1. ABSTRACT

"LIBRARY MANAGEMENT SYSTEM" is windows based application that works within centralized network. It provides facility to issue book, return book for student.

The Library Management System helps the librarian to get the student details easily that who have taken books and due date of returning the books . So that librarian can easily keep track of the student who took the books and who didn't returned the book on time.

2. SYNOPSIS

Library Management System has book and student class with data members like book no, bookname, authorname. Books records is stored in a binary file. An administrator can issue book and deposit it within 15 days. Student Records are stored in binary file. Administrator can add, modify or delete record. We have not used graphics to keep program simple. The date will be stored in binary file i.e. on .dat file namely BOOK.DAT and STUDENT.DAT

The Functions of Administrator are:

1. Create student record
2. Display all student record
3. Display specific student record
4. Modify student record
5. Delete student record
6. Create book
7. Display all books
8. Display specific book
9. Modify book
10. Delete book
11. Issue book
12. Deposit student book

3. HARDWARE REQUIREMENT

TYPE	NAME
Processor	Pentium 4 processor
RAM Capacity	2 GB
Hard Disk	200 MB

4. SOFTWARE SPECIFICATIONS

TYPENAME	
Operating System	Window 8
Front end tools	Turbo C++
Back End tools	.dat file

5. INPUT AND OUTPUT DEVICES

Keyboard

Monitor

Mouse

6. SCREENSHOTS AND CODING

Source code:-

```
//*****************************************************************
//                        HEADER FILE USED IN PROJECT
//*****************************************************************

#include<fstream.h>
#include<conio.h>
#include<stdio.h>
#include<process.h>
#include<string.h>
#include<iomanip.h>

//*****************************************************************
//                CLASS USED IN PROJECT
//*****************************************************************



class book
{
        char bno[6];
        char bname[50];
        char aname[20];
  public:
        void create_book()
        {
                cout<<"\nNEW BOOK ENTRY...\n";
                cout<<"\nEnter The book no.";
                cin>>bno;
                cout<<"\n\nEnter The Name of The Book ";
                gets(bname);
                cout<<"\n\nEnter The Author's Name ";
                gets(aname);
                cout<<"\n\n\nBook Created..";
        }

        void show_book()
        {
                cout<<"\nBook no. : "<<bno;
                cout<<"\nBook Name : ";
                puts(bname);
                cout<<"Author Name : ";
                puts(aname);
        }
```

```
        void modify_book()
        {
                cout<<"\nBook no. : "<<bno;
                cout<<"\nModify Book Name : ";
                gets(bname);
                cout<<"\nModify Author's Name of Book : ";
                gets(aname);
        }
        char* retbno()
        {
                return bno;
        }

        void report()
        {cout<<bno<<setw(30)<<bname<<setw(30)<<aname<<endl;}


};      //class ends here



class student
{
        char admno[6];
        char name[20];
        char stbno[6];
        int token;
public:
        void create_student()
        {
                clrscr();
                cout<<"\nNEW STUDENT ENTRY...\n";
                cout<<"\nEnter The admission no. ";
                cin>>admno;
                cout<<"\n\nEnter The Name of The Student ";
                gets(name);
                token=0;
                stbno[0]='/0';
                cout<<"\n\nStudent Record Created..";
        }

        void show_student()
        {
                cout<<"\nAdmission no. : "<<admno;
                cout<<"\nStudent Name : ";
                puts(name);
                cout<<"\nNo of Book issued : "<<token;
                if(token==1)
```

```
                        cout<<"\nBook No "<<stbno;
        }

        void modify_student()
        {
                cout<<"\nAdmission no. : "<<admno;
                cout<<"\nModify Student Name : ";
                gets(name);
        }

        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<<endl;}

};      //class ends here



//***************************************************************
//          global declaration for stream object, object
//***************************************************************

fstream fp,fp1;
```

```
book bk;
student st;


//***************************************************************
//              function to write in file
//***************************************************************

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

void write_student()
{
        char ch;
        fp.open("student.dat",ios::out|ios::app);
        do
        {
                st.create_student();
                fp.write((char*)&st,sizeof(student));
                cout<<"\n\ndo you want to add more record..(y/n?)";
                cin>>ch;
        }while(ch=='y'||ch=='Y');
        fp.close();
}


//***************************************************************
//              function to read specific record from file
//***************************************************************


void display_spb(char n[])
{
        cout<<"\nBOOK DETAILS\n";
        int flag=0;
        fp.open("book.dat",ios::in);
        while(fp.read((char*)&bk,sizeof(book)))
```

```
		{
			if(strcmpi(bk.retbno(),n)==0)
			{
				bk.show_book();
				flag=1;
			}
		}

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

void display_sps(char n[])
{
		cout<<"\nSTUDENT DETAILS\n";
		int flag=0;
		fp.open("student.dat",ios::in);
		while(fp.read((char*)&st,sizeof(student)))
		{
			if((strcmpi(st.retadmno(),n)==0))
			{
				st.show_student();
				flag=1;
			}
		}

		fp.close();
		if(flag==0)
			cout<<"\n\nStudent does not exist";
		getch();
}


//***************************************************************
//		function to modify record of file
//***************************************************************


void modify_book()
{
		char n[6];
		int found=0;
		clrscr();
		cout<<"\n\n\tMODIFY BOOK REOCORD.... ";
		cout<<"\n\n\tEnter The book no. of The book";
		cin>>n;
		fp.open("book.dat",ios::in|ios::out);
```

```
		while(fp.read((char*)&bk,sizeof(book)) && found==0)
		{
			if(strcmpi(bk.retbno(),n)==0)
			{
				bk.show_book();
				cout<<"\nEnter The New Details of book"<<endl;
				bk.modify_book();
				int pos=-1*sizeof(bk);
				fp.seekp(pos,ios::cur);
				fp.write((char*)&bk,sizeof(book));
				cout<<"\n\n\t Record Updated";
				found=1;
			}
		}

		fp.close();
		if(found==0)
			cout<<"\n\n Record Not Found ";
		getch();
}


void modify_student()
{
		char n[6];
		int found=0;
		clrscr();
		cout<<"\n\n\tMODIFY STUDENT RECORD... ";
		cout<<"\n\n\tEnter The admission no. of The student";
		cin>>n;
		fp.open("student.dat",ios::in|ios::out);
		while(fp.read((char*)&st,sizeof(student)) && found==0)
		{
			if(strcmpi(st.retadmno(),n)==0)
			{
				st.show_student();
				cout<<"\nEnter The New Details of student"<<endl;
				st.modify_student();
				int pos=-1*sizeof(st);
				fp.seekp(pos,ios::cur);
				fp.write((char*)&st,sizeof(student));
				cout<<"\n\n\t Record Updated";
				found=1;
			}
		}

		fp.close();
		if(found==0)
			cout<<"\n\n Record Not Found ";
```

```
	getch();
}

//***************************************************************
//	function to delete record of file
//***************************************************************


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;
	fp.open("student.dat",ios::in|ios::out);
	fstream fp2;
	fp2.open("Temp.dat",ios::out);
	fp.seekg(0,ios::beg);
	while(fp.read((char*)&st,sizeof(student)))
	{
		if(strcmpi(st.retadmno(),n)!=0)
			fp2.write((char*)&st,sizeof(student));
		else
			flag=1;
	}

	fp2.close();
	fp.close();
	remove("student.dat");
	rename("Temp.dat","student.dat");
	if(flag==1)
		cout<<"\n\n\tRecord Deleted ..";
	else
		cout<<"\n\nRecord not found";
	getch();
}


void delete_book()
{
	char n[6];
	clrscr();
	cout<<"\n\n\n\tDELETE BOOK ...";
	cout<<"\n\nEnter The Book no. of the Book You Want To Delete : ";
	cin>>n;
	fp.open("book.dat",ios::in|ios::out);
	fstream fp2;
```

```
	fp2.open("Temp.dat",ios::out);
	fp.seekg(0,ios::beg);
	while(fp.read((char*)&bk,sizeof(book)))
	{
		if(strcmpi(bk.retbno(),n)!=0)
		{
			fp2.write((char*)&bk,sizeof(book));
		}
	}

	fp2.close();
	fp.close();
	remove("book.dat");
	rename("Temp.dat","book.dat");
	cout<<"\n\n\tRecord Deleted ..";
	getch();
}



//***************************************************************
//	function to display all students list
//***************************************************************

void display_alls()
{
	clrscr();
	fp.open("student.dat",ios::in);
	if(!fp)
	{
		cout<<"ERROR!!! FILE COULD NOT BE OPEN ";
		getch();
		return;
	}

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

	while(fp.read((char*)&st,sizeof(student)))
	{
		st.report();
	}

	fp.close();
	getch();
```

```
}


//***************************************************************
//          function to display Books list
//***************************************************************

void display_allb()
{
          clrscr();
          fp.open("book.dat",ios::in);
          if(!fp)
          {
                    cout<<"ERROR!!! FILE COULD NOT BE OPEN ";
                    getch();
                    return;
          }

          cout<<"\n\n\t\tBook LIST\n\n";
          cout<<"==========================================================
==================\n";
          cout<<"Book Number"<<setw(20)<<"Book Name"<<setw(25)<<"Author\n";
          cout<<"==========================================================
==================\n";

          while(fp.read((char*)&bk,sizeof(book)))
          {
                    bk.report();
          }
          fp.close();
          getch();
}



//***************************************************************
//          function to issue book
//***************************************************************

void book_issue()
{
          char sn[6],bn[6];
          int found=0,flag=0;
          clrscr();
          cout<<"\n\nBOOK ISSUE ...";
          cout<<"\n\n\tEnter The student's admission no.";
          cin>>sn;
          fp.open("student.dat",ios::in|ios::out);
          fp1.open("book.dat",ios::in|ios::out);
```

```
        while(fp.read((char*)&st,sizeof(student)) && found==0)
        {
                if(strcmpi(st.retadmno(),sn)==0)
                {
                        found=1;
                        if(st.rettoken()==0)
                        {
                                cout<<"\n\n\tEnter the book no. ";
                                cin>>bn;
                                while(fp1.read((char*)&bk,sizeof(book))&& flag==0)
                                {
                                        if(strcmpi(bk.retbno(),bn)==0)
                                        {
                                                bk.show_book();
                                                flag=1;
                                                st.addtoken();
                                                st.getstbno(bk.retbno());
                                                int pos=-1*sizeof(st);
                                                fp.seekp(pos,ios::cur);
                                                fp.write((char*)&st,sizeof(student));
                                                cout<<"\n\n\t Book issued
successfully\n\nPlease Note: Write the current date                                                                    in ba
                                        }
                                }
                                if(flag==0)
                                        cout<<"Book no does not exist";
                        }
                        else
                                cout<<"You have not returned the last book ";

                }
        }
        if(found==0)
                cout<<"Student record not exist...";
        getch();
        fp.close();
        fp1.close();
}

//***************************************************************
//          function to deposit book
//***************************************************************

void book_deposit()
{
   char sn[6],bn[6];
   int found=0,flag=0,day,fine;
   clrscr();
   cout<<"\n\nBOOK DEPOSIT ...";
```

