Interview Questions (optional)

Practice Quiz, 3 questions

1 point

1.

3-SUM in quadratic time. Design an algorithm for the 3-SUM problem that takes time proportional to n^2 in the worst case. You may assume that you can sort the n integers in time proportional to n^2 or better.

Note: these interview questions are ungraded and purely for your own enrichment. To get a hint, submit a solution.



1 point

2.

Search in a bitonic array. An array is *bitonic* if it is comprised of an increasing sequence of integers followed immediately by a decreasing sequence of integers. Write a program that, given a bitonic array of n distinct integer values, determines whether a given integer is in the array.

- Standard version: Use $\sim 3 \lg n$ compares in the worst case.
- Signing bonus: Use $\sim 2\lg n$ compares in the worst case (and prove that no algorithm can guarantee to perform fewer than $\sim 2\lg n$ compares in the worst case).

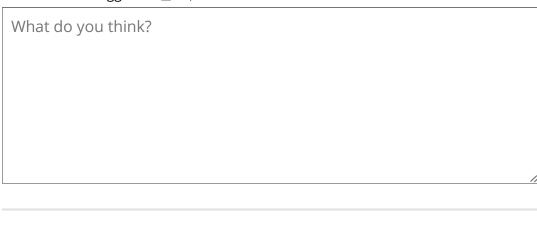
Interview (Qwestions (toptional)
Practice Quiz, 3 qu	estions –

1 point

3.

Egg drop. Suppose that you have an n-story building (with floors 1 through n) and plenty of eggs. An egg breaks if it is dropped from floor T or higher and does not break otherwise. Your goal is to devise a strategy to determine the value of T given the following limitations on the number of eggs and tosses:

- Version 0: 1 egg, $\leq T$ tosses.
- Version 1: $\sim 1 \lg n$ eggs and $\sim 1 \lg n$ tosses.
- Version 2: $\sim \lg T$ eggs and $\sim 2 \lg T$ tosses.
- Version 3: 2 eggs and $\sim 2\sqrt{n}$ tosses.
- Version 4: 2 eggs and $\leq c\sqrt{T}$ tosses for some fixed constant c.



Submit Quiz

