**Report**

In this experiment, I had to compare two sorting methods: bubble and selection sorting. I wrote both programs using a MacBook Pro 2015 with an Intel Core i5 processor and an 8 GB 1867 MHz DDR3.

When I wrote the programs, I designed them to be as concise as possible to get the best out of each sorting method. The results of the experiment showed that the selection sorting method is superior to the bubble sorting method. During the first run (500 iterations) the bubble sort was fairly close in speed; however, the potential of the selection sort algorithm widened the gap between the two once I tested for 2500 and 5000 iterations.

Even though both of these sorting methods are O(n^2) algorithms, bubble sort takes a significant amount of time because it only looks for adjacent elements, while selection only looks for the lowest value. In other words, selection swaps “n” number of times while bubble sort swaps “n(n-1)” number of times.

In conclusion, these algorithms are compatible for short term/small-results; however, selection sort is substantially better for bigger/long-term results.

|  | Selection | Bubble |
| --- | --- | --- |
| Best Case | O(n^2) | O(n) |
| Worst Case | O(n^2) | O(n^2) |
| Average Case | O(n^2) | O(n^2) |
| Stable | No | Yes |