

Name: _____

Assignment: Sorting and Methods

Introduction

Your task is to create a program that sorts data for the user. The user is able to enter their own data, and select which sorting technique they would like used by the program.

Program Specifics

The program is required to contain all of the following features:

- The program must be designed for maximum efficiency using methods
- The program must let the user enter their own data. This is a separate method
- The program must let the user select bubble sort, selection sort, or insertion sort. Each of these is a separate method
- The program must print out the contents of the sorted array. This is a separate method
- Validate all user input
- User interface must be organized and easy to read

Any student that wishes to receive a mark greater than 80% must include one of the following features. Any student that wishes to receive a mark greater than 90% must include two of the following features:

- Include shell sort as a fourth sorting option for the user. This is a separate method
- Tell the user how long it took to sort their data after sorting. Time should be in seconds or milliseconds. Use `System.currentTimeMillis()` or `System.nanoTime()`
- Sort strings instead of numbers. Must be sorted alphabetically.
- Include an option for the user that, if selected, populates an array with randomly generated values from 1-100 instead of accepting user input. If chosen with the sorting strings option, randomly generate letters of alphabet. This is a separate method
- When sort is complete ask user if they wish to enter new values. If yes, prompt user with two choices: either they enter an entirely new set of data or they add additional values to those already sorted. If user does not wish to enter new values quit program. This may involve creation of additional methods.

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Completion Checklist

Y/N

Does my program run? _____

Does my program include all of the required features? _____

Has my program been properly tested? _____

Have I addressed all run-time and logic errors found during testing? _____

Does my program include the required number of bonus features to meet my goals? _____

Have I included proper variable names? _____

Do I have proper comments (body and header)? _____

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	Level 4	Level 3	Level 2	Level 1
Code Format	The code is properly formatted. There is a header, thorough use of body comments, proper variable names, good use of white space, and generally good code structure.	The code is mostly properly formatted. However, the comments may not always be helpful or descriptive, or there be poor variable names, or slightly disorganized code structure.	The code is not formatted well. Variable names, comments, white space, and/or general code structure have not been organized well.	The code is very poorly formatted. No attention has been paid to formatting techniques such as comments or variable names.
Required Features	The program includes all required features. The features have been executed effectively and thoroughly.	The program includes most or all features. However, either execution is sloppy or one feature is missing.	The program only includes some required features. It is significantly limited in what it can do.	The program includes few if any functioning features. Substantial work is needed.
Additional Features	The program includes multiple additional features. You have gone beyond what is expected of you!	The program includes one additional feature. Well done!	The program does not include any additional features. You should aim higher!	The program includes an attempt at additional features that causes major errors and ruins execution.
Creative Solutions	The implementation is effective, efficient, and unique. The writer of this code is working beyond what is expected of them!	The implementation is effective and efficient. The writer of this code is working at the level expected of them.	The implementation is effective. The writer of this code should think about how to make more efficient and direct solutions in the future.	The implementation is ineffective. The solution is incomplete and/or extensively error-prone.

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Planning and Testing Assignment Feedback

Mark Breakdown

Knowledge	• Communication	Application	Thinking
/10	/10	/10	/10