Tree Traversal

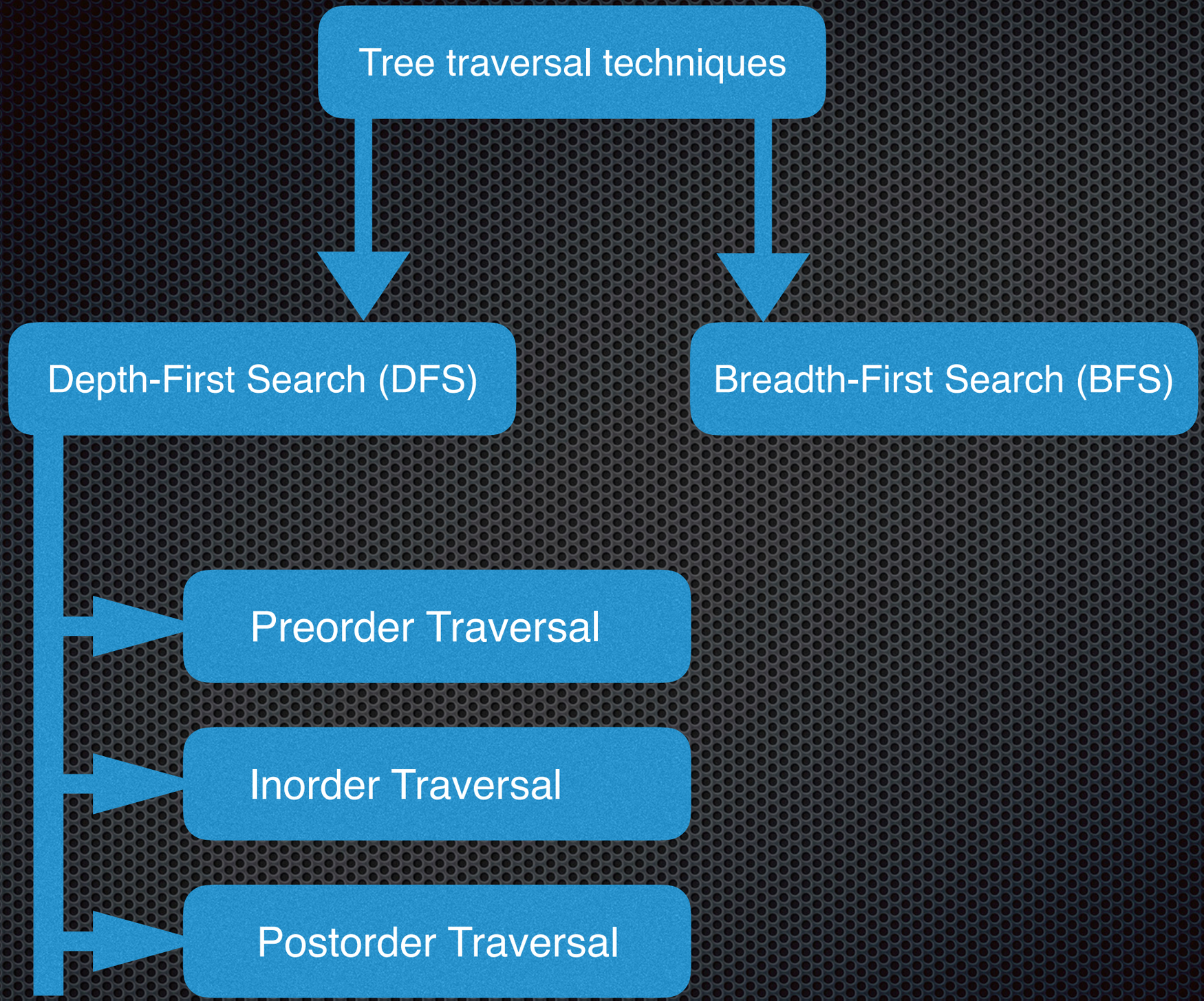
Traversal is a process to visit all the nodes of a tree and may print their values too

Tree Traversal Algorithms can be classified broadly in the following two categories by the order in which the nodes are visited:

Depth-First Search (DFS) Algorithm: It starts with the root node and first visits all nodes of one branch as deep as possible of the chosen Node and before backtracking, it visits all other branches in a similar fashion. There are three sub-types under this

1. Pre-order Traversal (Root, Left , Right)
2. In-order Traversal (Left ,Root, Right).
3. Post-order Traversal (Left , Right, Root)

Breadth-First Search (BFS) Algorithm: It also starts from the root node and visits all nodes of current depth before moving to the next depth in the tree.


