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### Sorting Algorithm

For Assignment 6 Sorting Assignment, I have tested the algorithm with three numbers to be sorted. The numbers that I used to test are 1000, 100000, and 200000. When I input 1000, the CPU goes up to 15% from 5% and the Disk stays at 6%. For each of the 5 sorts it only took 0 seconds. Once the terminal stops running, the CPU percentage goes down to 5%.

When I input 100,000 to the terminal, the CPU goes up to the 30% range. During the first few seconds of running, the CPU percentage kept fluctuation below and above the 30% range. Then 1 second elapsed for Bubble Sort and the CPU went down to a 20% range which kept fluctuating. Then 19 seconds elapsed on Selection Sort, 37 seconds elapsed on insertion sort, and 68 seconds elapsed on bubble sort. Throughout the time elapsing process the CPU percentage goes down to 10% and keeps fluctuating. When the terminal stops running, the CPU percentage goes down to 5%. The entire time the Disk percentage stays below 10%.

When I input 200,000, the CPU percentage goes up to 50%. During the first few seconds the CPU gradually decreased to 25%. Once Bubble Sort elapsed at 2 seconds, the CPU percentage went down to 18% and kept fluctuating. Then 28 seconds elapsed on Selection Sort, 50 seconds elapsed on insertion sort, and 111 seconds elapsed on bubble sort. When the terminal stops running, the CPU percentage goes down to 5%. The entire time the Disk percentage stays below 10%. Also seconds after the terminal stops, the CPU went up to 20% and then went down.

The time differences for the different numbers sorted is more drastic for higher numbers. The trade off for picking Selection Sort over bubble sort is that the time is much less for selection sort compared to bubble sort. My choice of program affects the CPU and the Disk percentages. The shortcoming for the empirical analysis is that the process for the terminal to run takes over 5 minutes.