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SHORT PROJECT 11

SUBMITTED BY: -
PUNIT BHALLA & VINEET VATS

CS5V81.001 SPECIAL TOPICS IN COMPUTER SCIENCE
THE UNIVERSITY OF TEXAS AT DALLAS

Performance Evaluation

K=⌈N/2⌉

Input Parameters	Select Algorithm	Priority Queue Algorithm
N=1M	Choice: 1 Time: 183 msec. Memory: 86 MB / 220 MB	Choice: 2 Time: 398 msec. Memory: 63 MB / 220 MB
N=2M	Choice: 1 Time: 281 msec. Memory: 101 MB / 346 MB	Choice: 2 Time: 778 msec. Memory: 66 MB / 371 MB
N=4M	Choice: 1 Time: 604 msec. Memory: 134 MB / 324 MB	Choice: 2 Time: 1781 msec. Memory: 208 MB / 592 MB
N=8M	Choice: 1 Time: 1277 msec. Memory: 43 MB / 135 MB	Choice: 2 Time: 4468 msec. Memory: 583 MB / 816 MB
N=16M	Choice: 1 Time: 2730 msec. Memory: 102 MB / 134 MB	Choice: 2 Time: 11826 msec. Memory: 492 MB / 900 MB
N=32M	Choice: 1 Time: 5691 msec. Memory: 156 MB / 274 MB	Choice: 2 Time: 26724 msec. Memory: 830 MB / 1285 MB
N=64M	Choice: 1 Time: 12433 msec. Memory: 249 MB / 416 MB	Choice: 2 Time: 71243 msec. Memory: 1156 MB / 1569 MB
N=128M	Choice: 1 Time: 25803 msec. Memory: 540 MB / 860 MB	Choice: 2 Time: 189336 msec. Memory: 2025 MB / 2045 MB
N=256M	Choice: 1 Time: 54821 msec. Memory: 1213 MB / 1508 MB	OutOfMemoryError

Conclusions

1. Selection algorithm runs faster than priority queue algorithm.
2. Run time complexity of selection algorithm is O(n), while that of priority queue algorithm is O(nlogk).