1. Were the time differences more drastic than you expected?

Ans: I used Merge, Quick, and selection sort. The First 2 are O(nlogn) and the last one is O(n^2). So we expected near performance between the first 2 and drastic performance for the last one.

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

Quicksort works best on unsorted data better but worse on sorted data.

Selection sort works best on sorted data but worse on fully unsorted data like decreasing sequence. Merge sort works for all cases in general. In reality, quick sort works best because of the low constant factor.

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

C / C++ is very fast language. So we can expect low run time than Java / Python.

Java / Python are considered quite slower than C / C++

4. What are the shortcomings of this empirical analysis?

I think we should consider different types of data sets for each algorithm. Like fully sorted by increasing, fully sorted by decreasing, and random data to get a better picture.