Text

Description automatically generated

Library Management System

by SP21-BCS-007

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## Requirements:

Write a menu driven program that depicts the working of a library. In this regard, you must first create a structure called book to hold the ID, title of the book, author name, price of the book, and flag indicating whether book is issued or not. Your program can create a (partially filled) array named ‘books data’ of ‘book’ structure to hold the information of books present in the library. The maximum capacity of books is 500.

The program should display different options to user for manipulating the books information. The menu options should be:

* **Add book information:** This option will add the book to the end of books data array. Should display an array, if books capacity is full (i.e., already added 500 books).
* **Display book information:** This option will ask the user to enter book id and show the book information (e.g., name, price etc.) after searching it in the books data array.
* **List all books of given author:** This option will ask the user to enter book author name and show the book information (e.g., name, price etc.) after searching it with author name in the books data array.
* **List the count of unissued books in the library:**
* **List the books in the order of ID:** you will have to sort books according to books ID.
* **Save books information:** This function saves all books information from the books data array into a file named ‘books.txt’.
* **Load books information:** This function loads all books information from a file named ‘books.txt’ into the books data array.
* **Exit**

**Note:** The usage of functions in this program is optional, but highly recommended.

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## NOTE:

The code some **readability issues** due extraordinary formatting and output manipulation. For better understanding checkout my **report video** on this project or checkout my **GitHub repository** for this project.

## Video Demo:

* **Watch this Video this for demonstration of working of My code.**

<https://drive.google.com/file/d/1x34vFsOxicIywNBvtPg3Y8K479Ge3Vho/view?usp=sharing>

## GitHub Link:

* **Checkout this link to get .cpp file and input/output files.**

<https://github.com/asadali27232/LibrarayMnagagementProject.git>

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Sir! Please **run this code** once to check how amazingly it performs all tasks or checkout code run console windows **screenshots at the end** of this document.

A humble Request. Thanks Sir!

## CODE:

#include<iostream>

#include<fstream>

#include<iomanip>

#include<stdlib.h>

#include<string>

#include<cstring>

#include<cmath>

#include<cctype>

using namespace std;

int countBooks=0;

char garbage;

struct book{

    int ID;

    string title;

    string author;

    double price;

    bool issue;

};

book Library [1000];

void addBooks ();

void displayBooks ();

void authorBooks ();

void unissuedBooks ();

void sortBooks ();

void loadBooks ();

void exportBooksInfo();

//Ignore these functions. They are just manipulating the output of above functions.

void output\_addBooks ();

void output\_displayBooks ();

void output\_authorBooks ();

void output\_unissuedBooks ();

void output\_sortBooks ();

void output\_loadBooks ();

void output\_exportBooksInfo(ofstream& outdata);

int main()

{

    while(1)

    {

        system("CLS");

        cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('=') << "=" << "|" << endl;

        cout << setw(25) << setfill(' ') << " " << "|" << setw(19) << setfill(' ') << " " << setw(29) << "007-Library Management System" << setw(21) << setfill(' ') << right << "|" << endl;

        cout << setw(25) << setfill(' ') << " " << "|" << setw(68) << setfill('=') << "=" << "|" << endl;

        cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('=') << "=" << "|" << endl;

        cout << setw(25) << setfill(' ') << " " << "|" << setw(30) << setfill(' ') << " " << setw(8) << "Main Manu" << setw(30) << setfill(' ') << right << "|" << endl;

        cout << setw(25) << setfill(' ') << " " << "|" << setw(68) << setfill('=') << "=" << "|" << endl;

        cout << endl;

        cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

        cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') <<  "Sr No. " << "|" << setw(45) << setfill(' ') << left <<  " Library Management Tools" << "|" << setw(13) << setfill(' ') << right <<  "Options   " << "|" << endl;

        cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

        cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

        cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') <<  "1.   " << "|" << setw(45) << setfill(' ') << left <<  " Add Books Information" << "|" << setw(13) << setfill(' ') << right <<  "[ A ]    " << "|" << endl;

        cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

        cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') <<  "2.   " << "|" << setw(45) << setfill(' ') << left <<  " Search Books by ID" << "|" << setw(13) << setfill(' ') << right <<  "[ D ]    " << "|" << endl;

        cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

        cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') <<  "3.   " << "|" << setw(45) << setfill(' ') << left <<  " List all Books of an Author" << "|" << setw(13) << setfill(' ') << right <<  "[ R ]    " << "|" << endl;

        cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

        cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') <<  "4.   " << "|" << setw(45) << setfill(' ') << left <<  " Display Unissued Books" << "|" << setw(13) << setfill(' ') << right <<  "[ U ]    " << "|" << endl;

        cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

        cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') <<  "5.   " << "|" << setw(45) << setfill(' ') << left <<  " Sort Books by Book ID" << "|" << setw(13) << setfill(' ') << right <<  "[ S ]    " << "|" << endl;

        cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

        cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') <<  "6.   " << "|" << setw(45) << setfill(' ') << left <<  " Laod Books Information from a File" << "|" << setw(13) << setfill(' ') << right <<  "[ I ]    " << "|" << endl;

        cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

        cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') <<  "7.   " << "|" << setw(45) << setfill(' ') << left <<  " Get Books Information in a File" << "|" << setw(13) << setfill(' ') << right <<  "[ O ]    " << "|" << endl;

        cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

        cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') <<  "8.   " << "|" << setw(45) << setfill(' ') << left <<  " Exit" << "|" << setw(13) << setfill(' ') << right <<  "[ E ]    " << "|" << endl;

        cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

        char option;

        cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

        cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') <<  "==>  " << "|" << setw(45) << setfill(' ') << left <<  " Enter an Option" << "|" << setw(5) << setfill(' ') << left <<  "    [ " ;

        cin >> option;

        option = toupper(option);

        switch(option)

        {

        case 'A':

            addBooks();

            break;

        case 'D':

            displayBooks();

            break;

        case 'R':

            authorBooks();

            break;

        case 'U':

            unissuedBooks();

            break;

        case 'S':

            sortBooks();

            break;

        case 'I':

            loadBooks();

            break;

        case 'O':

            exportBooksInfo();

            break;

        case 'E':

            return 1;

            break;

        default:

            cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

            cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') << right <<  "==>  " << "|" << setw(45) << setfill(' ') << left <<  " Entered an Invalid Option!" << "|" << setw(14) << setfill(' ') << right << "|" << endl;

            cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') <<  "==>  " << "|" << setw(45) << setfill(' ') << left <<  " Press Enter Key to Enter Main Menu Again...!" << "|" << setw(14) << setfill(' ') << right << "|" << endl;

            cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

            cout << endl;

            cin.get(garbage);

            cin.get(garbage);

    }

    }

}

void addBooks ()

{

    output\_addBooks ();

    if (countBooks == 1000)

    {

        cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

        cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') << right <<  "==>  " << "|" << setw(59) << setfill(' ') << left <<  " There is no Space for more Books. Library is already Full!"  << right << "|" << endl;

        cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

    }

    else

    {

    string issueFlag;

    char addMore;

    bool addMoreFlag;

    int i = countBooks;

    do

    {

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') << right <<  "==>  " << "|" << setw(59) << setfill(' ') << left <<  " Enter Book ID:"  << right << "|" << endl;

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') << right <<  "==>  " << "| ";

    cin >> Library[i].ID;

    cin.get(garbage);

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') << right <<  "==>  " << "|" << setw(59) << setfill(' ') << left <<  " Enter Book Title:"  << right << "|" << endl;

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') << right <<  "==>  " << "| ";

    getline(cin, Library[i].title);

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') << right <<  "==>  " << "|" << setw(59) << setfill(' ') << left <<  " Enter Author Name:"  << right << "|" << endl;

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') << right <<  "==>  " << "| ";

    getline(cin, Library[i].author);

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') << right <<  "==>  " << "|" << setw(59) << setfill(' ') << left <<  " Enter Book Price:"  << right << "|" << endl;

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') << right <<  "==>  " << "| ";

    cin >> Library[i].price;

    cin.get(garbage);

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') << right <<  "==>  " << "|" << setw(59) << setfill(' ') << left <<  " Is Book Issued or Unissued:"  << right << "|" << endl;

