Assignment 11

R-5.1 Let S = {a, b, c, d, e, f, g} be a collection of objects with benefit-weight values as follows: a:(12,4), b:(10,6), c:(8,5), d:(11,7), e:(14,3), f:(7,1), g:(9,6). What is an optimal solution to the fractional knapsack problem for S assuming we have a sack that can hold objects with total weight 18? Show your work.

R-5.3 Suppose we are given a set of tasks specified by pairs of the start times and finish times as T = {(1,2),(1,3),(1,4),(2,5),(3,7),(4,9),(5,6),(6,8),(7,9)}. Solve the task scheduling problem for this set of tasks.

R-5-11 Solve Exercise R-5.1 for the 0-1 Knapsack Problem.

R-5-12 Sally is hosting an Internet auction to sell n widgets. She receives m bids, each of the form "I want k_i widgets for d_i dollars," for i = 1, 2, …, m. Characterize her optimization problem as a knapsack problem. Under what conditions is this a 0-1 versus fractional problem?