Tree traversal techniques
Depth-First Search (DFS)
Breadth-First Search (BFS)
Preorder Traversal
Inorder Traversal
Postorder Traversal

Traversal is a process to visit all the nodes of a tree and may print their values too

Type of Tree Traversals :

1. **Pre-order Traversal (Root, Left , Right)**
2. **In-order Traversal (Left ,Root, Right)**
3. **Post-order Traversal (Left , Right, Root)**

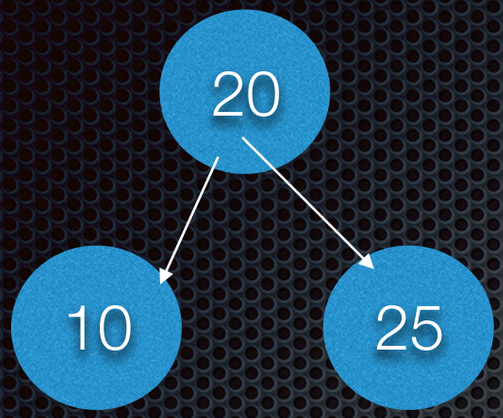
Algorithm

Step 1 – Visit root node.
Step 2 – Recursively traverse left subtree.
Step 3 – Recursively traverse right subtree.

Until all nodes are traversed

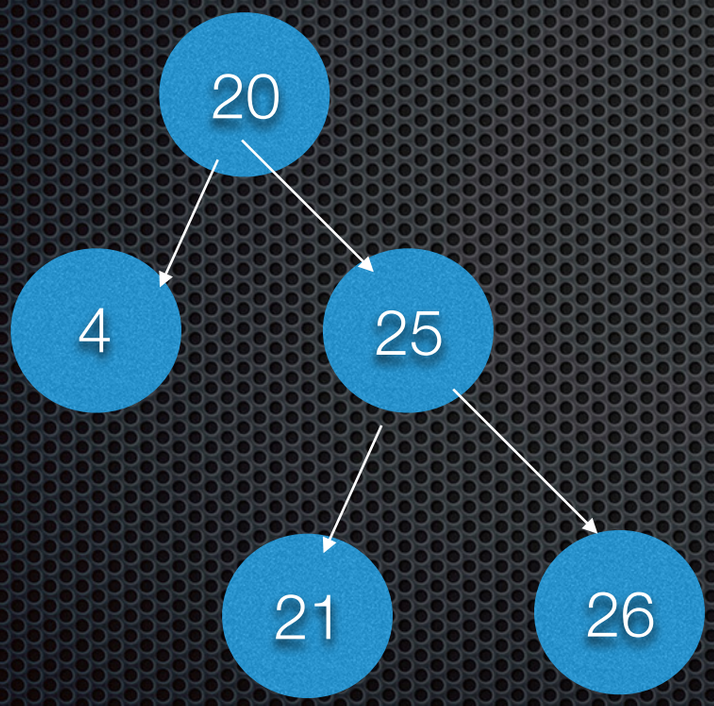
Pre-order Traversal (Root, Left , Right)