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') << right <<  "==>  " << "| ";

    getline(cin, issueFlag);

        if (issueFlag=="Issued" || issueFlag=="issued")

            Library[i].issue = true;

        if (issueFlag=="Unissued" || issueFlag=="unissued")

            Library[i].issue = false;

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') << right <<  "==>  " << "|" << setw(59) << setfill(' ') << left <<  " Above Book Information has been Added." <<  right << "|" << endl;

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') << right <<  "==>  " << "|" << setw(59) << setfill(' ') << left <<  " Do you want to Enter an other Book..? [Y/N]" <<  right << "|" << endl;

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') << right <<  "==>  " << "| ";

    cin >> addMore;

    if (addMore=='Y' || addMore=='y')

            addMoreFlag = true;

    else

            addMoreFlag = false;

    i++;

    } while(addMoreFlag);

    countBooks = i;

    }

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') << right <<  "==>  " << "|" << setw(59) << setfill(' ') << left <<  " Books Information has been added Successfully." << right << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') <<  "==>  " << "|" << setw(59) << setfill(' ') << left <<  " Press Enter Key to Enter Main Menu Again...!" << "|" << right << endl;

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

    cin.get(garbage);

    cin.clear();

    cin.ignore(100, '\n');

}

void displayBooks ()

{

    output\_displayBooks ();

    int searchID;

    string authorName;

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') << right <<  "==>  " << "|" << setw(59) << setfill(' ') << left <<  " Enter Book ID to Search:"  << right << "|" << endl;

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') << right <<  "==>  " << "| ";

    cin >> searchID;

    cout << setw(9) << setfill(' ') << " " <<  "|" << setw(104) << setfill('-') << "-" << "|" << endl;

    cout << setw(9) << setfill(' ') << " " << "|"

         << " " << setw(8) << setfill(' ') << left <<  "ID" << "|"

         << " " << setw(45) << setfill(' ') << left <<  "Title" << "|"

         << " " << setw(27) << setfill(' ') << left <<  "Author" << "|"

         << " " << setw(6) << setfill(' ') << left <<  "Price" << "|"

         << " " << setw(9) << setfill(' ') << left <<  " Status" << "|"<< endl;

    cout << setw(9) << setfill(' ') << " " <<  "|" << setw(104) << setfill('-') << "-" << "|" << endl;

    cout << setw(9) << setfill(' ') << " " <<  "|" << setw(104) << setfill('-') << "-" << "|" << endl;

    for (int i=0; i<countBooks; i++)

    {

    if (Library[i].ID == searchID)

    {

    cout << setw(9) << setfill(' ') << " " << "|"

         << " " << setw(8) << setfill(' ') << left << Library[i].ID << "|"

         << " " << setw(45) << setfill(' ') << left << Library[i].title<< "|"

         << " " << setw(27) << setfill(' ') << left << Library[i].author << "|"

         << " " << setw(6) << setfill(' ') << left << setprecision(1) << showpoint << fixed << Library[i].price << "|";

    if (Library[i].issue == true)

        cout << " " << setw(9) << setfill(' ') << left << "Issued" << "|"<< endl;

    if (Library[i].issue == false)

        cout << " " << setw(9) << setfill(' ') << left << "Unissued" << "|"<< endl;

    cout << setw(9) << setfill(' ') << " " <<  "|" << setw(104) << setfill('-') << "-" << "|" << endl;

    }

    }

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') << right <<  "==>  " << "|" << setw(59) << setfill(' ') << left <<  " All Books of given ID are Displayed Successfully." <<  right << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') <<  "==>  " << "|" << setw(59) << setfill(' ') << left <<  " Press Enter Key to Enter Main Menu Again...!" << right << "|" << endl;

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

    cin.get(garbage);

    cin.clear();

    cin.ignore(100, '\n');

}

void authorBooks ()

{

    output\_authorBooks();

    string authorName;

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') << right <<  "==>  " << "|" << setw(59) << setfill(' ') << left <<  " Enter Author Name:"  << right << "|" << endl;

