

- a) Following is the the chart of the algorithm, the running times and the algorithm execution time:

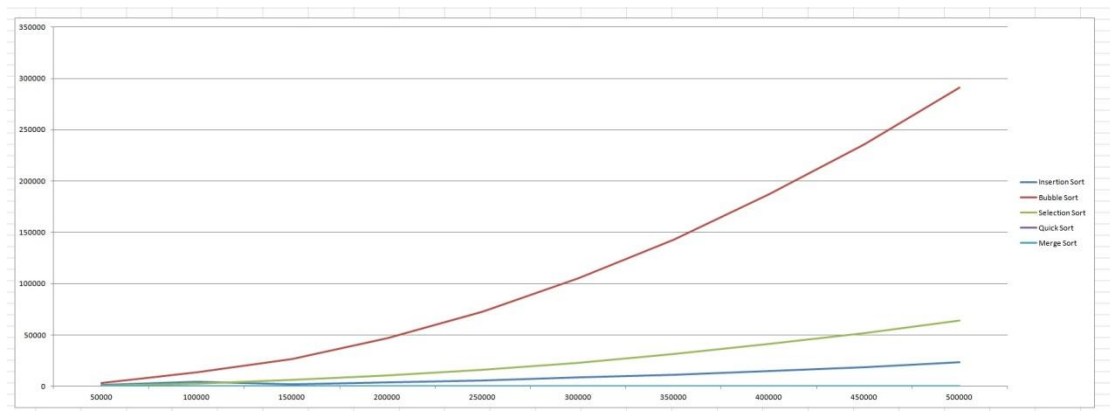


Figure 1: Graph of algorithm execution times.

- b) I choose the insertion sort algorithm as the quadratic sorting algorithm to sort the “small enough” subarray. The reason is that from the figure of a), except the merge sort algorithm and the quick sort algorithm, the insertion sort algorithm get the best performance.
- c) In my algorithm, the maximum size of a subarray to be sorted by the quadratic sort is 20. The reason is that when the size is bigger than 20 for the quick sort, the probability that we choose a pivot that is consistently on one end (left or right) of the subarray as the worst case pivot is less than 10%.