

AVL TREES: EXPLORING DUALITY

Lecture 37

Assignment

- Finish reading sections 9.1 and 9.2 and do all self-check exercises

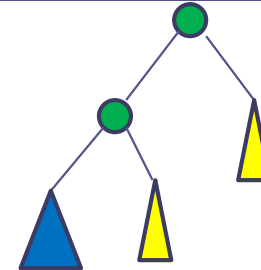
The taxonomy of unbalanced trees and the respective balancing action

3

□ Left-Left Tree

- Root's balance factor is -2
- Left child's balance factor is -1

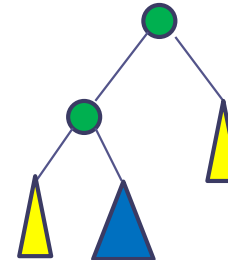
Action: Rotate right around the parent



□ Left-Right Tree

- Root's balance factor is -2
- Left child's balance factor is +1

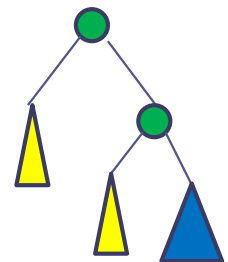
Action: 1) Rotate left around the child
2) Rotate right around the parent



□ Right-Right Tree

- Root's balance factor is +2
- Right child's balance factor is +1

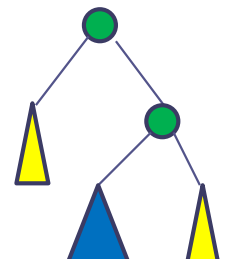
Action: Rotate left around the parent



□ Right-Left Tree

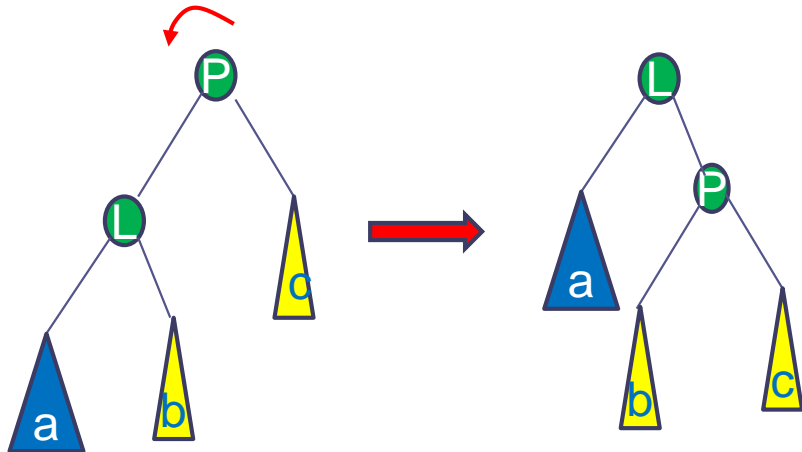
- Root's balance factor is +2
- Right child's balance factor is -1

