CSC-20 –Program Concept + Method II

Final Exam: Part One (Take Home – 25 Points)

- **Assigned**: April 16, 2018
- **Due date**: May 2nd , 2018 at 8:00AM (Absolutely no late work accepted. The website will be closed after this time.)
- **Turn in**: Writing up result and submit your work, in PDF format, to Canvas

You are going to demonstrate your understanding with the four sorting algorithms by showing their executions. The algorithms are: Bubble, Selection, Insertion, and Quicksort sorts. For the consistency of the evaluation, please use the only the algorithms we discussed in our lecture.

1. You have the following list of numbers to sort (10 points):

   [54, 25, 93, 17, 77, 31, 44, 55, TBD]

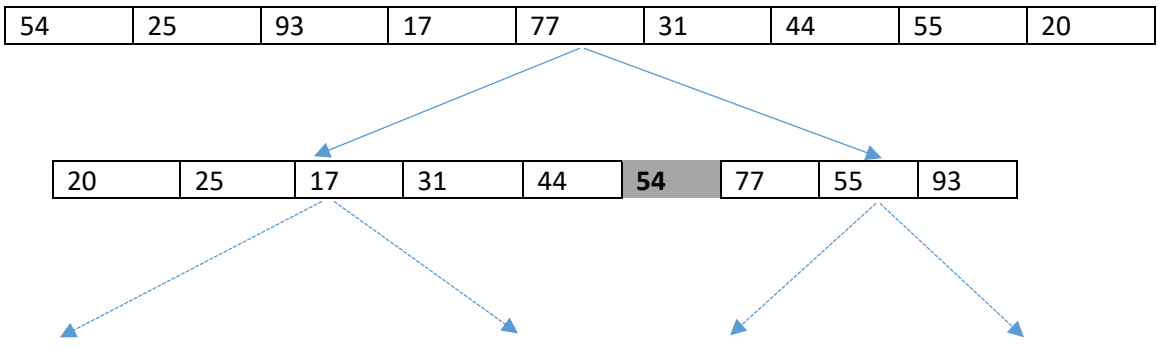
   Where TBD (to be determined) is the last 2 digits of your CSUS's Student Id.

You need to show all execution passes (see lecture notes on a definition of execution pass) of the algorithms, in a table row format, with the exception of Quick Sort. For example, for the first pass of execution, if we assume TBD has a value of 20, the Selection sort will have the following entry:

54	25	20	17	77	31	44	55	**93**

……

For Quick Sort, if TBD has a value of 20, using a recursion tree, you can use the following example to demonstrate your work:



2. Using the data provided, which of the above algorithm is more efficient and why? Hints: Please consider counting the number of comparisons made by each algorithm. Do not count the number of passes. Please show your work and motivate your answer. (15 points)

Please be sure to work closely with your instructor for any clarifications you need.