Algorithm PA1

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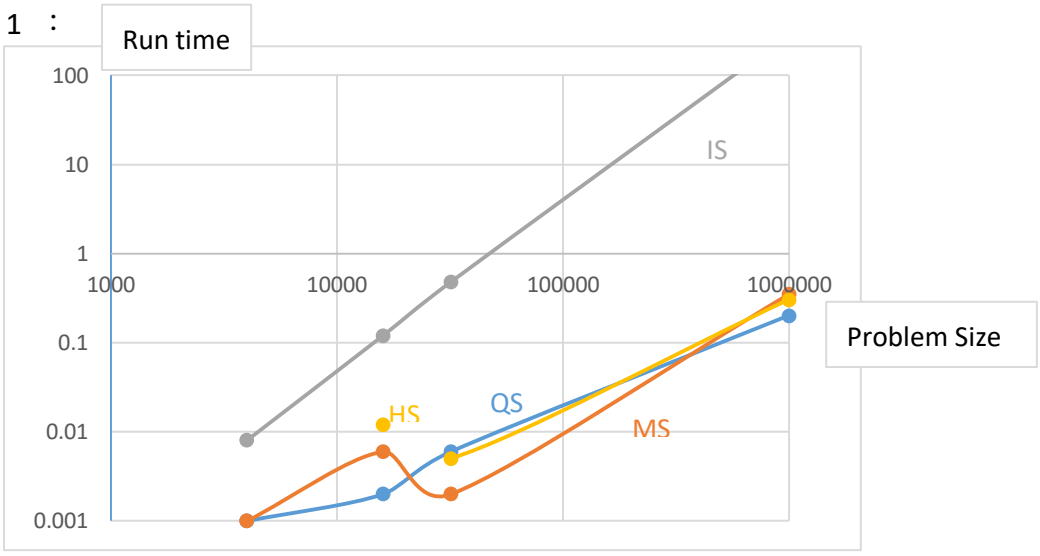
input size	IS		MS	
	CPU time (s)	Memory (KB)	CPU time (s)	Memory (KB)
4000.case2	0	12500	0.00899	12500
4000.case3	0.015997	12500	0.001	12500
4000.case1	0.007999	12500	0.001	12500
16000.case2	0	12648	0.005	12648
16000.case3	0.241963	12648	0.004	12648
16000.case1	0.119982	12648	0.005998	12648
32000.case2	0	12648	0.008999	12648
32000.case3	0.883886	12648	0.005999	12648
32000.case1	0.481927	12648	0.0019997	12648
1000000.case2	0.003	18668	0.183972	22476
1000000.case3	569.161	18668	0.208969	22476
1000000.case1	283.689	18668	0.350946	22476

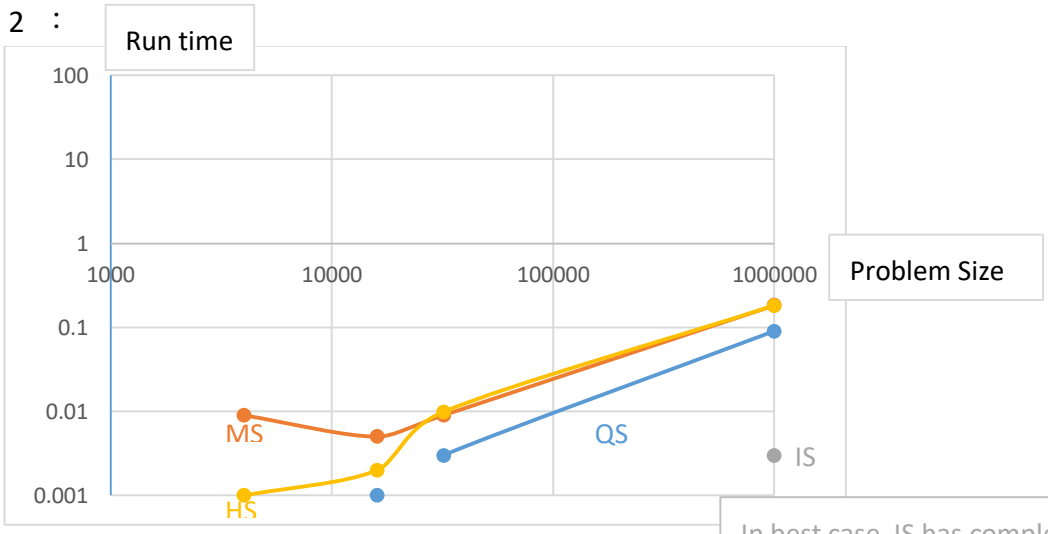
input size	QS		HS	
	CPU time (s)	Memory (KB)	CPU time (s)	Memory (KB)
4000.case2	0	12500	0	12500
4000.case3	0	12500	0.001	12500
4000.case1	0.001	12500	0	12500
16000.case2	0.001	12648	0.002	12648
16000.case3	0.001	12648	0.002	12648
16000.case1	0.002	12648	0.011999	12648
32000.case2	0.003	12648	0.00988	12648
32000.case3	0.002	12648	0.006998	12648
32000.case1	0.00599	12648	0.00499	12648
1000000.case2	0.089986	18668	0.180972	18668
1000000.case3	0.098985	18668	0.178973	18668
1000000.case1	0.199969	18668	0.302954	18668

