California State University, Fullerton

CPSC 335

Fall 2018

Project 2

Randomness & Sorting

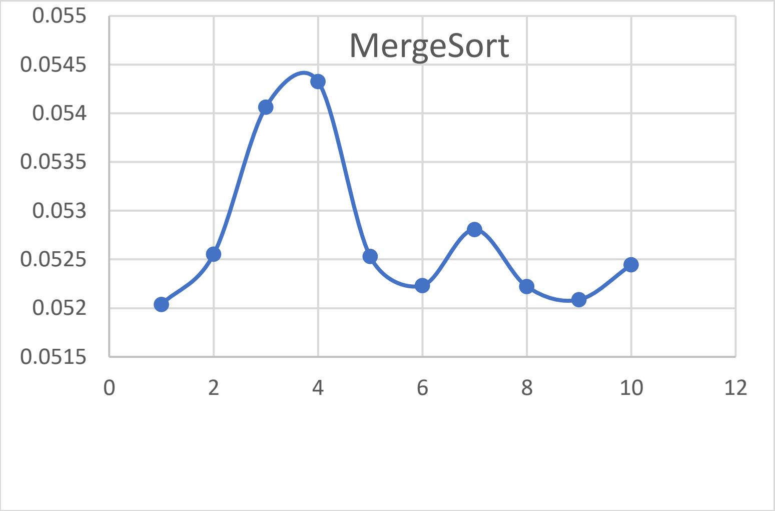
Mergesort

Size 1000

Worst time: 0.0136694 seconds

Average time: 0.01314 seconds

Best time: 0.0126855 seconds



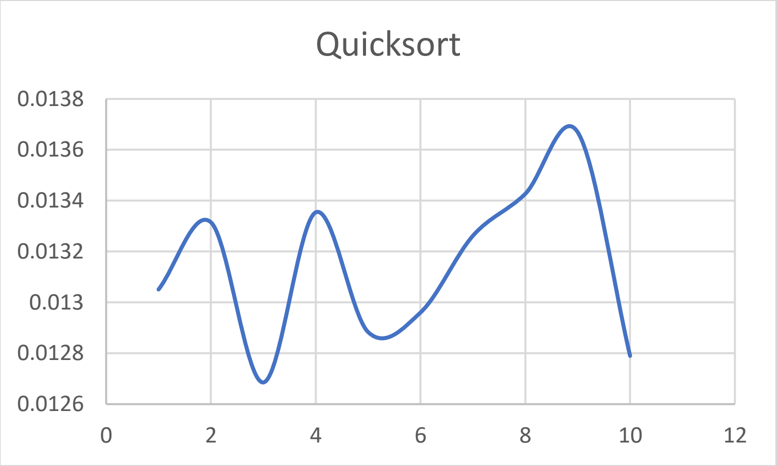
Quicksort

Size 1000

Worst time: 0.0543271 seconds

Average time: .05273 seconds

Best time: 0.0520388 seconds



Merge sort best, worst, and average cases is O(n log n). Quicksort best is O(n log n), worst is O(n^2), and average is O(n log n). The times differences between the two algorithm are much different than I expected. Although both have the same time efficiency on average, quicksort seem to be faster. It was probably slower due to temporary array, but if I implemented in place, it would have probably been O(n) in best case. The worst case would also be changed to O(n^2). The nice thing about mergesort is that it will always be O(n log n), if you use the temporary array way. Mergesort is also better for large data structures, like linked list.