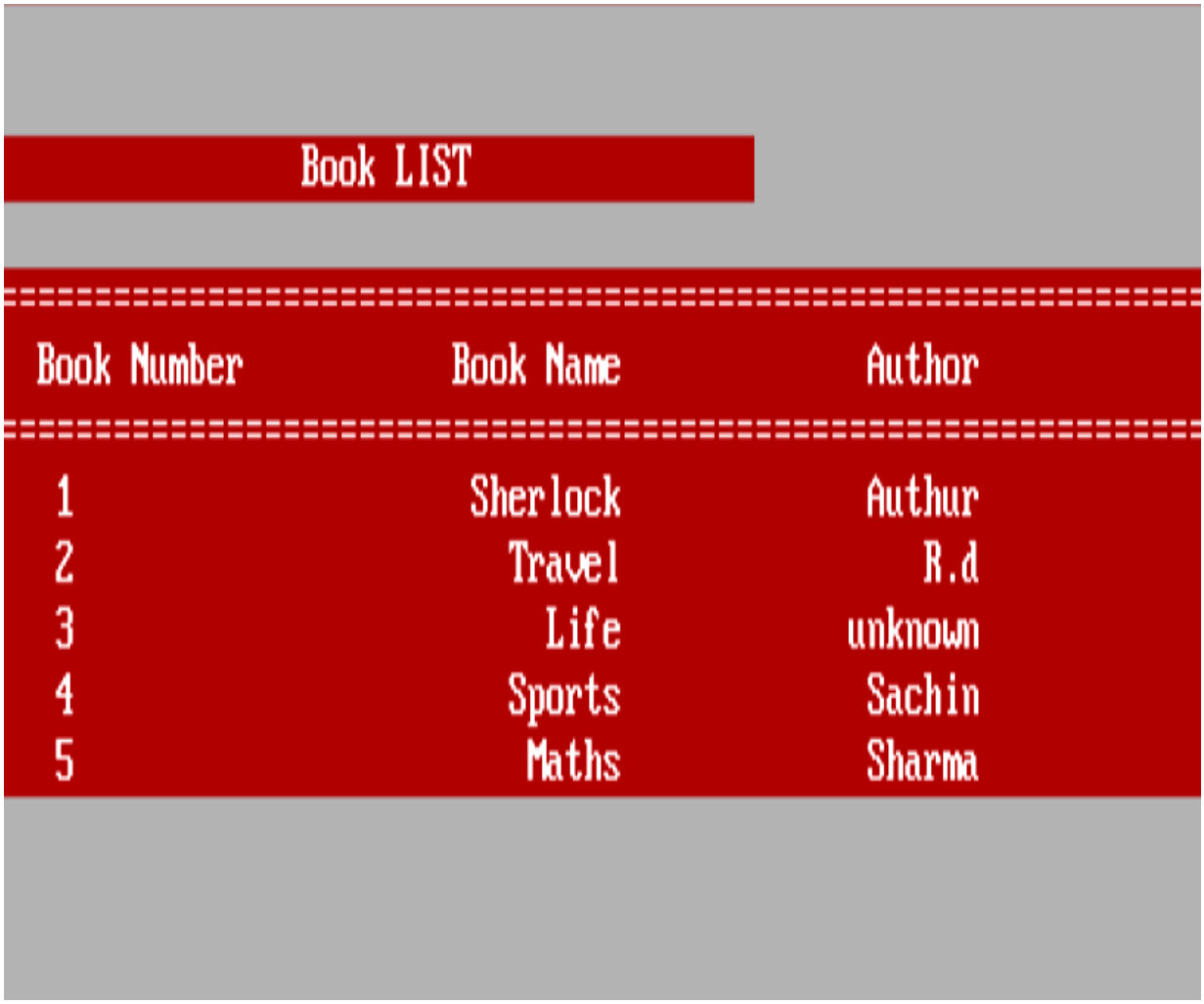
Output -:


MAIN MENU
(1) BOOK ISSUE
(2) BOOK DEPOSIT
(3) ADMINISTRATOR MENU
(4) Instructions
(5) Exit
Please Select Your Option (1-4)

