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CSC172 lab16

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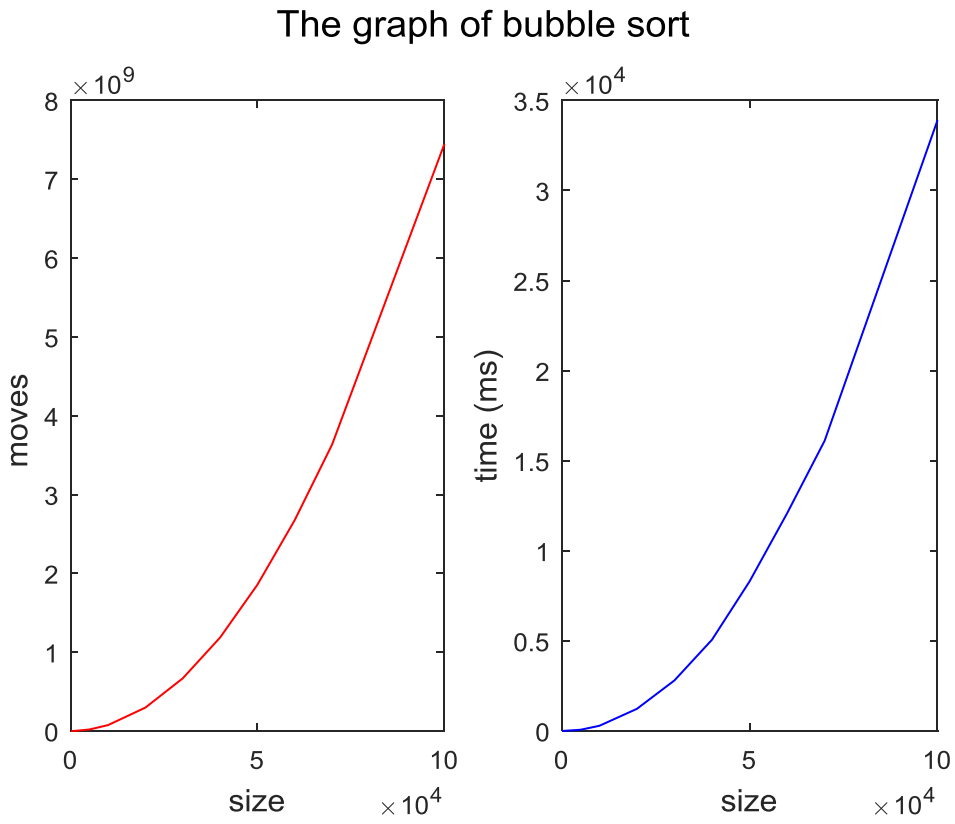
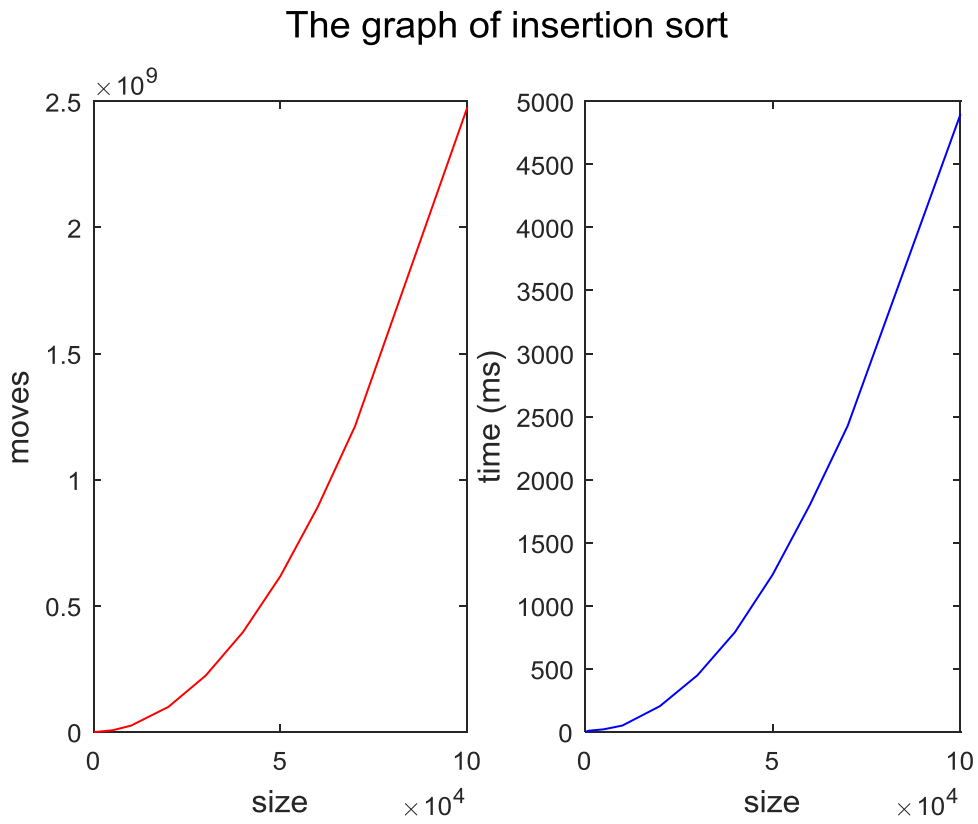
Part 1. Bubble sort.

