

Create a RED BLACK Tree by inserting following sequence of number
8, 18, 5, 15, 17, 25, 40 & 80.

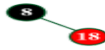
Insert (8)

Tree is Empty. So insert newNode as Root node with black color.



Insert (18)

Tree is not Empty. So insert newNode with red color.



Insert (5)

Tree is not Empty. So insert newNode with red color.

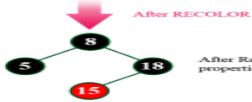


Insert (15)

Tree is not Empty. So insert newNode with red color.



Here there are two consecutive Red nodes (18 & 15). The newnode's parent sibling color is Red and parent's parent is root node. So we use RECOLOR to make it Red Black Tree.



After Recolor operation, the tree is satisfying all Red Black Tree properties.

Insert (17)

Tree is not Empty. So insert newNode with red color.



Here there are two consecutive Red nodes (15 & 17). The newnode's parent sibling is NULL. So we need rotation. Here, we need LR Rotation & Recolor.



After Right Rotation & Recolor



Insert (25)

Tree is not Empty. So insert newNode with red color.



Here there are two consecutive Red nodes (18 & 25). The newnode's parent sibling color is Red and parent's parent is not root node. So we use RECOLOR and Recheck.



After Recolor operation, the tree is satisfying all Red Black Tree properties.

Insert (40)

Tree is not Empty. So insert newNode with red color.



Here there are two consecutive Red nodes (25 & 40). The newnode's parent sibling is NULL. So we need a Rotation & Recolor. Here, we use LL Rotation and Recheck.



After LL Rotation & Recolor operation, the tree is satisfying all Red Black Tree properties.

Insert (80)

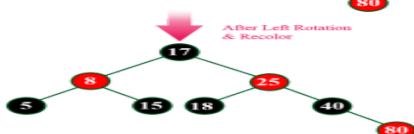
Tree is not Empty. So insert newNode with red color.



Here there are two consecutive Red nodes (40 & 80). The newnode's parent sibling color is Red and parent's parent is not root node. So we use RECOLOR and Recheck.



After Recolor again, there are two consecutive Red nodes (17 & 25). The newnode's parent sibling color is Black. So we need Rotation. We use Left Rotation & Recolor.



Finally above tree is satisfying all the properties of Red Black Tree and it is a perfect Red Black tree.