Suraj Pradeep 1BM18CS114

LAB 8

Insertion in Red Black trees

```
def fix_insert(self,k):

    while k.parent.color == 1:
        if k.parent == k.parent.parent.right:

            u = k.parent.parent.left
            if u.color == 1:
                u.color = 0
                k.parent.color = 0
                k.parent.parent.color = 1
                k = k.parent.parent

            else:
                if k == k.parent.left:
                    k = k.parent
                    self.right_rotate(k)
                k.parent.color = 0
                k.parent.parent.color = 1
                self.left_rotate(k.parent.parent)

        else:
            u = k.parent.parent.right

            if u.color == 1:
                u.color = 0
                k.parent.color = 0
                k.parent.parent.color = 1
                k = k.parent.parent
            else:
                if k == k.parent.right:
                    k = k.parent
                    self.left_rotate(k)
                k.parent.color = 0
                k.parent.parent.color = 1
                self.right_rotate(k.parent.parent)
        if k == self.root:
            break
    self.root.color = 0
```

```
if n == n.parent.right:
    n = n.parent
    self.left_rotate(n)

n.parent.color = 0
n.parent.parent.color = 1
self.right_rotate(n.parent.parent)

if (n == self.root):
    break

self.root.color = 0
```