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Nachenberg CS32

Homework 4

2. You cannot use the Coord class as one of the mapping types because the Map template function compare the types of data using Boolean expressions that do not work for classes. For example, the ‘find’ function uses the Boolean operator ‘!=’ to compare the data member ‘m\_key’ of type KeyType. When the KeyType is a string, int, double, etc, this expressions is acceptable. However, you cannot compare classes such as Coord using the != operator, therefore it does not compile.

3b. You have to send in a string as one of the parameters of the listAll function because you concatenate the string to form the overall path. If you achieve the similar effect in the one parameter version of listAll with no string parameter, there would be no where to add on the new subclasses and continually printing to cout would mess up the order of everything since cout prints immediately.

4a. O(N3); The code goes through 3 nested for loops each going for 0 to N.

4b. O(N3); The mathematical evaluation for first two loops would be:

n(n-1)/2 (taken from Nachenberg lecture 10) which when only paying to the highest order term becomes N2. Then you also account for the last loop from 0 to N, so in total it is N3.

5. O(N2); The bottom of the combine function runs through a loop from 0 to N. In this loop, it calls the ‘get’ function, which calls the ‘find’ function. The find function runs through all N elements of the map as well, so in total it is N2.