COMP 482 Project 5

BACKGROUND: Sorting! I know what you're saying "Dino! We already did a sorting project!" Yes…yes… but not like this one. I am going to let you cheat! How you ask? You are going to be able use the built in Arrays.sort() function in java. Why you ask? …because I am going to be evil and teach you how to override the sort function to sort how you want it! <insert evil laugh here>

OBJECTIVE: Given an array of integers, I want you to implement a function that takes an array and sorts it based on absolute value. If two numbers have the same absolute value (for example -2 and 2) sort them according to sign (-2 will be first 2 will be second).

I will let you do this project in 1 of 2 ways – but one way has a penalty:

Option 1 (can earn a max of 100%) – Using Arrays.sort() create a custom comparator to perform this sort or use a lambda function.

Option 2 (can earn a max of 75%) – Implement your own method for performing this sort. Note if your method performs worse than $O(n^2)$ you will earn even less points!

Input Format: The input file will be called input5.txt and be in the same directory as the java and class files. The format of input5.txt will be a standard text file containing whitespace (spaces/tabs/newlines) separated integers. Please note to put a single space between numbers to act as a delimiter (see examples below)!

Output: print the array in the sorted order requested to the screen.

EXAMPLE #1: Given an input5.txt file of:
-3 0 -5 7 5

Then the output would be:
0 -3 -5 5 7

EXAMPLE #2: Given an input5.txt file of:
2 -2 2 -2 2 -2

Then the output would be:
-2 -2 -2 2 2 2

EXAMPLE #3: Given an input5.txt file of:
7 -7 4 3 -2 -3 -4 2

Then the output would be:
-2 2 3 -3 -4 4 -7 7

Project information and Project Submissions:
- Projects will be done **ONLY** in **Java** (No other languages will be accepted)
- Students should begin to work on projects when the project specifications are released.
- Projects will be released as early as possible to students, and you are encouraged to complete the projects as early as possible. Even if a topic has yet to be covered, if students have taken the time to learn the material beforehand, feel free to attempt projects early and submit them early.
- You will be able to submit your project as many times as you wish until the deadline given. (**For a regrade you must submit the project at least 7 days prior to the deadline otherwise there will be no regrade**)
- Late projects will not be accepted.

Projects must be submitted as follows:

- You must submit your project to Canvas **ONLY.** Email submissions will not be accepted.
- The file must be submitted in a ".zip" format
- The ".zip" file should be named with your First and Last name with the project number at the end (Example: DinoBiel1.zip)
- If working in visual studio please do not zip the entire project. Only zip the ".java" file (doing this will cost you points!)
- you must use the DEFAULT package, if not sure how to do this, ask the professor.
- Failure to comply with the rules above will result in a major loss of points on the project!

Grading Rubric: When grading your projects I will assign grades based on the following criteria:

- Does the project work according to the specification including reasonable time complexity? – **50%**
- Does the project utilize the concepts requested in the specification? – **30%**
- Is the code provided in the project well formatted? – **10%**
- Does the code contain sufficient and useful comments to explain sections of the code? – **10%**