

Project # 1

(Computer Programming)

Deadline for Submission: February 4, 2019.

Marks: 100

Scope

Arrays, structures, functions.

UOS Library Management System

The UOS does not have a library database management system for maintaining its books information in their library. The university consults your company and you are hired to develop a system in C++ language that will maintain information of the national university's library.

You are advised to use structures, array and functions to implementing this project. There will be bonus marks on adding colors or graphical user interface in the system.

Allocate array of 100 size for this program.

Groups:

The students can create a group of **at most THREE members**. In case of separation from a group the student will have to do the project alone.

Information about Books

Information about a book in your system should be maintained as follow

| Field | Information | Type |
|-------|------------------|------------|
| 1 | Book Name | char array |
| 2 | Book ISBN Number | char array |
| 3 | Publisher Name | char array |
| 4 | Author Name | char array |
| 5 | Number of Copies | integer |
| 6 | Data of Issue | string |

It is recommended to use structure in C/C++ for maintaining book information.

The students are advised to implement the following functions regarding library book management. Upon executing your software your software should display the list of following options.

UOS Library Management System

Press option key to activate the required function.

- (0) Add New Book (Total # of Books = 105)
- (1) Edit Book
- (2) Delete Book
- (3) Search Book
- (4) Add Library User (Total # of Users = 32)
- (5) Edit Library User
- (6) Delete Library User
- (7) Search Library User
- (8) Issue Book (Total # of Issued Books = 12)
- (9) Delete Issued Book

-1 to quit.

Bonus Marks: There will be bonus marks if the users of your system could navigate in different options through “Up” and “Down” keys.

Add Book Information

This function will add new book information in your database. You will first get the book information from the user (using cin or scanf functions), and then you will add all information in the structure array. Please note, you are not advised to add duplicate book information in your system. You can detect duplicate book information with the help of Book ISBN number. In case, if the user tries to add a book that already exists in your system. Your system should display that the book information is already existed in the database. The add book option should be active by pressing the 0 key and the layout of the screen should be as changed as follow.

UOS Library Management System

Add New Book (Please add required information in the appropriate fields)

Book Name: C++ Programming

Book ISBN Number: 123456

Publisher Name: MIT

Author Name: Dietel & Dietel

Number of Copies: 6

Date of Issue: 12-03-1999

Do you want to add book information (Y/N): Y

Upon pressing the 'Y' key, the layout of the screen should be changed as follow

UOS Library Management System

The book information was not duplicate and the new book information is successfully added in the system.

Search Book Information

Upon calling this function the user of your system will search information regarding all available books. The book information should be searchable from the following options.

- (a) ISBN Number
- (b) Author Name
- (c) Book Name
- (d) Publisher Name
- (e) Book Issue Year

The layout of your screen should be changed as follow

UOS Library Management System

Search Book

Press option key to activate the required function.

- (0) Search through ISBN Number
- (1) Search through Author Name
- (2) Search through Book Name
- (3) Search through Publisher Name
- (4) Search through Issue Year

Let suppose user select option '4', then the layout of your screen should be changed as follow

UOS Library Management System

Search Book

Enter Issue Year: 2003

Let suppose user enters '2003' in the issue year, then the layout of your screen should be changed as follow

UOS Library Management System

Search Book

| Book | ISBN | Author | Publisher | # Copies | Issue Date |
|------|-------|--------|-----------|----------|------------|
| C++ | 34323 | ABC | ABC | | |
| OS | 48283 | XYZ | | | |
| DS | 42930 | ABC | | | |
| JAVA | 58538 | OPQ | | | |
| C | 93449 | ABC | | | |
| .NET | 58583 | DIS | | | |

Page 1/4

Edit Book Information

This function will edit (modify) some existing book information in your database. First the user of your system will search book in the database through different options and then he/she will edit the information. The book information should be searchable from the following options.

- (a) ISBN Number
- (b) Author Name
- (c) Book Name
- (d) Publisher Name
- (e) Book Issue Year

Delete Book Information

This function will delete some existing book information from the database. Similar to edit book option, the user of your system will first search the book information in the database through different options and then he/she will delete the required information. The book information should be searchable from the following options.

- (a) ISBN Number
- (b) Author Name
- (c) Book Name
- (d) Publisher Name
- (e) Book Issue Year

Information about Library Users

In addition to above functions your system will also issue books to different students or employers (we will call them users of your library system).

Information about employers or students should be maintained in a separate structure and the members of this structure should be look like this

| Field | Information | Type |
|--------------|---------------------|--|
| 1 | Library ID | Integer variable. Every member of library either student or employer should have a unique id in your system |
| 2 | First Name | char array |
| 3 | Last Name | char array |
| 4 | Student or Employer | char array in case of student the value of this field should be "student" while in case of employer the value of this field should be "employer" |
| 5 | Date of Birth | string |

Add Library User

By calling this function, you would first be asked about a password that would be stored in some variable, and then, your system will ask the user to enter library user information in the system. You are advised to not to add duplicate users in the database.

Edit Library User

By calling this function your system will edit existing user information in the database, only after giving password. Similar to book edit option you can edit library user information through different options.

Delete Library User

By calling this function your system will delete existing user information in the database, after password verification. Similar to book delete option you can edit library user information through different options.

What else. We still did not talk about how to maintain information - if a book is issued from your library system. The information regarding book issue should be maintained in a separate structure. The members of this structure should be look like as

| Field | Information | Type |
|--------------|------------------------------------|----------------------------|
| 1 | Book ISBN Number | String |
| 2 | Library ID of Employer or students | Integer |
| 3 | Issue Date | Variable of structure date |
| 4 | Return Date | Variable of structure date |

Issue Book

By calling this option your system will issue book to some library user. Your system will first search book in the database through different options as we discussed above, and then it will add information regarding book issue in a separate data structure. Note, in addition to book information you also need to maintain the library user id to whom the book was issued in a separate data structure. You are advised to use array of structure variables for maintaining records of issued books.

Delete Issued Book

This function will delete information regarding issued book from your system. This option will first ask user to enter Library user id and after successful entry this function will delete the information from the database.