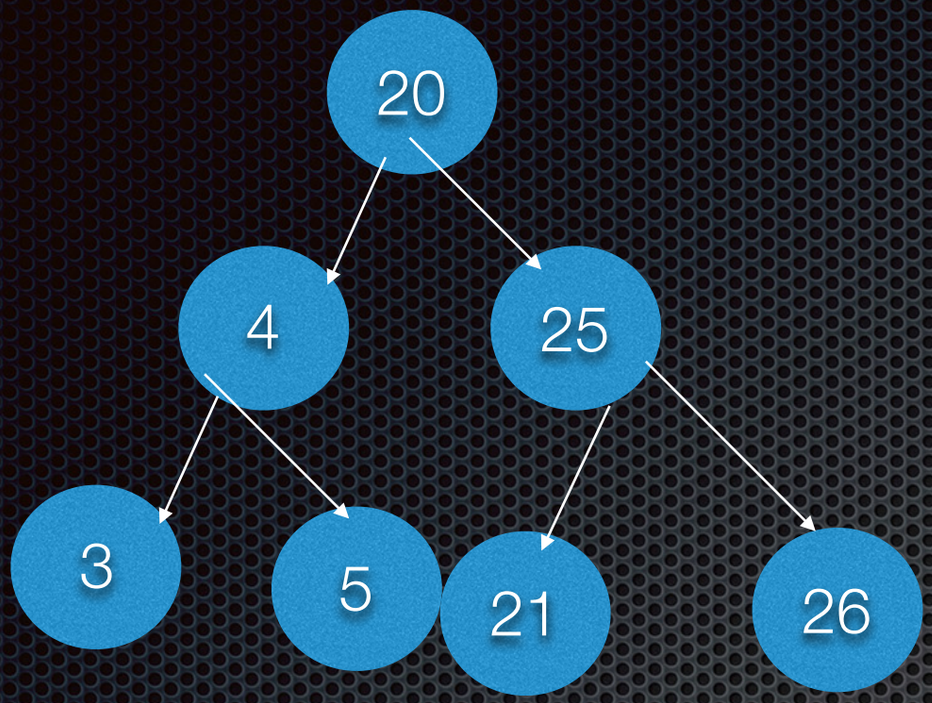
In this traversal method, the root is visited first, then left subtree and later the right sub-tree.



