

CSE 204

DATA STRUCTURE AND ALGORITHMS – I

Offline 2

Problem 1

Comparison of Selection Sort & Insertion Sort

Submitted By

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Submitted to

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Date of Submission

09-06-2019

MACHINE CONFIGURATION:

1. **Processor:** Intel(R) Core(TM) i7-8550U CPU @ 1.80GHz, 2GHz
2. **Installed RAM:** 8.00 GB
3. **OS:** Windows 10 Home Single Language
4. **System Type:** x64-based PC

Data Set

Input Constraint (N)	Insertion Sort (Avg. case) ns	Insertion Sort (Best case) ns	Insertion Sort (Worst case) ns	Selection Sort (Avg. Case) ns	Selection Sort (Best Case) ns	Selection Sort (Worst Case) ns
10	495	225	568	740	518	771
100	10059	1018	13860	22951	18063	24642
200	42996	1434	51720	84348	72342	85821
500	235351	2364	241504	397936	370556	399561
1000	1118000	5000	1213000	1604000	1545000	1846000
2000	4541000	19000	5985000	5144000	4964000	5890000
5000	34004000	32000	34709000	48600000	442501000	49888000
10000	114196000	61000	124196000	196086000	175487000	238417000

Time Complexity

Insertion Sort

Best Case : $O(n)$

Worst Case : $O(n^2)$

Average Case : $O(n^2)$

Selection Sort

Best Case : $O(n^2)$

Worst Case : $O(n^2)$

Average Case : $O(n^2)$

Comparison using Graph (Insertion Sort vs Selection Sort)

