

```

Node* balance(Node* root, int dir) {
    if (red(root.left)) {
        if (red(root.right)) {
            root.left  = blacken(root.left);
            root.right = blacken(root.right);
            root.black = false;
        }
        else {
            if (red(root.left.left)) {
                root = rb.rotate.single(
                    root, RIGHT);
            }
            else {
                if (red(root.left.right)) {
                    root = rb.rotate.dbl(
                        root, RIGHT);
                }
                else {
                }
            }
        }
    }
    else {
    }
    return root;
}

```

