

Department: IS Teacher:	FINAL EXAM: C PROGRAMMING LANGUAGE (For student of ICT K65). Time: 90 minutes. (<i>Permit using document, do not copy any way</i>)	Semester 2020-1
	Full Name: No: StudentCard:	

To manage books, a management system has stored a list of books as a structure with fields including:

- Ten_sach (the title of a book, the maximum length of 30 characters, does not contain any spaces)
- Ten_tac_gia (author name, string length up to 30, no spaces)
- Nha_xuat_ban (publisher's name, a string of characters up to 20, do not consist of spaces)
- Nam_XB (publication year, whole number)
- Gia_ban (bookselling price, real number)

List of books stored on external memory as a text file: HUST.txt with respect to the following structure:

```
=====
2
C_Programming_Language
Dennis_Ritchie
Prentice_Hall
1988
59000
```

```

Programming_in_ANSI_C
Balagurusamy
Prentice_Hall
2012
600000
=====
```

The first line of the file contains an integer number that is the number of books in the system. In the following lines, each line in the file contains information fields of a book, each field is separated by a line, each record is separated by a blank line.

Write a program with the following functions:

1. Create a menu interface to choose functions as follows:

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1. Enter information of n books of HUST
2. Print the information of the entered books on the screen
3. Sort descending information by year of publication and display
4. Search for books by title
5. Search books by author's name
6. Exit
=====
```

2. Enter information of n books: after inputting, save data in a file which contains information of n books, each field stays on one line, each record is separated by a blank line.
3. Print to the screen the information of just entered: read information from the file and display it on the screen including:
 - Total number of books.
 - Information of books according to the aligning columns, including:
Title (width 30) Author name (width 30) Year of publication (width 10) Price (width 10).
4. Sort the books' information down by year of publication and display:
Reads data from text files and sorts in descending order by year of publication. If the publication year is the same, sort by descending price. Record the sorted data to a new text file named HUST2021.txt and print to the screen a list of sorted books including:
 - Total number of books.
 - Information of books according to the aligning columns, including:
Title (width 30) Author name (width 30) Year of publication (width 10) Price (width 10)
5. Search by book title: the program allows the user to enter the name of a book and return information for the books if any. For simplicity, this is the exact name search. If the book appears multiple times, print out the information of all occurrences (in the format of <book name>, <author name>, <publisher>. Otherwise, print out the message that no book is found.
For example, with the file HUST.txt as above, when:

Input	output
C_Programming_Language	Dennis_Ritchie, Prentice_Hall
Intro_C_Programming_Language	No book is found!

6. Search by author name: the program allows the user to enter an author's name and return book information. If the author appears many times, print out the number of occurrences (in the format of <author name>, <title of book>, <number of occurrences>. On the contrary, print the message "Not found This author! ".
For example, with the file HUST.txt as above, when:

Input	Output
Dennis_Ritchie	Dennis_Ritchie, C_Programming_Language, 1
Nguyen_Binh_Minh	Not found this author!

7. Exit the program: ask the user to close the opened file, free up memory (if any) before exiting.

Notes:

- Write functions for each function separately.
- Input file name is HUST.txt.
- After sorting information, the data after sorting is saved to file: HUST2021.txt.