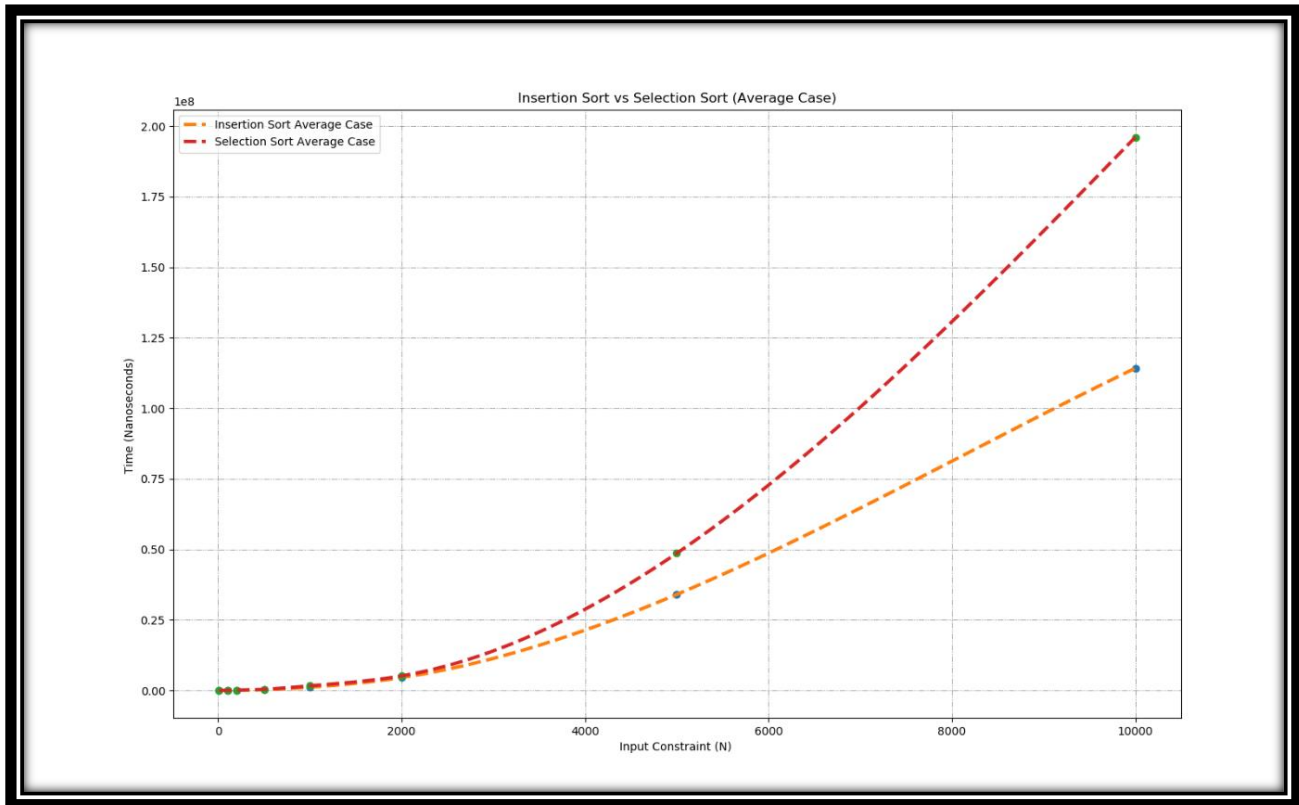


Fig : Insertion Sort vs Selection Sort (Average Case)