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') << right <<  "==>  " << "| ";

    cin.get(garbage);

    getline(cin, authorName);

    cout << setw(9) << setfill(' ') << " " <<  "|" << setw(104) << setfill('-') << "-" << "|" << endl;

    cout << setw(9) << setfill(' ') << " " << "|"

         << " " << setw(8) << setfill(' ') << left <<  "ID" << "|"

         << " " << setw(45) << setfill(' ') << left <<  "Title" << "|"

         << " " << setw(27) << setfill(' ') << left <<  "Author" << "|"

         << " " << setw(6) << setfill(' ') << left <<  "Price" << "|"

         << " " << setw(9) << setfill(' ') << left <<  " Status" << "|"<< endl;

    cout << setw(9) << setfill(' ') << " " <<  "|" << setw(104) << setfill('-') << "-" << "|" << endl;

    cout << setw(9) << setfill(' ') << " " <<  "|" << setw(104) << setfill('-') << "-" << "|" << endl;

    for (int i=0; i<countBooks; i++)

    {

    if (Library[i].author == authorName)

    {

    cout << setw(9) << setfill(' ') << " " << "|"

         << " " << setw(8) << setfill(' ') << left << Library[i].ID << "|"

         << " " << setw(45) << setfill(' ') << left << Library[i].title<< "|"

         << " " << setw(27) << setfill(' ') << left << Library[i].author << "|"

         << " " << setw(6) << setfill(' ') << left << setprecision(1) << showpoint << fixed << Library[i].price << "|";

    if (Library[i].issue == true)

        cout << " " << setw(9) << setfill(' ') << left << "Issued" << "|"<< endl;

    if (Library[i].issue == false)

        cout << " " << setw(9) << setfill(' ') << left << "Unissued" << "|"<< endl;

    cout << setw(9) << setfill(' ') << " " <<  "|" << setw(104) << setfill('-') << "-" << "|" << endl;

    }

    }

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') << right <<  "==>  " << "|" << setw(59) << setfill(' ') << left <<  " All Books of given Author are Displayed Successfully." <<  right << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') <<  "==>  " << "|" << setw(59) << setfill(' ') << left <<  " Press Enter Key to Enter Main Menu Again...!" << right << "|" << endl;

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

    cin.clear();

    cin.ignore(100, '\n');

}

void unissuedBooks ()

{

    output\_unissuedBooks ();

    int totalUnissued;

    for (int i=0; i<countBooks; i++)

    {

    if (Library[i].issue == false )

    {

    cout << setw(9) << setfill(' ') << " " << "|"

         << " " << setw(8) << setfill(' ') << left << Library[i].ID << "|"

         << " " << setw(45) << setfill(' ') << left << Library[i].title<< "|"

         << " " << setw(27) << setfill(' ') << left << Library[i].author << "|"

         << " " << setw(6) << setfill(' ') << left << setprecision(1) << showpoint << fixed << Library[i].price << "|";

    cout << " " << setw(9) << setfill(' ') << left << "Unissued" << "|"<< endl;

    cout << setw(9) << setfill(' ') << " " <<  "|" << setw(104) << setfill('-') << "-" << "|" << endl;

    totalUnissued = i;

    }

    }

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') << right <<  "==>  " << "|" << setw(35) << setfill(' ') << left <<  " Total count of unissued Books is " << setw(4) << setfill(' ') << totalUnissued << setw(21) << setfill(' ') <<  right << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') <<  "==>  " << "|" << setw(59) << setfill(' ') << left <<  " Press Enter Key to Enter Main Menu Again...!" << right << "|" << endl;

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

    cin.get(garbage);

    cin.clear();

    cin.ignore(100, '\n');

}

void sortBooks ()

{

    output\_sortBooks();

    book hold;

    for (int pass=0; pass<countBooks-1; pass++ )

    {

    for (int i=0; i<countBooks-1; i++)

    {

        if ( Library[i].ID > Library[i+1].ID  )

        {

            hold = Library[i] ;

            Library[i]  = Library[i+1] ;

            Library[i+1]  = hold;

        }

    }

    }

    for (int i=0; i<countBooks; i++)

    {

    cout << setw(9) << setfill(' ') << " " << "|"

