Karl Hickel

Data Structures

Renae German

May 18, 2018

Sorting

The purpose of this project is to create and compare different sorting algorithms and their respective run times. Obviously the slowest algorithms are the brute force ones such as bubble sort and insertion sort. Bubble sorted the file at 6 milliseconds and insertion sort ran ran it at 2. Clearly considering that there are only 33 values in my file and the fact that I have a fast processor makes a huge difference. Quick sort and shell sort sorted very VERY quickly. Like less than 0.1 milliseconds. They sorted so fast that I can't even measure it in milliseconds. It is difficult to differentiate sorting algorithms when there are very small differences in runtime when you have a very fast processor and relatively small data sets. Although it is important to note that quicksort, along with shell sort are faster than brute force algorithms that run in On^2. N log n is not the fastest run time in the world but it is noticeably faster that On^2. Especially once you are dealing with much larger data sets, the runtime can mean the difference between a few minutes to a couple hours. Some of the shortcomings of empirical analysis is that it is hardware dependent and is very difficult to make an accurate assessment. Despite the fact that it is more accurate, mathematical analysis is still preferable considering it is more cost effective.