Action: 1) Rotate right around the child
2) Rotate left around the parent



Left-Left

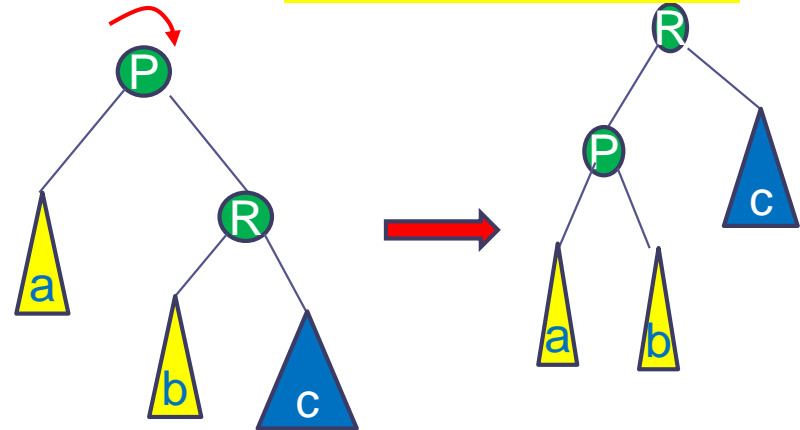
aLbPc



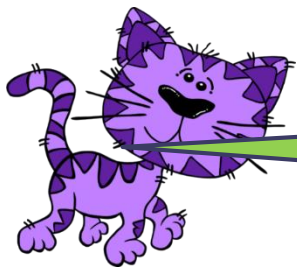
Action: Rotate right around the parent

Right-Right

aPbRc



Action: Rotate left around the parent



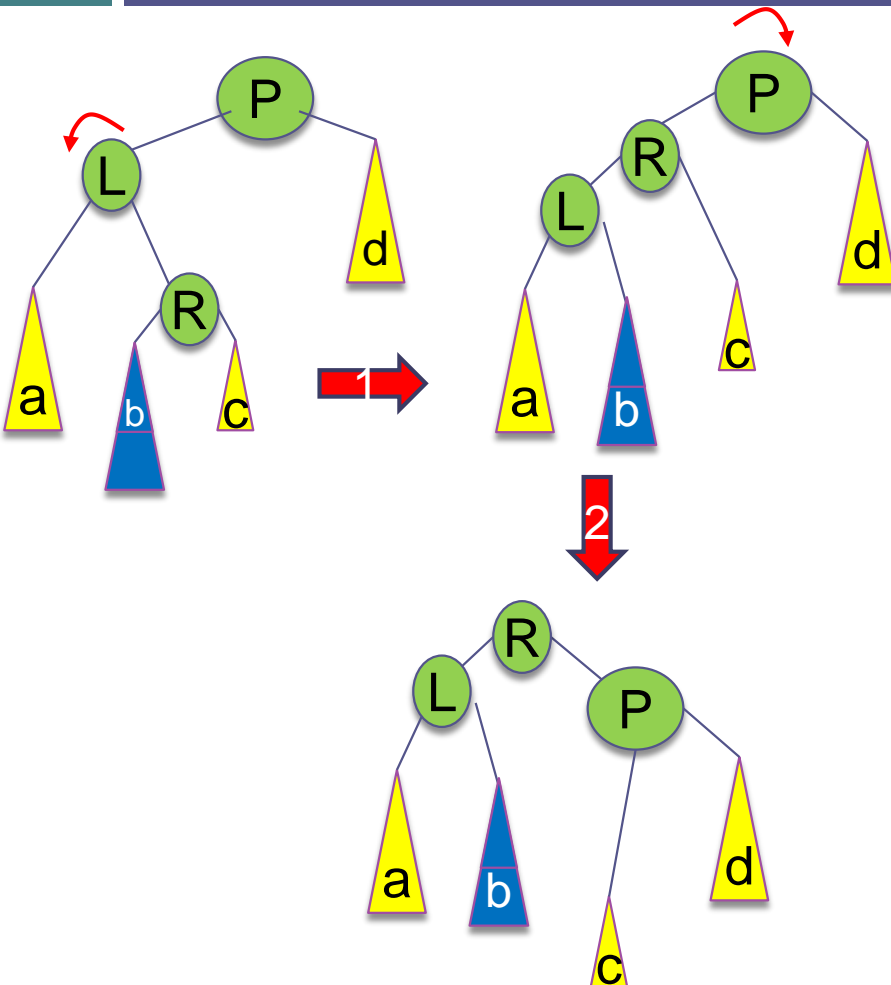
But... How
can we *prove*
that this
procedure is
correct?

Just check the
order of the nodes
with any traversal
algorithm!

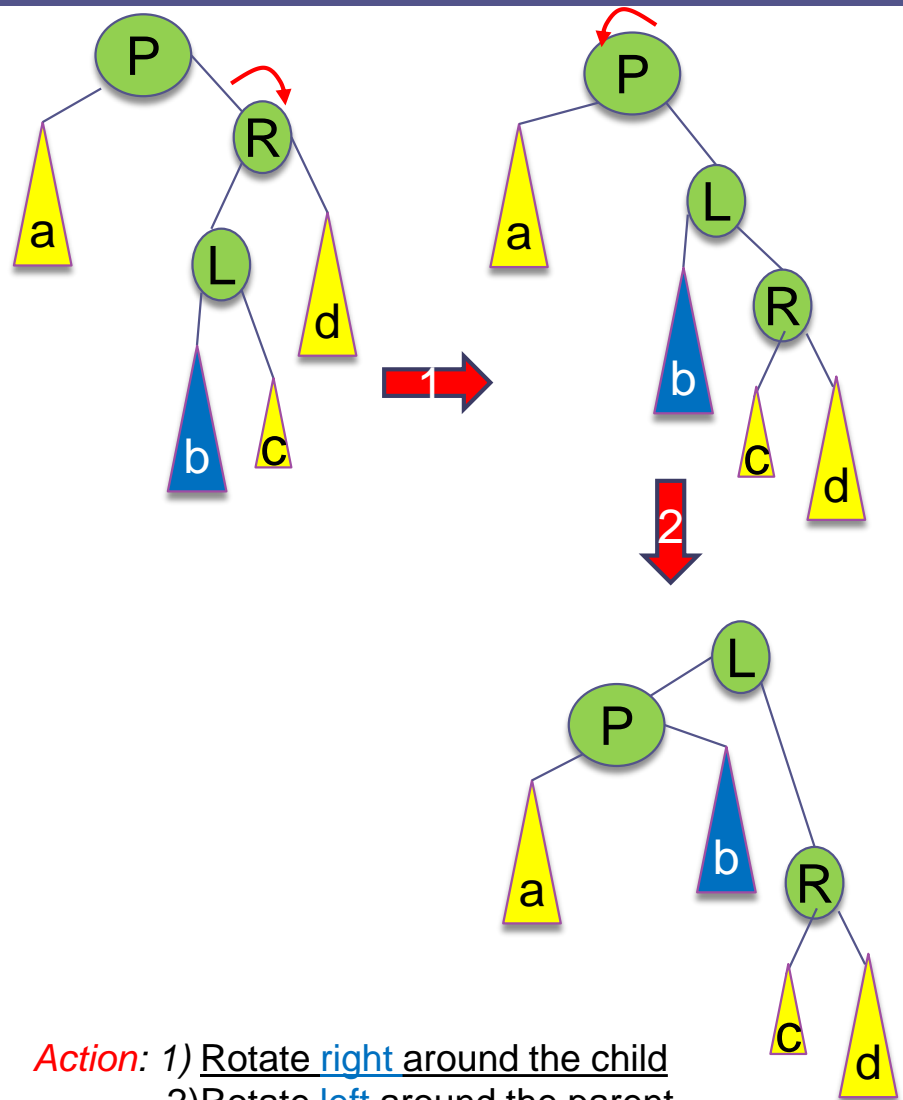


Left-Right (aLbRcPd) Right-Left (aPbLcRd)

5



Action: 1) Rotate left around the child
2) Rotate right around the parent



Action: 1) Rotate right around the child
2) Rotate left around the parent