Northern Michigan University (Marquette Co, MI)
CS 422-01-25W: Algorithms: Design And Analysis

Program 3
Due: Friday 28 February 2025 9:00 A.M. EST

Create a folder called "PG3" in the top level of your CS422-01-25W folder. Place all files pertaining to this assignment into the top level of your PG3 folder. Place a (possibly empty) file called "DONE" into this folder when you are ready to have your programs graded. The only files you need to turn in are the .java files. Please don't turn in any files other than these!!

Write the following program in Java:

Your program should prompt the user for the number of elements in an array, and then to ask the user for a list of class records: Student name (string) and class average (double). Then, you should ask for the number of records (m) from the beginning of the list and the number of records (n) from the end of the list. You should then print out the first m records and the last n, but not any stuff between m and n. The list should be sorted by class average from highest to lowest. Records with identical class averages should be relatively sorted alphabetically by class name.

Couple of points.

1. You should a use a good algorithm to accomplish this. Don't sort the entire array when all you need are the first m and last n records. Make it reasonably time efficient. Also, make it reasonably space efficient. In particular, don't use a second array, just move stuff around in the one and only array of records.

2. You might have to print more than m records from the beginning of the list and/or more than n records from the end of the list. If there is more than one student matching the class average of the last element in the first list (or matching the first element in the last list), you still have to print all students with that average because they are all equally good (or equally bad)!

All data fields must be private, as always. Your main class should be named "PG3.java".

Example:

```
How many records are in your list?  5

Please enter the name of student 1:  Poe, Andy
Please enter the average:  100

Please enter the name of student 2:  Gates, Bill
Please enter the average:  75
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Please enter the name of student 3:  Kowalczyk, Mike
Please enter the average:  100

Please enter the name of student 4:  McRonald, Donald
Please enter the average:  75

Please enter the name of student 5:  Haskell, Jason
Please enter the average:  100

How many from the first part of the list?  2
How many from the last part of the list?  2

FIRST PART:
Haskell, Jason Grade: 100
Kowalczyk, Mike Grade: 100
Poe, Andy Grade: 100

LAST PART:
Gates, Bill Grade: 75
McRonald, Donald Grade: 75
```