SEN114 COMPUTER PROGRAMMING II 2018/2019 SPRING ASSIGNMENT

Hello all,

Your first assignment in 2018/19 is to write a student system on java as a console program. This program will demonstrate the following aspects of OOP in Java;

1. Correct use of all Access specifiers ( public, private,protected) in an appropriate way
2. Over-loading using either methods or constructors(if necessary)
3. Abstract classes with a method that is required in all derived classes
4. Overriding of a method(if necessary)
5. Example use of a friend functions that receives an object of a class and modifies the object
6. A class with a modified copy constructor and demonstrate the effect of this on pass-by-value and pass-by-reference calls
7. Demonstrate the difference between an array and a arraylist
8. Using of the sort&search algorithms on your container

Your student system should include these : All students will have a name,surname and id as string. There will be grades for 5 lesson ( course 1 grade, course 2 grade… ). There will be GPA, but it wont be a spesific field; you will create a getGpa function and it will calculate and return the GPA. All the data related to the program will be kept in a file. You will create a menu within your console program that will ask user for input.

Default menu items :

**Show student information** – system will ask for the student’s id and when user enters the student id system will show the related student’s all information( it will read a student’s related file and reads the information from there)

**Show ALL student information-** when selected it will read all student files and show to the user.

**Update student information-** system will ask for which student you want to update for and when user enters the students id, system will show the corresponding information and when user enters the information system will update the related file. (With checking are you sure to update the student’s information Y / N )

**Delete student information**- system will ask for which student you want to delete for and when user enters the students id, system will delete the file related (With checking are you sure to delete the student’s information Y / N )

**Show GPA** – system will ask fort he student’s id and when user enters the student id system will show the GPA of the related student( your getGpa function will work here)

**Show the Average GPA** – system will show the average GPA for all the students ( you should check how many students are there and calculate the average with that,it should show correct average )

**Exit Menu Item** – when selected

You will explain the difference between an array and a arraylist . While deleting&upgrading the student list , use an array or arraylist to do that. ( For example, read the data , save it in array list, delete or update the related data and read the array list again and save it to the related file. You can do this with array(s) , you can do this with arraylist(s) . If you can find other way to do that, it will be evaluated as such. There will be sort algorithm and search algorithm functions within your program. ( You will at least select 2 of sort algorithms, 2 of search algorithms) You will compare those algorithms within ( compare the first sort algorithm with second sort algorithm, what are their speeds and which one is better and why ) – You will comment your logic and explain the speeds of your functions, show the speeds of your functions

**ASSIGNMENT SUBMISSION**

You may not work with the other students. Each student should write up and hand in his or her assignment separately

You should submit the assignments via mail to the address cagdasozer@aydin.edu.tr

That mail will include

SEN114-ASSG as mail subject

Your name, surname and id

You will send the soft copy of your program and related files.

You will also open a Github account if you dont have any , upload it there, and paste the repository link to the mail

You will bring me the hard copy of your program (with your comments on everything you have coded and everything that needs to be explained

**DUE FOR 3th of April by midnight. No excuses will be accepted**

**IMPORTANT NOTES**

Please note that by the electronic submission of your first assignment I am assuming that you are familiar with the academic rules for assignments. The assignment should be 100% your own work. If any unreferenced work is used from any other source (including colleagues, the Internet or past students) it will be a serious matter and referable to the disciplinary board. Please note that all assignment work can be the subject of an interview process.

All assignments for this module will be uploaded to plagiarism detection software where the content will be analysed and compared to other assignment from this year and previous years.