(Axis in graphs below have been trun into logarithmic order, so if the run time = 0, it won't show on graph.)

Case 1 ：

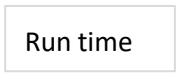


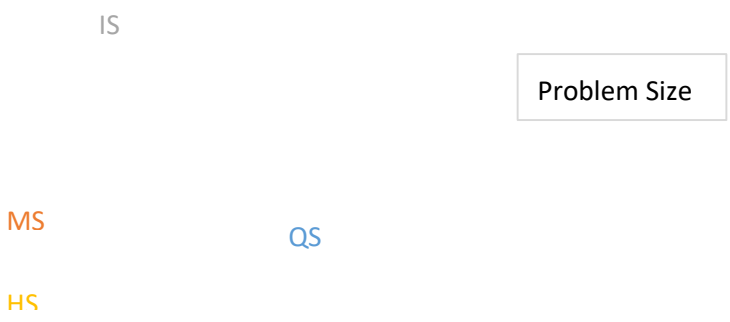
Case 2 ：

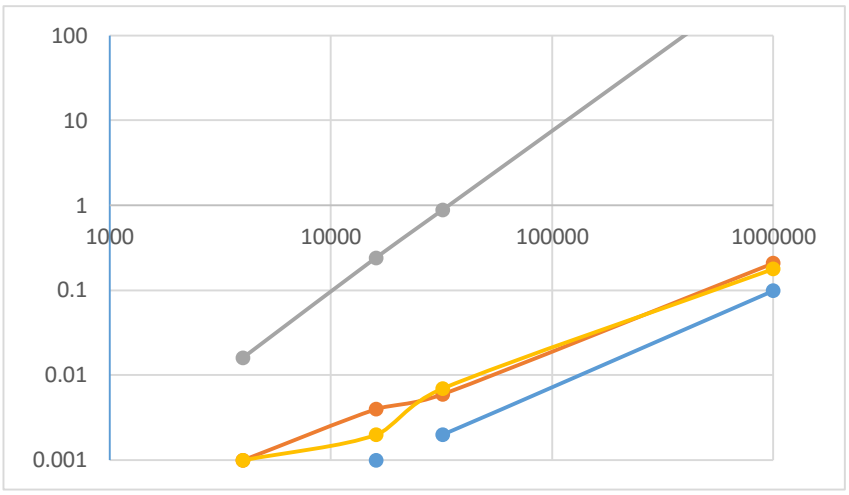


In best case, IS has complexity(O(1)).
Therefore after taking log, it won't show.

Case 3 ：







Conclusion

In this assignment, I basically just translate the psuedo code in textbook / notes in class into c++ code. And the results above indicate that insertion sort has higher time complexity (since it's O(n^2)), and other algorithms have lower time complexity (O(nlogn)), which also can be observed easily by the graph above.