

Take Home Test 4

CSCI 3394 – Advanced Algorithms

This test consists of several questions that you are to answer and return to me by class time on Thursday. If possible, typed answers are preferred.

1. The change making problem with a limited number of coins is where you are given a set of coins and told to provide a certain value in change with a minimum number of coins. This problem can not be solved optimally with a greedy algorithm. Show that it can be done with DP by writing the recurrence relationship and the iterative loop for it. Assume that you have standard denominations of 25, 10, 5, and 1 cents. (5 points)
2. The solution to the 0/1 knapsack problem with fractional weights that we did in class can have worst case performance where the final list has a length that is exponential in the number of items. Determine an input set where this would occur. (5 points)