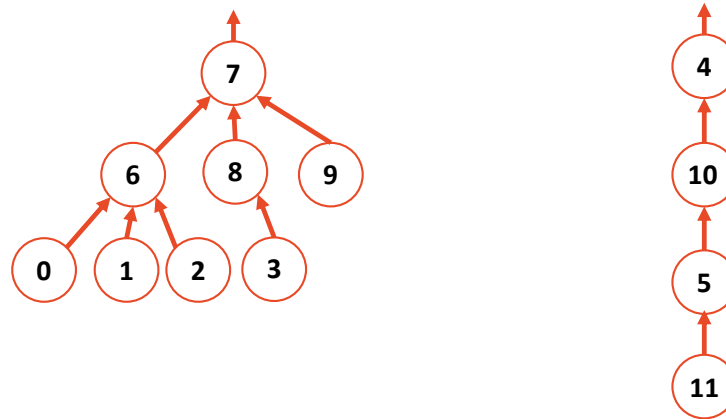


# Disjoint Sets – Smart Union



**Union by height**

0	1	2	3	4	5	6	7	8	9	10	11
6	6	6	8		10	7		7	7	4	5

*Idea: Keep the height of the tree as small as possible.*

**Union by size**

0	1	2	3	4	5	6	7	8	9	10	11
6	6	6	8		10	7		7	7	4	5

*Idea: Minimize the number of nodes that increase in height*

Both guarantee the height of the tree is: \_\_\_\_\_.