CS 312: Algorithm Analysis

Homework Assignment #21 – Local Search

Design a local search algorithm for the 0-1 knapsack problem. Assume there are n items $x_1 \ldots x_n$ each with weight w_i and value v_i. The knapsack can have at most one of each item and the total weight cannot exceed W. You want to maximize the total value in the knapsack.

Question 1: (7 points) Show the psuedocode/explanation for your algorithm.

Question 2. (3 points) Is it guaranteed to find an optimal solution? Justify your answer.