

# Practice Quiz 8

CSCI 136: Spring 2022

Your name: \_\_\_\_\_

This week's quizzes cover readings, handouts, labs, and lecture materials up to and including April 11th.

Answer the following questions as practice for your graded quiz on Friday.

1. What are the two methods common to all iterators?\*

Your answer: next () and hasNext ()

2. What is the running time of binary search on a sorted  $n$ -element array?

Your answer:  $O(\log n)$

3. Assume we have a `Vector` of  $n$  integers in sorted order.

- (a) Describe how we could insert a new integer in the `Vector` so that the resulting `Vector` (including this new integer) remains in sorted order.

Your answer: We could locate where the element needs to be stored using binary search, and then add it to the `Vector` using the `add(int, E)` method that shifts other items down to make room

- (b) What is the running time of the method you described above (in question 3a)?

Your answer: The binary search takes  $O(\log n)$  time; adding to the `Vector` takes up to  $O(n)$  time to shift down the elements. In total this takes  $O(n + \log n) = O(n)$  time.

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\*We saw that the Java `Iterator` interface actually has a third `remove ()` method; we're asking for the other two.