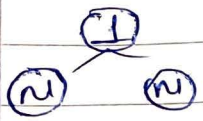
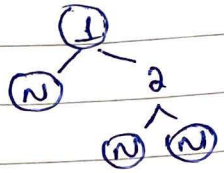
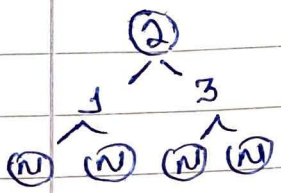
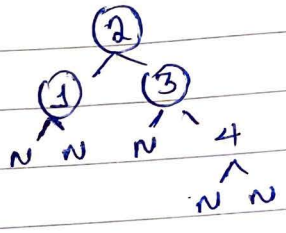
Musab Mehadi mmehadi@jacobs-university.de

- Let's assume we enter the elements 1, 2, 3, and 4 in to a tree









Proof by Induction

(*) Circled Nodes represent Black color while uncircled nodes represent Red. "N" represents NULL.

- As we can see from the above trees, when $n=2$ we have a Red node whose key is 2
- when $n=3$, we have two Red nodes with keys 1 and 3
- when $n=4$, we have one Red node with key = 4

(*) Therefore, it is clear that for $n \geq 2$ we have a minimum of one Red node.