Assessment 2

due Monday, January 30, 2012

1. Suppose that each row of an $n \times n$ array $A$ consists of 1’s and 0’s in such a way that, for any row, all the 1’s come before any 0. Assuming that $A$ is already in memory, describe how to find which row of $A$ which contains the most 1’s. Aim to do this in $O(n)$ time, not $O(n^2)$. [6 points]

2. exercise 3-3, part a (not part b), pp 61-62. Ignore any function involving a $\lg^*$. [8 points]

3. (Implement a stack using two queues) Exercise 10.1-7, p 236 [4 points]

4. (Reverse a linked list in constant space) Exercise 10.2-7, p 241 [6 points]

5. Exercise 10.4-2, p 248 [4 points]

6. Exercise 10.4-4, p 248 [4 points]

7. Draw the binary tree whose inorder traversal is $abcdefgh$ and whose postorder traversal is $acbegfhd$. [5 points]

8. Consider an ordered tree $T$ and a binary tree $T'$ representing it, using the first-child next-sibling representation (section 10.4). An inorder traversal of $T'$ is equivalent to what kind of traversal of $T$? Give a brief explanation. [4 points]

Total: 41 points