**CS430 3/29 Activities**

1. 0-1 Knapsack Problem

Given N items and a total weight limit W, vi is the value and wi is the weight of item i, maximize the total value of items taken.

The dynamic programming algorithm computes entries for a matrix C[0..N, 0..W]

C[i,j] = the optimal value of the items put into the knapsack from among items {1,2,...,i} with total weight <= j

with C[0,?] = C[?,0] = 0

1.1 When you think about calculating C[i,j] there are two options. The ith item is in that optimal answer or is not. Write the recurrence relation.

1.2. Write pseudocode to fill in the C[i,j] matrix, use your answer from #1.

2. Design a greedy algorithm for making change (in U.S. money) of n cents with the following coins: quarters (25 cents), dimes (10 cents), nickels (5 cents), and pennies (1 cent) , using the least total number of coins.