Binary Search Trees-2

Lecture- 56

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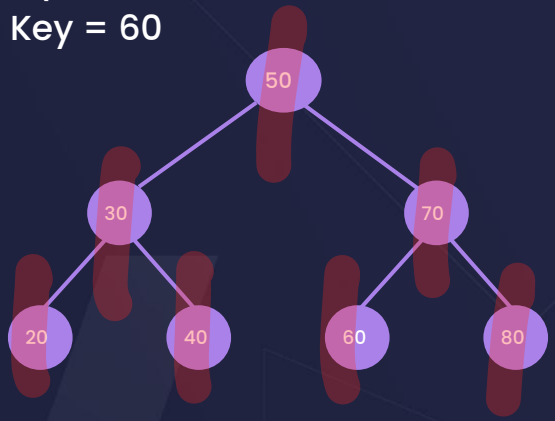
Inorder predecessor and successor for a given key in BST

Input:

Input:

Key = 60



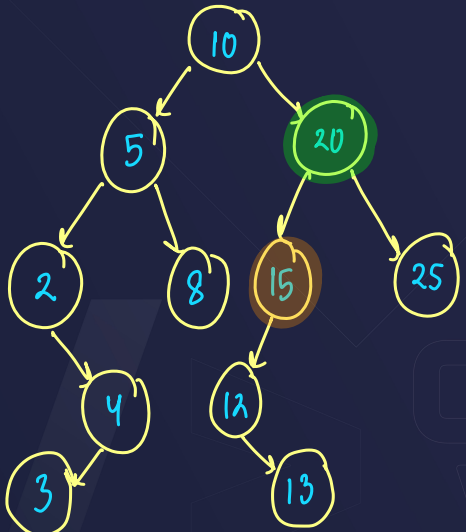
20 30 40 50 60 70 80

pred suc

Output:

```
Inorder predecessor is 50
Inorder successor is 70
```

How to find inorder pred :



Steps →

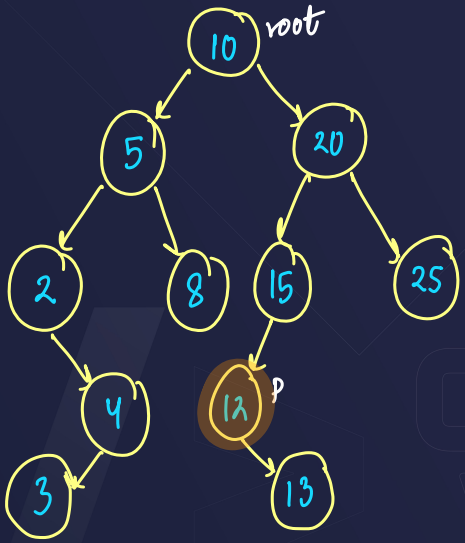
1 → go left once

2 → keep going right

Code :

```
if( root->left == NULL)
    return NULL;
Node* pred = root->left;
while( pred->right != NULL)
        pred = pred->right;
return pred;
```

How to find inorder successor :



