

Algorithms (COT 6405): Assignment 8

Due date: October 30 (Thursday)

Problem 1 (4 points)

Give an efficient *nonrecursive* algorithm that prints all elements of a binary search tree in sorted order, and specify the worst-case running time of your algorithm.

Problem 2 (6 points)

This problem is inherited from the midterm; you should write a solution even if you received the full credit for solving it during the exam.

Suppose that we have four algorithms, called A_0 , A_1 , A_2 , and A_3 , whose respective running times are n , n^2 , $\lg n$, and 2^n . If we use a certain old computer, then the maximal sizes of problems solvable in an hour by these algorithms are s_0 , s_1 , s_2 , and s_3 . Suppose that we have replaced the old computer with a new one, which is k times faster. Now the maximal size of problems solvable in an hour by A_0 is $k \cdot s_0$. What are the maximal problem sizes for the other three algorithms if we run them on the new computer?