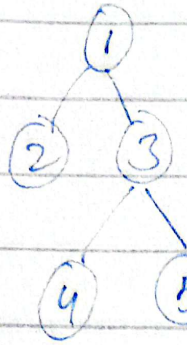
Diameter of Binary Tree



Length of longest path between any 2 nodes (leaves)

node

① diam ↑ through

② Rightdiameter

③ LeftDiameter

```
int Diam(root){
If (root == NULL) return 0;
LeftDiameter = diam(root->left)
RightDiameter = diam(root->right)
CurrDiam = height(root->left) + height(root->right)
return max(LD, RD, CD);
```

TC $O(n^2)$

Used Height Function aswell.

Optimal $O(n)$

```
int height(root){
if(root == NULL){
return 0;
leftHt = Ht(root->left)
RightHt = Ht(root->right)
ans = max(lHt + RHt, ans)
return max(lHt, RHt) + 1;
}
```