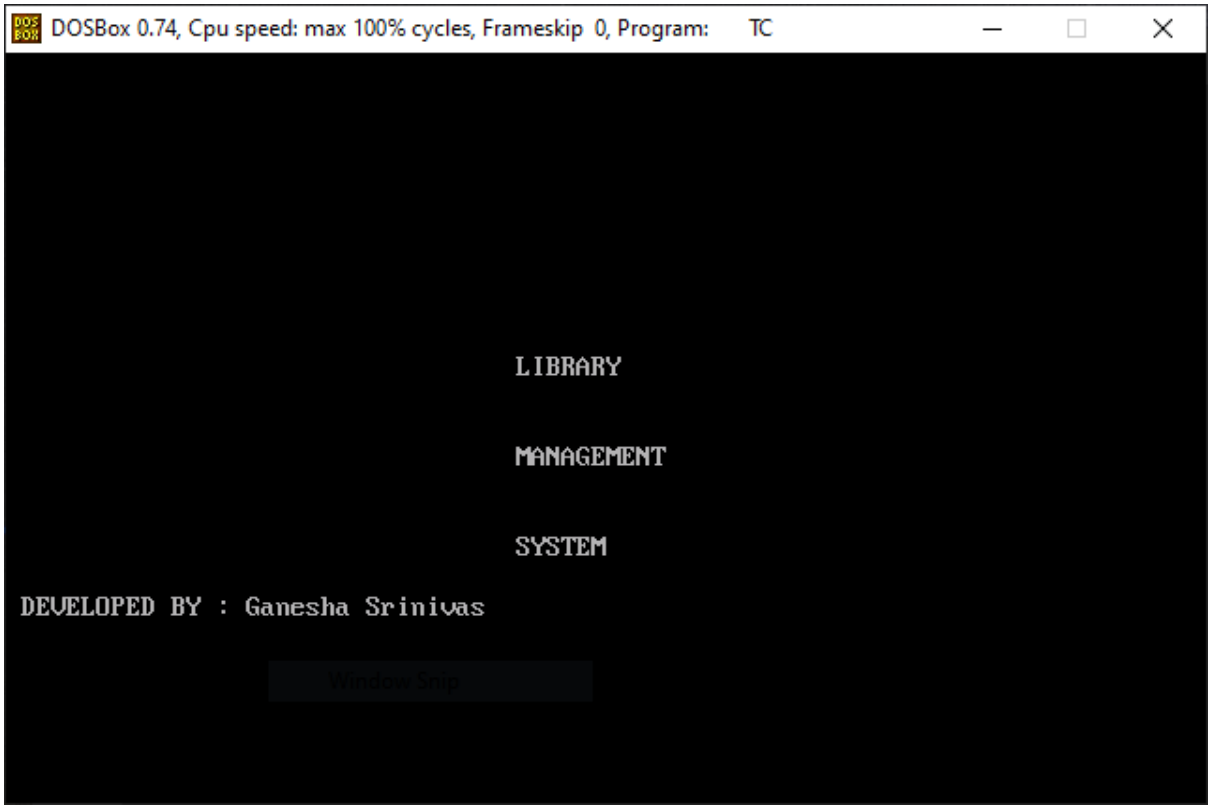
```
cout<<"\n\n\tEnter The student's admission no.";
cin>>sn;
fp.open("student.dat",ios::in|ios::out);
fp1.open("book.dat",ios::in|ios::out);
while(fp.read((char*)&st,sizeof(student)) && found==0)
  {
        if(strcmpi(st.retadmno(),sn)==0)
        {
              found=1;
              if(st.rettoken()==1)
              {
                    while(fp1.read((char*)&bk,sizeof(book))&& flag==0)
                    {
                      if(strcmpi(bk.retbno(),st.retstbno())==0)
                    {
                          bk.show_book();
                          flag=1;
                          cout<<"\n\nBook deposited in no. of days";
                          cin>>day;
                          if(day>15)
                          {
                            fine=(day-15)*1;
                            cout<<"\n\nFine has to deposited Rs. "<<fine;
                          }
                                st.resettoken();
                                int pos=-1*sizeof(st);
                                fp.seekp(pos,ios::cur);
                                fp.write((char*)&st,sizeof(student));
                                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();
fp.close();
fp1.close();
}
```