The graph below is the plot of bubble sort. The theoretical results of bubble sort is O (n) for best case and O (n^2) for worst case. It is clear that both graph below is really close to x^2. It may hard to compare the speed of bubble sort with other sort method by graph. However, it is really easy to see from OUTPUT, bubble sort is really slow and take too much moves.



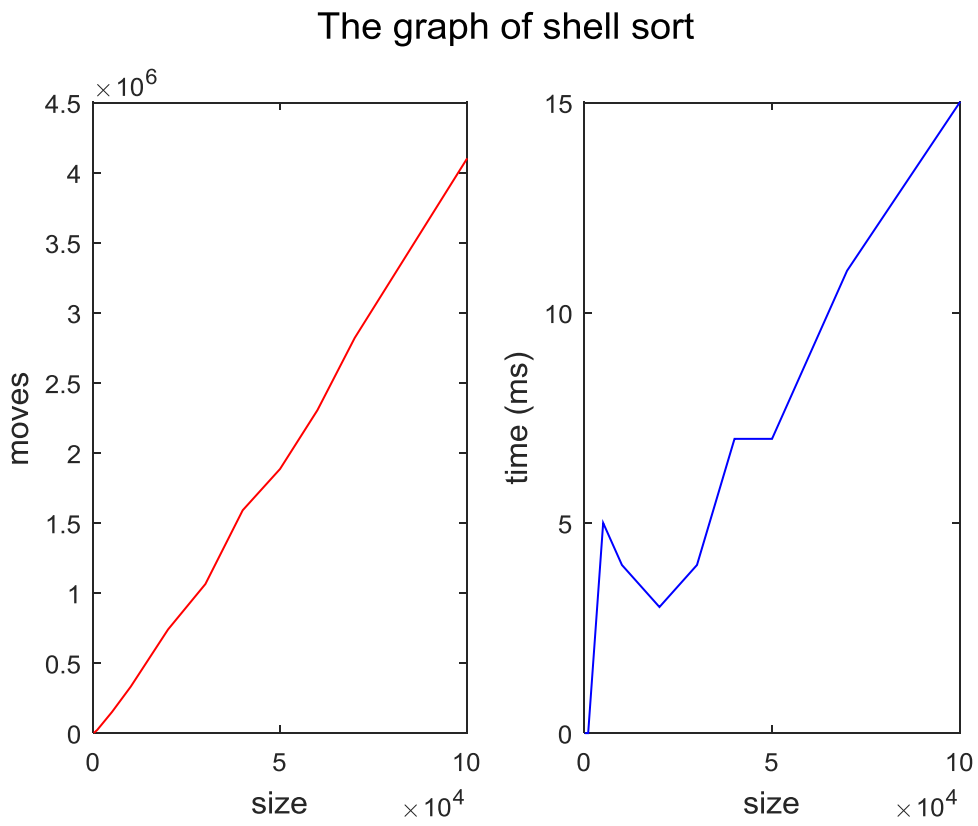
Part 2. Insertion sort.

