

Date:

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3.1 / a) Properties of Red-Black Tree

(1) each tree node is color either red or black

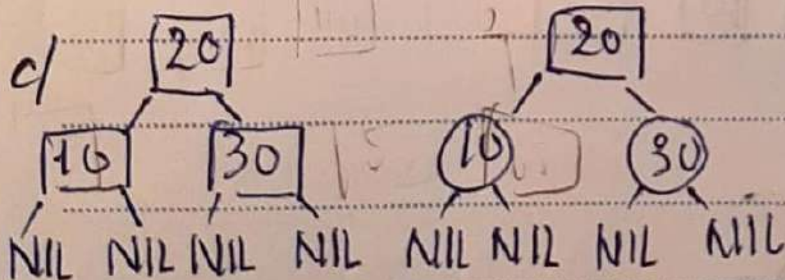
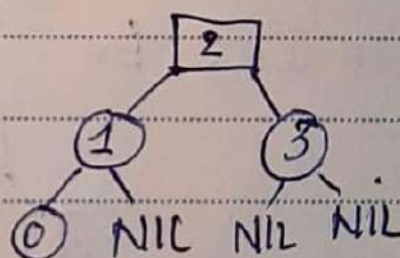
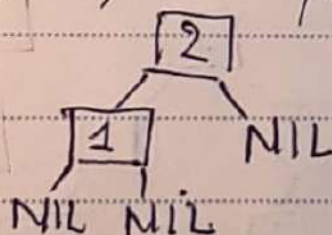
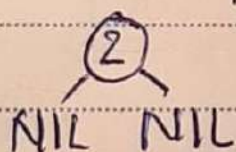
(2) the root node of the tree is always black

(3) every path from the root to any of the leaf nodes must have the same number of black nodes.

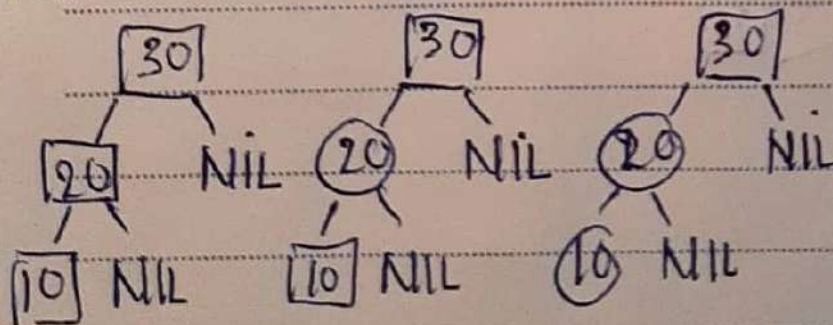
(4) no two red nodes can be adjacent,

Example: \square black \circ red

a) violate property (2), (3), (4)



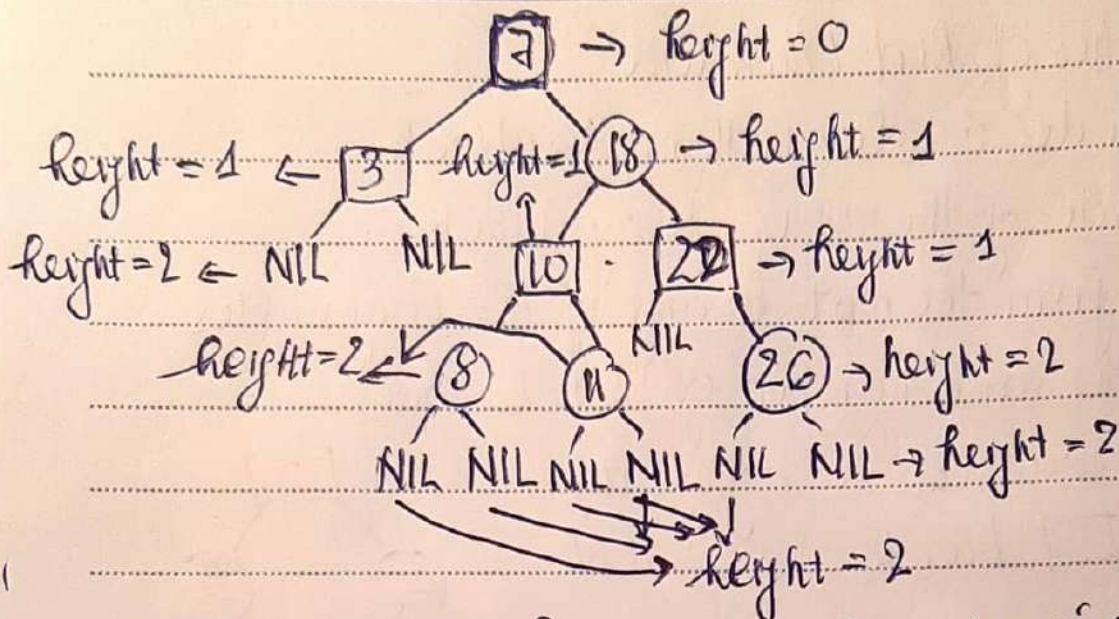
are red black trees



are not red black trees

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e/ it is possible to have all black nodes in a Red Black Tree Ex:

