

NAME – SHIVAM KUMAR

ID- 201551087

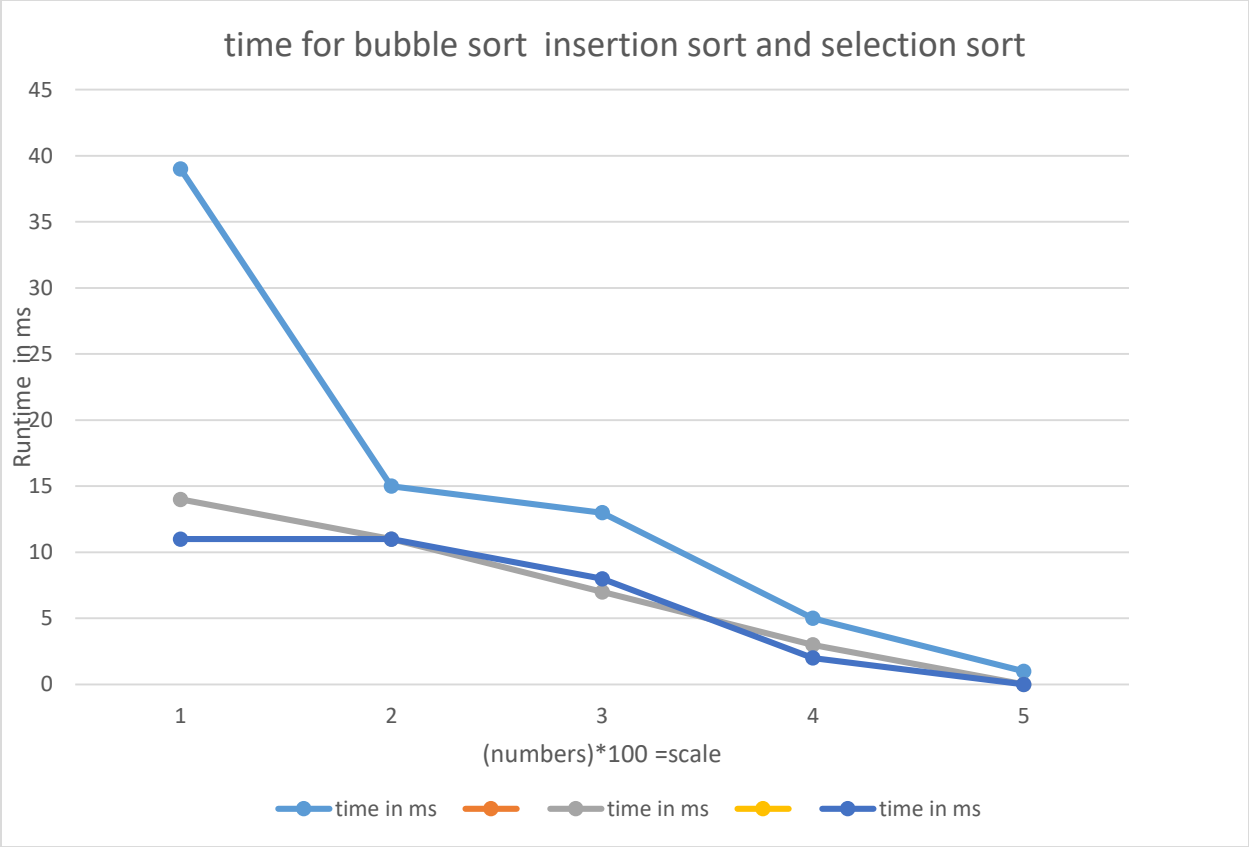
LAB1-ALGO

To analyze the bubble sort, selection sort and insertion sort algorithms, you are provided with two files, one contains a large list of integer numbers (1500 numbers) and the other contains a large list of words (1200 numbers). Sort both these files in ascending order and lexicographic order respectively. Find out the time it takes for your implementations to sort these files.

Check which algorithm is fastest for 100 numbers and 100 words, 400 numbers and 400words, 800 numbers and 800words. Plot a graph of their running times.

