CSC2302

Data Structures using Python

Homework#3

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☛This homework is used to test your ability to **design, implement and test** a program

☛You don't need to submit this homework

☛ You are asked to create two files: main.py and functions.py (the last .py file will hold functions definitions)

Instructions to follow:

1. I am providing you with an input file that has data about best-selling books in the world. Do not change the content of the file!
2. You are asked to write a Python program that allows the user to use the following menu:
    1. Explore the content of the file
    2. View the different book genres in the file
    3. Sort the books by language
    4. Find the latest published book
    5. Get information about a book
    6. Quit

Important points to consider:

1. Including printing the menu and excluding the last menu option, each menu option should be implemented using a user defined function. Make sure that your functions are designed properly.
2. Options 2 to 5 should not be executed if the user did not select option 1 in advance.
3. When the user selects option 1, you are asked to load the file data to a list of lists
    a. An empty list is already in the main program
    b. Make sure that the year and number of sales are saved as numerical values!
    c. Once data is loaded to the list, file should be closed and the remaining menu options should work with the filled list!
    d. In this option you allow the user to view the content of the filled list by looking at first N books(head of the list), last N books(tail of the list) or a random sample of the books in the list!
    e. Make sure that N does not exceed the number of books in the list!

4. In option 2, you need to use the right data structure to allow the user to view the different books genres along with how many books in each genre
    a. Make sure that you print the content of the chosen data structure
5. When the user chooses option 3, you allow the user to view the content of the list either in ascending order or descending order
    a. Apply bubble sort for ascending order and selection sort for descending order
        i. Define a function for each of these algorithms
6. For option 4, your function should return the title of the latest published book in the list
    a. Don't use a predefined method in Python to find the latest published book but work on your own algorithm that will do the job
    b. It could be a list of books!
7. For option 5, using linear search define, a function that finds information about book X.
    a. Your function should return the book information or "Not found" if the book does not exist
    b. Print the book information in a tabular format
        i. Obviously not inside the function!!!

Good Luck!