



PROJECT WORK ON C

Objectives :

After going through this unit, you will be able to:

- Write project synopsis including cover paper, table of content and preface.
- Physical and logical design of the project.
- Design and development of realtime project.
- Coding of the project using C.
- Project report with documentation.

10.1 Project Synopsis of the Project

Computerized information system enables us to find right information at right time very instantly. So, such information systems have been more and more useful and essential day by day from small organization to big enterprises. The project that we have developed is also a very useful information system that provides the right and correct information about various books in library. The title of the project is '**Library Books Info System (LBIS)**' and it provides the information about the books in library.

This project is very useful in library as it enables the library staffs to maintain the records of all library books in computer so that they can find the information about books very fast. Since it is developed using C language, the project '**Library Books Info System (LBIS)**' is CUI based so that the interaction with the system is through only the keyboard. So, although it is a bit more difficult for the user who are quite familiar with the GUI based environment, menu facilities are available so that the user just can select the required option from the list of commands and does the different tasks accordingly.

The library staffs can perform the following operations in the project.

1. Insert new record
2. Display record
3. Update record
4. Delete record
5. Search record
6. Quit

It stores the following records about the books.

Book(Book no, Title, Subject, Price, No. of books in library, Author, Publisher).

The 'Bookno' is the unique number assigned to each book in library and it has been maintained in the project automatically. The project itself checks the uniqueness and informs the user if the duplicate book no is entered.

10.2 Project Development using C Programming

The project has been developed using the C language. 'Turbo C++ (TC)' program has been used for developing the project. So, some of its features such as 'clrscr()' function does not function in other environment such as 'DEV C++', 'Visual C++' environment if the source code is copied to there. But after we make the executive file, it runs in all environments.

When the project runs, it displays the following menu:



In order to perform all these features, in project contains the following codes written in C language. [Note: This project is developed using Turbo C++ IDE, so you want to copy the entire code of the project into other environment sub as DEV C++, Visual C++ etc, you need to remove all the 'clrscr()' library function.]

```
//code to include necessary header files
#include<stdio.h>
#include<conio.h>
#include<process.h>
#include<string.h>
//Code to declare function prototype
void insertData();
void displayData(void);
void updateData(int);
```


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```

        insertData();
        break;
    case 2:
        //code to call displayData function
        displayData();
        break;
    case 3:
        //code to call updateData function
        printf("\n Enter the book no. which you want to update ");
        scanf("%d",&bn);
        updateData(bn);
        break;
    case 4:
        //code to call deleteData function
        printf("\n Enter the book no. which you want to delete ");
        scanf("%d",&bn);
        deleteData(bn);
        break;
    case 5:
        //code to call searchdata function
        searchData();
        break;
    case 6:
        exit(0);
    default:
        printf("\n\na\naSORRY!!! You entered an invalid choice ");
        printf("\n Please, enter the valid choice between 1 to 6 ");
        getch();
    }
}

//Code to declare function definition
void insertData()
{
    char next='y';
    int duplicatebookno=0,lastbookno;;
    clrscr();

    while(next=='y' || next=='Y')
    {
        aa:
        clrscr();
        printf("\nEnter the book no ");
        scanf("%d",&b.bn);

        //code to call function to check the book no. has been repeated or not
        duplicatebookno=checkBookNo(b.bn);
    }
}

```

```

        if(duplicatebookno==1)
        {
            printf("\n\nThe book no. which you typed just
is already exists in the data file!!!!");
            printf("\n\nPlease, enter the unique book no.!!!");
            lastbookno=findLastBookNo();
            printf("\n\nThe last book no. is : %d",lastbookno);
            getch();
            goto aa;
        }
        fflush(stdin);
        printf("\nEnter the title of the book ");
        gets(b.title);
        printf("\nEnter the subject of the book ");
        gets(b.sub);
        printf("Enter the price of the book ");
        scanf("%f",&b.price);
        printf("\nEnter the no. of book ");
        scanf("%d",&b.nob);
        fflush(stdin);
        printf("\nEnter the author of the book ");
        gets(b.author);
        printf("\nEnter the publisher of the book ");
        gets(b.publisher);
        fp=fopen("Book.dat","a");
        if(fp==NULL)
        {
            printf("\nFile creation error has occurred!!!");
        }
        else
        {
            fwrite(&b,sizeof(b),1,fp);
            fclose(fp);
        }
        printf("\n\nDo you want to insert record of another book (Y/N)
        next=getche();
    }
}

void displayData(void)
{
    clrscr();
    fp=fopen("Book.dat","r");
    rewind(fp);
    if(fp==NULL)
    {

```

