

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

- **Daniel Zhu. Daniel submitted the source code of our program.**

2. What did you learn from your partner? What did your partner learn from you?

- **I learnt about thinking more critically on how to plan and code.**

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

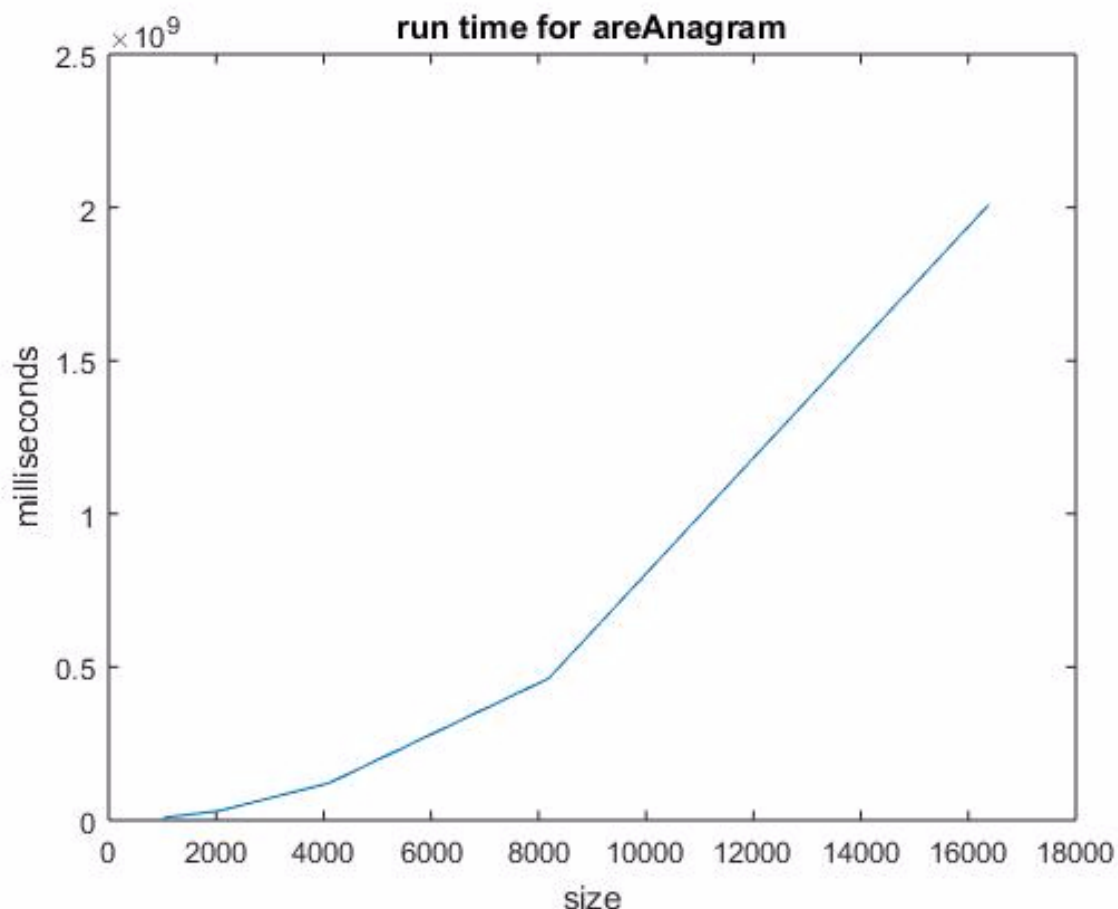
- **My partner is okay but since we didn't get new partners from last assignment, we had to work again. Schedule was bit problem, however would mostly certainly work with him again.**

4. Analyze the run-time performance of the areAnagrams method.

-What is the Big-O behavior and why? Be sure to define N.

