

# Homework 8

CS 3343 – Fall 2006  
Tom Bylander, Instructor

assigned October 19, 2006  
due October 27, 2006

Your solutions must be submitted as a document to WebCT.

1. (20 pts.) Do Exercise 7.1.7. Provide pseudocode for part b. You can assume  $A$ , *counter*,  $B$ , and  $C$  are global variables. Also provide pseudocode for assigning a value to a position in  $A$ .
2. (20 pts.) Do Exercise 7.2.2. You can answer part b by providing the size of the shifts.
3. (20 pts.) For an open hash table (chaining), find the probability that a given cell is empty. Assume  $n$  keys and  $m$  cells. Assume that the probability that a given key is hashed to a given cell is  $1/m$ .
4. (20 pts.) For an open hash table (chaining), find the probability that at least one cell has more than 1 key. Assume  $n$  keys and  $m$  cells. Assume that the probability that a given key is hashed to a given cell is  $1/m$ . Hint: This is a more general version of the birthday problem.
5. (20 pts.) Show B-trees of order 4 that contain the integers from 0 to 10 where the root has one key, the root has two keys, and the root has three keys.