

When you are satisfied that your program is correct, write a brief analysis document. The analysis document is 30% of your Assignment 3 grade. Ensure that your analysis document addresses the following.

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

Sean Hammond

Me

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

Every... few hours or so? But we used Saros (EXTREMELY useful) a lot, so much of the time, we were coding together and exchanging ideas.

I don't really like the idea of switching often, mainly due to the fact that once you get the flow going, it's hard to leave it. You have great ideas, but then when it's time to switch, it'll be hard to implement that idea. Not everyone thinks the same way you do.

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

It was a little hard working with Sean this time, mostly because it was a bit hard to reach him. He can take a bit to reply to texts, but I understand that he has a busy schedule. At the same time, it's really difficult because we haven't been able to get together and he was so busy, I've had to do majority of the code

Yes, I do plan on working with him again.

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.)

Many of the methods that we had to develop would have already been done in Java list – such as add, move, sort, contains... we wouldn't have to go through hours of having to figure out how to work through the list. Also, there would be a heck lot less code written in the class.

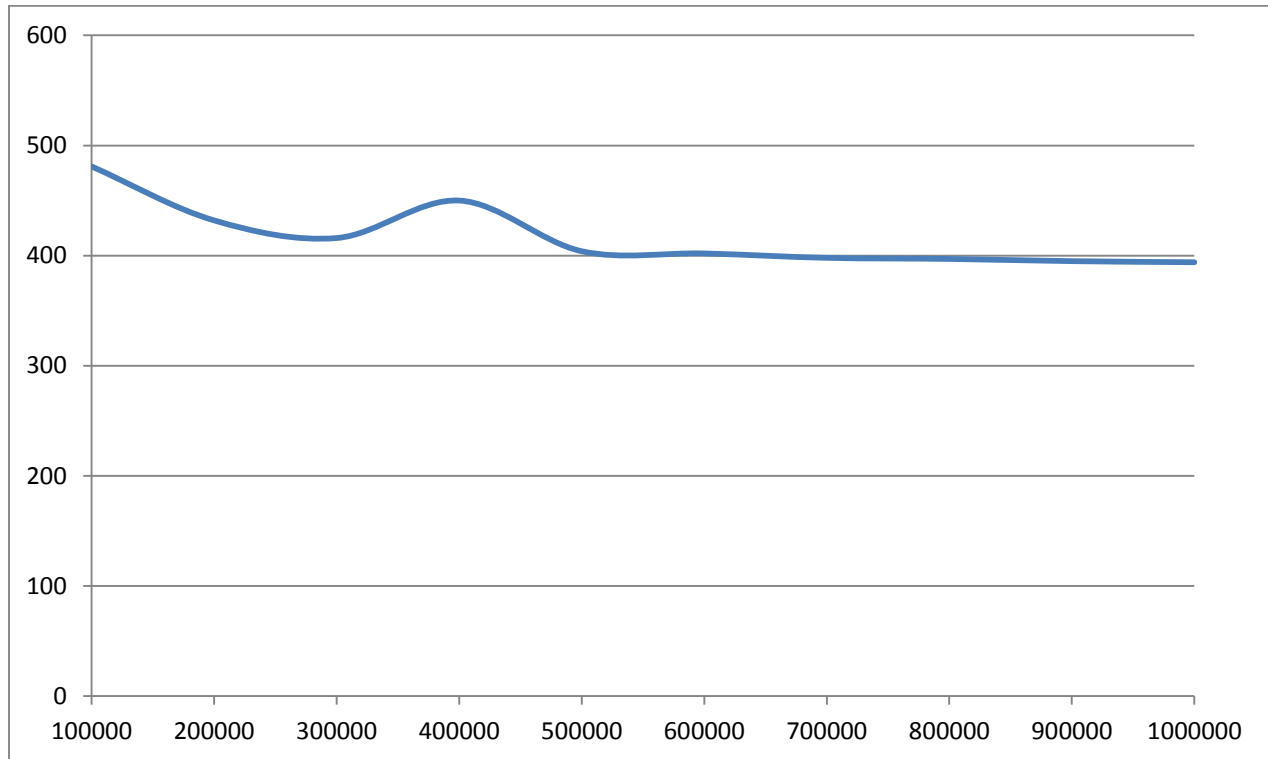
It would reduce the time to develop the program and possibly even the run time as well, as the built-in methods probably have a more efficient/simpler way of sorting/adding than what we came up with.