**The big of behavior is  $O(N^2)$  because it should be exponential growth.**

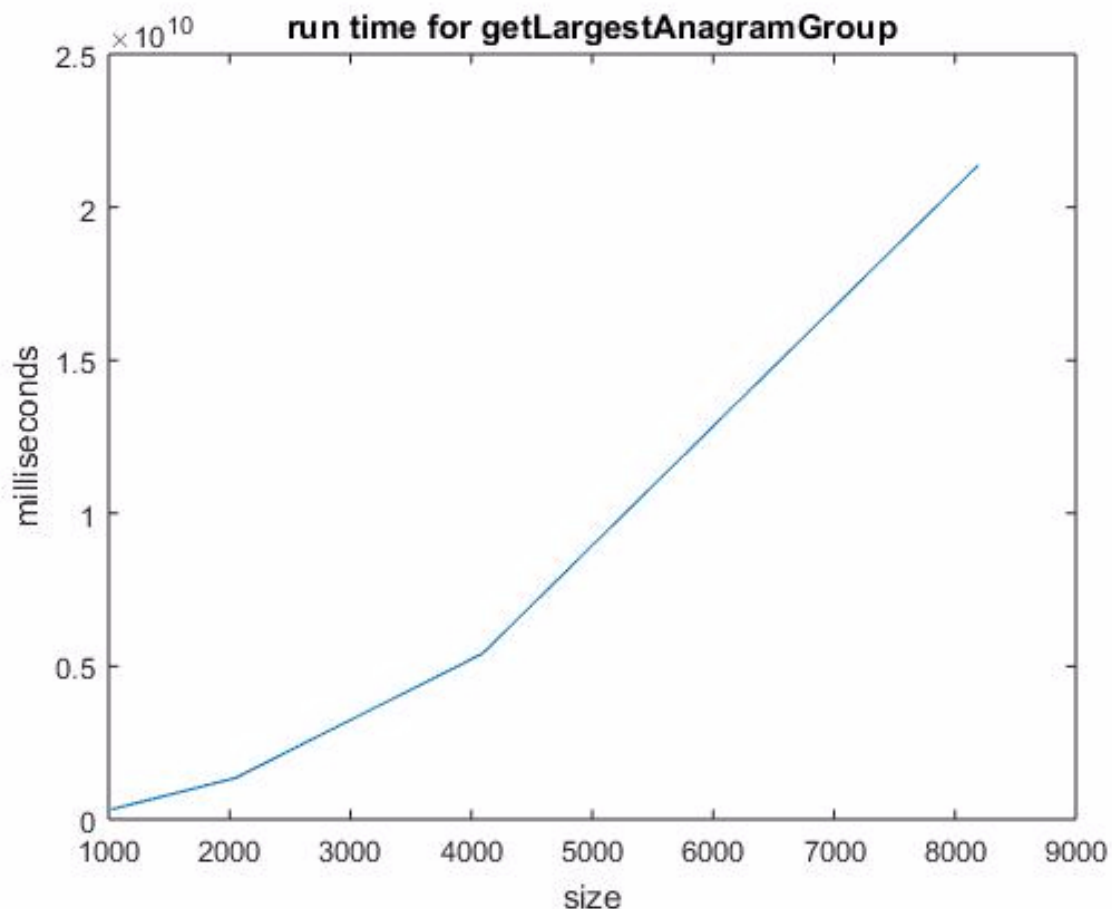
-Plot the running time for various problem sizes (up to you to choose problem sizes that sufficiently analyze the problem). (NOTE: The provided AnagramTester.java contains a method for generating a random string of a certain length.)



-Does the growth rate of the plotted running times match the Big-O behavior you predicted?

