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Analysis Document 3
Feb 5, 2015

1. Daniel Avery is once again my programming partner. I will be submitting the code for our program.

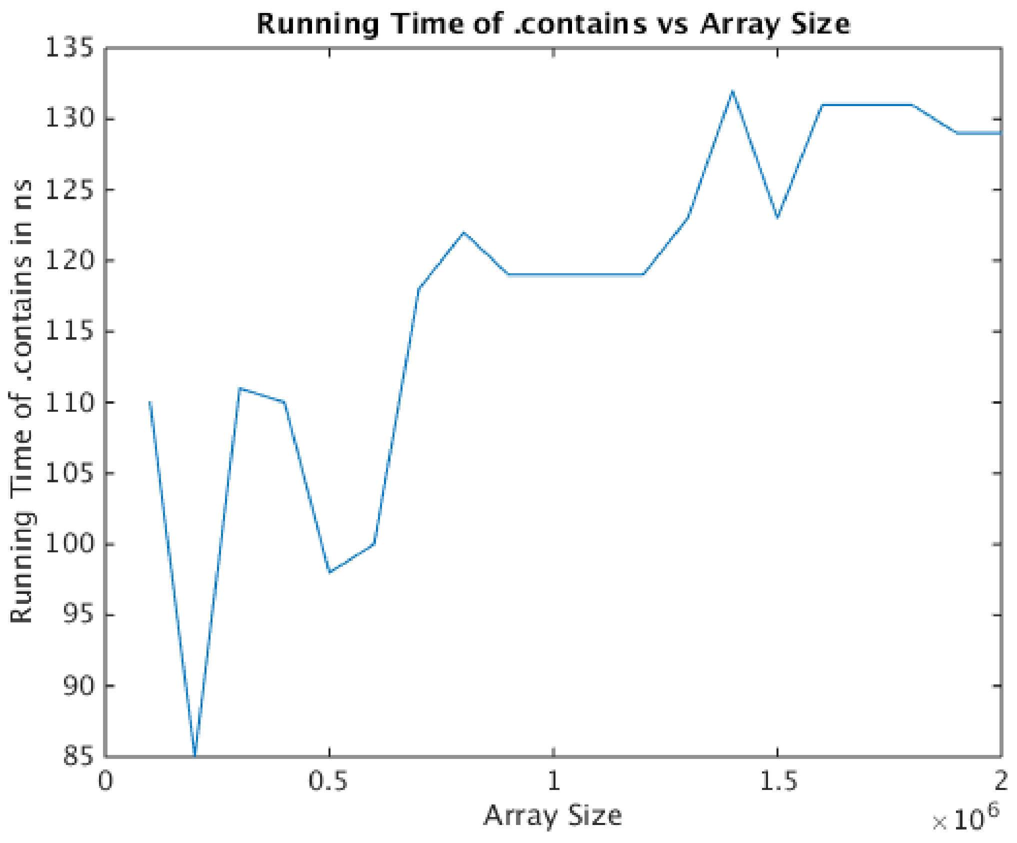
2. We switched roughly twice an hour, or more often when the other person was having trouble. I'm satisfied with the rate at which we switched; any less often would encourage a loss of focus but switching any more often might become obnoxious in certain scenarios.

3. Daniel's slow, methodical, understand-everything approach is enough to drive me crazy at times, but with a little patience I can see the fruits of our labors. I'm planning on working with Daniel as much as possible, because we do good work even though it takes much longer than I would like.

4. If we used Java Lists, our programming time would have been much, much lower, since we wouldn't have had to worry about arrays refusing to be generic, typecasting throwing warnings everywhere, or writing methods for functionality that already exists in Java, all of which annoyed us. Running time would probably be the same or slightly better, since Java likely contains optimizations that would never have occurred to us.

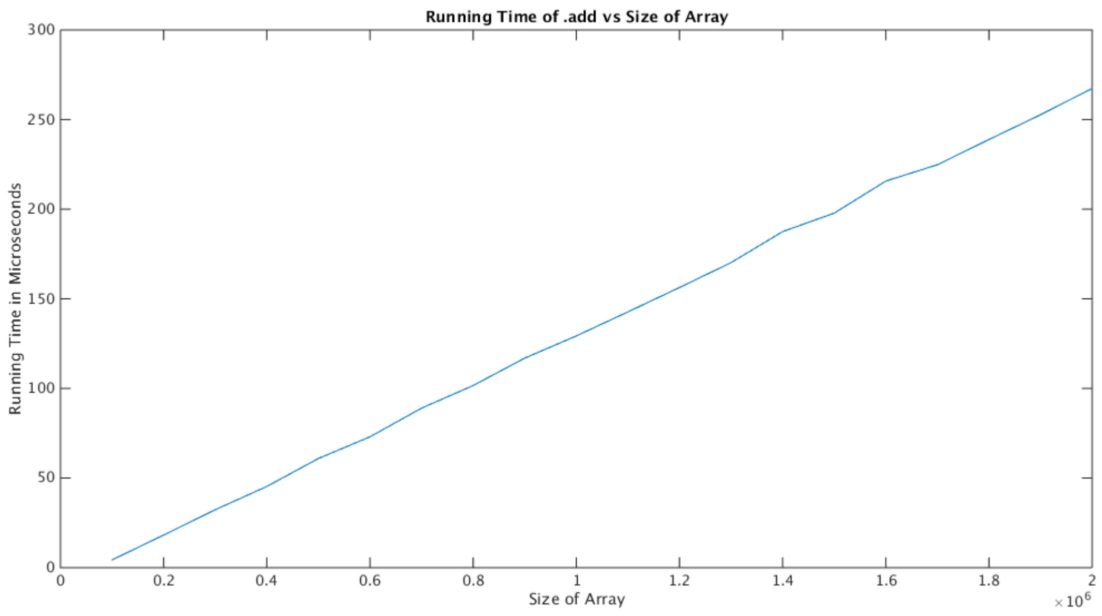
5. Since our contains method is hardly more than a call to our binary search method, we expect it to have O(log n) complexity, just like a vanilla binary search.

6.



This doesn't resemble O(log n) at all. We think that because the amount of elapsed time is so small, external variables like background processes had a much bigger impact on the running time than the actual .contains algorithm.

7.



Worst case, finding the right position to add is O(log n). Doing the actual adding and shifting of elements results in a complexity of O(n log n). This graph looks much more reasonable, since we are dealing with times in microseconds rather than nanoseconds.

8. Not counting the analysis document, it took us 14 hours to finish the assignment.