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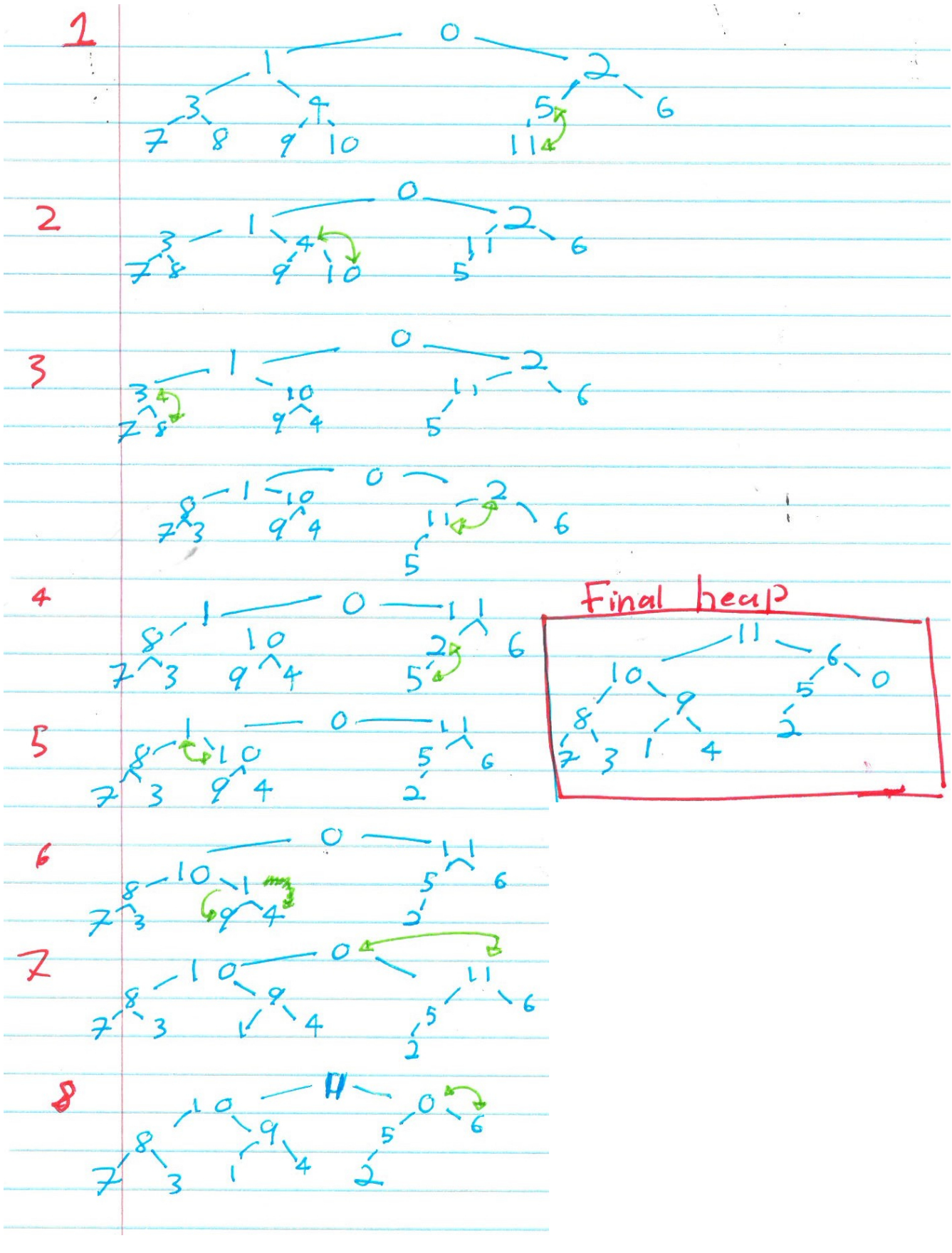
To construct a heap from a binary tree, scan the tree in reversed breadth-first order. When you find a subtree that is *not* a leaf (that is, one that has at least one child node) you check if the subtree root is greater than either child.

If it's not, you swap the root for the largest child. (If the subtree has more than one level, you might need to do several more swapping operations on the way down to get a max heap.) Once that subtree is a maxheap, you can move on to the next subtree in breadth-first order. Once you've reached the root and finished all swap operations, you have a max heap!

For a step-by-step example with show work, see the next page.


1
2
3
4
5
6
7
8
Final heap