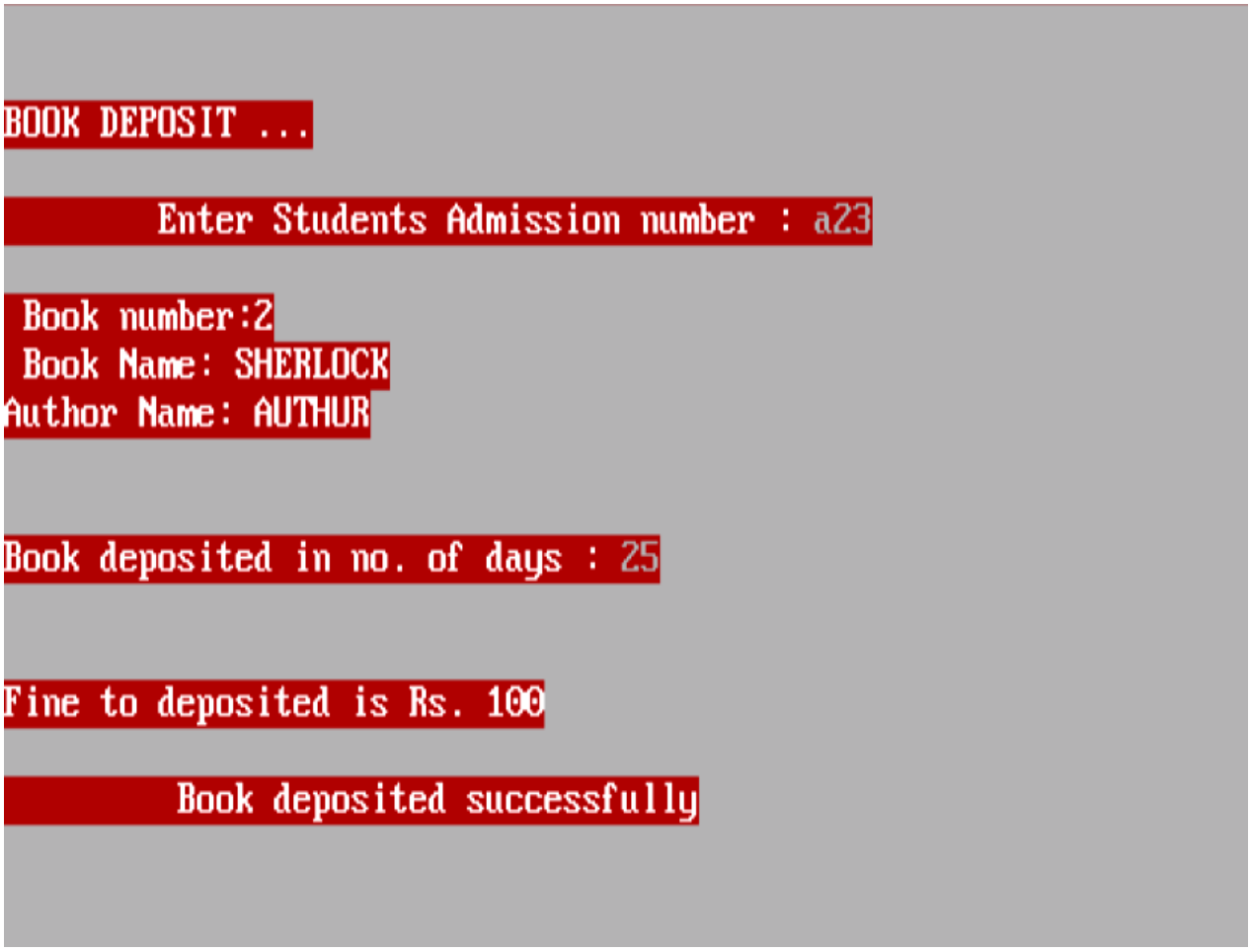

ADMINISTRATOR MENU
(1) CREATE STUDENT RECORD
(2) DISPLAY ALL STUDENTS RECORD
(3) DISPLAY SPECIFIC STUDENT RECORD
(4) DELETE STUDENT RECORD
(5) CREATE BOOK
(6) DISPLAY ALL BOOKS
(7) DISPLAY SPECIFIC BOOK
(8) DELETE BOOK
(9) BACK TO MAIN MENU
Please Enter Your Choice (1-9)

STUDENT LIST

Admission No.	Name	Book Issued
a23	ASHUTOSH	0
a24	Jawahar	0
a25	Yashwanthi	0
a26	Bimal	1
a27	Varshini	0
a28	Abhijeeth	1
a29	Arushi	1
a31	Divakar	0
a32	Ranjani	0
a33	Theodicy	0
a34	Avinash	0
a36	ISHIKA	1
a37	Karan	0
a38	SONIA	0
a39	Yashwanth	1


Book LIST
Book Number
Book Name
Author
1
Sherlock
Authur
2
Travel
R.d
3
Life
unknown
4
Sports
Sachin
5
Maths
Sharma

```
BOOK ISSUE ...

        Enter Student's Admission number : a23


        Enter Book number : 2

 Book number:2
 Book Name: SHERLOCK
Author Name: AUTHUR


         Book issued successfully

Please Note: Write the current date in backside of your book
 and submit within 15 days. Fine Rs.10 for each day
 after 15 days period
```


BOOK DEPOSIT ...
Enter Students Admission number : a23
Book number:2
Book Name: SHERLOCK
Author Name: AUTHUR
Book deposited in no. of days : 25
Fine to deposited is Rs. 100
Book deposited successfully

Conclusion:

Library Management System has been created using the oops concept which allows the user to store the book details and the student/customer details. This software package allows storing the details of all the data related to library. The system is strong enough to withstand regressive yearly operations under conditions where the database is maintained and cleared over a certain time of span. The implementation of the system in the organization will considerably reduce data entry, time and also provide readily calculated reports.