20,10,25

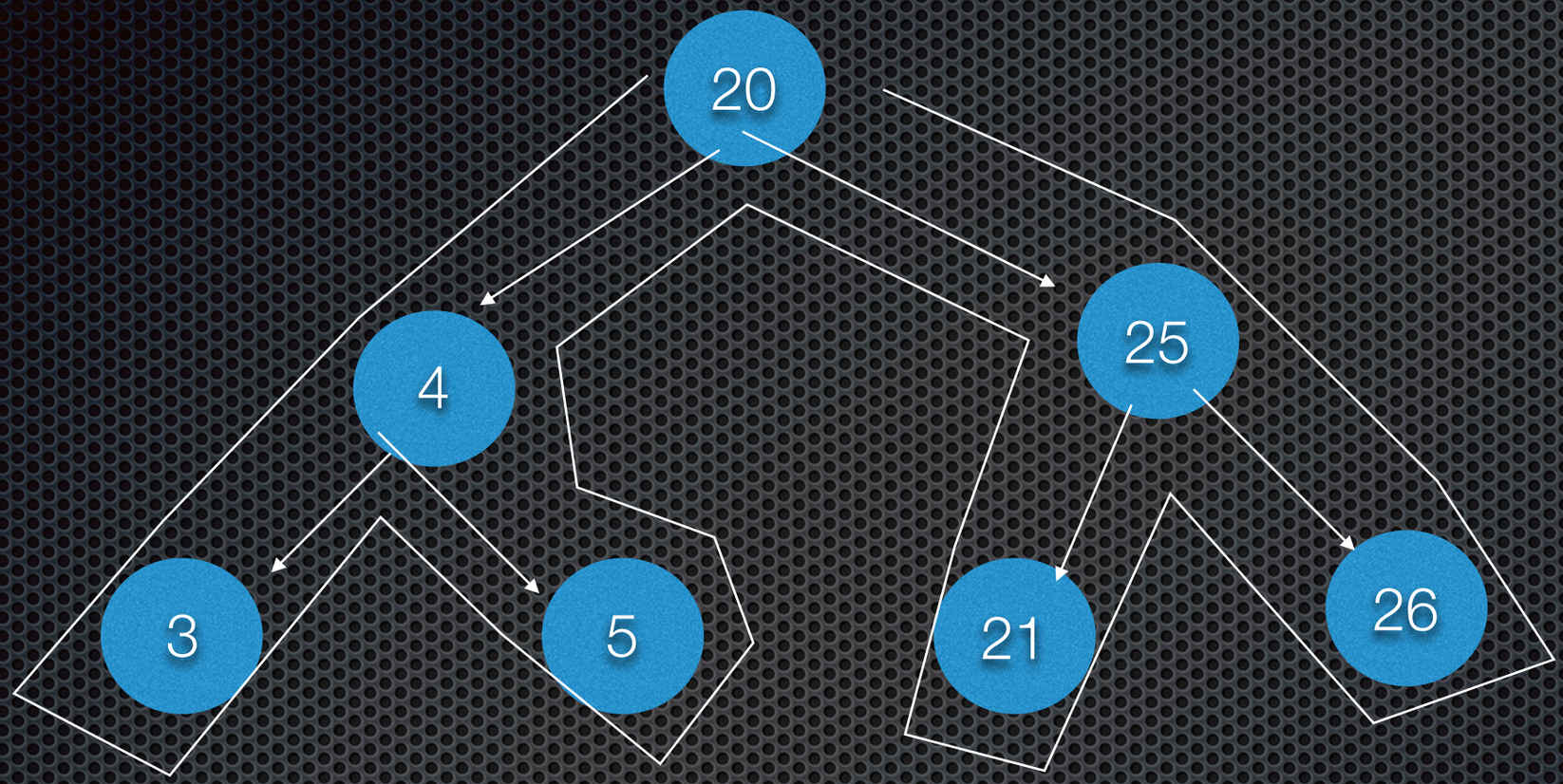
20,4 ,25,21,26





Root, Left , Right

20, 4, 3, 5, 25, 21, 26

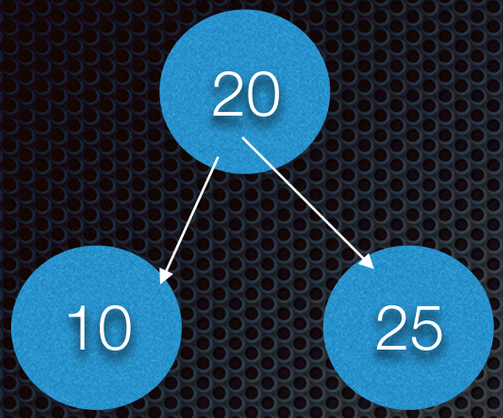


Pre-order - 20, 4, 3, 5, 25, 21, 26

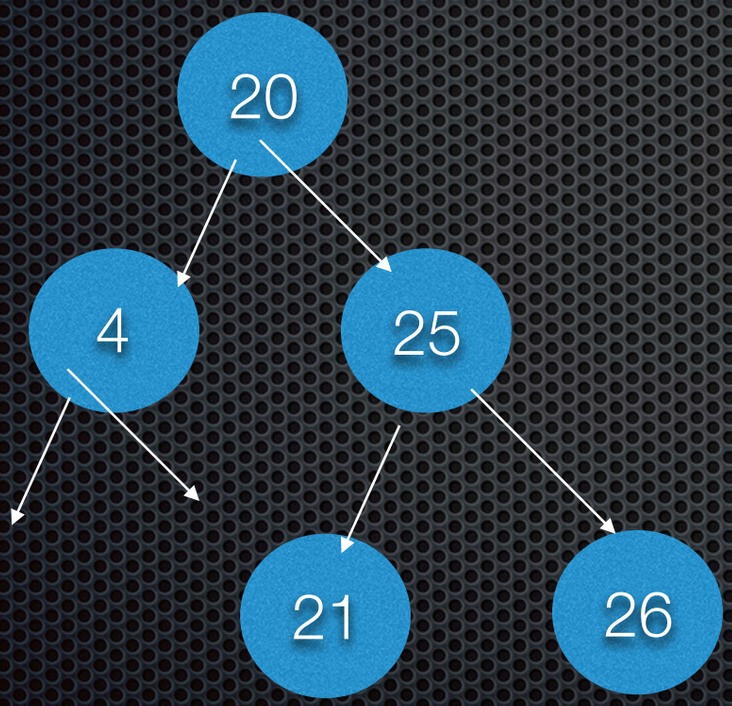
In-order Traversal
In this traversal method, the left subtree is visited first, then the root and later the right sub-tree.

