

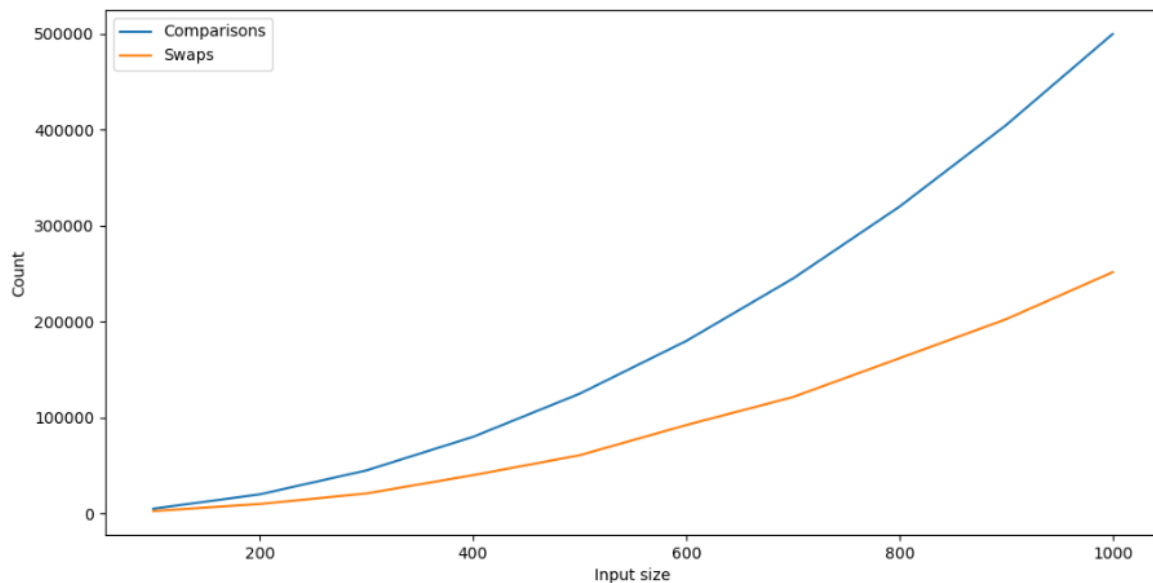
Ex3

1. Derive the formulas for (i) number of comparisons, and (ii) average-case number of swaps for bubble sort.

(i) For comparison, $n*(n-1)/2$ since we are adding from $n-1$ to 1. Therefore, for the Big O notation, it will be $O(n^2)$.

(ii) For swaps, suppose the half of those comparison will result in a swap. So, the formula will be formula for comparison/2 which will be $n*(n-1)/4$. The Big O notation for swaps will also be $O(n^2)$.

4. Separately plot the results of #comparisons and #swaps by input size, together with appropriate interpolating functions. Discuss your results: do they match your complexity analysis?



As we assume that the half of the comparison will result in swap, the graph matched with our assumptions which showed that number of swaps is about half of the comparison for every input size.