Steps : 1) go right once

2) Keep going left if possible

Code : DIY

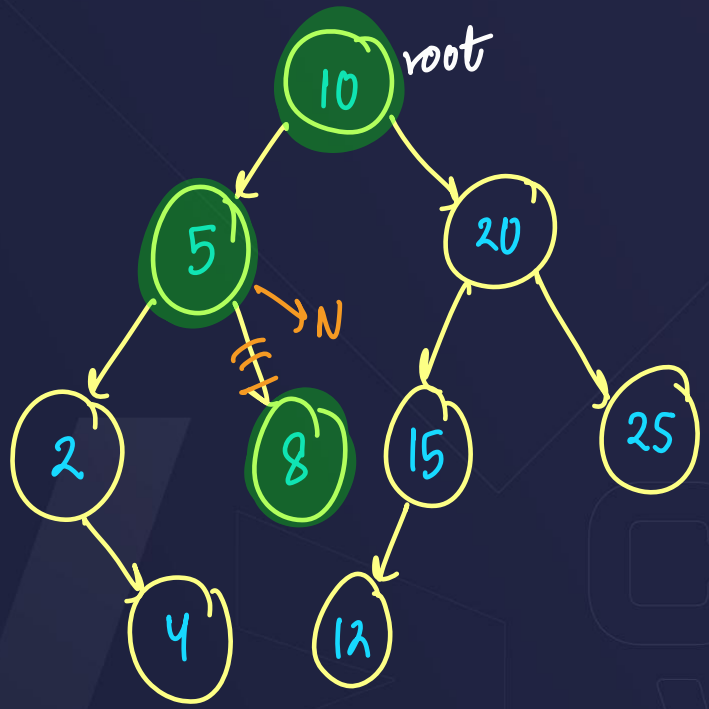
How to delete a node from a BST : (But you have to maintain the property of BST)

1) It is a leaf node → Easy

2) It has only one child (either left or right) → Easy

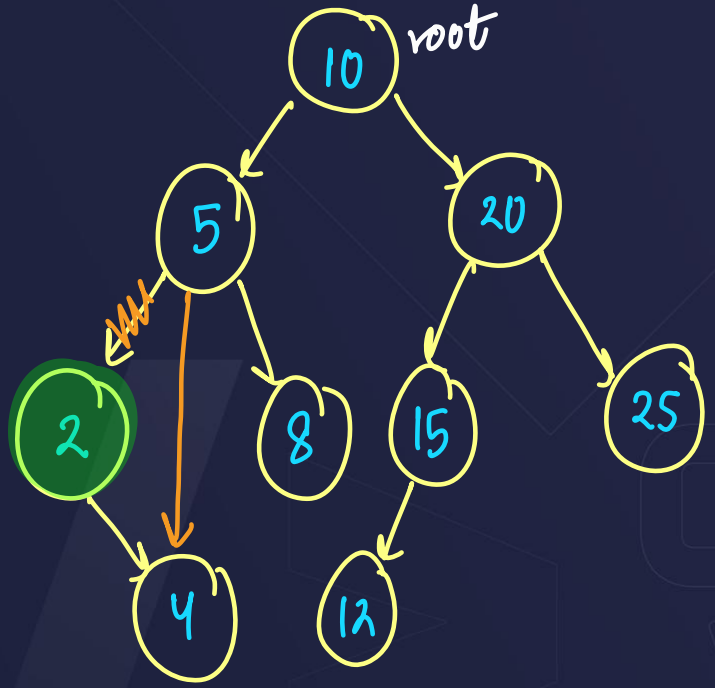
3) It has 2 child nodes → Hard

Deletion: The node has 0 child



Deletion: The node has 0 child

Deletion: The node has 1 child

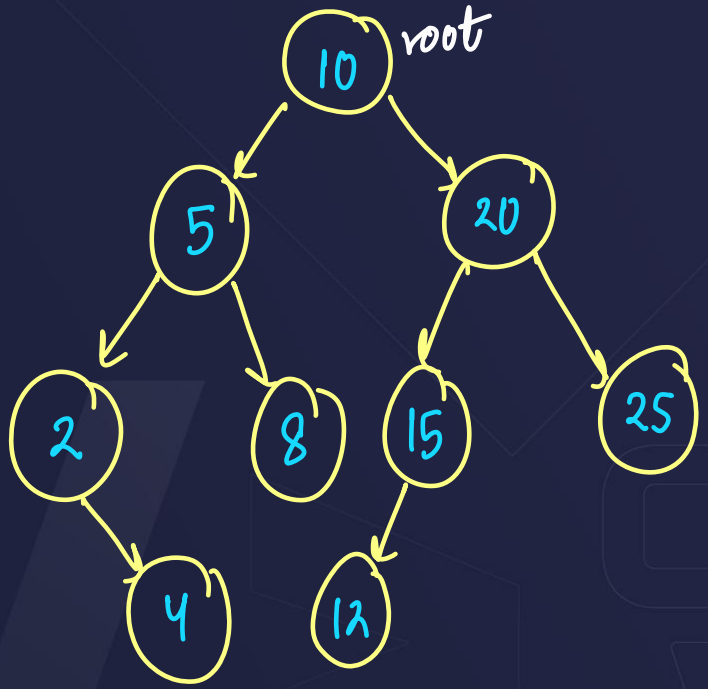


target = 2

S->left = deleteNode(S->left);

