Cs 2420 assignment 3 analysis document

Daniel Zhu

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

Angel Dhungana,

I, Daniel Zhu, submitted the source code

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

We basically handled the main code and testing code separately. He handled it whenever it came to testing code and I handled it when it came to the actual code, so we swapped every half hour or so. I felt very comfortable with this, but would have liked to switch more often, because most of the time we were just stumped sitting in front of the screen, and would have liked to move along quicker so we could switch quicker.

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

He was very good at writing test codes which is something I am very bad at so that helped, however our schedules didn't match too well so we will likely be seeking different partners in the future.

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.)

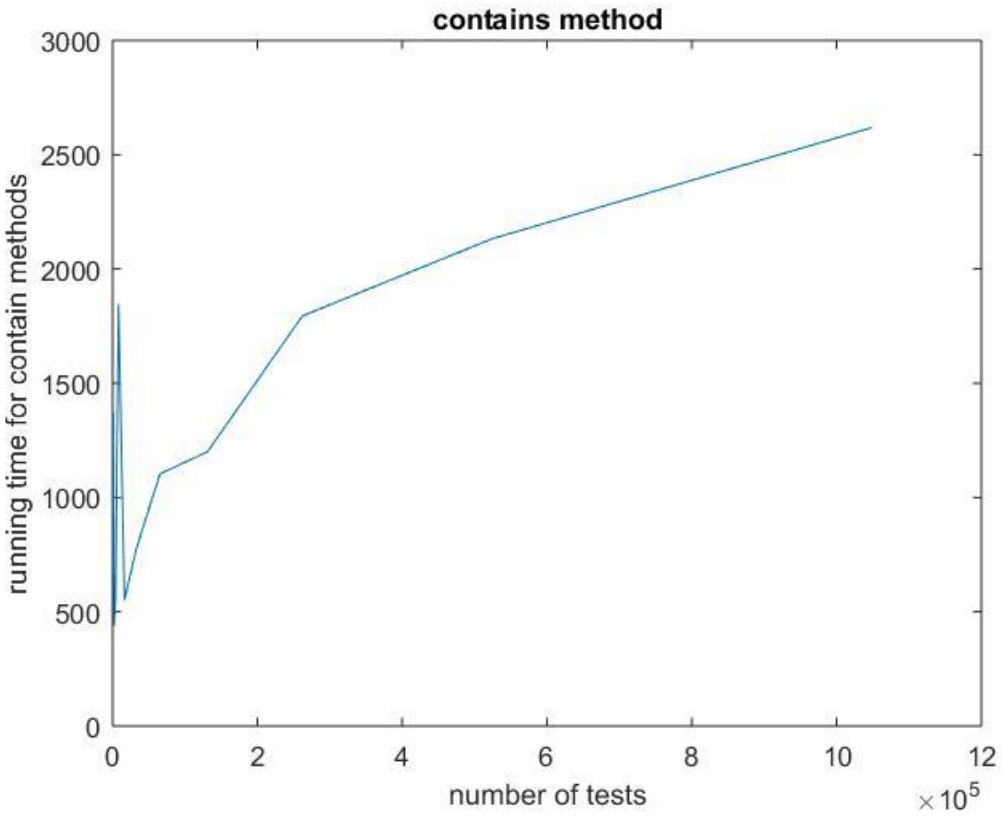
Java List, already implemented add and some other methods. It would have been more efficient for us since some methods.

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

Log(N), because it calls the binary search.

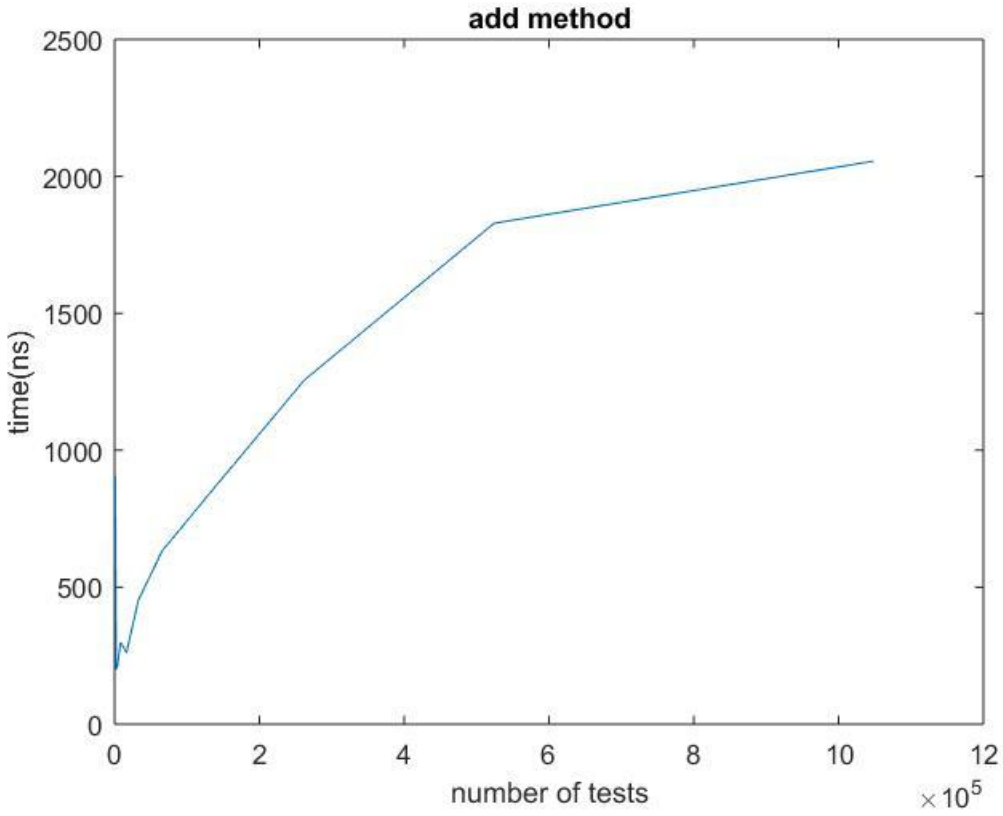
6. Plot the running time of BinarySearchSet's contains method, using the timing techniques demonstrated in Lab 2. Be sure to use a decent iteration count to get a reasonable average of running times. Include your plot in your analysis document. Does the growth rate of these running times match

the Big-oh behavior you predicted in question 5?



The growth rate matched my predicted Big O behavior

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., iteration count), 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)?



For an element not already in the set it takes anywhere from Nto NLog(N) time to locate the correct position and insert the element, it takes NLog(N) time to add the element in the worst case scenario due to binary search, and the shifting that is needed later due to replacing.

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

10-15 hours