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Top-down splay tree

- Top-down splay trees are easy to implement as we descent the tree in our search for some node X, we must take the nodes that are on the access path and move them and their sub-trees out of the way. We must also perform some tree rotations to guarantee the amortized time bound.
- At any point, in the middle of a splay, we have:
  - The current node X, i.e. the root of its sub-tree
  - The tree L that stores nodes less than X
  - Tree R that stores nodes larger than X
- Initially X is the root of the splay tree, and L and R are empty. As we descent the tree two levels at a time, we encounter a pair of nodes.
- Depending on whether these nodes are smaller than X or larger than X, they are placed in L or R along with sub-trees that are not on the access path to X.
- When we finally reach X, we can attach L and R to the bottom of the middle tree and as a result, X will have been moved to the root.
- We now have to show how the nodes are placed in the different tree.
- The only thing we have to do now is reassemble the splay tree.