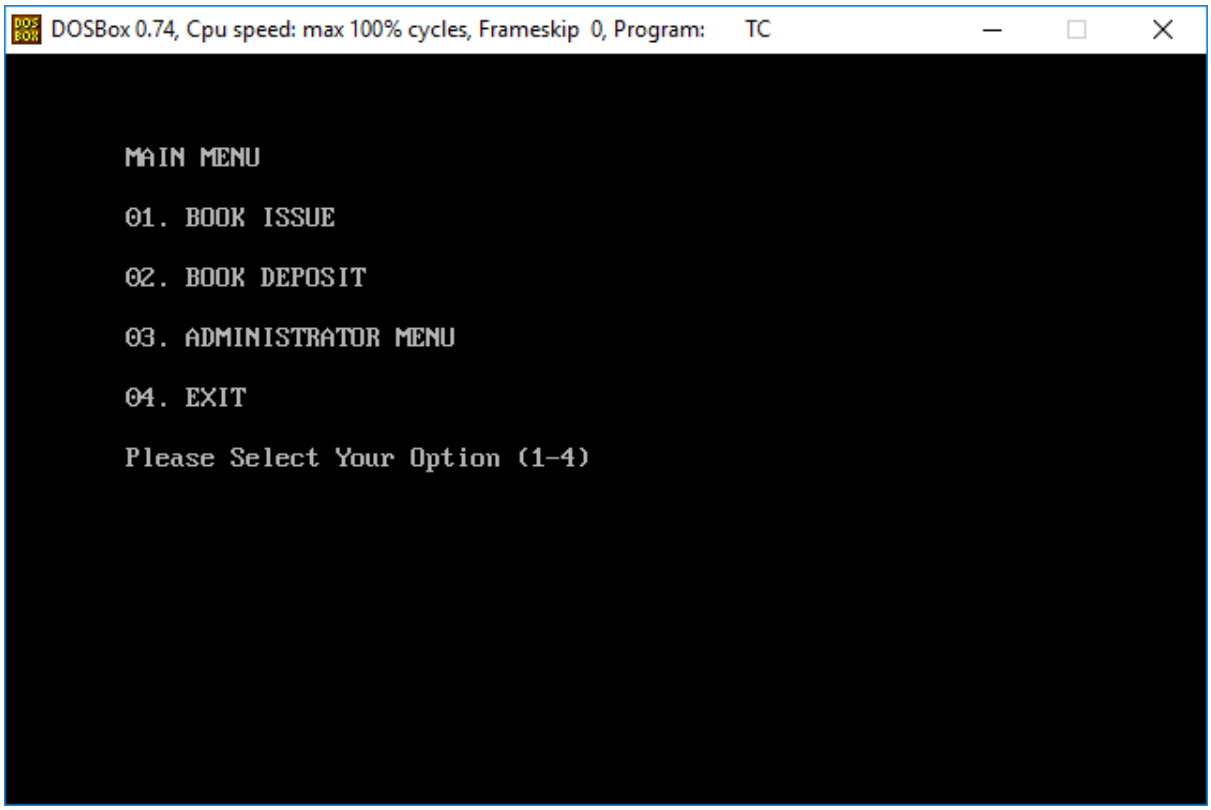
//***

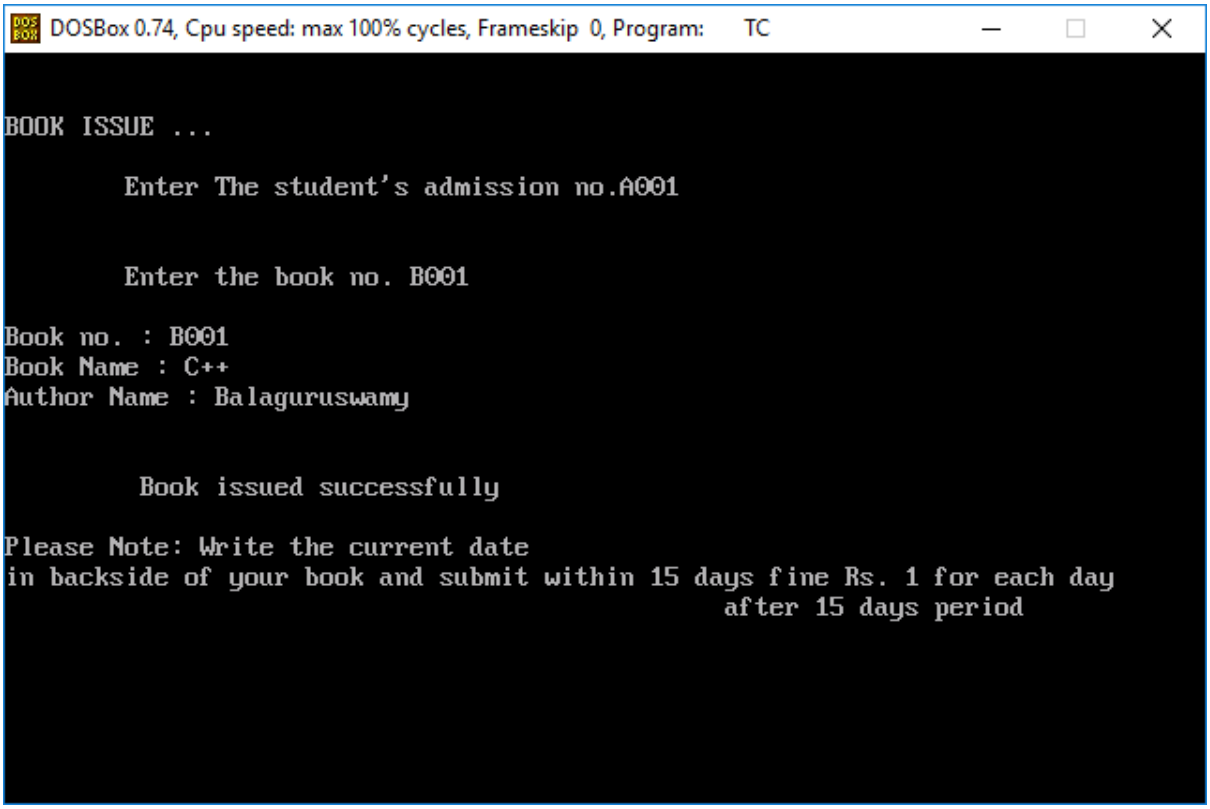
```
//          INTRODUCTION FUNCTION
//*****************************************************************

void intro()
{
        clrscr();
        gotoxy(35,11);
        cout<<"LIBRARY";
        gotoxy(35,14);
        cout<<"MANAGEMENT";
        gotoxy(35,17);
        cout<<"SYSTEM";
        cout<<"\n\n DEVELOPED BY : ANAMIKA S TRIPATHI(1BM18MCA03) &
GANESHA S(1BF18MCA06)";
        getch();
}



//*****************************************************************
//          ADMINISTRATOR MENU FUNCTION
//*****************************************************************

void admin_menu()
{
        clrscr();
        int ch2;
        cout<<"\n\n\n\tADMINISTRATOR MENU";
        cout<<"\n\n\t1.CREATE STUDENT RECORD";
        cout<<"\n\n\t2.DISPLAY ALL STUDENTS RECORD";
        cout<<"\n\n\t3.DISPLAY SPECIFIC STUDENT RECORD ";
        cout<<"\n\n\t4.MODIFY STUDENT RECORD";
        cout<<"\n\n\t5.DELETE STUDENT RECORD";
        cout<<"\n\n\t6.CREATE BOOK ";
        cout<<"\n\n\t7.DISPLAY ALL BOOKS ";
        cout<<"\n\n\t8.DISPLAY SPECIFIC BOOK ";
        cout<<"\n\n\t9.MODIFY BOOK ";
        cout<<"\n\n\t10.DELETE BOOK ";
        cout<<"\n\n\t11.BACK TO MAIN MENU";
        cout<<"\n\n\tPlease Enter Your Choice (1-11) ";
        cin>>ch2;
        switch(ch2)
        {
                case 1: clrscr();
                        write_student();break;
                case 2: display_alls();break;
                case 3:
                        char num[6];
                        clrscr();
```

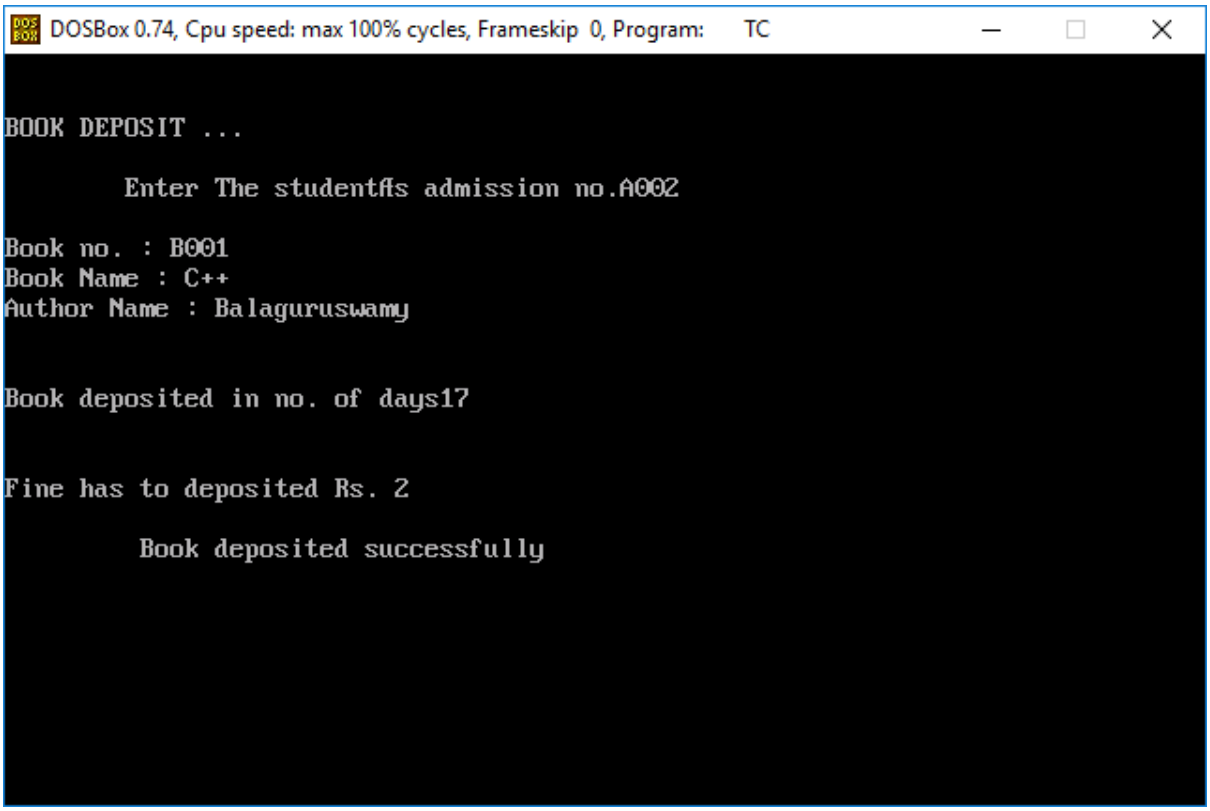
