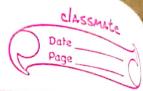
## Brathik Karanth 1BM18cs139



```
Node *insert (Nøde * nøde, int key)
          if (node = = NULL)
           return (new Node (key));
         if (key < node > key)
              node > left = insert (node > left , key);
         else if (key > node > key)
              node -) right = insert (node -> right, key);
        elee
           Seturn node;
         node - sheight = 1+ max ( height (node -) lift)
                              height (node-)right)?;
         int balance = get Balance (node);
Cayes:
         if ( balance > 1 de key < node -) left -> key)
            return right Rotate (node);
         if (balance <- | && key > node -) right -) key)
RR
            return left Rotate (node);
         if (balance > 1 && key > node -) left -> key?)
LR
           node -> left = left Rotate (node-) left);
             Tuhurn sight Rotate (node); 3
RL
         if (balance <-1 && key < node -> right-) key)
          2 wede -> right = right Rotate (node -> right);
             return left Rotate (node); }
          return node;
```

```
Node * delete Node (Node * scot, int key)
 if (1004 == NULL)
   return root;
  y ( key < root >key)
     root - left = delete Node (root -) left, key);
  else if (key > root - key)
    1801 -) right = delete Node (1001-) right, key);
 of if ((scot ) left == NULL) 11
   if ( ( 100+ -) right == NULL))
    Node * temp = root -) left?
                 reet -) left :
                 Yout -) right;
   if (temp = = NULL)
      temp = root;
     fue(temp);
    Node Hemp = minvalue Noble (root-) right);
     root -> key: temp -> key;
     2001 -) right = delete Node (root -) right,
                              temp -) key);
```

```
if (root = = NULL)
           return root;
           ropt - height 10 = 1+ max (height (root > left),
                                          height (root-)right));
          int balance = get Balance (root)
  LL
          y (balance > 1 &&
               get Balance (root ) left) >=0)
               return right Rotate (root);
 LR
         if Chalance 201 ss
              get Balance (root ) left) < 0)
             root -) left = left Rotate (root-) left);
return right Rotate (root);
RR
         if Chalance <-1 44
            get Balance (root - right) e = 0)
            Return left Rotate (root);
RL
        y (balance <-1 &&
              get Balance (root -) right ) >0)
             root -) right = right Rotate (root -) right);
return left Rotate (root);
        return root;
```