Project 4 Management of a library

Objectives :

This last project is about designing a program that simulates a library : members, books, registrations, loans, returns of books, etc. You must provide data types and functions that answer the below specification requirements, and design menus that rely on these functions. When several choices are possible, we advise you to propose (and implement) these different solutions, justifying their choice and comparing them, from the point of view of the implementation and the facilities/limitations they impose on the user. All written programs must be readable, commented, and modular in order to evolve easily. Developed programs must be easy and fun to use for a novice user (other than you) !

The graphical interface is a plus but is not mondatory, a console display is enough. You are also asked to write a structured and concise report in which you describe your algorithmic design, the difficulties encountered and the envisaged improvements of your application.

Requirement specification :

You must manage two databases, db-members and db-books, representing library members and books respectively. The db-member database contains as many members records as members registered in the library. Each member record is composed of the following elements :

— First and last names of the member.
— The mailing address and e-mail address of the member.
— Profession of the member
— List of borrowed book codes (up to 3 borrowings) and return date for each of them (15 days maximum).

The base-book database contains as many books as books that can be borrowed from the library. Each book includes :

— The title and author of the book.
— A code XXX-YYY with 7 caracters, where XXX is the theme of the book (NOV for novel, CAR for cartoon, etc ...), and YYY is the number of the book into the XXX theme. For example, the book referenced NOV-255 is the 255th novel within the theme NOV in the database.
— Total number of copies.
— The number of available copies.

Menu :

You must offer two menus to the librarian. A read only access service menu allowing you to :

1. View the list of members ordered alphabetically.
2. Display the list of books according to one of the following orders : code, title, author, ...
3. Search for information about a book (again offer several search criteria).
4. Display the list of borrowed books whose return date has been exceeded, and, for each, the information about the borrower member.

A menu that interfaces with the librarian. This menu provides :
- The display of the current date.
- L'ajout d'un nouvel adhérent.
- Adding a new member.
- Deleting an adherent or a book from the data-base.
- The record of a new loan (implies the modification of a member and a book).
- Taking into account the restitution of a book (e.g. has the return date been respected by the borrower ?).

This specification is indicative and minimalist, it should allow you to design a basic version of the application. You can enrich the specifications as you like.

Some ideas of enrichment :
- Search for a book author,
- Look for members who hold (at this moment) a given book,
- Show the number (total or over a given period) of loans for a given theme (or a given book),
- Show the number of books in the library that belong to a given theme
- Show the theme/book/author that has the largest number (global or A given period) of loans.
- ...

Storage of data

The data of the library (members, books, loans, ...) are sotcked in files of your choice (type, structuration of the data, ...) . The use of a real database is a plus.

Planning
- Subject available on May 1, 2017
- Follow-up session on May 12, 2017
- Defense of the project, and upload of reports, on May 26, 2017

Project Defense Each project team has 20 minutes to defend its work, as follows :
- During the first 10 minutes, you will briefly introduce the project, describe the organization of the team, expose your achievements with respect to the requirements, and the problems you faced. Both team members must speak in turn. Note that you must prepare and rehearse your speech.
- For the next 10 minutes, you will answer the questions of the examiner. Each team member must be able to answer any question, on any part of the project.

Please note that, depending on the quality of their performance, project members may get different marks.