```
                        cout<<"\n\n\tPlease Enter The Admission No. ";
                        cin>>num;
                        display_sps(num);
                        break;
                case 4: modify_student();break;
                case 5: delete_student();break;
                case 6: clrscr();
                        write_book();break;
                case 7: display_allb();break;
                case 8: {
                        char num[6];
                        clrscr();
                        cout<<"\n\n\tPlease Enter The book No. ";
                        cin>>num;
                        display_spb(num);
                        break;
                        }
                case 9: modify_book();break;
                case 10: delete_book();break;
                case 11: return;
                default:cout<<"\a";
        }
        admin_menu();
}


//***************************************************************
//          THE MAIN FUNCTION OF PROGRAM
//***************************************************************


void main()
{
        char ch;
        intro();
        do
        {
                clrscr();
                cout<<"\n\n\n\tMAIN MENU";
                cout<<"\n\n\t01. BOOK ISSUE";
                cout<<"\n\n\t02. BOOK DEPOSIT";
        cout<<"\n\n\t03. ADMINISTRATOR MENU";
                cout<<"\n\n\t04. EXIT";
                cout<<"\n\n\tPlease Select Your Option (1-4) ";
                ch=getche();
                switch(ch)
                {
                        case '1':clrscr();
                                book_issue();
```

