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### Lab-06

```
void RBTree :: insert(const int &data) {  
    Node *Pt = new Node(data);  
    root = BSTInsert(root, Pt);  
    fixViolation(root, Pt);  
}
```

```
Node* BSTInsert(Node* root, Node* Pt) {  
    if (root == NULL)  
        return Pt;  
    if (Pt->data < root->data) {  
        root->left = BSTInsert(root->left, Pt);  
        root->left->parent = root;  
    }  
    else if (Pt->data > root->data) {  
        root->right = BSTInsert(root->right, Pt);  
        root->right->parent = root;  
    }  
    return root;  
}
```

Case A: Parent of Pt is invalid grand-parent of Pt.

Case 1: The uncle of Pt is also red only - Recoloring req.

Case 2: Pt is right child of its parent - Left rotation req.

Case 3: Pt is left child of its parent - Right rotation req.

Case B: Parent of Pt is right child of grand-parent of Pt.

Case 1: The uncle of Pt is also red only - Recoloring req.

Case 2: Pt is left child of its parent - Right rotation req.

Case 3: Pt is right child of its parent then left rotation. Revisited.

⑥

Red