         << " " << setw(8) << setfill(' ') << left << Library[i].ID << "|"

         << " " << setw(45) << setfill(' ') << left << Library[i].title<< "|"

         << " " << setw(27) << setfill(' ') << left << Library[i].author << "|"

         << " " << setw(6) << setfill(' ') << left << setprecision(1) << showpoint << fixed << Library[i].price << "|";

    if (Library[i].issue == true)

        cout << " " << setw(9) << setfill(' ') << left << "Issued" << "|"<< endl;

    if (Library[i].issue == false)

        cout << " " << setw(9) << setfill(' ') << left << "Unissued" << "|"<< endl;

    cout << setw(9) << setfill(' ') << " " <<  "|" << setw(104) << setfill('-') << "-" << "|" << endl;

    }

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') << right <<  "==>  " << "|" << setw(59) << setfill(' ') << left <<  "All Books sorted by ID Successfully." << right << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') <<  "==>  " << "|" << setw(59) << setfill(' ') << left <<  " Press Enter Key to Enter Main Menu Again...!" << "|" << right << endl;

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

    cin.get(garbage);

    cin.get(garbage);

}

void loadBooks ()

{

    output\_loadBooks ();

    ifstream indata;

    string fileName;

    cin.get(garbage);

    do

    {

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') << right <<  "==>  " << "|" << setw(59) << setfill(' ') << left <<  " Enter Input File Name:"  << right << "|" << endl;

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') << right <<  "==>  " << "| ";

    getline(cin, fileName);

    indata.open(fileName.c\_str());

    if (!indata)

    {

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') << right <<  "==>  " << "|" << setw(59) << setfill(' ') << left <<  " File NOT Found....!" << right << "|" << endl;

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

    }

    else

    {

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') << right <<  "==>  " << "|" << setw(59) << setfill(' ') << left <<  " Record Found and has been Read Successfully." << right << "|" << endl;

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

    }

    } while (!indata);

    string issueFlag;

    while(!indata.eof())

    {

        indata >> Library[countBooks].ID;

        indata.get(garbage);

        getline(indata, Library[countBooks].title);

        getline(indata, Library[countBooks].author);

        indata >> Library[countBooks].price;

        indata.get(garbage);

        getline(indata, issueFlag);

        if (issueFlag=="Issued" || issueFlag=="issued")

            Library[countBooks].issue = true;

        if (issueFlag=="Unissued" || issueFlag=="unissued")

            Library[countBooks].issue = false;

        countBooks++;

    }

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') << right <<  "==>  " << "|" << setw(59) << setfill(' ') << left <<  " Books Information has been Read Successfully." << right << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') <<  "==>  " << "|" << setw(59) << setfill(' ') << left <<  " Press Enter Key to Enter Main Menu Again...!" << "|" << right << endl;

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

    cin.clear();

    cin.ignore(100, '\n');

}

void exportBooksInfo()

{

    ofstream outdata;

    output\_exportBooksInfo(outdata);

    string fileName;

    cin.get(garbage);

    do

    {

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') << right <<  "==>  " << "|" << setw(59) << setfill(' ') << left <<  " Enter Output File Name:"  << right << "|" << endl;

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') << right <<  "==>  " << "| ";

    getline(cin, fileName);

    outdata.open(fileName.c\_str());

    } while (!cin);

    output\_exportBooksInfo(outdata);

    for (int i=0; i<countBooks; i++)

    {

    outdata << setw(9) << setfill(' ') << " " << "|"

            << " " << setw(8) << setfill(' ') << left << Library[i].ID << "|"

            << " " << setw(45) << setfill(' ') << left << Library[i].title<< "|"

            << " " << setw(27) << setfill(' ') << left << Library[i].author << "|"

            << " " << setw(6) << setfill(' ') << left << setprecision(1) << showpoint << fixed << Library[i].price << "|";

    if (Library[i].issue == true)

        outdata << " " << setw(9) << setfill(' ') << left << "Issued" << "|"<< endl;

    if (Library[i].issue == false)

        outdata << " " << setw(9) << setfill(' ') << left << "Unissued" << "|"<< endl;

    outdata << setw(9) << setfill(' ') << " " <<  "|" << setw(104) << setfill('-') << "-" << "|" << endl;

