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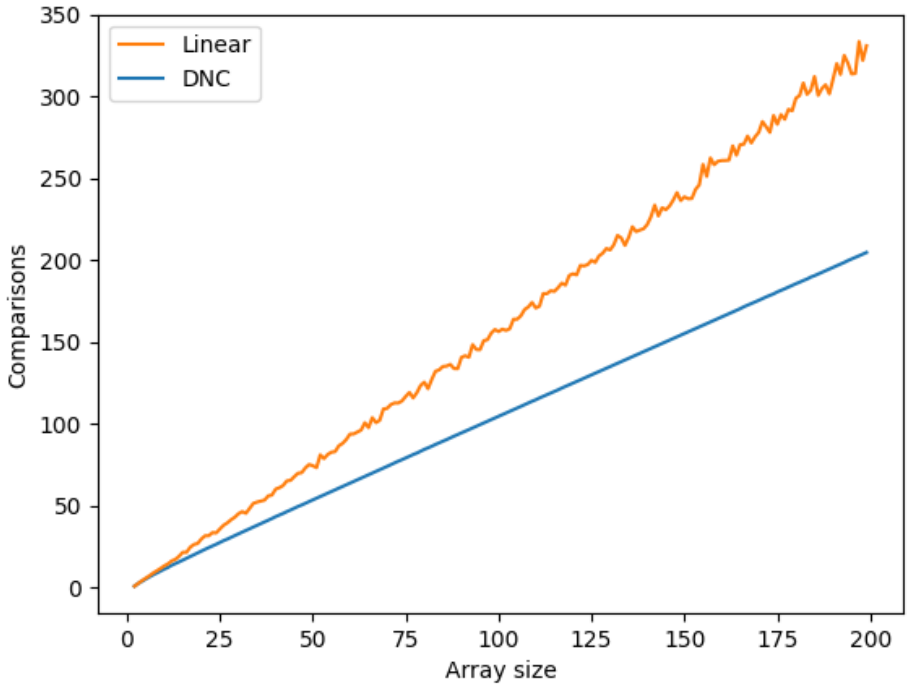
Lab 1 Report



Purpose:

In this lab my partner and I explored two different implementations of an algorithm to find the second largest number in a list of numbers. The first implementation used a linear algorithm and the second used a divide and conquer algorithm.

Procedure:

In our analysis we tested array sizes between 2 and 200. With each array size our program performs an analysis of both algorithms by creating an array of the given size and filling it with random integers between 1 and 100. It then runs both algorithms on the random array and counts the number of comparisons. This process of creating a random array and running the algorithms is repeated 100 times, and the average number of comparisons is plotted on the graph.

Analysis:

Both the linear and DNC algorithms have the same asymptotic behavior, but the DNC algorithm is more efficient. The number of comparisons for the linear algorithm is 1.5 times the size of the array while the comparisons for the DNC algorithm is 1 times the size of the array.