Thomas Glenn Madsen
Assignment 3 analysis document

1. Who is your programming partner? Which of you submitted the source code of your program?

Tanner Wilson, I did.

2. How often did you and your programming partner switch roles? Would you have preferred to switch less/more often? Why or why not?

Once every 40 Minutes to Hour, I liked it the way it was as it gave the person driving enough time to really get into it and the other enough to think and research.

3. Evaluate your programming partner. Do you plan to work with this person again?

He’s great, yes.

4. If you had backed the sorted set with a Java List instead of a basic array, summarize the main points in which your implementation would have differed. Do you expect that using a Java List would have more or less efficient and why? (Consider efficiency both in running time and in program development time.)

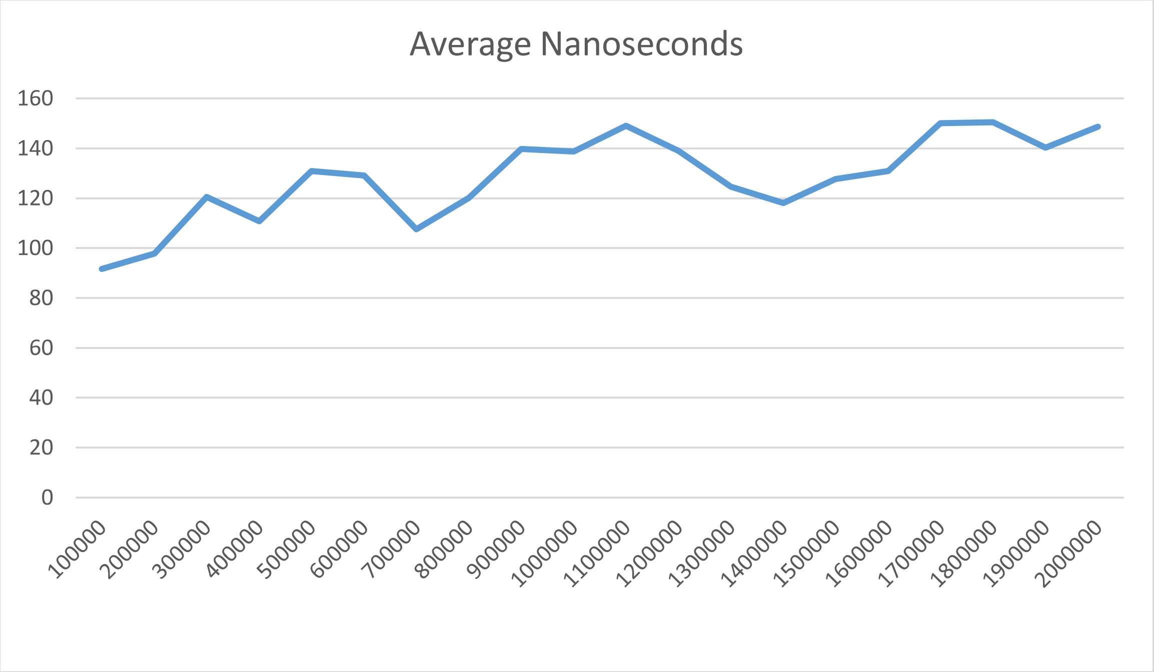
It would have made little difference in any way except for a little overhead unless I stopped using binary search and started running a different sorting algorithm after every time I added/removed something.

5. What do you expect the Big-O behavior of MySortedSet's contains method to be and why?

Log(n) as binary search’s complexity is Log(n).

6. Plot the running time of MySortedSet's contains method for sets of sizes 100,000 to 2,000,000 by steps of 100,000. Use the timing techniques demonstrated in Lab 1. Be sure to choose a large enough value of timesToLoop to get a reasonable average of running times. Include your plot in your analysis document. Does the growth rate of these running times match the Big-oh behavior you predicted in question 5?

Timeings for contain function averaged over 200000000 times.



Couldn’t get conclusive enough timings…

7. Consider your add method. For an element not already contained in the set, how long does it take to locate the correct position at which to insert the element? Create a plot of running times. Pay close attention to the problem size for which you are collecting running times. Beware that if you simply add N items, the size of the sorted set is always changing. A good strategy is to fill a sorted set with N items and time how long it takes to add one additional item. To do this repeatedly (i.e., timesToLoop), remove the item and add it again, being careful not to include the time required to call remove() in your total. In the worst-case, how much time does it take to locate the position to add an element (give your answer using Big-oh)?

8. How many hours did you spend on this assignment?

~16 hours.