

Homework 7

Instructor: Sandy Irani

Covers sections 10.3-10.7, 12.1

Written Homework

zyBook Exercises are labeled in the text with an "E" in the title bar. You do not have to copy the questions for any of the written homework in your solutions that you turn in.

- 1) There are eight different jobs in a printer queue. Each job has a distinct tag which is a string of three upper case letters. The tags for the eight jobs are:

$$\{LPW, QKJ, CDP, USU, BBD, PST, LSA, RHR\}$$

- (a) How many different ways are there to order the eight jobs in the queue?
 - (b) How many different ways are there to order the eight jobs in the queue so that job USU comes immediately before CDP?
 - (c) How many different ways are there to order the eight jobs in the queue so that job USU comes somewhere before CDP in the queue, although not necessarily immediately before?
 - (d) How many different ways are there to order the eight jobs in the queue so that either QKJ or LPW come last?
 - (e) How many different ways are there to order the eight jobs in the queue so that QKJ is either last or second-to-last?
- 2) (6 points) License plate numbers in a certain state consists of seven characters. The first character is a non-zero digit (1 through 9). The next four characters are capital letters (A through Z) and the last two characters are non-zero digits. Therefore, a license plate number in this state can be any string of the form:

Digit-Letter-Letter-Letter-Letter-Digit-Digit

- (a) How many different liscence plate numbers are possible?
 - (b) How man liscence plate numbers are possible if no digit appears more than once?
 - (c) How man liscence plate numbers are possible if no digit or letter appears more than once?
- 3) zyBook exercise 10.3.2
- 4) zyBook exercise 10.5.4
- 5) zyBook exercise 10.5.5
- 6) zyBook exercise 10.5.8
- 7) zyBook exercise 10.6.3
- 8) zyBook exercise 10.6.4

- 9) zyBook exercise 10.7.3
- 10) How many binary strings of length 12 have at least one 0 and at least one 1?
- 11) zyBook exercise 10.7.4
- 12) A fair coins is flipped 12 times. Since the coin is a fair coin, all of the outcomes are equally likely.
 - (a) What is the size of the sample space?
 - (b) What is the probability that at least one of the 12 flips comes up heads?
 - (c) What is the probability that the same number of flips come up heads as come up tails?
- 13) A pair of dice (one red and one blue) are thrown. Each die has six sides. The dice are fair, so each outcome is equally likely. What is the probability that the number that comes up on the blue die is one more than the number on the red die?
- 14) Three different colored dice (red, blue, and green) are thrown. Each die has six sides. The dice are fair so each outcome is equally likely. What is the probability that at least one of the die comes up 6?
- 15) zyBook exercise 12.1.4

Challenge Activities (marked with a "C" in the title bar)

- 1) Challenge Activity 10.4.1
- 2) Challenge Activity 10.5.1
- 3) Challenge Activity 10.7.1