**Yup, the prediction matches the plot.**

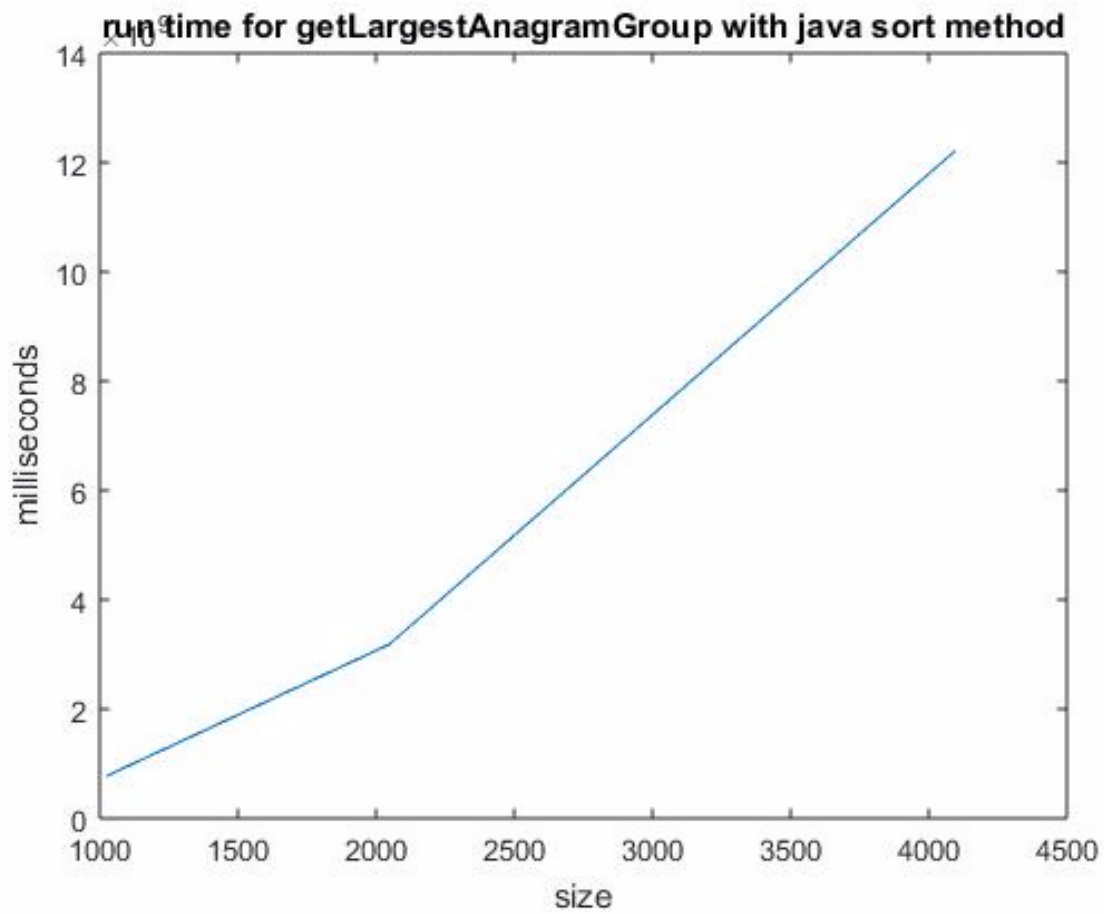
5. Analyze the run-time performance of the `getLargestAnagramGroup` method using your insertion sort algorithm. (Use the same list of guiding questions as in #4.) Note that in this case,  $N$  is the number of words, not the length of words. Finding the largest group of anagrams involves sorting the entire list of words based on some criteria (not the natural ordering). To get varying input size, consider using the very large list of words linked on the assignment page, save it as a file, and take out words as necessary to get different problem sizes, or use a random word generator, provided in `AnagramTester.java`. If you use the random word generator, use a modest word length, such as 5-15 characters.



6. What is the run-time performance of the `getLargestAnagramGroup` method if we use Java's sort method instead (<http://docs.oracle.com/javase/6/docs/api/java/util/Arrays.html>)? How does it compare to using insertion sort? (Use the same list of guiding questions as in #4.)

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

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**10-15 hours**