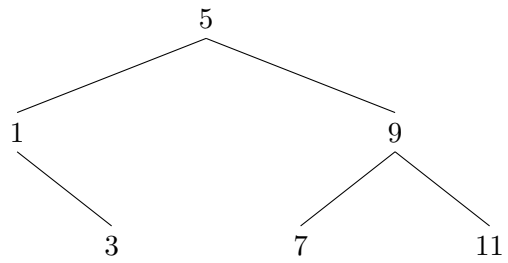
SICP Exercise 2.64

Yuchong Pan

August 19, 2016

a. If the parameter n equals 0, then the constructed tree will be empty, and the remaining elements will be all the original elements. Otherwise, the `partial-tree` procedure recursively converts the first $\lfloor \frac{n-1}{2} \rfloor$ elements to the left subtree and the last $n - \left(\lfloor \frac{n-1}{2} \rfloor + 1 \right)$ elements to the right subtree, and the middle entry is the entry of the constructed tree. Then, `partial-tree` calls the constructor `make-tree` to make a tree with the entry, the left subtree and the right subtree. The tree produced by `list->tree` for the list (1 3 5 7 9 11) is given as follows:



b. The number of steps required by `list->tree` grows as $\Theta(n)$, where n is the size of the given list.