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CS 32

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Homework 2

QUESTION 2

The one-parameter insert causes a compiler error because inside the insert function, it compares whether one Coord is greater than the other Coord, and there is no operator > function written in the Coord class to help the compiler determine what constitutes as “greater than” for Coords. Thus, the compiler returns an error.

QUESTION 4B

If we only had a one-parameter version of listAll, we would not be able to solve it because there is no way to carry over the path variable without using the keyword static. Thus, we would start over with a fresh new path in every recursive call, so it would only print out a forward slash plus the current file name instead of the path of the file.

QUESTION 5

*A*

The k-loop iterates approximately N times per j-iteration. The j-loop iterates approximately N times per i-iteration. The i-loop iterates approximately N times. To find the time complexity, we multiply these together. The time complexity is N cubed, otherwise written as O(N3).

*B*

The k-loop iterates approximately N times per j-iteration. The j-loop iterates i times per i-iteration. The k-loop iterates approximately N times. Thus, we can use the following equation to solve for our time complexity: , which simplifies to O(N3).

QUESTION 6

*A*

There are only two loops in interleave, and they are two separate loops. The first one will iterate N times, since nmin ends up being equal to N if both seq1 and seq2 have the same length. The second one will not run at all, because nmin and n are equal. Thus, the time complexity is O(N).

*B*

The first loop iterates N times. The second loop does not run, similar to the other interleave version, so the time complexity is O(N). Thus, it is the same time complexity as the original interleave function, even if it may have a smaller constant than the first one.