IT306 Take Home Assignment 2

Assignment Directions

It is mandatory that you attempt this assignment on your own. You may use any printed resources you would like (text, notes, Internet – not recommended!). You may ask your instructor and TA questions on a limited basis. This is **not** a group assignment; however, limited discussion with your classmates is permitted. You may not work with a tutor or receive assistance on this assignment from outside resources. Sharing your work with a classmate or receiving assistance from someone outside of the course is considered a violation of the Mason Honor Code and results in 0 for the assignment in the first attempt and F in the course for the second attempt.

- **LATE ASSIGNMENT IS NOT ACCEPTED after 11:59 p.m. on the due date. Please don't send your late assignments to me or TA via emails as they will be discarded. You need to submit the softcopy to the myMason Portal on or before 11:59 p.m. If not submitted on time, it is classified as LATE.**
- **All the naming conventions used have to be followed the guidelines:**
- **All the variables have to be declared and initialized inside the method before they are used.**
- **All the arrays have to be declared before they are used.**
- **No global variables are allowed to be used in your application class.**
- **All methods must be structured programs.**

Assignment Requirements

An educational institute has at most 1000 students. You will implement an ***application*** for this institute that provides the following functionality:

1. Reading the student-records from a file.
2. Sorting the student list according to the GPA; the sorted result should be stored in a text file.
3. Searching the students based on GPA using binary search; the result should be printed using JOptionPane class.

If a student does not have a valid GPA, they should not be considered.

You are to implement three sorting methods based on

1) Insertion sort
2) Selection sort
3) Radix sort (use bucket sort for stably sort)

The ***Student*** class should include the following description:

- name: String
- gpa: double
- total number of students: static int

- mutators and accessors
- required methods
- gpa is at least 2.0 and at most 4.0

The input text file is provided to you.

Rubric:

- Including name, Gnumber, and email address at the top of the application class. **3 points**
- Proper exception handling. **5 points**
- Proper documentation within the submitted code. **5 points**
- Working execution of sorting methods (for all three). **15 points**
- Proper implementation of sorting methods (three). **30 points**
- Proper implementation of the student class. **5 points**
- Proper reading from text file. **5 points**
- Proper storing/processing information in an array structure. **4 points**
- Proper writing into text file. **5 points**
- Working execution of searching method and implementation. **15 points**
- Correct output for searching. **2 points**
- Correct output for sorting. **6 points**

The grade for a program that does not compile is no more than 20 points.