    }

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') << right <<  "==>  " << "|" << setw(59) << setfill(' ') << left <<  " All Books Info Exported to a File." <<  right << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(8) << setfill(' ') <<  "==>  " << "|" << setw(59) << setfill(' ') << left <<  " Press Enter Key to Enter Main Menu Again...!" << right << "|" << endl;

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('-') << "-" << "|" << endl;

    cin.clear();

    cin.ignore(100, '\n');

}

//Ignore these functions. They are just manipulating the output of above functions.

void output\_addBooks ()

{

    system("CLS");

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('=') << "=" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(19) << setfill(' ') << " " << setw(29) << "007-Library Management System" << setw(21) << setfill(' ') << right<< "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(68) << setfill('=') << "=" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('=') << "=" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(30) << setfill(' ') << " " << setw(9) << "Add Books" << setw(30) << setfill(' ') << right << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(68) << setfill('=') << "=" << "|" << endl;

    cout << endl;

}

void output\_displayBooks ()

{

    system("CLS");

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('=') << "=" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(19) << setfill(' ') << " " << setw(29) << "007-Library Management System" << setw(21) << setfill(' ') << right<< "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(68) << setfill('=') << "=" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('=') << "=" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(21) << setfill(' ') << " " << setw(25) << "Display Books of Given ID" << setw(23) << setfill(' ') << right << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(68) << setfill('=') << "=" << "|" << endl;

    cout << endl;

}

void output\_authorBooks ()

{

    system("CLS");

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('=') << "=" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(19) << setfill(' ') << " " << setw(29) << "007-Library Management System" << setw(21) << setfill(' ') << right<< "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(68) << setfill('=') << "=" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('=') << "=" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(19) << setfill(' ') << " " << setw(31) << "Display All Books of an Author" << setw(19) << setfill(' ') << right << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(68) << setfill('=') << "=" << "|" << endl;

    cout << endl;

}

void output\_unissuedBooks ()

{

    system("CLS");

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('=') << "=" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(19) << setfill(' ') << " " << setw(29) << "007-Library Management System" << setw(21) << setfill(' ') << right<< "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(68) << setfill('=') << "=" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('=') << "=" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(22) << setfill(' ') << " " << setw(24) << "List of Un-issued Books" << setw(23) << setfill(' ') << right << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(68) << setfill('=') << "=" << "|" << endl;

    cout << endl;

    cout << setw(9) << setfill(' ') << " " <<  "|" << setw(104) << setfill('-') << "-" << "|" << endl;

    cout << setw(9) << setfill(' ') << " " << "|"

         << " " << setw(8) << setfill(' ') << left <<  "ID" << "|"

         << " " << setw(45) << setfill(' ') << left <<  "Title" << "|"

         << " " << setw(27) << setfill(' ') << left <<  "Author" << "|"

         << " " << setw(6) << setfill(' ') << left <<  "Price" << "|"

         << " " << setw(9) << setfill(' ') << left <<  " Status" << "|"<< endl;

    cout << setw(9) << setfill(' ') << " " <<  "|" << setw(104) << setfill('-') << "-" << "|" << endl;

    cout << setw(9) << setfill(' ') << " " <<  "|" << setw(104) << setfill('-') << "-" << "|" << endl;

}

void output\_sortBooks ()

{

    system("CLS");

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('=') << "=" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(19) << setfill(' ') << " " << setw(29) << "007-Library Management System" << setw(21) << setfill(' ') << right<< "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(68) << setfill('=') << "=" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('=') << "=" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(22) << setfill(' ') << " " << setw(23) << "Sorting Books by Book ID" << setw(23) << setfill(' ') << right << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(68) << setfill('=') << "=" << "|" << endl;

    cout << endl;

    cout << setw(9) << setfill(' ') << " " <<  "|" << setw(104) << setfill('-') << "-" << "|" << endl;

    cout << setw(9) << setfill(' ') << " " << "|"

         << " " << setw(8) << setfill(' ') << left <<  "ID" << "|"

         << " " << setw(45) << setfill(' ') << left <<  "Title" << "|"

