**Assignment 3 Analysis Document** Andy Ford

1. My programming partner is Bo Zhu. He submitted the source code of our program.

2. We probably switched once every hour. I would have preferred to switch more often. It would have kept both of us more involved in all aspects of writing the program.

3. Bo is a great partner. He is very good at working through a program to find bugs. He is very bright and can make sense of tricky code. He is always looking for the best way to write a program, which is great, but it can also be time-consuming. I would be happy to work with him again.

4. If we had used a Java List instead of a basic array, we would have spent much less time implementing details like doubling the size of the array when it is full, or shifting all of the elements when a new element is added. So in terms of program development time, using a Java List would have been much more efficient. Using a Java List may have been more efficient in regard to running time, but probably not much. The code we used to imitate a Java List probably resulted in similar behavior and efficiency, but could likely be improved.

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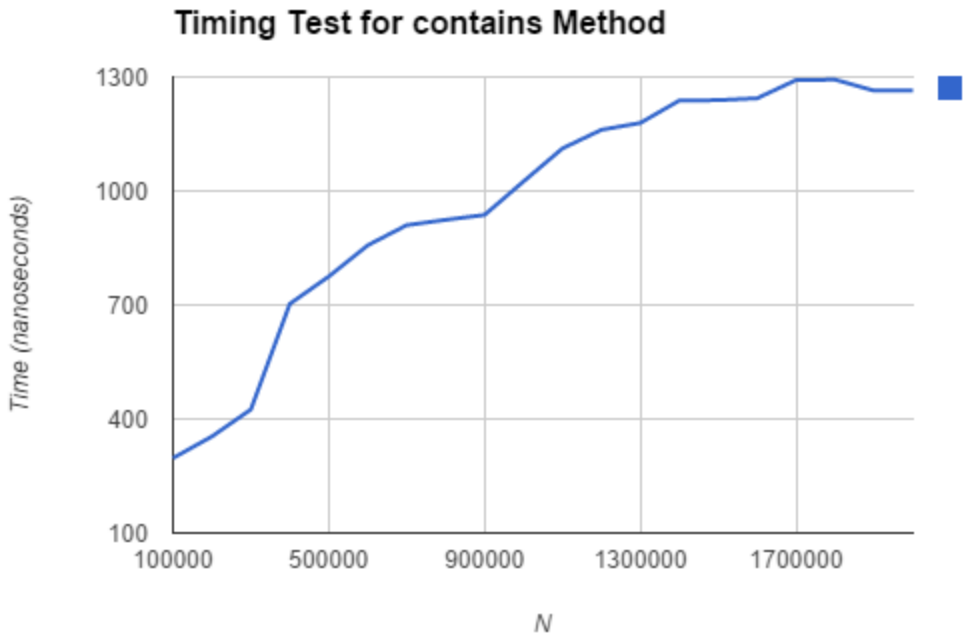
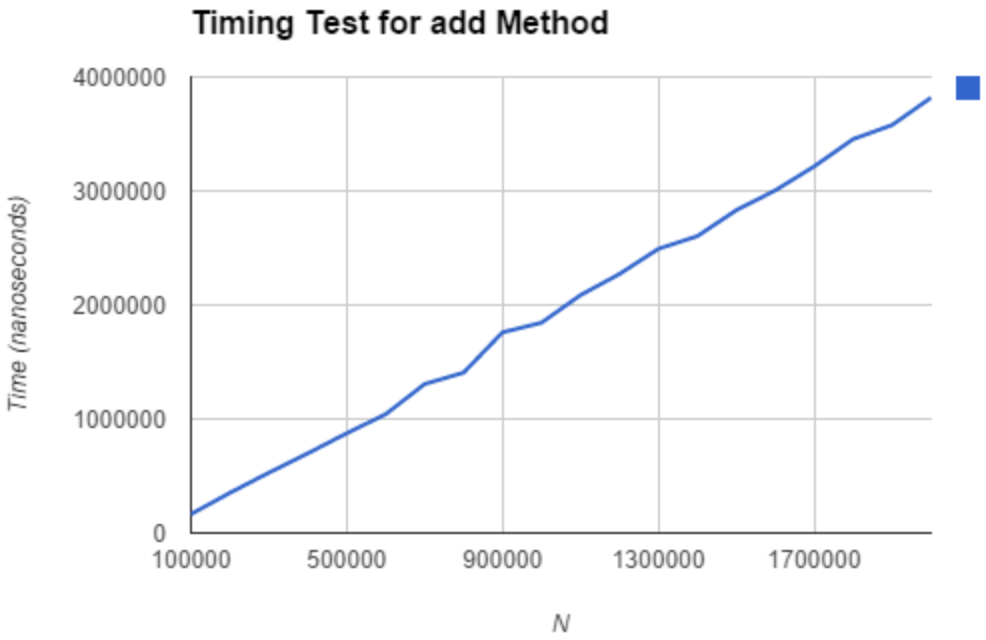
5. I expect the Big-O behavior of MySortedSet's contains method to be O(log(N)) because it uses a binary search.

6. The plot matches my prediction of O(log(N)) for the behavior of the contains method:



7. To locate the position in which to insert the item, it takes a maximum of log(N) steps. In the worst case scenario, the item to be added will be inserted in the very first slot. This means all N items will have to be shifted over one spot. Therefore, the add method has a complexity of O(N). This is reflected by the linearity of the graph of N vs. running time for the add method:




8. We spent at least 10 hours on this assignment.