Anthony Iovino
Analysis Document 8

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

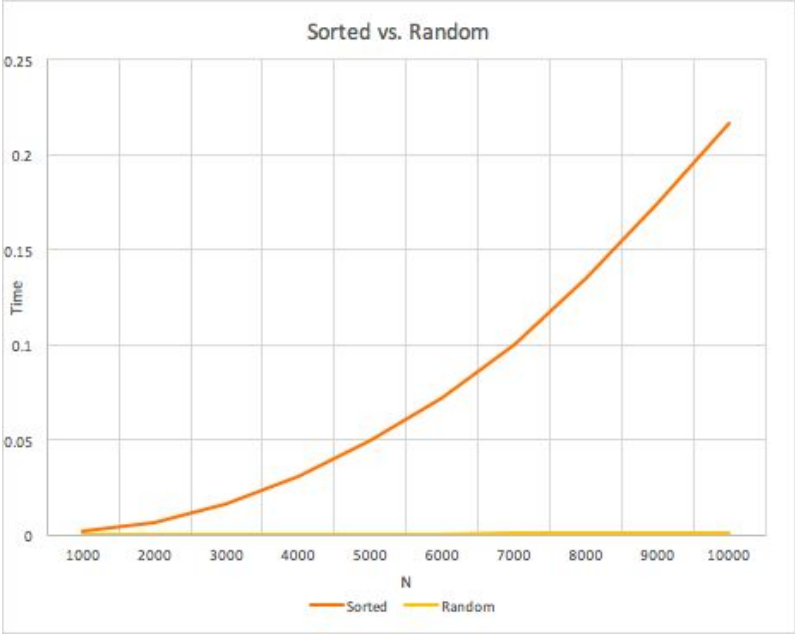
QI luo. She submitted the source code for this assignment.

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

Qi is a really good programmer and a really nice person. It great to work with her but I will be out of town for the upcoming assignment and will therefore be doing solo.

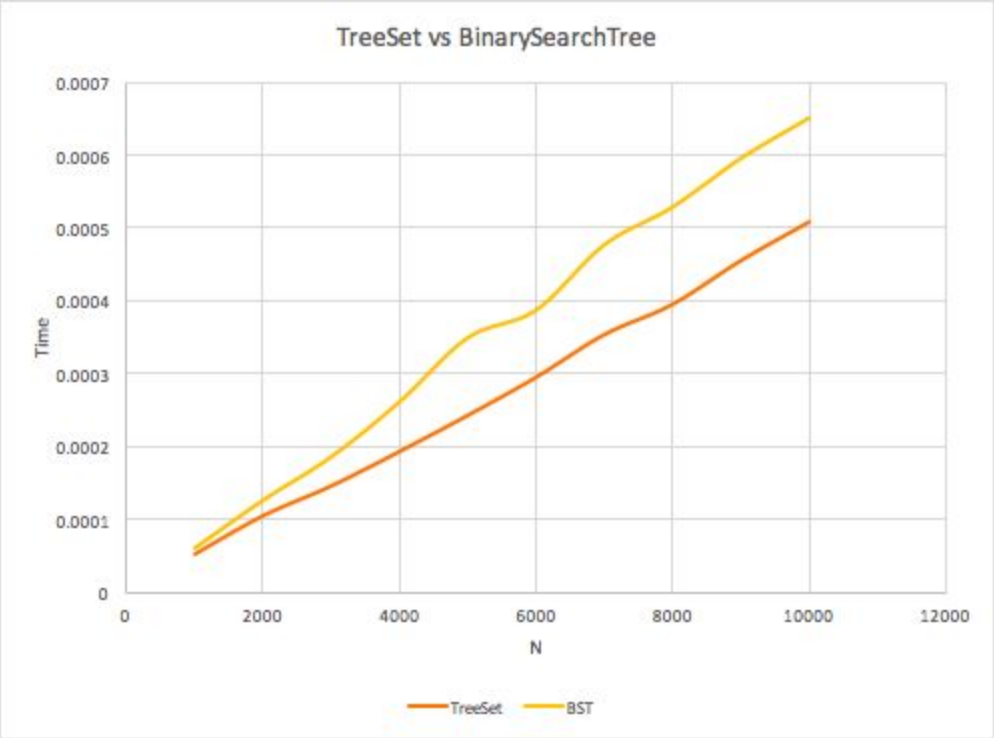
3.

We followed the suggested guidelines while creating our experiment. The random insertion of elements into our binary search tree resulted in logN behavior as expected. Our graph demonstrates that the overall efficiency of random insertion is better than ordered insertion and that it appears to be logN. However, I am unsure as to why insertion or sorted sets appears to result in exponential O(N^2) behavior.



4.

We followed the suggested guidelines for this experiment. Our plots demonstrate that java TreeSet is more performant than our implemented binary search tree due to an added balancing step.



5. Many dictionaries are in alphabetical order. What problem will it create for a dictionary BST if it is constructed by inserting words in alphabetical order?Explain what you could do to fix the problem.

If words are inserted in alphabetical order the tree will be very unbalanced. It will result in a line of nodes extending on the right each time. In this case, the resulting binary search tree would have a height that is equal to the number of nodes in the binary search tree. In the worst case, inserting and element would involve the traversal of N-1 nodes to get to the very last insertion point. If the words were added in a random order, the resultant tree would be more balanced and the worst case scenario for insertion would not force the traversal of N elements.

6. How many hours did you spend on this assignment?
10 hours