REPORT FOR PROJECT1

Insertion Sort:

What I expected to see was for the permuted list for Insertion Sort to have a pretty lengthy time complexity, which is precisely what happened. Because the worst case for Insertion Sort is n^2, it was not a surprise to me when the tests for the permuted lists saw IS to have a much larger run time than that of the others. When the list was pre-sorted however, IS saw its best case and was right around the same time complexity as the other sorting algorithms.

Merge Sort:

For MS I expected a progression similar to what I saw, which was progressing at nlogn, seeing that this is the best, worst and average time complexity. Because of this I expected the results for permuted and sorted to be about the same. Sorted seemed to be a little quicker, which is to be expected because there is not much work to be done, but overall, the results were similar.

Heap Sort:

For HS, I was expecting similar results to MS results given that its best, worst and average cases are the same as that of MS. I fully expected the run time of heap sort to be more than that of build heap, given that the heap has to be built prior to the heap being sorted. This checked out in my tests. For permuted and sorted I was expecting similar results and I got almost identical results.

Build Heap:

I was expecting BH to have a faster runtime than that of HS because the heap has to build before and can be sorted. This checked out. I was expecting the results for building the heap to be similar for both. This was the case given that the final results ended up being only 12 milliseconds apart. I was expecting them to be similar because for both files they were basically performing only one action, building the heap, so I assumed that the results would be very close to one another.