

Assignment 5

Work Chapter 4 exercises 2, 3, 4, 7 (you don't have to do any programming for any of these—just write it out on paper.) You may submit these in paper hard copy if you want to do that instead of scanning your work to pdf.

Write a greedy algorithm to solve the following problem:

We have a number of bins with a capacity of 1 and we have a set of objects all with different sizes between 0 and 1. What is the fewest number of bins that would be needed to store all of these objects?

Design your greedy algorithm using the selection-feasibility check-solution check outline given in Chapter 4 of the text. Explain in writing your local optimality condition—that is, what your selection criteria is.

Note that your greedy algorithm does not have to actually give the optimal solution for all cases. Evaluate and discuss whether you think your algorithm actually works for all cases. (It's an important takeaway that an algorithm can be tremendously useful even if it doesn't always work optimally.)