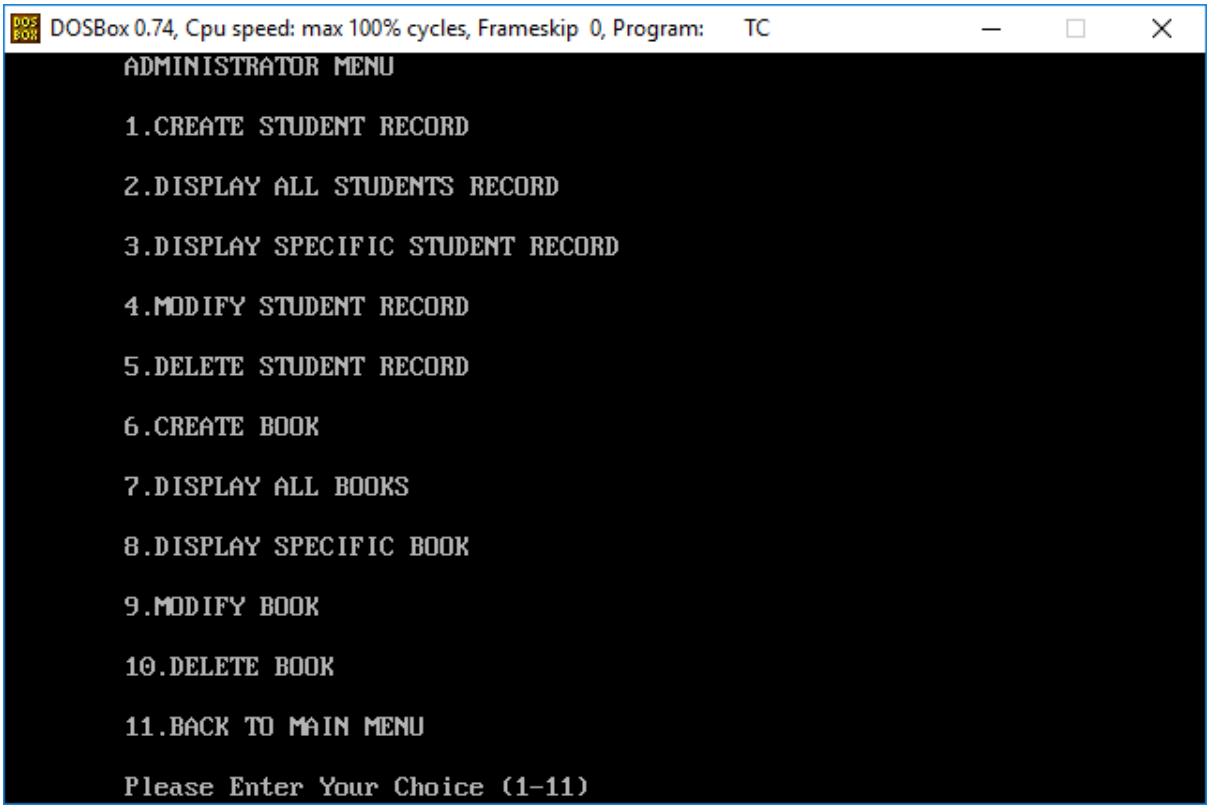
```
                                        break;
                                case '2':book_deposit();
                                        break;
                                case '3':admin_menu();
                                        break;
                                case '4':exit(0);
                                default :cout<<"\a";
                        }
        }while(ch!='4');
}

//*****************************************************************
//                              END OF PROJECT
//*****************************************************************
```

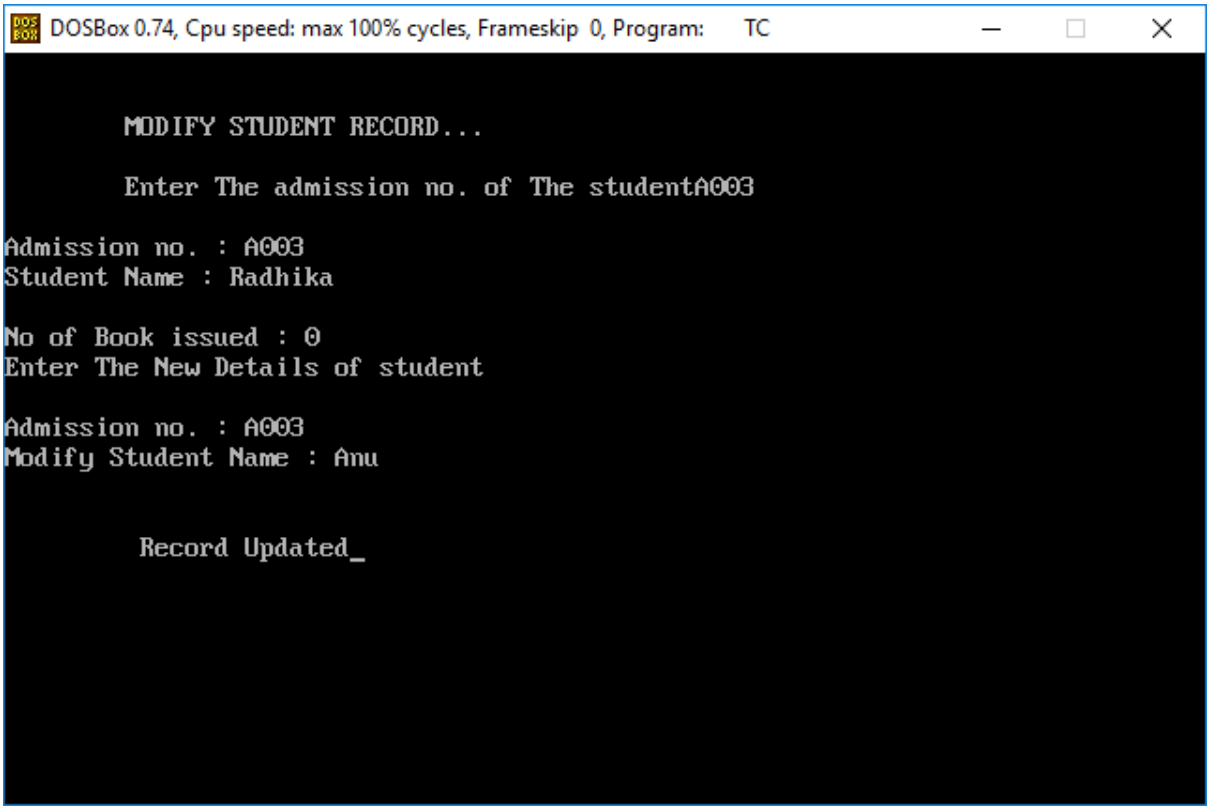

DOSBox 0.74, Cpu speed: max 100% cycles, Frameskip 0, Program: TC
LIBRARY
MANAGEMENT
SYSTEM
DEVELOPED BY : Ganesha Srinivas