Left ,Root, Right

Left ,Root, Right

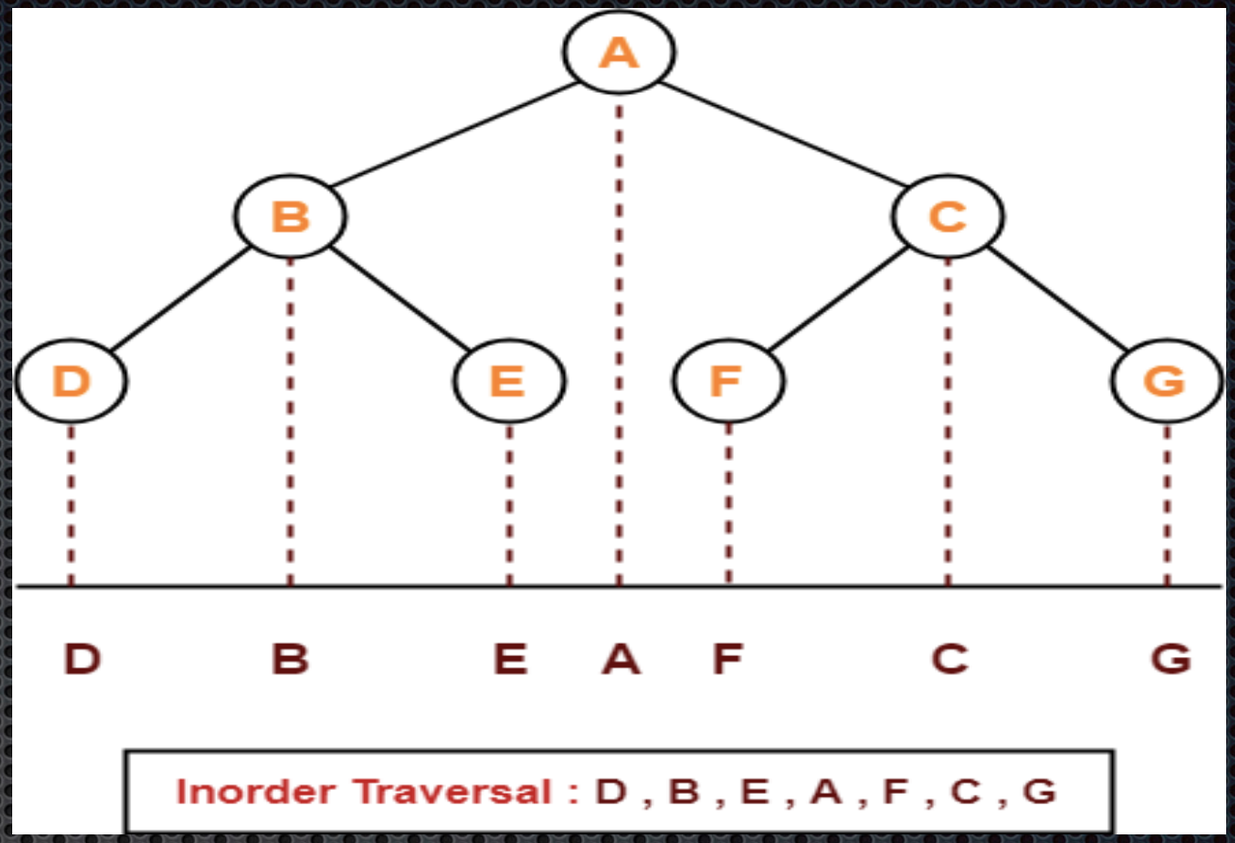