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

N/2

Our contains method uses a binary search to locate the object the user is looking for. The binary method takes a number N and then halves it left or right continually until it finds the object.

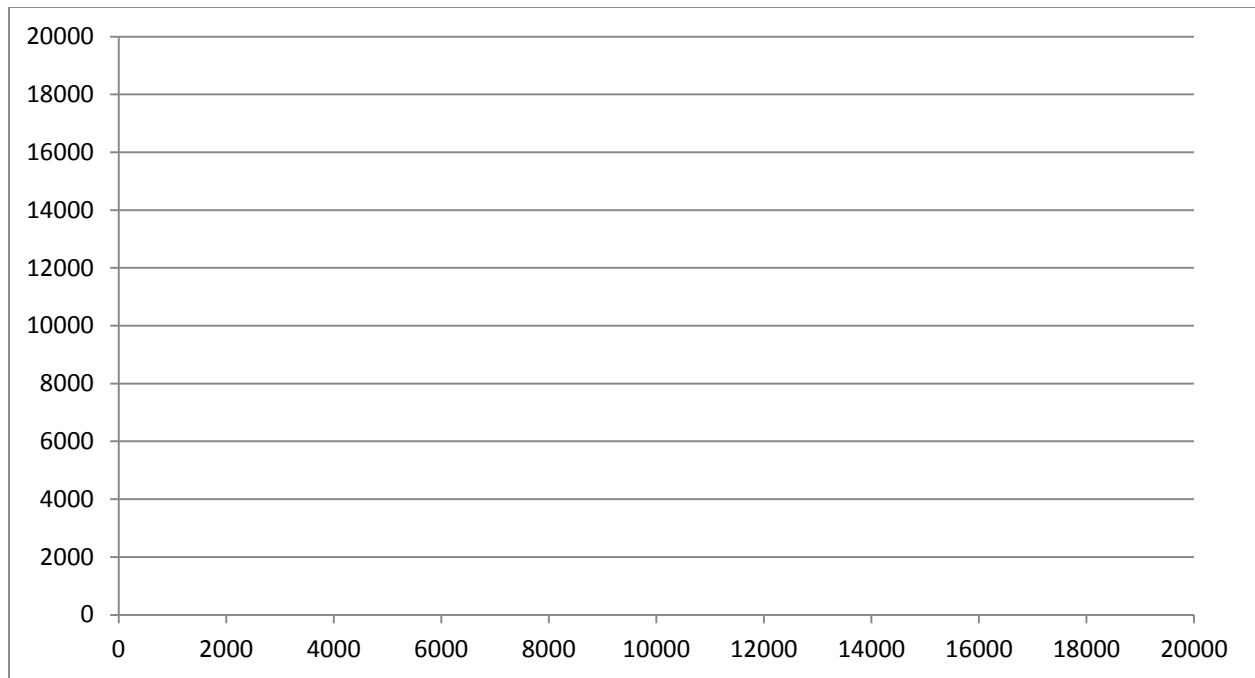
6. Plot the running time of MySortedSet's contains method for sets of sizes 100000 to 2000000 by steps of 100000. Use the timing techniques demonstrated in Lab 1. Be sure to choose a large enough value of timesToLoop to get a reasonable average of running times. Include your plot in your analysis document. Does the growth rate of these running times match the Big-oh behavior you predicted in question 5?



(y-axis is the amount of time to do the loops. x-axis is the amount of loops done)

No it doesn't. It seems to be more like N rather than $N/2$.

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)?



(y-axis is the amount of time to do the loops. x-axis is the amount of loops done)

N/2

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

About 13 hours

Programming partners are encouraged to collaborate on the answers to these questions. However, each partner must write and submit his/her own solutions.

Upload your document (.pdf only!) to the Assignment 3 page by 11:59pm on February 5.