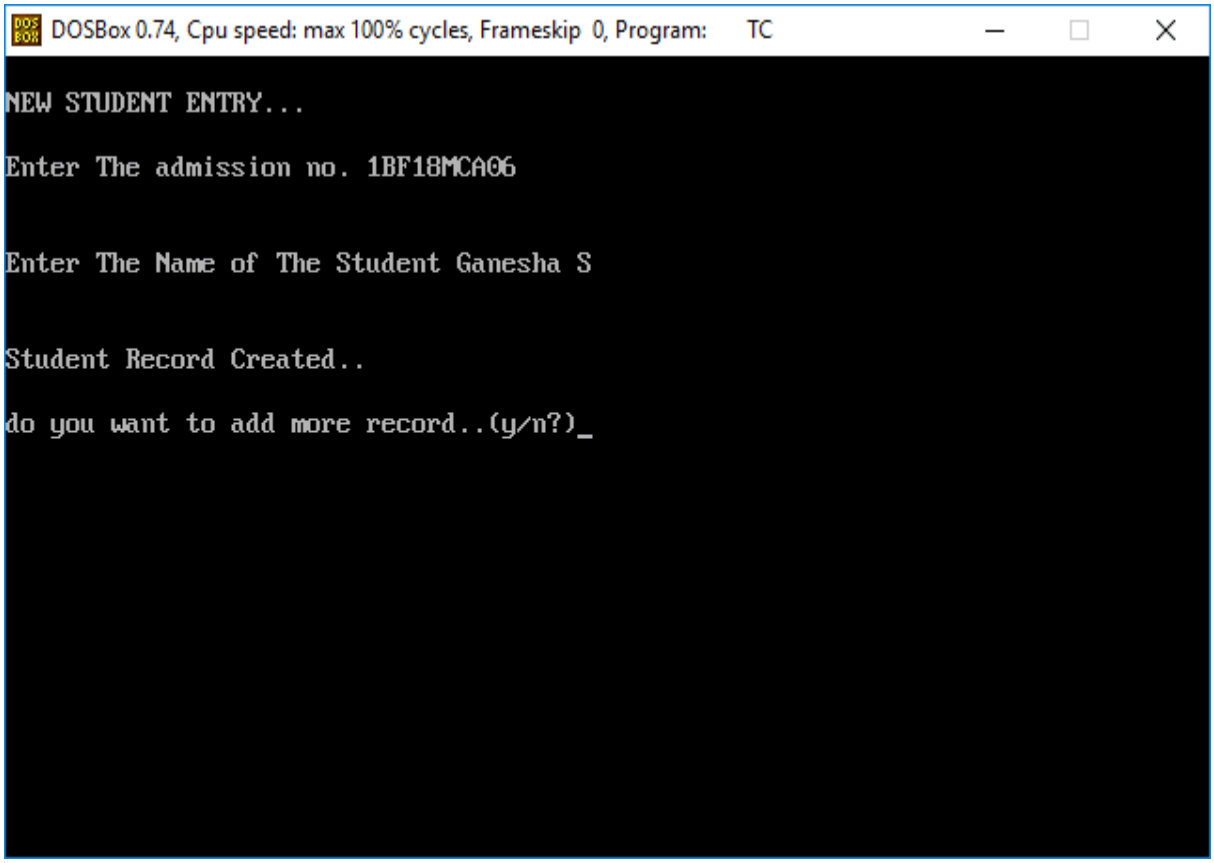

DOSBox 0.74, Cpu speed: max 100% cycles, Frameskip 0, Program: TC
MAIN MENU
01. BOOK ISSUE
02. BOOK DEPOSIT
03. ADMINISTRATOR MENU
04. EXIT
Please Select Your Option (1-4)

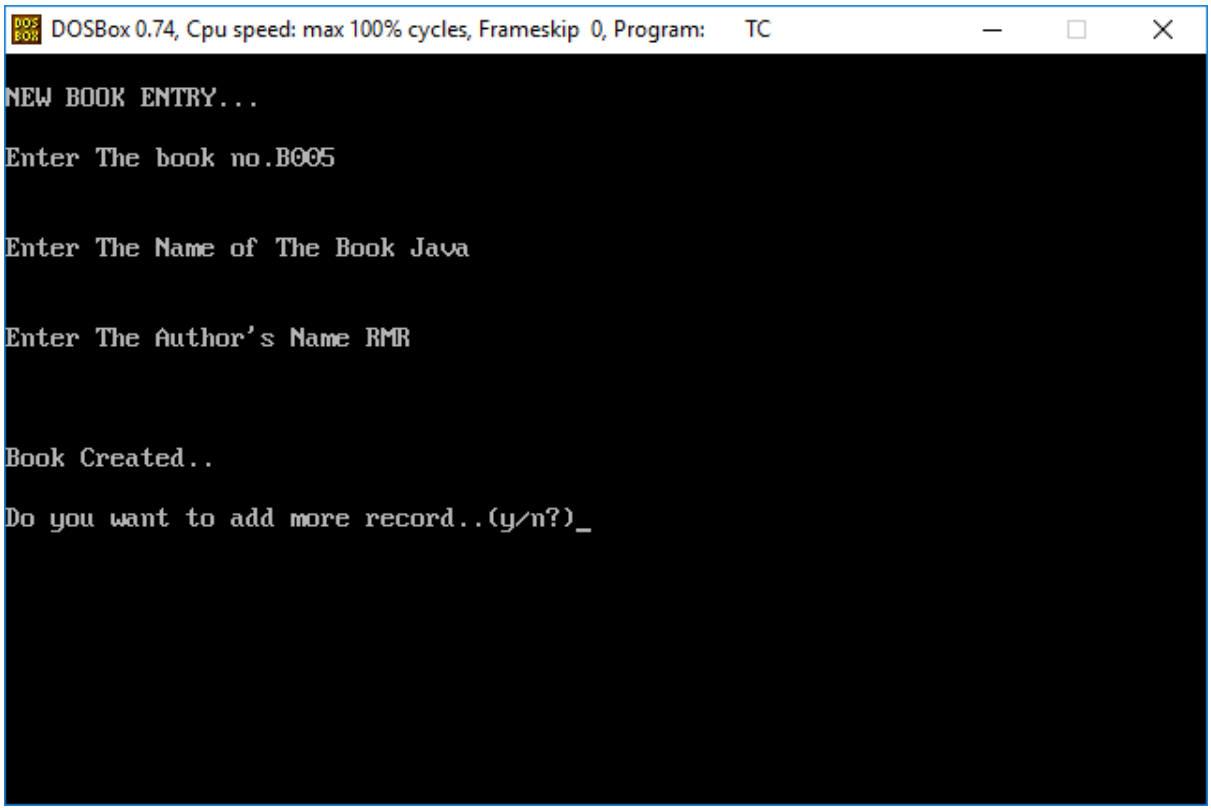

DOSBox 0.74, Cpu speed: max 100% cycles, Frameskip 0, Program: TC
BOOK ISSUE ...
Enter The student's admission no.A001
Enter the book no. B001
Book no. : B001
Book Name : C++
Author Name : Balaguruswamy
Book issued successfully
Please Note: Write the current date
in backside of your book and submit within 15 days fine Rs. 1 for each day
after 15 days period

