Reading Quiz #3

Started: Feb 1 at 11:42am

Quiz Instructions

Read section 5.4 of your textbook. Only one section was assigned this week because (1) the algorithm is a bit tricky and so you will probably need longer to read through the section than you would for some other sections, and (2) test #1 is scheduled for the Tuesday after this quiz is due and you might want time to study for it.

Question 1	1 pts

In the merging step, the algorithm looks at the points that are inside a strip of width 2δ centred on line L. How many of the n points can this strip contain?

○ This strip might contain in $\Omega(n)$ points.

○ At most $O(\log n)$ points.

○ At most $O(\sqrt{n})$ points.

○ No more than 15 points.

Question 2	1 pts

Can the merging step in "*Finding the Closest Pair of Points*" problem with a set of n points, be done in $O(n)$ time? Why?

○ No. We have found the closest pair of points in each subproblem. However, we should calculate the distance between points which one lies in the left subproblem and the other on the right subproblem too. This takes time $O(n^2)$.

○ Yes. We only need to calculate the distance of each point with a small subset of other points. This takes time $O(n)$.

○ Yes. We should only compare the distance of closest points in each subproblem and, report the smallest one. This takes constant time.

○ No. When merging, we should sort the points by increasing y-coordinate. This takes time $O(nlogn)$.

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