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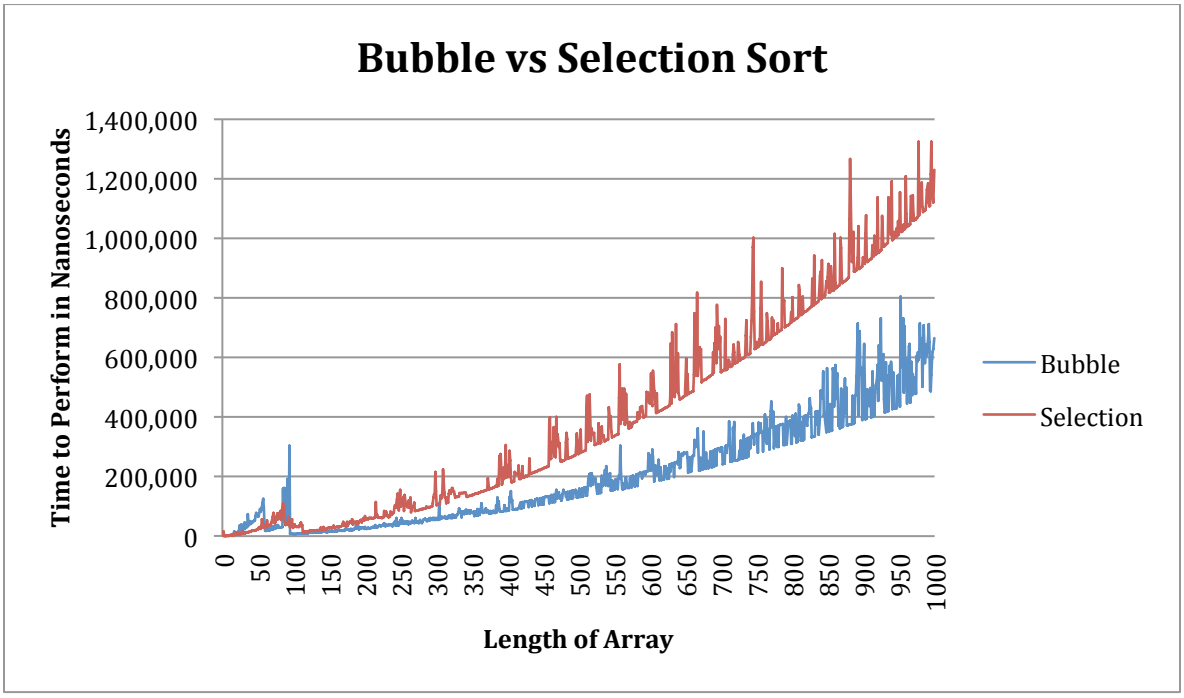
Part 2: Analysis, Comparison of Bubble Sort and Selection Sort



The above plot shows the time to perform Bubble Sort and Selection sort for arrays with lengths from 1 to 1,000. From the plot above, it appears that selection performs faster for arrays with small lengths (approx. less than a length of 75) and bubble sort performs faster for arrays with larger lengths (approx. greater than a length of 75).

Generally, selection sort should outperform bubble sort. This makes sense as Bubble sort compares each number with each other and swaps while selection sort swaps only after finding the minimum index in the list. [1][2] The output of this graph may be deceiving because of the fact that the algorithm was only used to sort an array from descending order to ascending order rather than a completely random array. I repeated the code multiple times and found similar results in all cases. One website also performs a visual sort of reserving the order of an array and bubble sort does outperform selection sort in this case as well. [3]

Bubble sort performs best when reserving the order, such as from descending to ascending order as in this case or when the data is nearly sorted. [3] It performs the worst when the data is completely unsorted. Selection sort performs the best when the data is completely out of order and it performs the worst if the data is almost sorted.

References:

[1] http://analgorithmaday.blogspot.com/2011/01/selection-sort-bubble-sort.html
[2] http://en.wikipedia.org/wiki/Selection_sort
[3] http://www.sorting-algorithms.com/