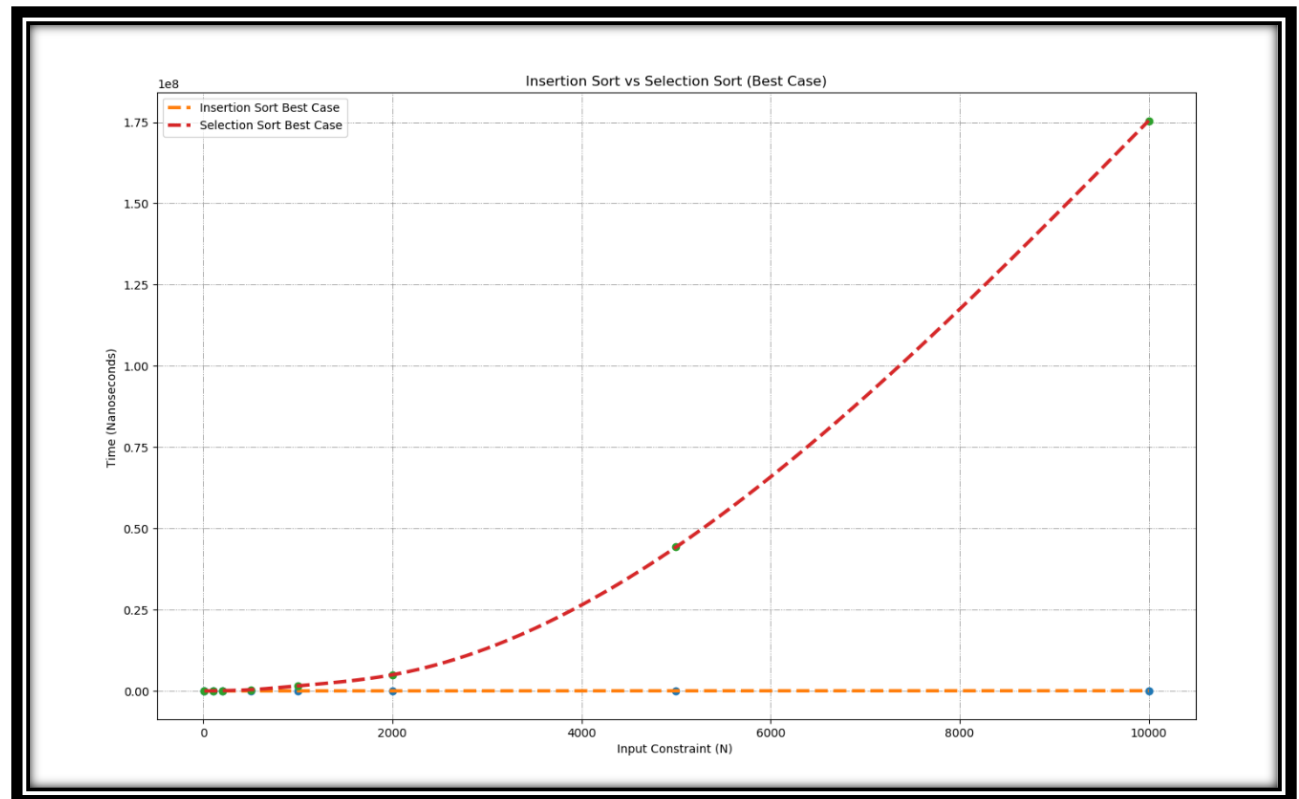


Fig : Insertion Sort vs Selection Sort (Best Case)

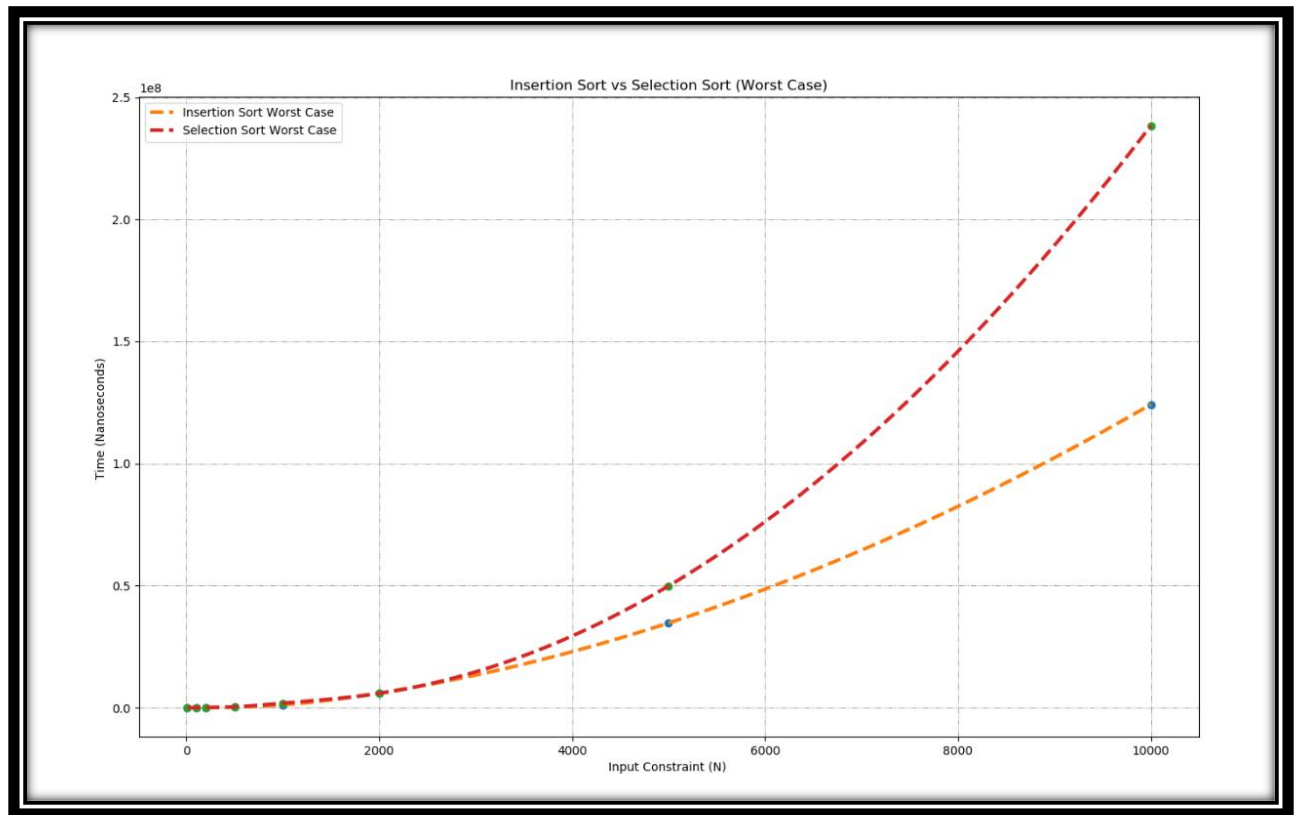


Fig : Insertion Sort vs Selection Sort (Worst Case)

