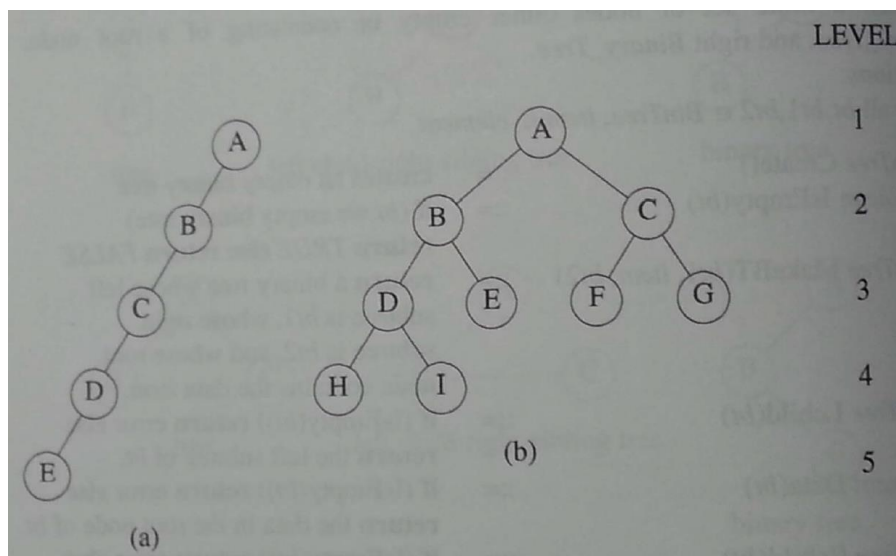


## Homework 4

Sungwon Kang

Due April 16

1. What is the maximum number of nodes in a k-ary tree of height h? Prove your answer.
2. Write out the preorder, inorder and postorder traversals of the following binary trees.



3. Write a program containing nonrecursive versions of the function `preorder()` and the function `postorder()` discussed in class.
4. A *max (min)* tree is a tree in which the key value in each node is no smaller (larger) than the key values in its children (if any). A *max heap* is a complete binary tree that is also a max tree. A *min heap* is a complete binary tree that is also a min tree.

Suppose that we have the following key values: 7, 16, 49, 82, 5, 31, 6, 2, 44.

- (a) Write out the max heap after each value is inserted into the heap.
- (b) Write out the min heap after each value is inserted into the heap.