Written Assignment Content

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Chapter-10:

R-10.4 What is the worst-case running time for inserting n key-value pairs into an initially empty map M that is implemented with the UnsortedTableMap class?

* **O(N) is the worst case running time.**

R-10.9 Draw the 11-entry hash table that results from using the hash function, h(i)=(3i+5) mod 11, to hash the keys 12, 44, 13, 88, 23, 94, 11, 39, 20, 16, and 5, assuming collisions are handled by chaining.

C-10.42 Suppose that each row of an n×n array A consists of 1’s and 0’s such that, in any row of A, all the 1’s come before any 0’s in that row. Assuming A is already in memory, describe a method running in O(nlogn) time (not O(n2) time!) for counting the number of 1’s in A.

* **Iterating down every row in A. Since all of the 1’s come first in the beginning indexes of each row, the second a 0 is discovered just break from that row and move to the next row. This is essentially a 2D array that has every row containing 1’s first and then 0’s to n size.**

Chapter-11:

R-11.2 Insert, into an empty binary search tree, entries with keys 30, 40, 24, 58, 48, 26, 11, 13 (in this order). Draw the tree after each insertion

R-11.5 Dr. Amongus claims that the order in which a fixed set of entries is inserted into an AVL tree does not matter—the same AVL tree results every time. Give a small example that proves he is wrong.

R-11.8 Draw the AVL tree resulting from the insertion of an entry with key 52 into the AVL tree of Figure 11.14b.

C-11.29 Explain how to use an AVL tree or a red-black tree to sort n comparable elements in O(nlogn) time in the worst case.