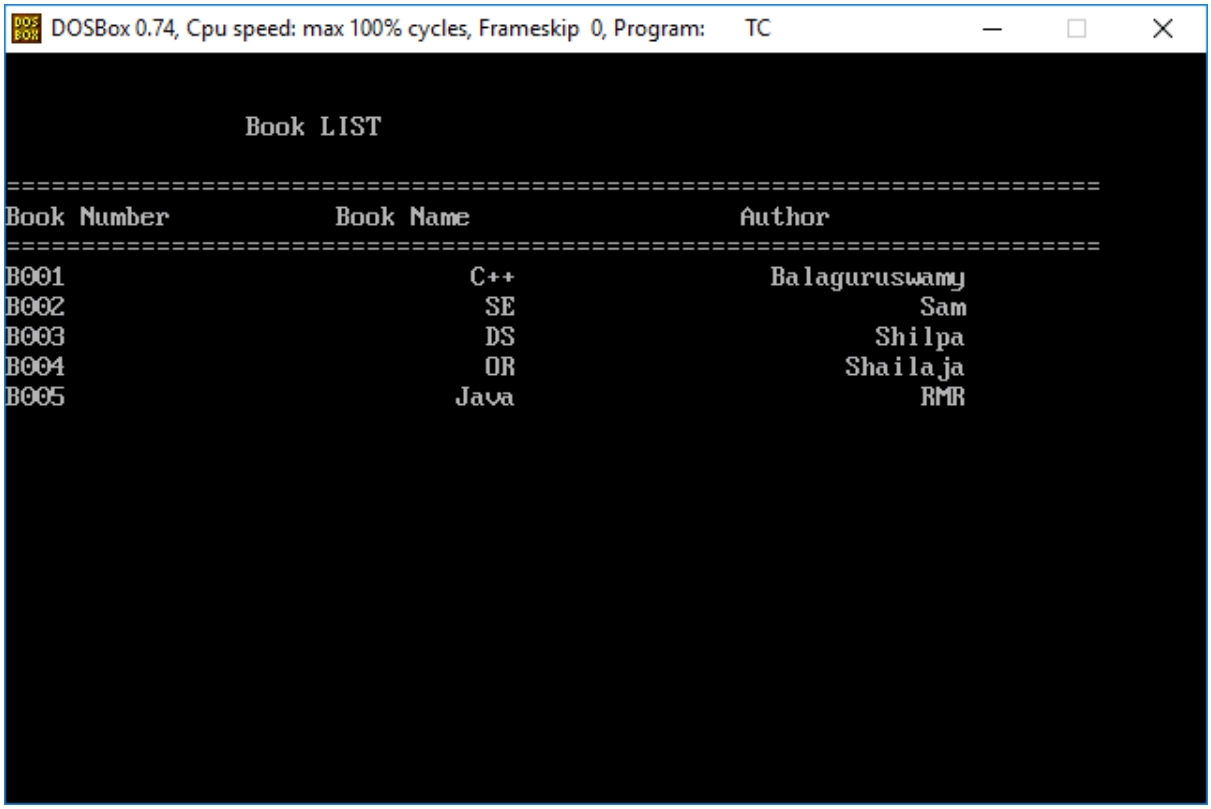

DOSBox 0.74, Cpu speed: max 100% cycles, Frameskip 0, Program: TC
BOOK DEPOSIT ...
Enter The studentfs admission no.A002
Book no. : B001
Book Name : C++
Author Name : Balaguruswamy
Book deposited in no. of days17
Fine has to deposited Rs. 2
Book deposited successfully

