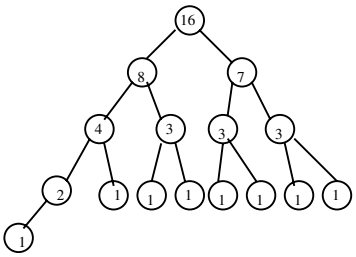
15.1-5 Given an element x in an n-node order-statistic binary tree and a natural number i, how can the ith successor of x be determined in $O(\lg n)$ time.

This problem can be solved if our data structure supports two operations:

- Rank(x) – what is the position of x in the total order of keys?
- Get(i) – what is the key in the ith position of the total order of keys?

What we are interested in is $Get(Rank(x) + i)$.

In an order statistic tree, each node x is labeled with the number of nodes contained in the subtree rooted in x.



Implementing both operations involves keeping track of how many nodes lie to the left of our path.