```

        printf("\n\nRead operation failure as the file file which
you are searching does not exist!!!");
    }
    else
    {
        printf("\n\tBook No.\tTitle\tSubject\tPrice\tNo. of
Books\tAuthor\tPublisher");
        while(fread(&b,sizeof(b),1,fp)==1)
        {
            printf("\n\t%-8d\t%s\t%s\tRs.%.2f\t%d\t%s\t%s",b.bn,
b.title,b.sub,b.price,b.nob,b.author,b.publisher);
        }
        fclose(fp);
    }
    getch();
}

void updateData(int bn)
{
    fp=fopen("Book.dat","r");
    fpl=fopen("newBook.dat","w");
    if(fp==NULL || fpl==NULL)
    {
        printf("\nFile Operation failed");
    }
    else
    {
        //code to show the existing data
        printf("\n\nThe followings are the existing data!!!!!!");
        while(fread(&b,sizeof(b),1,fp)==1)
        {
            if(b.bn==bn)
            {
                printf("\n\tBook No. : %d",b.bn);
                printf("\n\tTitle : %s",b.title);
                printf("\n\tSubject : %s",b.sub);
                printf("\n\tPrice : Rs. %.2f",b.price);
                printf("\n\tNo. of Books: %d",b.nob);
                printf("\n\tAuthor : %s",b.author);
                printf("\n\tPublisher : %s",b.publisher);
            }
        }
        //code to enter new data
        rewind(fp);
        printf("\n\nEnter the new correct data ");
        while(fread(&b,sizeof(b),1,fp)==1)
        {

```



```

        if(bn==b.bn)
        {
            printf("\n\nEnter the book no ");
            scanf("%d",&b.bn);
            fflush(stdin);
            printf("\nEnter the title of the book ");
            gets(b.title);
            printf("\nEnter the subject of the book ");
            gets(b.sub);
            printf("Enter the price of the book ");
            scanf("%f",&b.price);
            printf("\nEnter the no. of book ");
            scanf("%d",&b.nob);
            fflush(stdin);
            printf("\nEnter the author of the book ");
            gets(b.author);
            printf("\nEnter the publisher of the book ");
            gets(b.publisher);
            fwrite(&b,sizeof(b),1,fpl);
        }
        else
        {
            fwrite(&b,sizeof(b),1,fpl);
        }
    }
    fclose(fp);
    fclose(fpl);
    remove("Book.dat");
    rename("newBook.dat","Book.dat");
    printf("\n\nThe record has been successfully updated in the data file\n");
    getch();
}

void deleteData(int bn)
{
    fp=fopen("Book.dat","r");
    fpl=fopen("newBook.dat","w");
    if(fp==NULL || fpl==NULL)
    {
        printf("\nFile Operation failed");
    }
    else
    {
        while(fread(&b,sizeof(b),1,fp)==1)
        {
            if(bn==b.bn)
            {
                continue;
            }
            else
            {

```

```

printf("\n\nEnter the subject of the book which you want to search ");
    gets(subject);
    fp=fopen("Book.dat","r");
    if(fp==NULL)
    {
        printf("\nFile search operation failed!!!!!!!!!!!!!!!!!!!!");
    }
    else
    {
        while(fread(&b,sizeof(b),1,fp)==1)
        {
            if(strcmpi(b.sub,subject)==0)
            {
                printf("\n\tBook No.      :      %d",b.bn);
                printf("\n\tTitle       :      %s",b.title);
                printf("\n\tSubject    :      %s",b.sub);
                printf("\n\tPrice      :      Rs.%2f",b.price);
                printf("\n\tNo. of Books:      %d",b.nob);
                printf("\n\tAuthor     :      %s",b.author);
                printf("\n\tPublisher  :      %s",b.publisher);
                found=1;
            }
        }
        if(found==0)
        {
            printf("\n!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!");
            printf("\nThe book which you are searching is not found ");
        }
        fclose(fp);
    }
    break;
case 4:
    //code to close search window
    printf("\nPress any key to quit the search operation");
    break;
default:
    printf("\nYou entered invalid choice for search ");
}
getch();

```

```

checkBookNo(int bn)

```

```

    int repeated=0,lastbookno;
    struct book bl;
    fp=fopen("Book.dat","r");
    if(fp==NULL)
    {

```



