Assignment6

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CPSC 350: Data Structures and Algorithms

1 Introduction

This assignment encouraged us to create, test, and compare several sorting algorithms. These include Bubble Sort, Selection Sort, Insertion Sort, and Quick Sort. After utilizing code from class and adapting pseudo code from other sources, I created the algorithms. To implement them, I tested using a rand double generator that showed me the differing speeds of the 4 algorithms, viewed using ¡ctime¿ formatting for an approximated count. Using large example arrays to comprehend the various Big O speeds, I found the results noted below.

2 Results

Using 100,000 doubles in the array, I found the following results:
Bubble Sort:
Length of time: 45.96350 seconds
Insertion Sort:
Length of time: 9.85301 seconds
Selection Sort:
Length of time: 12.55084 seconds
Quick Sort:
Length of time: 0.00018 seconds

3 Conclusion

This assignment demonstrated the various Big O times of the algorithms conclusively, with the speeds between Bubble sort and any other algorithm being large, and Quick sort being many levels above its peers. Notably, Selection sort was slower than anticipated because of the highly random double values. Also, the compiling nature of C++ meant that the time spent waiting for the print to appear was lengthier than anticipated. Some shortcomings of the empirical nature of this analysis is the lack of clear information on the varying Big O times, with log(n) being difficult to notice.