

CPSC 335 - Project 2

Project Report

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Hypothesis:

We hypothesize that randomization can be used to generate data for testing algorithms that has similar efficiency and determining its performance. Also, we predict that even though two algorithms that the same efficiency, they can have different average running times and different ranges of performance.

Average Performance:

Mergesort: 21.339652 seconds

Quicksort: 2.890862 seconds

Standard Deviation:

Mergesort: 2.334232905 seconds

Quicksort: 0.13701204 seconds

Range:

Mergesort: 12.0892 seconds

Quicksort: 0.8582 seconds

Conclusion:

After running the experiments on both algorithm, we concluded that randomization can be used to generate data for testing algorithms since both Mergesort and Quicksort have a very low standard deviation. Having a low standard deviation means that most of the data points are close to the average. Our prediction was correct because Quicksort had a lower average running time, which meant that two algorithms that has the same efficiency can have average running time.

We also find that even though both algorithms are great for sorting, the quicksort had a lower range of elapsed time. Both of the algorithms were consistent on their range minus the fact that our mergesort graph shows a huge spread towards the end. This could be due to some variables that is not necessarily how well the algorithm was implemented. This concludes our experiment that though they could have the same efficiency they could have different running times.

Graphs

Mergeort