         << " " << setw(27) << setfill(' ') << left <<  "Author" << "|"

         << " " << setw(6) << setfill(' ') << left <<  "Price" << "|"

         << " " << setw(9) << setfill(' ') << left <<  " Status" << "|"<< endl;

    cout << setw(9) << setfill(' ') << " " <<  "|" << setw(104) << setfill('-') << "-" << "|" << endl;

    cout << setw(9) << setfill(' ') << " " <<  "|" << setw(104) << setfill('-') << "-" << "|" << endl;

}

void output\_loadBooks()

{

    system("CLS");

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('=') << "=" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(19) << setfill(' ') << " " << setw(29) << "007-Library Management System" << setw(21) << setfill(' ') << right<< "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(68) << setfill('=') << "=" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('=') << "=" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(20) << setfill(' ') << " " << setw(29) << "Import Books Data form a File" << setw(20) << setfill(' ') << right << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(68) << setfill('=') << "=" << "|" << endl;

    cout << endl;

}

void output\_exportBooksInfo(ofstream& outdata)

{

    system("CLS");

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('=') << "=" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(19) << setfill(' ') << " " << setw(29) << "007-Library Management System" << setw(21) << setfill(' ') << right<< "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(68) << setfill('=') << "=" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('=') << "=" << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(22) << setfill(' ') << " " << setw(25) << "Save Books Info on a File" << setw(22) << setfill(' ') << right << "|" << endl;

    cout << setw(25) << setfill(' ') << " " << "|" << setw(68) << setfill('=') << "=" << "|" << endl;

    cout << endl;

    outdata << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('=') << "=" << "|" << endl;

    outdata << setw(25) << setfill(' ') << " " << "|" << setw(19) << setfill(' ') << " " << setw(29) << "007-Library Management System" << setw(21) << setfill(' ') << right<< "|" << endl;

    outdata << setw(25) << setfill(' ') << " " << "|" << setw(68) << setfill('=') << "=" << "|" << endl;

    outdata << setw(25) << setfill(' ') << " " <<  "|" << setw(68) << setfill('=') << "=" << "|" << endl;

    outdata << setw(25) << setfill(' ') << " " << "|" << setw(22) << setfill(' ') << " " << setw(25) << "Save Books Info on a File" << setw(22) << setfill(' ') << right << "|" << endl;

    outdata << setw(25) << setfill(' ') << " " << "|" << setw(68) << setfill('=') << "=" << "|" << endl;

    outdata << endl;

    outdata << setw(9) << setfill(' ') << " " <<  "|" << setw(104) << setfill('-') << "-" << "|" << endl;

    outdata << setw(9) << setfill(' ') << " " << "|"

         << " " << setw(8) << setfill(' ') << left <<  "ID" << "|"

         << " " << setw(45) << setfill(' ') << left <<  "Title" << "|"

         << " " << setw(27) << setfill(' ') << left <<  "Author" << "|"

         << " " << setw(6) << setfill(' ') << left <<  "Price" << "|"

         << " " << setw(9) << setfill(' ') << left <<  " Status" << "|"<< endl;

    outdata << setw(9) << setfill(' ') << " " <<  "|" << setw(104) << setfill('-') << "-" << "|" << endl;

    outdata << setw(9) << setfill(' ') << " " <<  "|" << setw(104) << setfill('-') << "-" << "|" << endl;

}

Library Management System

by SP21-BCS-007

## Input File:

Graphical user interface, application

Description automatically generated

## Output File:

Table

Description automatically generated

Library Management System

by SP21-BCS-007

## Main Menu:

A screenshot of a computer

Description automatically generated with medium confidence

## Add Books Manually:

Text

Description automatically generated

Library Management System

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## Search Books by ID:

A screenshot of a computer

Description automatically generated

## List all Books of an Author:

A screenshot of a computer

Description automatically generated

Library Management System

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## List of un-issued:

Text

Description automatically generated

## Sort Books by ID:

A screenshot of a computer

Description automatically generated

Library Management System

by SP21-BCS-007

## Import Books from a File:

Text

Description automatically generated

## Get Books Information in a File:

Text

Description automatically generated

## Output File:

Table

Description automatically generated