SCC120 Week 11 workshop

Trees

1) If there are 5 edges in a tree, how many nodes are there? If there are "n" edges in a tree, how many nodes are there?

[handwritten: 6] *[handwritten: $n+1$]*

2) If there are "n" nodes in a tree, how many of these have in-degree 0? How many have in-degree 1? How many have in-degree 2?

[handwritten: 1] *[handwritten: $n-1$]* *[handwritten: 0]*

3) If there are "n" total nodes in a tree and "m" leaf nodes, how many of these have out-degree 0? How many have out-degree 1? How many have out-degree 2?
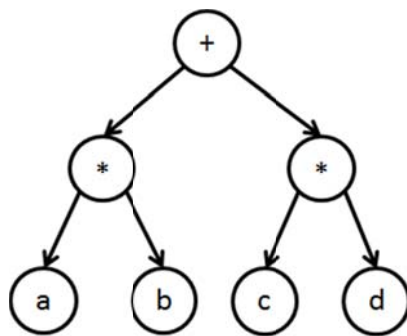
[handwritten: m] *[handwritten: $0 \sim n-m$]* *[handwritten: $0 \sim n-m$]*

4) If there are "n" total nodes in a tree, how many possible different subtrees of the tree are there?

5) If there are 6 edges in a binary tree, what is the maximum possible height? What is the minimum possible height?

6) Describe in words how you do a breadth-first traversal of a binary tree. Describe how you do a pre-order traversal of a binary tree.

7) Convert the following tree to its string-based representation (in post-order traversal).

ab* cd * +

8) Convert the following string (in pre-order) to a strict binary tree: -+b*ad*ec