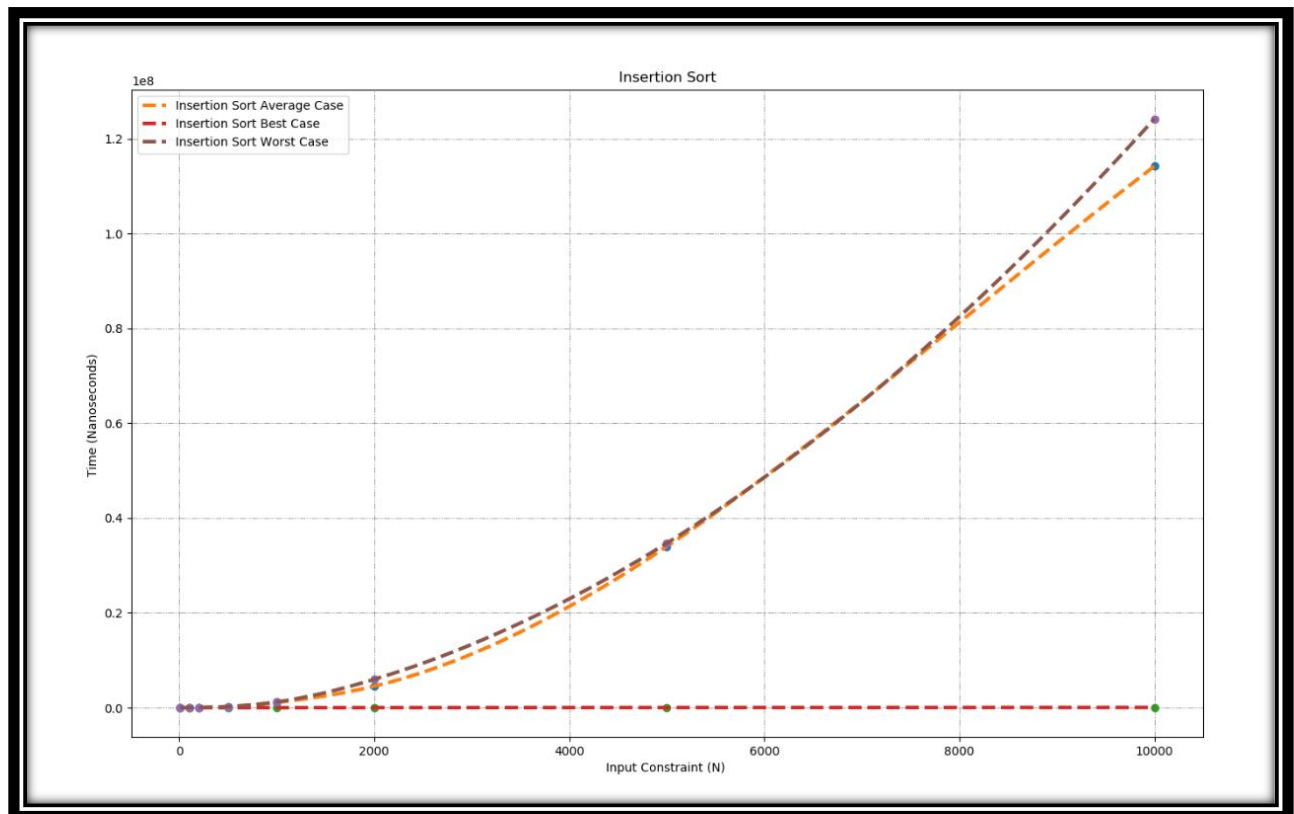


Fig : Insertion Sort(Best Case , Average Case & Worst Case)

