Charles Preston Baker

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?

Jonathan Chen. 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?

Not super often. I like how it is because I like typing the code.

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

He's great. Willing to help. I enjoy working with him. 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.)

Because java list is an interface which can store objects without having to worry about size. An array is a fixed size. So we wouldnt have had to worry about making the arry bigger or smaller we could just do it whenever we wanted. it would be more efficient because we wouldnt have to worry about that

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

I think the Big-O behavior of MySortedSet’s contain method is O(log(n)) algorithm because the binary search method is O(log(n)).

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?

I couldn't get the graph to work on my computer please check my partners graph.

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)?

We got the same time values for the add method and the contains method we did our timer to be set around the Binary Search method in both the contain and the add methods. In terms of T(n) = 1 +log(base2)(N) +N.

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

Many many hours probably around 13.

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.