Deletion: The node has 2 children

Zabardast

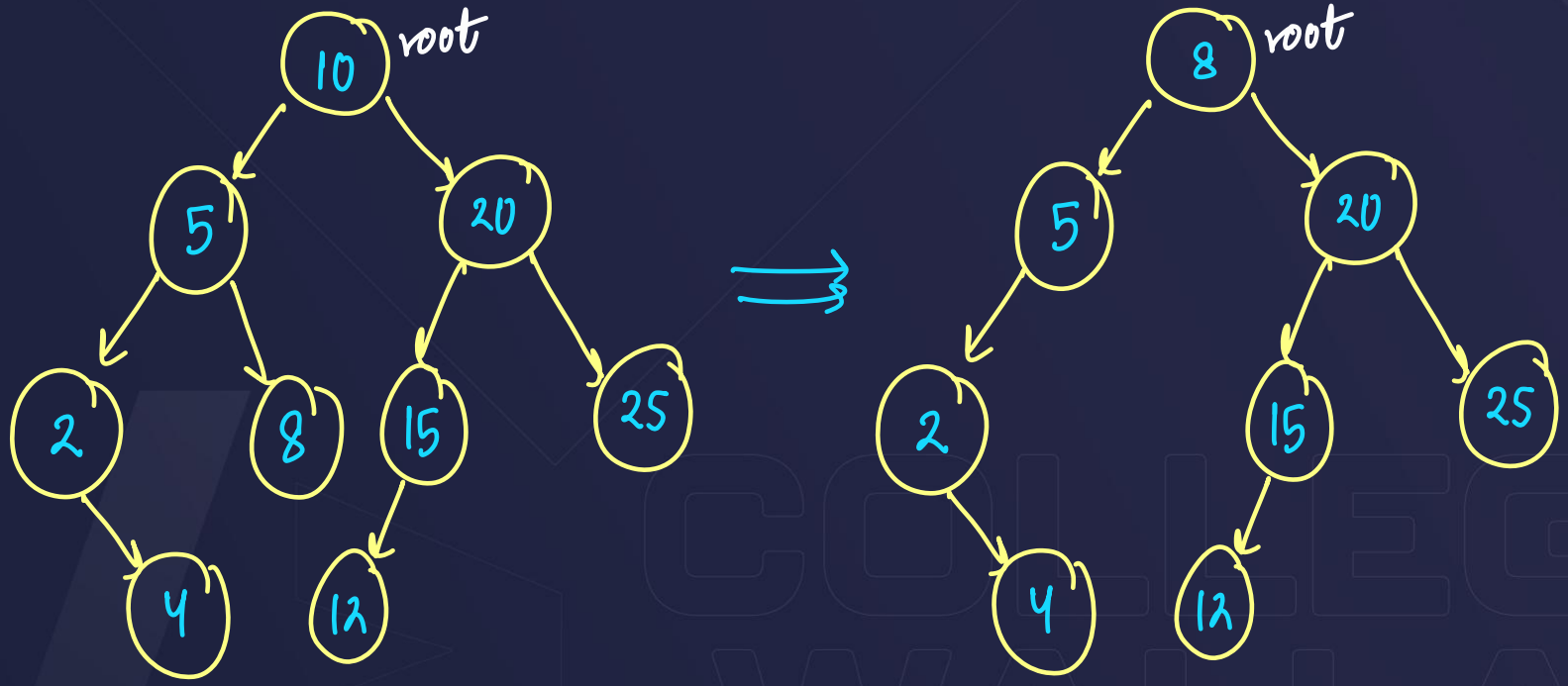


target = 10

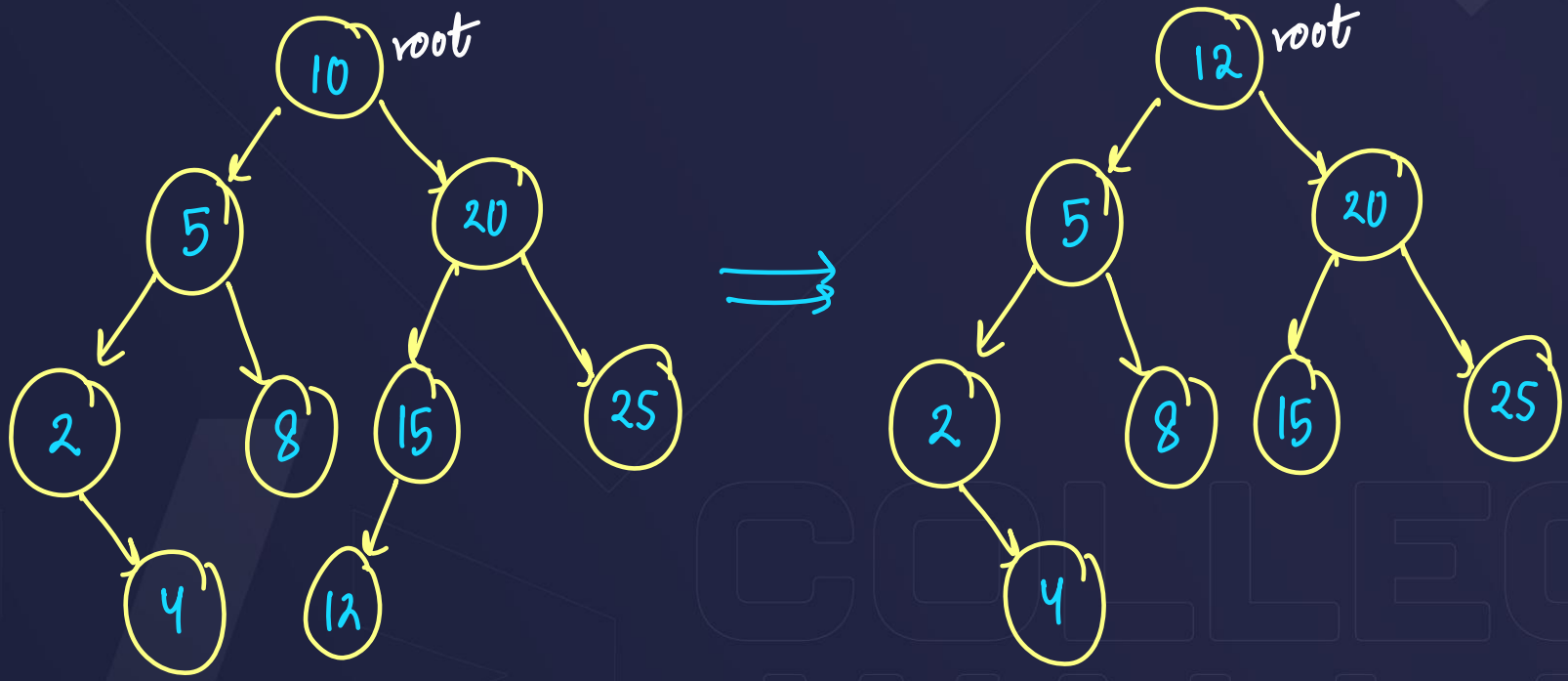
⇒ hint: we have to replace the node with something

→ replace the node with its inorder pred/ suc

Deletion: The node has 2 children



Deletion: The node has 2 children



target = 10

Correct ans ✓

Thank you !!