



Design and Analysis
of Algorithms I

Data Structures

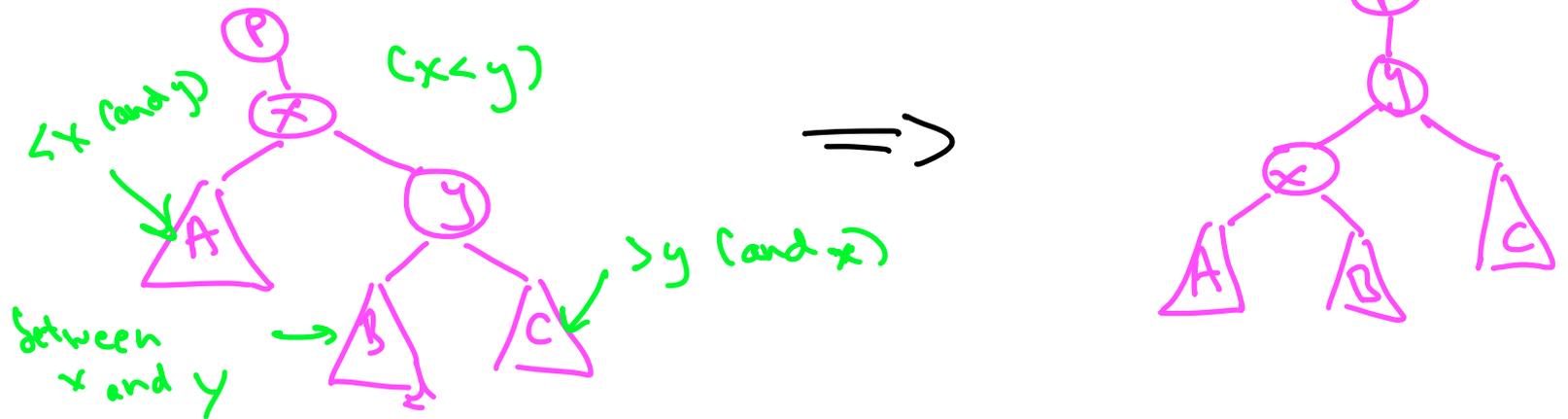
Rotations

Left Rotations

Key primitive: rotations. (common to all balanced search tree implementations - red-black, AVL, B+, etc.)

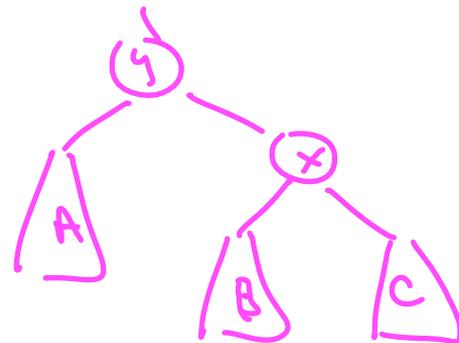
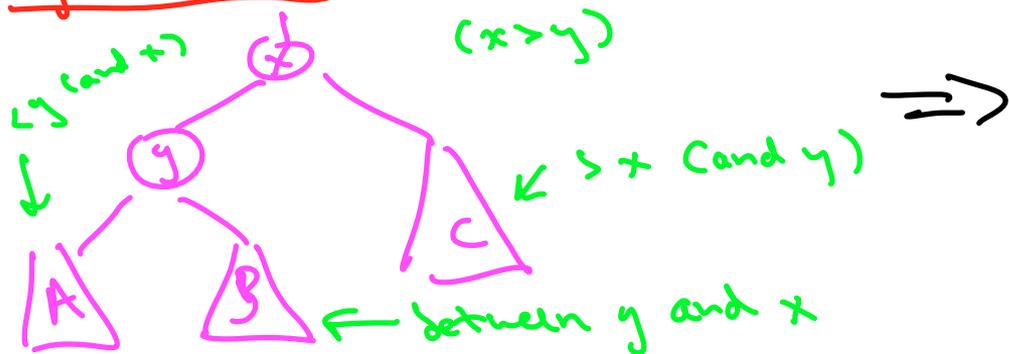
Idea: locally rebalance subtrees at a node in $O(1)$ time.

Left rotation: (of a parent x and right child y)



Right Rotations

Right rotation:



Nice properties: search tree property maintain, can implement in $O(1)$ time.