The graph below is the plot of insertion sort. The theoretical results of insertion sort is O (n) for best case and O (n^2) for worst case. It is clear that both graph below is really close to x^2. Although insertion sort have same run time as bubble sort and the shape is even similar, insertion sort is a little bit fast than bubble sort by comparing of interval of y-axis. The x-axis (size) for all sort method is same, so their y-axis could directly show the different of sort speed)



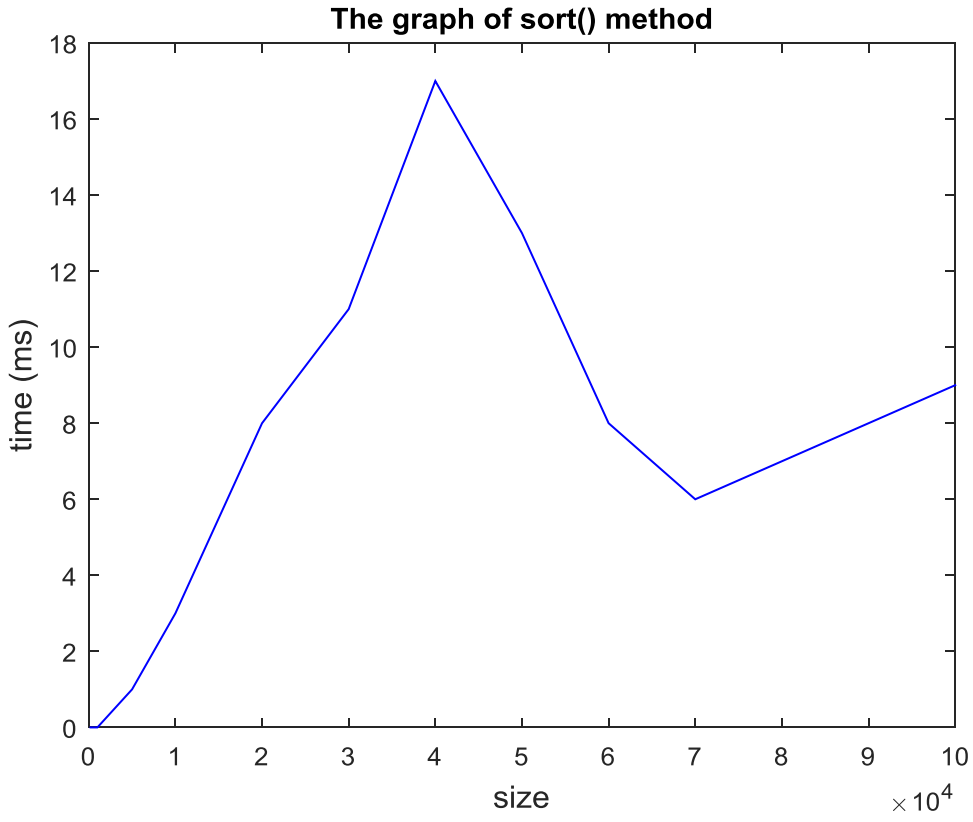
Part 3. Shell sort.

The graph below is the plot of shell sort. The theoretical results of shell sort is O ($\mathrm{n} * \log_2 n$) for best case and O (n^2) for worst case. Although second graph has noise, it still close to the linear of n *log (n).So, these graph basically close to theoretical results. By compare the y-axis, shell sort is really fast, but it is not stable.



Part 4. Sort method.

The graph below is the plot of sort method. Unlike other sort method, the execution time of sort () method sometime is not increasing with increasing of size. It is second fast sort method in these five sort method.



Part 5. Quick method.

The graph below is the plot of quick method. The theoretical results of shell sort is O (n log n) for best case and O (n^2) for worst case. These two graph really close to theoretical results .Quick sort have best performance in these sort method and it is really stabilize.