

Insertion Rules for Red Black Trees

Case 1 Outside grandchild causes a red-red violation after color flip

The Rule:

- Change color of G
- Change color of P
- Rotate P, G in the direction that lifts X

Case 2 The inside grandchild causes a red-red violation

The Rule:

- Change color of G
- Change color of X
- Perform double rotation:
 - P, X, lifting X
 - G, X, lifting X