```

printf("\n\nRead operation failure as the file which
are searching does not exist!!!");
}
else
{
    while(fread(&b1,sizeof(b1),1,fp)==1)
    {
        if(b1.bn==bn)
        {
            repeated=1;
            break;
        }
    }
    fclose(fp);
}
return(repeated);
}

int findLastBookNo()
{
    int lastbookno;
    struct book b2;
    fp=fopen("Book.dat","r");
    if(fp==NULL)
    {
        printf("\n\nFile open operation failure!!!");
    }
    else
    {
        while(fread(&b2,sizeof(b2),1,fp)==1)
        {
            lastbookno=b2.bn;
        }
        fclose(fp);
    }
    return(lastbookno);
}

```

10.3 Project Report

A sample report:

ABC International College

Kathmandu, Nepal



Library Books Info System (LBIS)

Prepared By:

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Grade :- XII
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Project Development Using 'C' Language

Submitted To:

Higher Secondary Education Board (HSEB)

Kathmandu, Nepal

In partial fulfillment of Computer Science

For

Grade XII

Internal Examiner

Name :

Signature :

Date :

External Examiner

Name :

Signature:

Date :

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With Thanks

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1. Introduction

The project '*Library Book Info System (LBIS)*' is going to develop for ABC International College, Kathmandu, Nepal. The college has a good library enriched with a lot of books. The library staffs are using paper based system for maintaining the records of the books. So, it takes plenty of time for them to maintain the records and get information about the particular books. But after the installation of this project, the library staffs can replace the paper based system and fully depend on the computerized system for maintain the records of books in computer.

2. Objective

