**CS2363 C++**

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**Search and Simple Sorting HW**

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Write a summary paper in which you give results for an array of 10,000 random integers and state whether or not the metrics produced by your program are consistent with predictions made in class.

Results for an array of 10,000 random integers:

1. For Exchange Sort:

* Random array
  + Number of comparison: 49995000
  + Number of exchange: 24908772
* Sorted array
  + Number of comparison: 49995000
  + Number of exchange: 0
* Reversed array
  + Number of comparison: 49995000
  + Number of exchange: 49944968

1. For Insertion Sort:

* Random array
  + Number of comparison: 24918765
  + Number of exchange: 24908772
* Sorted array
  + Number of comparison: 9999
  + Number of exchange: 0
* Reversed array
  + Number of comparison: 49953968
  + Number of exchange: 49944968

1. For Selection Sort:

* Random array
  + Number of comparison: 49995000
  + Number of exchange: 9981
* Sorted array
  + Number of comparison: 49995000
  + Number of exchange: 0
* Reversed array
  + Number of comparison: 49995000
  + Number of exchange: 7044

The metrics produced by my program are consistent with predictions made in class. The result for each metrics behave accordingly as it is predicted in class for all three sorting methods.

The format of the file is: a single integer stating the number of entries to be read, followed by *at least* that many integers. For example, the file

10 32 65 11 2 5 34 66 22 98 9

contains ten elements: 32, 65, 11, 2, 5, 34, 66, 22, 98, and 9.

The leading 10 is *not* one of the data elements.

That way you can open the file, read one integer, create your arrays, and then read the data into the arrays.

What happens if there aren’t enough integers in the file?

If there aren’t enough integers in the file, and since C++ does not do boundary checking in arrays then there will be “garbage” data; random data that is created but not actually in the file. Although no error is actually given for this logic error but the data in the array essentially is incorrect and should not be use for any sorting or other things.