EEL 4851 - Homework 1
Due February 27, 2007

**Problem 1 (Maximum subsequence sum – 30 pts):**
Trace the linear algorithm for the maximum subsequence sum problem for the following list of numbers:

    10 -12 5 6 -3 4 -10 8 -20 30 12

Show the maximum sum and the corresponding subsequence.

Problem 2 (Double linked lists – 30 pts):
Double linked lists are just like linked lists, except that there is a reference to both a next and a previous item. Accordingly, the list has both a head and a tail node.
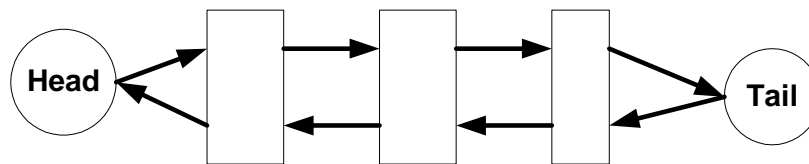
(a) Consider the operation "insert at the beginning". Is it more expensive for a single linked list or for a double linked list? What is the computational complexity (the big O number) for these operations?
(b) Consider the operation "append at the end". Is it more expensive for a single linked list or for a double linked list? What is the computational complexity?
(c) What about the operation "insert at a given position k"?
(d) Double linked lists are frequently used to implement queues? Why?

Problem 3 (Trees – 40 pts):
Consider the tree in the figure. Trace the following algorithms and show the output:
(a) Depth first, pre-order traversal.
(b) Depth first, in-order traversal
(c) Breadth first traversal.
(d) Show the evolution of the queue for each step of the breadth first traversal.