The prime objective of the project is to fulfill the requirements of ABC International College, Kathmandu, Nepal. This project has been developed to replace the existing manual system for keeping books records with computerized automated books record processing system. This project will automatically reduce the human efforts, time and cost and increases efficiency and accuracy of storing books records. The library staffs can get the right information in time and make further planning.

3. Analysis

Project analysis is the process of collecting and analyzing the requirements of the project to be developed in order to recognize the need and objective of any college for fast and accurate handling of the books information in library.

a. Identification of needs

The job of manual maintaining books record (handwritten) is very tedious, time consuming and prone to mistakes. To overcome these problems, this project has been developed.

b. Preliminary Investigation

It is a brief study of a potential project to estimate whether a detailed investigation is required or not. This project does not require any further investigation because simply we are going to develop it in C programming language.

c. Feasibility Study

A feasibility study is a preliminary study undertaken to determine whether a development of project is possible or not. This includes time factors, cost, legal or illegal factors to be studies. This project requires about 1 week to be completed. The cost will be very low. It will be legal and staffs can easily operate it.

d. Project Planning and Scheduling

The purpose of project planning is to establish reasonable plan for completing in time. The process of project planning involves developing estimates for the work to be performed, establishing the necessary the commitments and defining the plans to complete the project. This project requires about a week to get completed. The time line required for developing different tasks of the project is shown as below:

GANTT Chart:

S. N.	Jobs	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	Analysis							
