

Math 382

Homework 7

Due Monday, March 4

1. Consider a modified version of the activity scheduling problem. In this version, each activity has a positive value v_i and the goal is to maximize not the number of activities but the total of the values of all chosen activities. Give a counterexample that shows that the greedy algorithm we gave in class does not work for this version of the problem. (EXTRA CREDIT: Give a polynomial time algorithm to solve this problem.)
2. Consider an alphabet consisting of the English letters A through K. You have a document consisting of symbols from this alphabet with the frequencies shown in the table below. Construct an optimal prefix-free code for this document using the Huffman coding algorithm from class.

A	40
B	3
C	70
D	55
E	140
F	15
G	10
H	65
I	145
J	30
K	25

3. Problem 16-1 from the book.
4. Problem 16-2 from the book.