

①

Homework 5

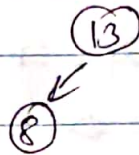
CS - 575

Q1) elements :- 13, 8, 5, 9, 4, 6, 12, 2, 1, 3

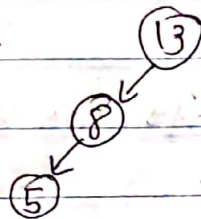
a) insert 13 :-

13

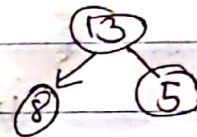
b) insert 8 :-



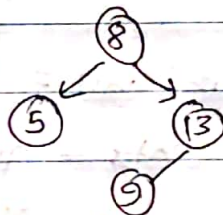
c) insert 5 :-



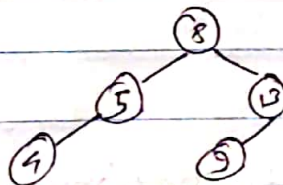
after inserting it fall under left-left case
right rotate :-



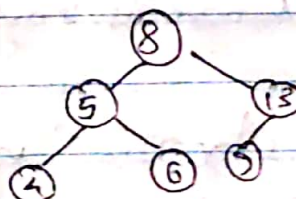
d) insert 9 :-



e) insert 4 :-

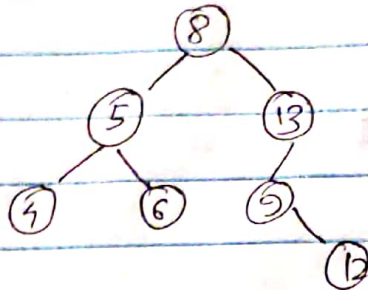


f) insert 6 :-

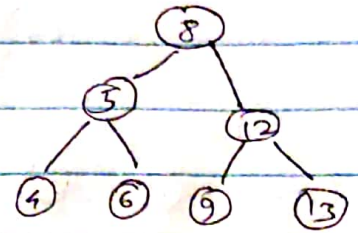


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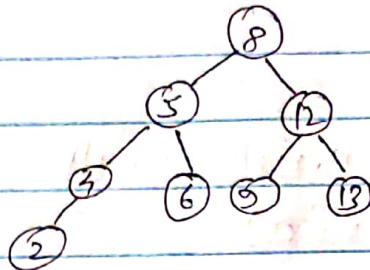
g) insert 12 :-



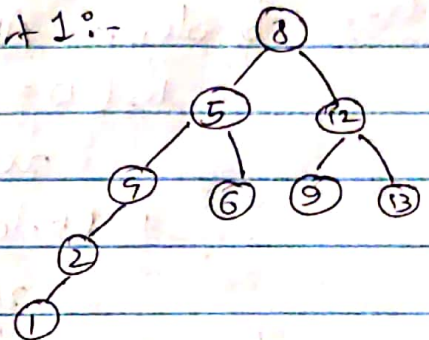
left rotate



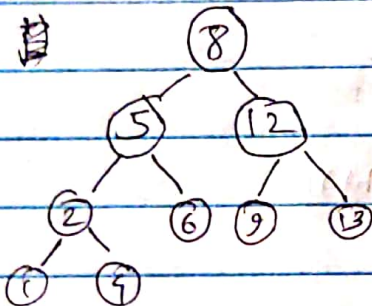
h) insert 2 :-



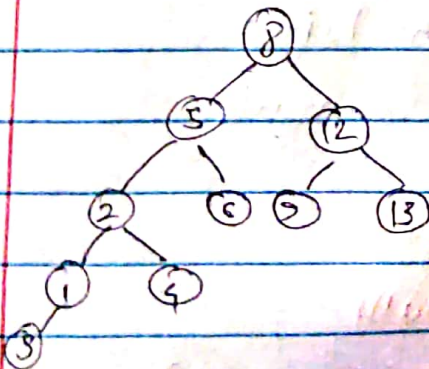
i) insert 1 :-



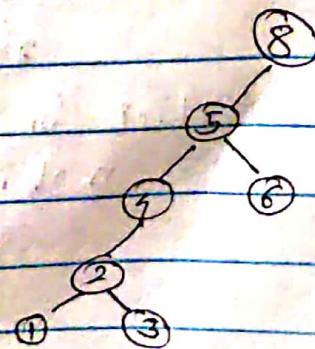
Right rotate



j) insert 3 :-

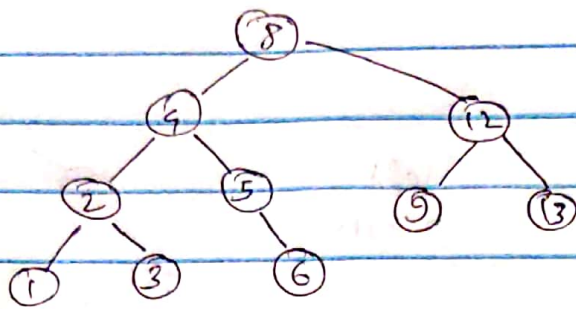


left rotate



now rotate right

P-3



Q2) boolean AVL confirm (node n) {
 if (n == null)
 return true
 if (n.left == null && n.right == null)
 return (n.height == 0)
 // check for right subchild recursively
 grab height
 int right height = -1
 if (n.right != null)
 if (!AVL confirm (n.right))
 return false
 if (n.key > n.right.key)
 return false
 right height = n.right.height
 // check for left subchild recursively
 grab its height
 int left height = -1
 if (n.left != null)
 if (!AVL confirm (n.left))
 return false
 return false

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```
    left height = n.left height  
    // check for height and balance  
    if (max (left height, right height) + 1 != n.height)  
        return false  
    return (abs (left height - right height) < 1)  
}
```