

## Insertion in Red Black Tree: -

1. Check whether the tree is empty or not.
2. If the tree is empty then insert the new node as root node with color **black**.
3. If the tree is not empty then insert the new node as leaf node with color **red**.
4. If the parent of new node is **black** then exit from the operation.
5. If the parent of new node is **red** then there is **red-red** conflict -
  - a. Now, check the color of new nodes parent's sibling, i.e., check the color of uncle of new node.
  - b. If the color of uncle is **red**, then recolor uncle and parent and also check the grandparent of new node -
    - i. If the grandparent is root node, then exit from the operation.
    - ii. If the grandparent is not root node, then recolor grandparent also.
  - c. If the color of uncle is either **black** or **null**, then do suitable rotation & recolor -
    - i. If LL or RR rotation is applied, we change parent and grandparent color only and leave child as it is.
    - ii. If LR or RL rotation is applied, we change child and grandparent color only and leave parent as it is.