

Programming Assignment Aaron Reich

Insertion Sort			
n	Simulated InsertionSort RT (μ s)	Theoretical Running Time= n^2	Hidden Constant
1000	1896	10^6	0.01896
2000	781	$4(10^6)$	0.00019525
3000	1312	$9(10^6)$	0.000145777778
4000	2182	$16(10^6)$	0.000136375
5000	3373	$25(10^6)$	0.00013492
6000	5357	$36(10^6)$	0.000148805556
7000	7329	$49(10^6)$	0.000149571429
8000	14874	$64(10^6)$	0.00023240625
9000	19747	$81(10^6)$	0.000243790123
10000	16223	$100(10^6)$	0.00016223
11000	16105	$121(10^6)$	0.000133099174
12000	19258	$144(10^6)$	0.000133736111
13000	22869	$169(10^6)$	0.000135319527
14000	26099	$196(10^6)$	0.000133158163
15000	30353	$225(10^6)$	0.000134902222
16000	34742	$256(10^6)$	0.000135710938
17000	38970	$289(10^6)$	0.000134844291
18000	45170	$324(10^6)$	0.00013941358
19000	49537	$361(10^6)$	0.000137221607
20000	53566	$400(10^6)$	0.000133915

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QuickSort		
Simulated QuickSort RT (μ s)	Theoretical Running Time= n^2	Hidden Constant
660	10^6	0.01896
405	$4(10^6)$	0.00019525
887	$9(10^6)$	0.00014577777778
1530	$16(10^6)$	0.000136375
2339	$25(10^6)$	0.00013492
3313	$36(10^6)$	0.00014880555556
4297	$49(10^6)$	0.00014957142857
6976	$64(10^6)$	0.00023240625
25635	$81(10^6)$	0.00024379012346
27391	$100(10^6)$	0.00016223
14895	$121(10^6)$	0.00013309917355
13661	$144(10^6)$	0.00013373611111
14326	$169(10^6)$	0.00013531952663
16242	$196(10^6)$	0.00013315816327
20425	$225(10^6)$	0.00013490222222
22676	$256(10^6)$	0.0001357109375
25480	$289(10^6)$	0.00013484429066
26380	$324(10^6)$	0.00013941358025
29735	$361(10^6)$	0.00013722160665
33127	$400(10^6)$	0.000133915

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HeapSort		
Simulated HeapSort RT (μ s)	Theoretical Running Time= $n \lg n$	Hidden Constant
5118	6907.7553	0.740906383872631
5397	15201.8049	0.355023632752977
10195	24019.1027	0.424453824413682
17727	33176.1986	0.534328848634274
22361	42585.9659	0.525079084797745
20600	52197.0885	0.394658027717389
20602	61975.658	0.332420835289881
20953	71897.5746	0.291428467741386
19924	81944.8187	0.243139228520863
16523	92103.4037	0.179396193150677
14458	102362.1561	0.141243605555511
20408	112711.9431	0.181063332231738
19280	123145.1602	0.15656319719498
17271	133655.3765	0.129220390920825
19369	144237.0822	0.134285855652174
18316	154885.504	0.11825509506687
21277	165596.4666	0.128487041039316
24131	176366.2867	0.136823201596612
22793	187191.6909	0.121762883226352
23106	198069.7511	0.116655874365866

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