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(Note: I will be abbreviating Median of 3 with base case N as MN, for example: Median of 3 with base case 5 is M5, and Median of 3 with base case 10 is M10. Additionally, Random Pivot Quicksort will be abbreviated RPQ, and Simple Quicksort with pivot = last will be abbreviated SQ.)

To QuickSort, or not to QuickSort?

In the test with Random data order, M10 and M20 were both the clear best algorithms, at times performing almost twice as fast as M5 and RPQ. SQ performed much better on the Random data order than it did on the other data orders, but not well enough to compete with M10 and M20.

In the test with Sorted data order, all three of M5, M10, and M20 performed very well. M5 held a very slight advantage over M20, but not significant enough to think much of. The sorted data order is the first one where we see how terribly SQ can perform in the worst case, with average time over 1000 times worse for the 128000 trial.

In the test with Reverse Sorted data order, M5 and M20 hold a slight lead over M10 and RPQ. All four of these algorithms performed extremely well compared to SQ, which again was over 1000 times worse.

Based on these three data orders, I would say that M20 is the best algorithm to use for general purposes. Although any of the Median of Three algorithms will yield great results, M20 performed the best on Random data order, which I deem to be the most important.

My reasoning is that the Median of Three process guarantees great results if the data is already sorted, regardless of base case. Because of this, it is easy to discount the minute differences between the three base case algorithms. However, the more random the data is to begin with, the better M20 will perform (according to my data).