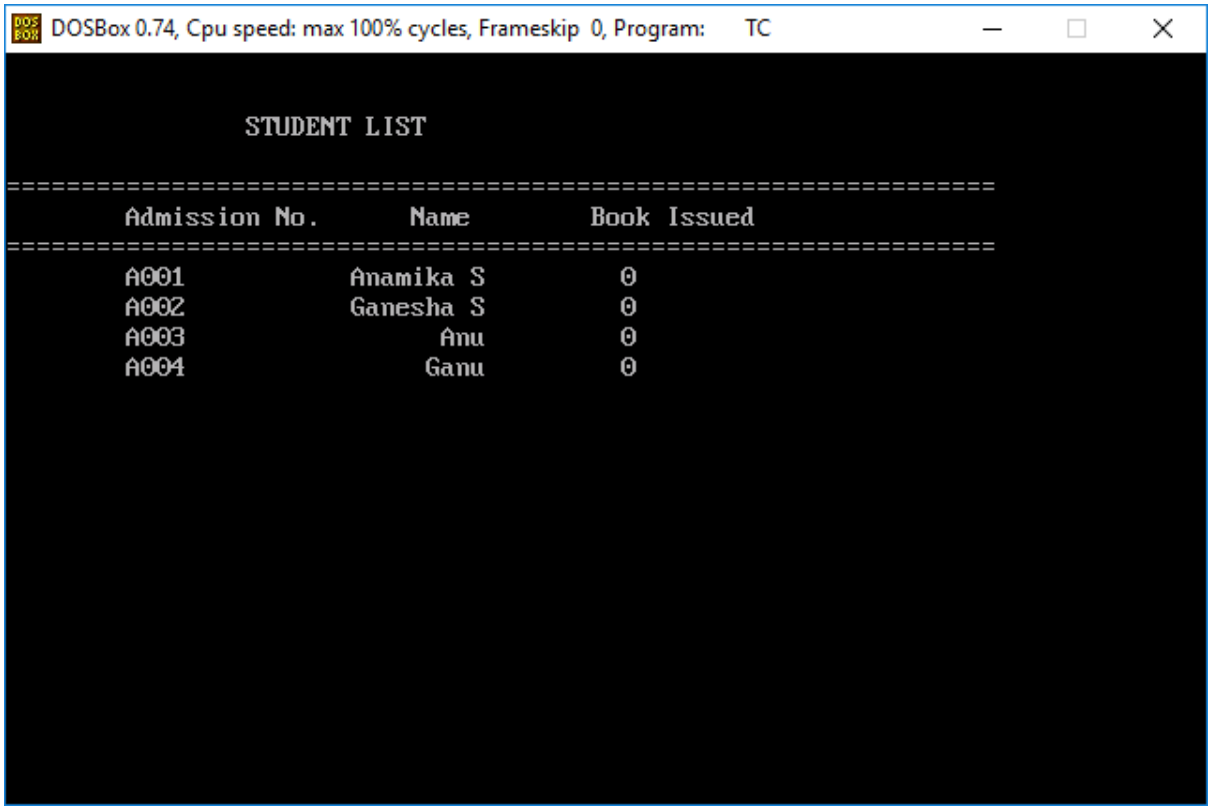

DOSBox 0.74, Cpu speed: max 100% cycles, Frameskip 0, Program: TC
ADMINISTRATOR MENU
1.CREATE STUDENT RECORD
2.DISPLAY ALL STUDENTS RECORD
3.DISPLAY SPECIFIC STUDENT RECORD
4.MODIFY STUDENT RECORD
5.DELETE STUDENT RECORD
6.CREATE BOOK
7.DISPLAY ALL BOOKS
8.DISPLAY SPECIFIC BOOK
9.MODIFY BOOK
10.DELETE BOOK
11.BACK TO MAIN MENU
Please Enter Your Choice (1-11)


DOSBox 0.74, Cpu speed: max 100% cycles, Frameskip 0, Program: TC
MODIFY STUDENT RECORD...
Enter The admission no. of The studentA003
Admission no. : A003
Student Name : Radhika
No of Book issued : 0
Enter The New Details of student
Admission no. : A003
Modify Student Name : Anu
Record Updated_


DOSBox 0.74, Cpu speed: max 100% cycles, Frameskip 0, Program: TC
NEW STUDENT ENTRY...
Enter The admission no. 1BF18MCA06
Enter The Name of The Student Ganesha S
Student Record Created..
do you want to add more record..(y/n?)_


DOSBox 0.74, Cpu speed: max 100% cycles, Frameskip 0, Program: TC
NEW BOOK ENTRY...
Enter The book no.B005
Enter The Name of The Book Java
Enter The Author's Name RMR
Book Created..
Do you want to add more record..(y/n?)_


DOSBox 0.74, Cpu speed: max 100% cycles, Frameskip 0, Program: TC
Book LIST
Book Number Book Name Author
B001 C++ Balaguruswamy
B002 SE Sam
B003 DS Shilpa
B004 OR Shailaja
B005 Java RMR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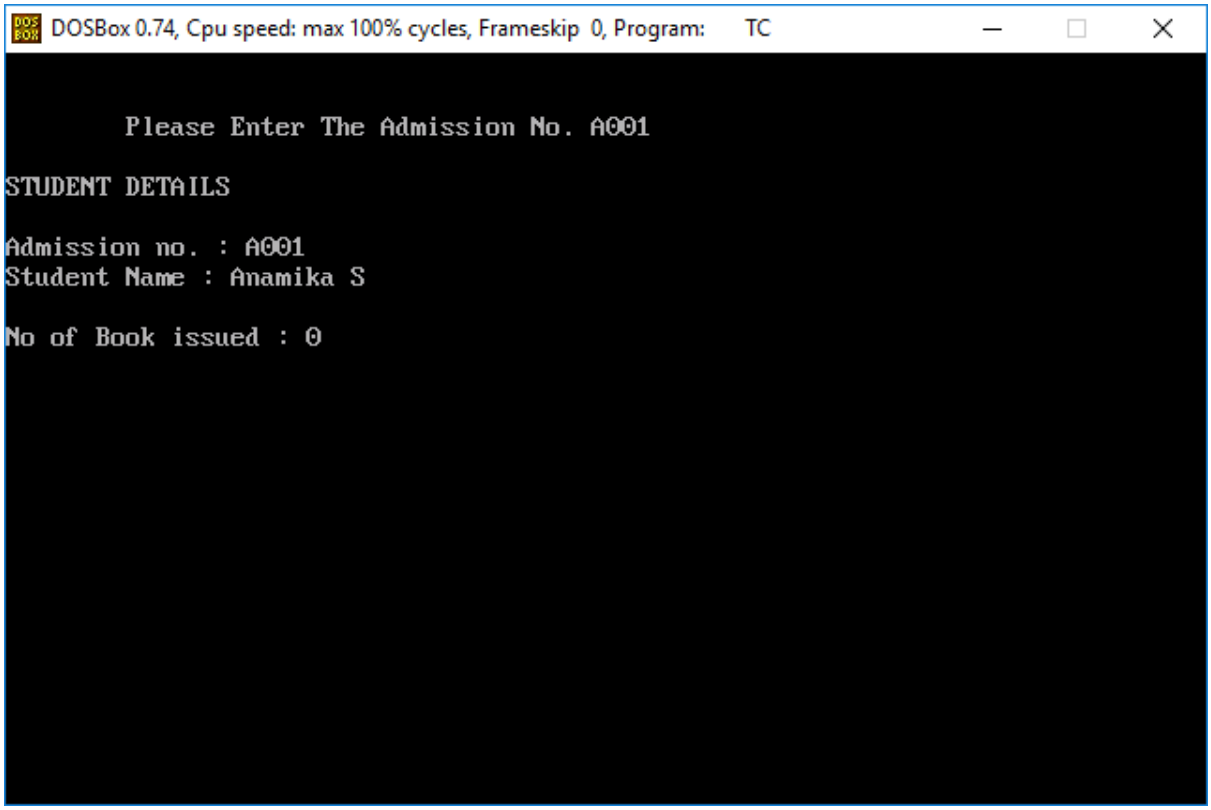
STUDENT LIST
Admission No. Name Book Issued
A001 Anamika S 0
A002 Ganesha S 0
A003 Anu 0
A004 Ganu 0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Please Enter The Admission No. A001
STUDENT DETAILS
Admission no. : A001
Student Name : Anamika S
No of Book issued : 0

7. CONCLUSION

Owing to the vastness of the information to be stored and the diverse tasks of Fee Report System involves, maintaining the Data becomes enormous. Library Management System has book and student class with data members like book no, bookname, authorname. Books records is stored in a binary file. An administrator can issue book and deposit it within 15 days. Student Records are stored in binary file. Administrator can add, modify or delete record. We have not used graphics to keep program simple. The date will be stored in binary file i.e. on .dat file namely BOOK.DAT and STUDENT.DAT. A Heart full attempt is made to the software to be bug free as we know “To error is Human”, there may be some bugs.

8. REFERENCE

[1].https://www.tutorialspoint.com/cplusplus/

[2]. http://www.cplusplus.com/doc/tutorial/

[3]. https://www.tutorialspoint.com/cplusplus/cpp_files_streams.htm

[4]. https://www.studytonight.com/cpp/file-streams-in-cpp.php