Birzeit University
Department of Electrical & Computer Engineering
Second Semester, 2022/2023 ENCS3130
Linux Laboratory
Python Project – Library Management System

Problem Overview:

This project involves creating a library management system (LMS) designed to assist libraries in effectively managing their collections. The LMS will provide the following functionalities:

1. Adding new books to the library collection
2. Searching for books within the library collection
3. Editing the information of existing books
4. Archiving books
5. Removing books from the LMS
6. Generating reports about the books available in the LMS
7. Exit

The specifications of each option in the LMS are as follows:

1. Adding new books to the library collection

1.1 The user will enter the name of the file containing the information about the new books after choosing this option. The LMS ought to make sure the file is available and accessible.

1.2 The new books' information will be presented in the format depicted in Figure 1.

1.3 While the other characteristics are optional (may be provided for some books but not for others), the Title, Publisher, and ISBNs must be provided for each book.

1.4 The LMS should display the book information on the screen, book after book, as it loads the book's information from the file.

1.5 The ISBNs on the LMS should be used to distinguish between different books. It is necessary to include a "number of copies" argument with the book information in the LMS. The "number of copies" must be set to 1 for each new book.

1.5 If any of the books that are being loaded from the book's information file already have a record in the LMS, the LMS should prompt the user to either replace the existing record or add a new copy of the book. The "number of copies" would be increased if the user wanted to add another copy of the book.

```
Title : Linux System Programming: Talking Directly to the Kernel and C Library
Publisher  :  O'Reilly Media
Edition : 2
Year : 2013
Month : 1
Language  :  English
Paperback  :  456 pages
ISBN-10  :  1449339530
ISBN-13  :  978-1449339531

Title : C Programming Language
Publisher  :  Pearsonon
Year : 1988
Month : 3
Paperback  :  272 pages
ISBN-10  :  0131103628
ISBN-13  :  978-0131103627
```

Figure 1: The format of the text file containing books information.

2. Searching for books within the library collection

The LMS should enable users to search for any registered book using any of the parameters (including the optional ones) and print the results on the screen. The user should be able also to store the result in a text file.

3. Editing the information of existing books

When selecting this option, the LMS should prompt the user to provide the file's name or ISBN number before letting them update the file's details. Before saving the changed data, the LMS should ask the user for confirmation.

4. Archiving books

4.1 The LMS should allow the users to move some of the books that are rarely used to archive. To do this, the user will enter the name of the ISBNs of the book after selecting this option, the LMS should ask the user for confirmation.

4.2 The user should be allowed to choose how many copies of a book should be archived if there are multiple copies of it available in the LMS.

5. Removing books from the LMS

By selecting this option, the user can delete books from the LMS. Only archived books can be deleted from the LMS. Also, the LMS should ask the user for confirmation.

6. Generating reports about the books available in the LMS.

When this option is used, a report that includes the following will be printed on screen::

1. how many books are in the LMS,
2. how many different books are offered in the LMS,

3. the number of books archived in the LMS,
4. how many books in the LMS are newer than a particular year,
5. Book distribution by the publisher,
6. Books distribution by year.

7. Exit

.The LMS will be terminated upon execution of this command, and all books' data must be saved to an LMS file. **The next time the LMS is launched, this file must be loaded.**

Submissions:

- You need to submit the code in .py format.
- You also need to submit at least three book information files.
- Write a report with
    - screenshots for the main menu and any other submenus and the description of each of them;
    - screenshots for the output of the options in the software mentioned above.

Important notes:

- Write the code for the Python program to satisfy the requirements described above.
- You must use functions (at least one function for each option).
- **You must use OOP concepts (classes, inheritance …).**
- **You must organize your project in modules. I. e. have each class and the main function in separate modules (python scripts).**
- Make sure your code is clean and well-indented; variables have meaningful names, etc.
- Make sure your script has enough comments inserted to add clarity.
- Work in groups of at most two students (it is ok to make groups from different sections)
- Deadline: **Saturday, 8 July 2023 at 11:59 pm**. Please submit your project through Ritaj as a reply to this message.
- This project is per group effort: instances of cheating will result in you failing the lab.

Grading Policy:

Item	Weight
Launching the LMS	10
Adding new books to the library collection	10
Searching for books within the library collection	10
Editing the information of existing books	10
Archiving books	5
Removing books from the LMS	5
Generating reports about the books available in the LMS	15
Using OOP	10
Use modules	10

Code Structure	5
Discussion	10
Total	**100**