CS 312: Algorithm Analysis

Homework Assignment #22 – 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 pseudocode/explanation for your algorithm.

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