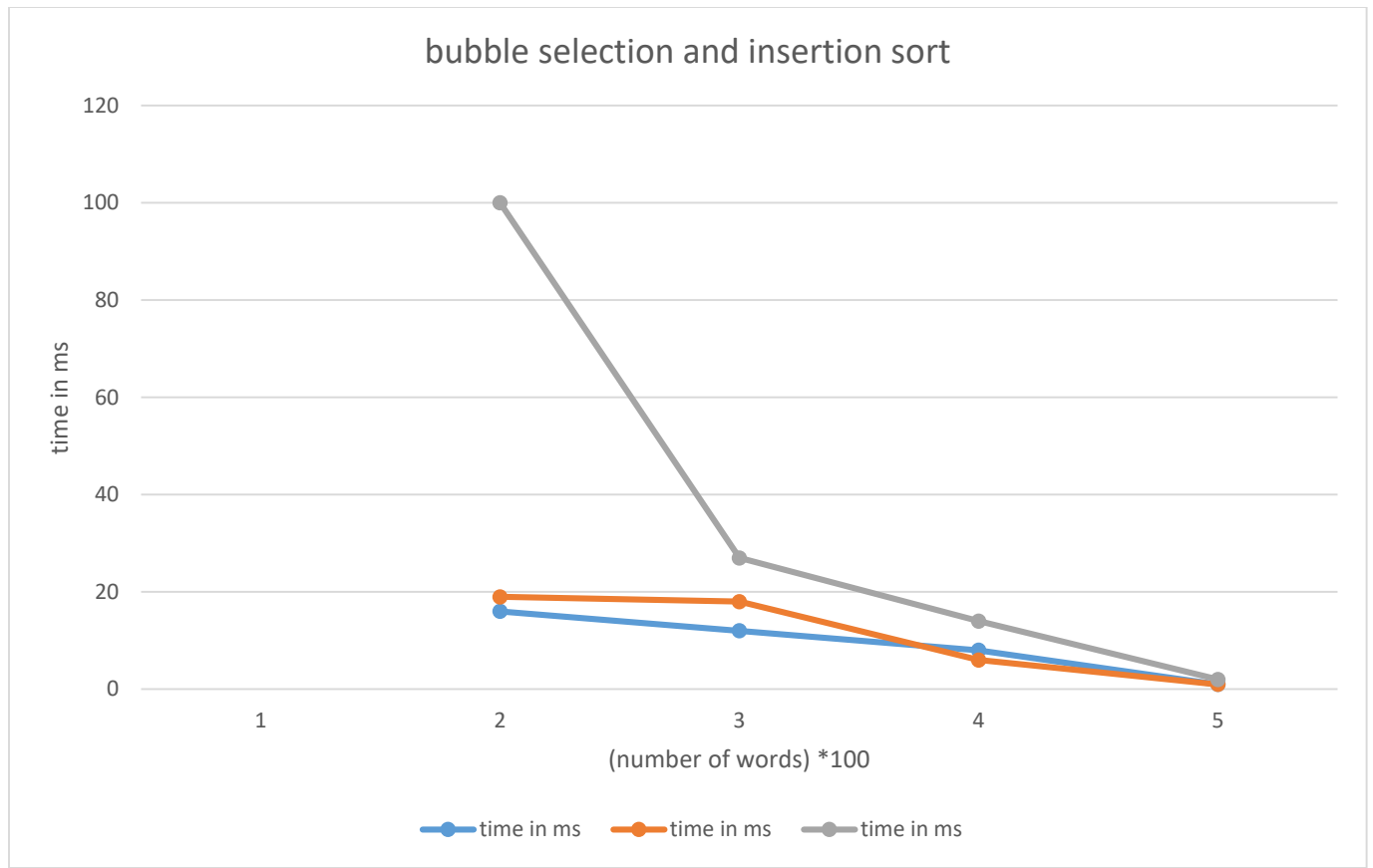
SOLUTION → a). For numbers →

Bubble sort					
numbers	1500	1200	800	400	100
time in ms	39	15	13	5	1
Insertion sort					
numbers	1500	1200	800	400	100
time in ms	11	11	8	2	0
Selection sort					
numbers	1500	1200	800	400	100
time in ms	14	11	7	3	0



b). For words →

BubbleWord				
words	1200	800	400	100
time in ms	100	27	14	2
InsertionWord				
words	1200	800	400	100
time in ms	16	12	8	1
SelectionWord				
words	1200	800	400	100
time in ms	19	18	6	1



Answers of all the questions are shown in above both data and graphs .

1→ With smaller datasets insertion sort works good.

2→ With larger datasets insertion sort works good.

3→All 2 algorithms are stable other than selection sort.

4→The most memory efficient algorithm is bubble sort.