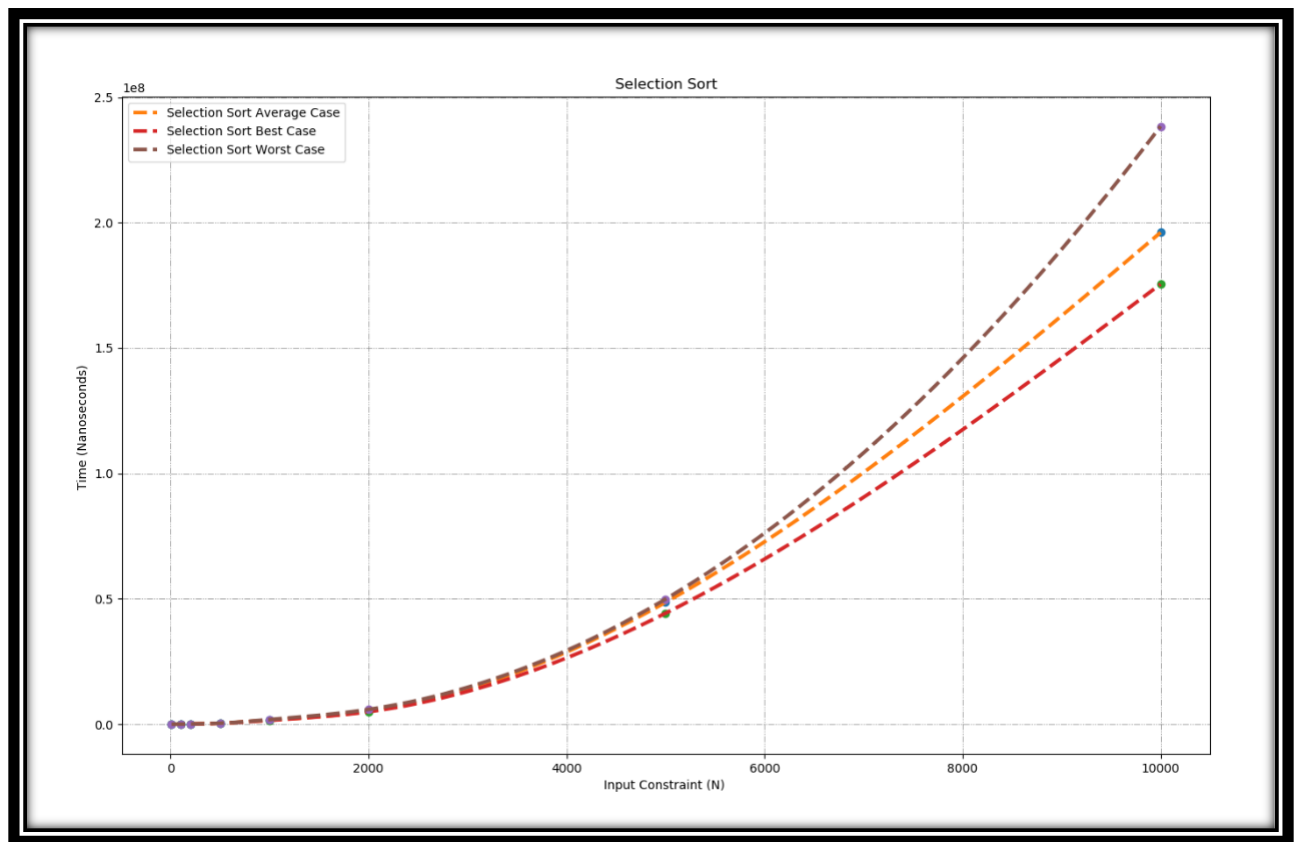


Fig : Selection Sort(Best Case , Average Case & Worst Case)