

COS 341, September 29, 1999

Due: October 6, 1999

Homework Set 2

Reading Assignments Finish reading Chapter 3.

Written Assignments Do exercises 6, 8, 10, 23, 24, 28 in Section 3.6, plus the following special problem:

Special Problem (counted as two exercises) Recall that in the *Job Offer Problem* a sequence of n offers are sequentially made, and one has to make an on-the-spot decision whether to accept the current offer. Under the k -strategy, one passes on the initial k offers, and then accepts the first offer that is better than these k offers; in case no future offer is better than the first k , then one just takes the very last offer. Assume that the relative merits of the offers are completely random. We have calculated and obtained in class a mathematical formula for $r_{n,k}$, the probability of getting the best offer by using the k -strategy.

Now suppose we are less ambitious, and will be satisfied if the job we get is among the top two offers. Let $q_{n,k}$ be the probability of achieving this goal under k -strategy. Note that clearly $q_{n,k} \geq r_{n,k}$.

(a) What is the value of $q_{4,2}$? You should write down explicitly all 24 permutations, and indicate explicitly which ones result in a success by the 2-strategy.

(b) Derive a mathematical expression for $q_{n,k}$. Check that it leads to the correct value for the case $n = 4, k = 2$.