RB-Tree

Write-up

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```
Node* BSTInsert (Node* root, Node *pt)
{
    if(root == NULL)
        return pt;
    if(pt -> data < root -> data)
    {
      root -> l = BSTInsert (root->l , pt);
      root -> l -> par = root;
    }
    else if (pt -> data > root -> data)
    {
        root->r = BSTInsert (root->r , pt);
        root->r-> par = root;
    }
    return root;
}
```

Case 1:
pt parent is left child of pt grand parent

SC 1: uncle is red only → recoloring

SC 2: pt is right child of parent's left → rotation

SC 3: pt is left child of parent's right → rotation

Case 2:
pt parent is right child of pt grand parent

SC 1: uncle is red only → recoloring

SC 2: pt is left child of parent's right → rotation

SC 3: pt is right child of parent's left → rotation