Assignment 6

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I. **Were the time differences more drastic than you expected?**

The time differences of quick sort compared to the other sorting methods were vastly more drastic than I expected. Quick sort was recorded being 3 decimal places faster than insertion sort. Bubble sort had the slowest runtime of them all, taking nearly three times as long as insertion sort.

II. **What tradeoffs are involved in picking one algorithm over another?**

When picking one algorithm over another it is important to understand the tradeoffs. Some require more RAM while others require more CPU. While running the sorting algorithms I noticed a spike in CPU from 1% to 5% but no noticeable change in RAM.

III. **How did your choice of programming language affect the results?**

After spending an entire semester working with C++, I found using it to implement the sorting methods easy. Compared to Java, C++ has a faster runtime because it is compiled to binaries. Java must first be interpreted so it has a slower runtime.

IV. **What are some shortcomings of this empirical analysis?**

Empirical analysis requires the manhours to write and implement all the sorting methods and then run tests on them. This costs the company both time and money. While empirical yields the most accurate results, calculating and comparing the Big-O runtime of the code is much more efficient.