2	Design							
3	Coding							
4	Testing							
5	Implementation							
6	Maintenance							

e. Hardware and Software requirement

It indicates hardware and software requirements of the project at the time of project development as well as project implementation.

Minimum hardware requirements for efficient operation of this project are as follows:

- i. Processor : Pentium and above
- ii. Hard disk : 5MB or above free space
- iii. RAM : 128 MB or above
- iv. Output Unit : Monitor
- v. Input Unit : Keyboard

Minimum hardware requirements for efficient operation of this project are as follows:

- i. Operating System : Windows XP or above Versions

4. Design

The project 'Library Books Info System' is based on CUI environment. It also has both Input Design and Output Design.

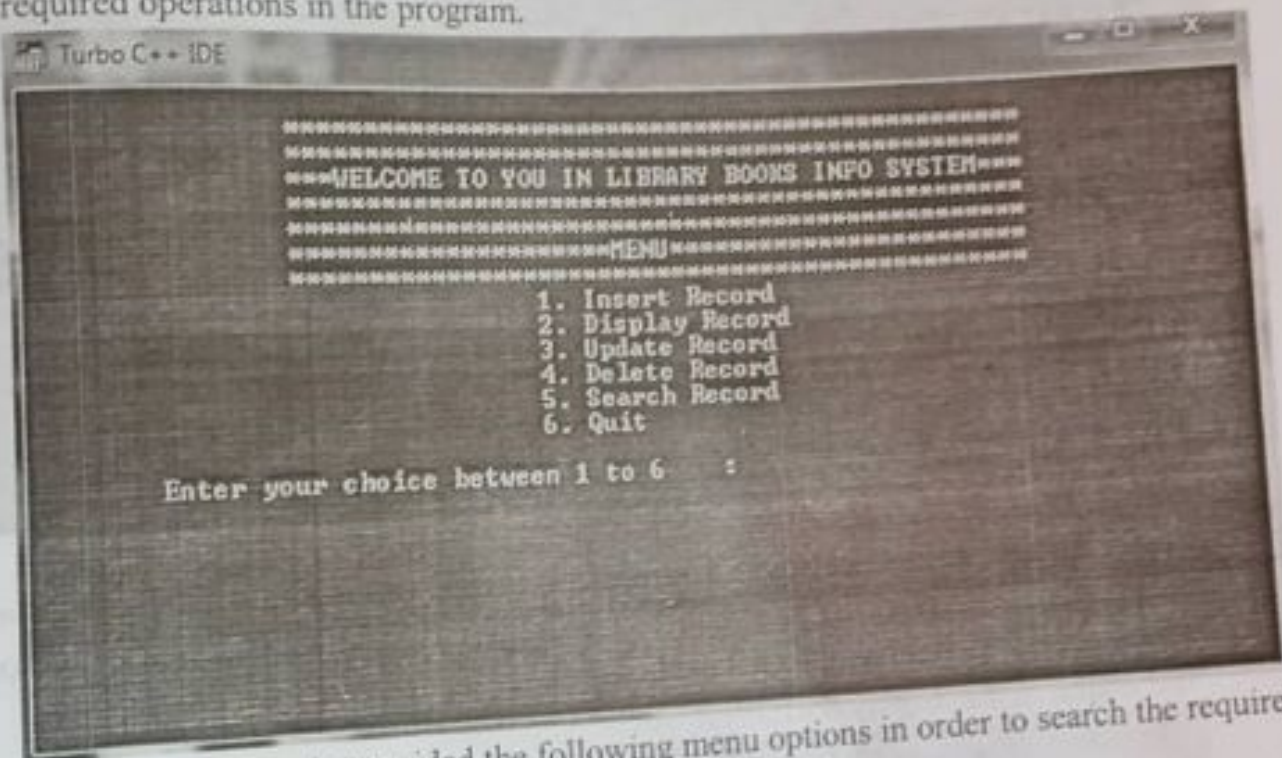
Input Design:

Input design involves the data structure design of the project and interface for the input the project. Since it handles only about the Books records, the input design of the project is very simple and stores the following information about books.

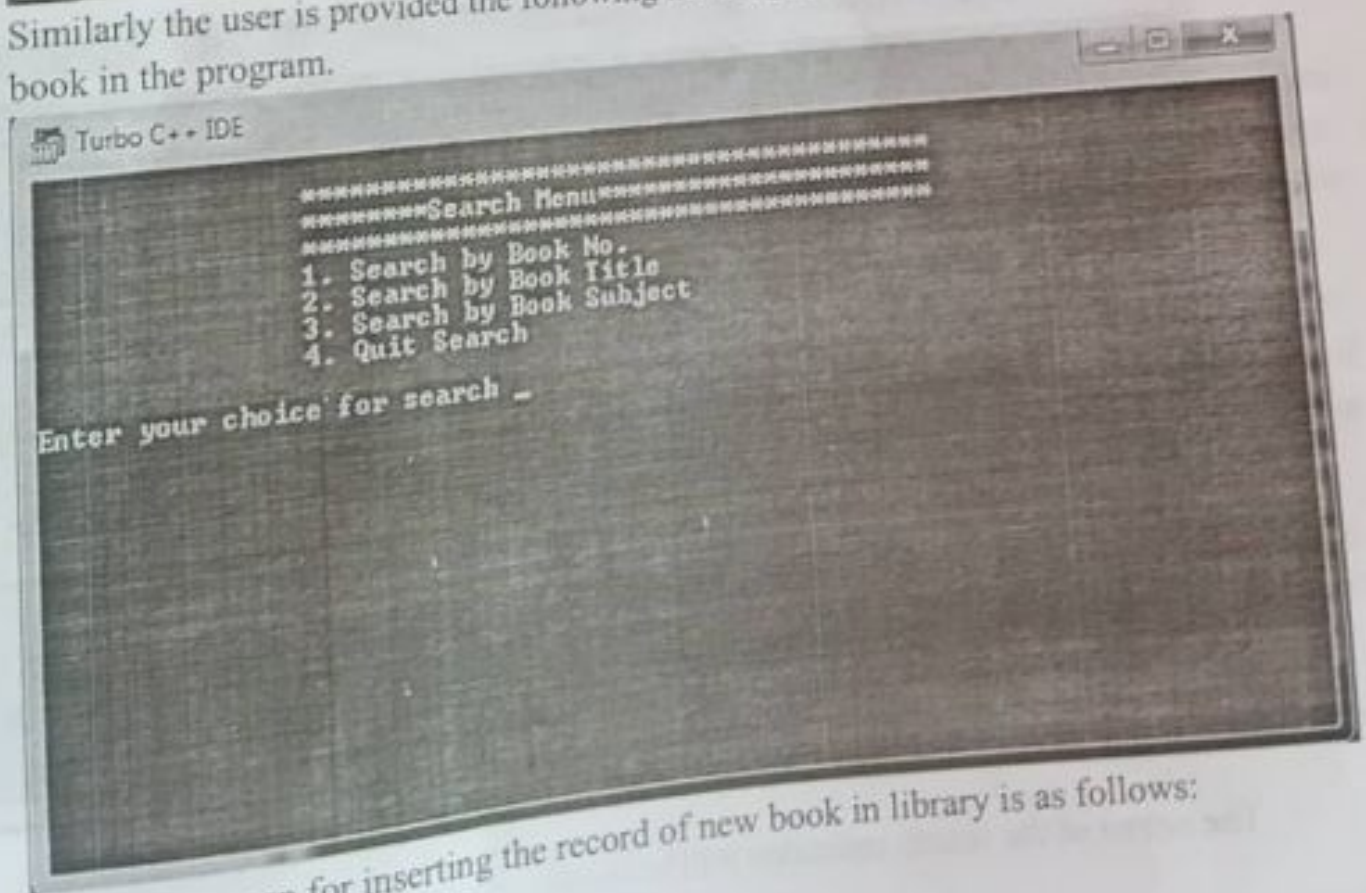
Book:

Fields	Description
Book no	It is the integer value and it stores the book number assigns to each book in library. Actually it is just like the primary key in database. So 'Bookno' assigned to each book is unique.
Title	It is the string value and it stores the title or name of the book.
Subject	It is the string value and it stores the subject of the book.
Price	It is the real number and it stores the price of the book.
NoOfBooks	It is the integer value and it stores the number of copies of the books available in library.
Author	It is the string value and it stores the name of the authors of the book.
Publisher	It is the string value and it stores the name of the publisher of the book.

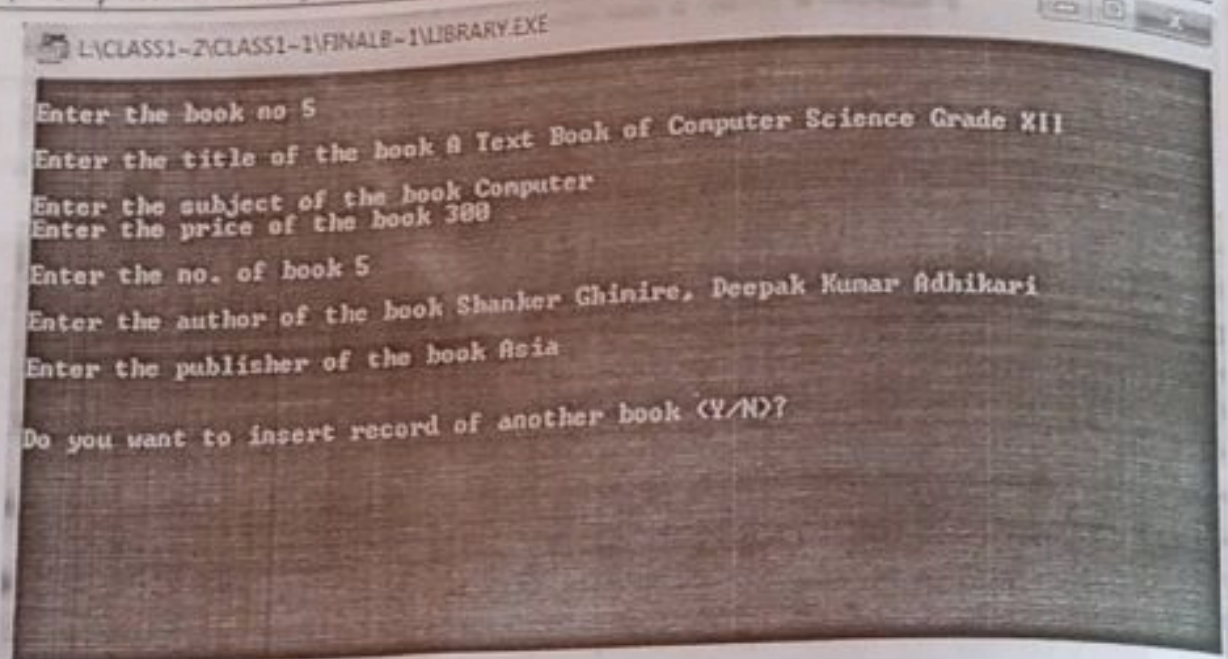
