CSCI3240 Lab 5: Structures

Please check the following link before you start:

- *https://www.tutorialspoint.com/cprogramming/c_structures.htm*

1. You are given a list of students with their ID, name, and score in "*student.csv*" file. Your task is to get the student data from the file. Next, sort the students by their scores in ascending order and display the sorted list. In cases of identical scores, sort students alphabetically by their names.

   Data Representation:
   Construct a structure named **`Struct_Student_Info`**, encompassing the following members:
   - `StudentName`
   - `ID`
   - `Score`

   Functionalities:

   a. **`SortByScore`** Function:
   - **Input:** The structure array ('studentsArray') and the number of students ('n').
   - **Functionality:** Sorts the students based on their scores. For students with the same score, an alphabetical order based on names should be considered.
   - **Output:** A modified structure array with students sorted as per the criteria.

   b. **`Display`** Function:
   - **Input:** The sorted structure array and the number of students ('n').
   - **Functionality:** Outputs the sorted list of students.
   - **Output:** Display student names, IDs, and scores.

   Sample content of *student.csv* file:

   Name, Student id, Score
   John Doe, 123456, 60.00
   Bruce Wayne, 100000, 79.30
   Bon Jovi, 345621, 60.00
   Ada Lovelace, 121915, 100.00
   Charles Babbage, 121791,99.90

Constraints

- $\mathbf{1 \leq n \leq 100}$
- $\mathbf{1 \leq ID \leq 10^6}$
- $\mathbf{0 \leq Score \leq 100}$
- **Student Name**
  - can consists of uppercase and lowercase letters.
  - contains space character to separate first name and last name.
  - the number of characters will not exceed 50.

Output Format

- Print exactly 'n' lines. Each line should display the student's name, ID and score separated by space character.
- the score should have exactly 2 digits after decimal point.

Sample Run

```
(base) jovyan@jupyter-asainju:~/3240/lab5$ gcc lab5Problem1.c -o lab5Problem1
(base) jovyan@jupyter-asainju:~/3240/lab5$ ./lab5Problem1
Bon Jovi 345621 60.00
John Doe 123456 60.00
Bruce Wayne 100000 79.30
Charles Babbage 121791 99.90
Ada Lovelace 121915 100.00
(base) jovyan@jupyter-asainju:~/3240/lab5$
```

Hint: *You may want to ignore the first line of the file (header).*

- *https://stdin.top/posts/csv-in-c/*
- *https://www.tutorialspoint.com/c_standard_library/c_function_qsort.htm*

Steps to Create the Log File:

1. **Open your terminal and start the scripting process by typing:**

```
(base) jovyan@jupyter-asainju:~/3240/lab5$ script Lab5_Log.txt
```

2. **List all the files in the current directory:**

```
(base) jovyan@jupyter-asainju:~/3240/lab5$ ls
```

3. **Compile your problem 1:**

```
(base) jovyan@jupyter-asainju:~/3240/lab5$ gcc lab5Problem1.c -o lab5Problem1
```

4. **Run your problem1:**

```
(base) jovyan@jupyter-asainju:~/3240/lab5$ ./lab5Problem1
```

Note: You can test with multiple other input values here.

5. **Exit the scripting process to finish and save the log file:**

```
(base) jovyan@jupyter-asainju:~/3240/lab5$ exit
```

6. **Convert the log file from txt to pdf using the txt created from using script**

```
(base) jovyan@jupyter-asainju:~/3240/lab4$ wkhtmltopdf Lab5_Log.txt Lab5_Log.pdf
```

The '**`Lab5_Log.pdf`** ' file will be generated in your current directory. Make sure this file is included in your submission.

Submission Instructions:

Please upload the following files:

- lab5Problem1.c
- Lab5_Log.pdf
- AI_Disclaimer.pdf

- **Submission Due:** Check Lab 5 Dropbox

Rubrics (Total 100 points):

Problem1:

Criteria	**Points**
Scores sorted, but partially (for instance, sorted by integer parts, but not decimal parts)	-10
Output not sorted at all	-50
Code does not make use of structs	-50
The program contains an interactive prompt	-10

The program depends on a specific number of lines in the data file	-15
The program does not satisfy the constraints	-15
The program does not display the output in the requested format	-15
The source code is not named correctly (it should be lab5Problem1.c)	-10
No submission or source code is missing	-100