Since the project is on CUI based environment, it does not contain any visual forms or such interface. So, the first interface screen for running the project is through the menu base. The user will be provided the following menu facilities in order to select the required operations in the program.



Similarly the user is provided the following menu options in order to search the required book in the program.



The input screen for inserting the record of new book in library is as follows:



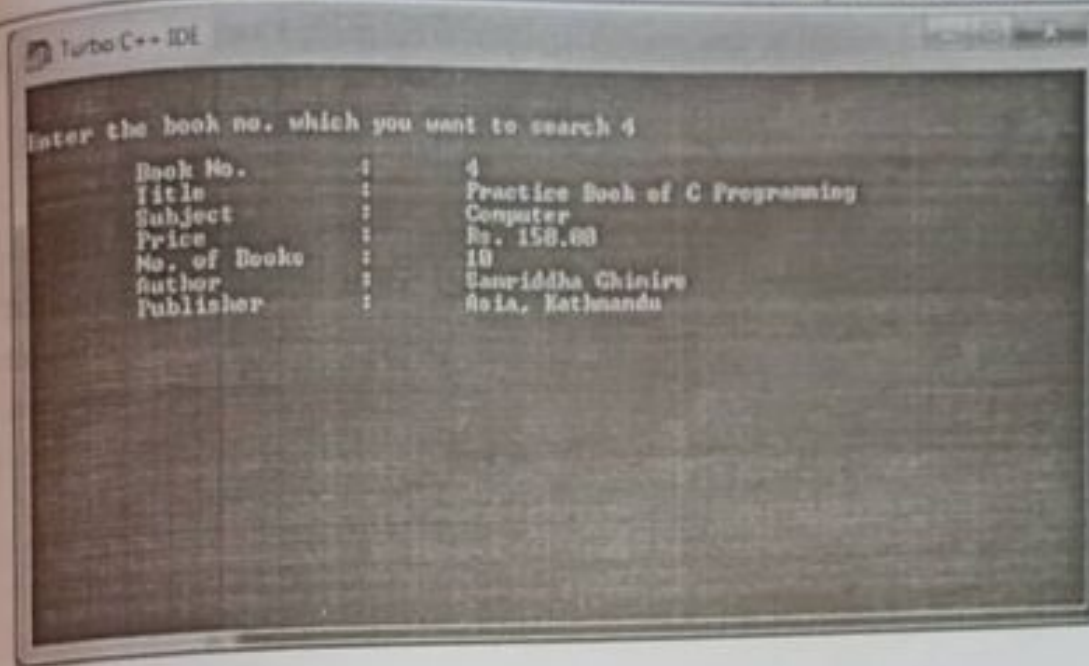
Output Design:

Output design deals with how the information or output of the program will be displayed on the screen or printed from the printer. The softcopy output of the project will be displayed only on the CUI environment.

The output of the display operations will be as follows:

	Book No.	TitleSubject	Price	No. of Books	Author	Publisher
r	1	Let us c	Computer	Rs. 500.00	4	
Ravi	2	Mero Nepali	Nepali	Rs. 340.00	5	Hari
asia	5	A Text Book of Computer Science Grade XII				Computer
	Rs. 300.00	5	Shanker Ghinire, Deepak Kumar Adhikari			Asia

The output of the search operation will be displayed as follows:



5. Coding

The entire coding of the project is done in Turbo C++ as the project is based on the C language. The entire coding has been already pasted in the above pages. [Note: In your actual project report, you can paste the entire coding of the project here. We have already shown the entire coding in the above topic, so we have not included the coding of the project again.]

6. 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 whether the project can be run without detail description of internal coding. It 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 lines of codes in all the functions of the program.

This project has fully tested by using both approaches and ensures the correct output.

7. 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.

8. Maintenance

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.

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