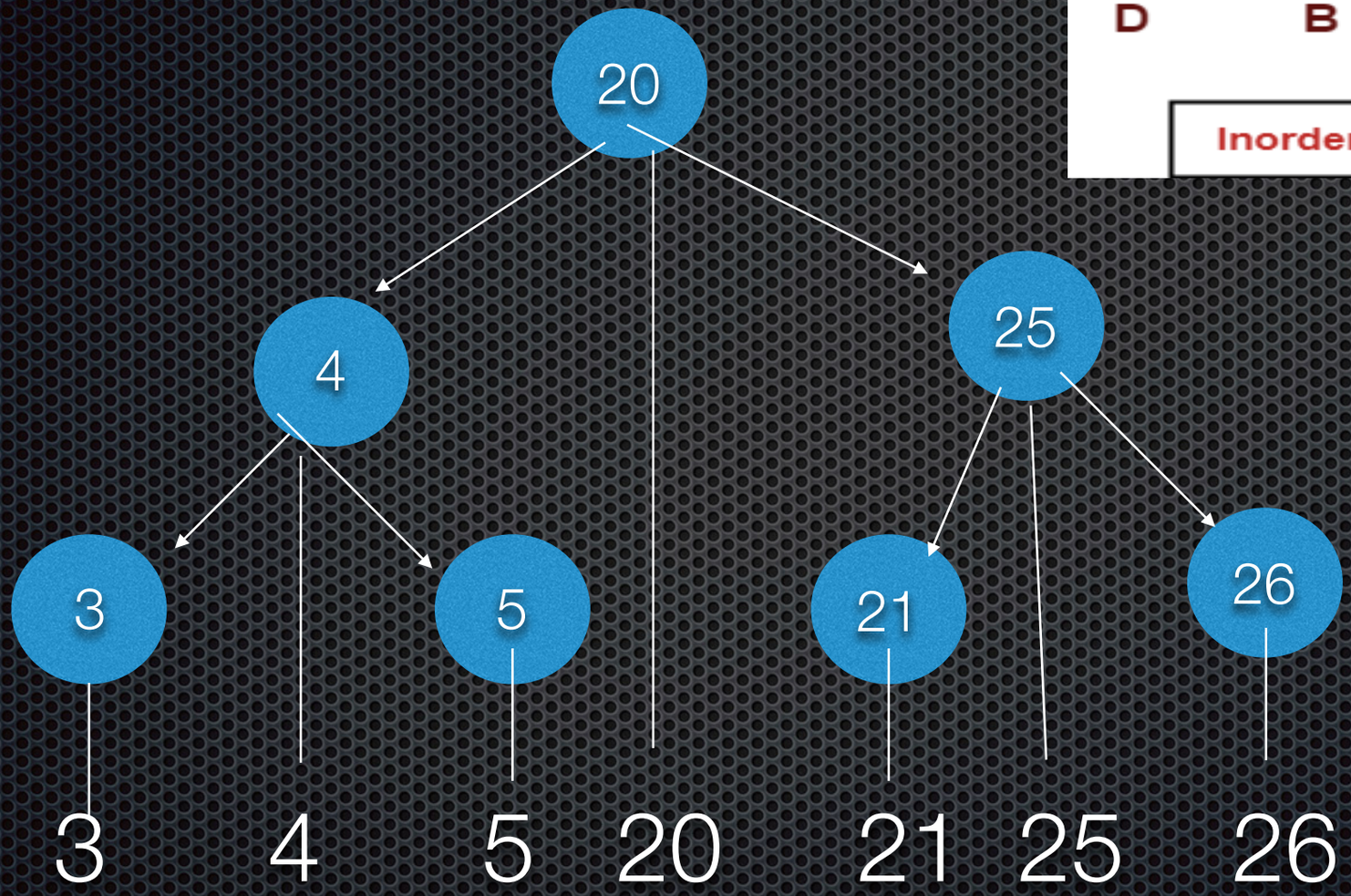
10,20,25



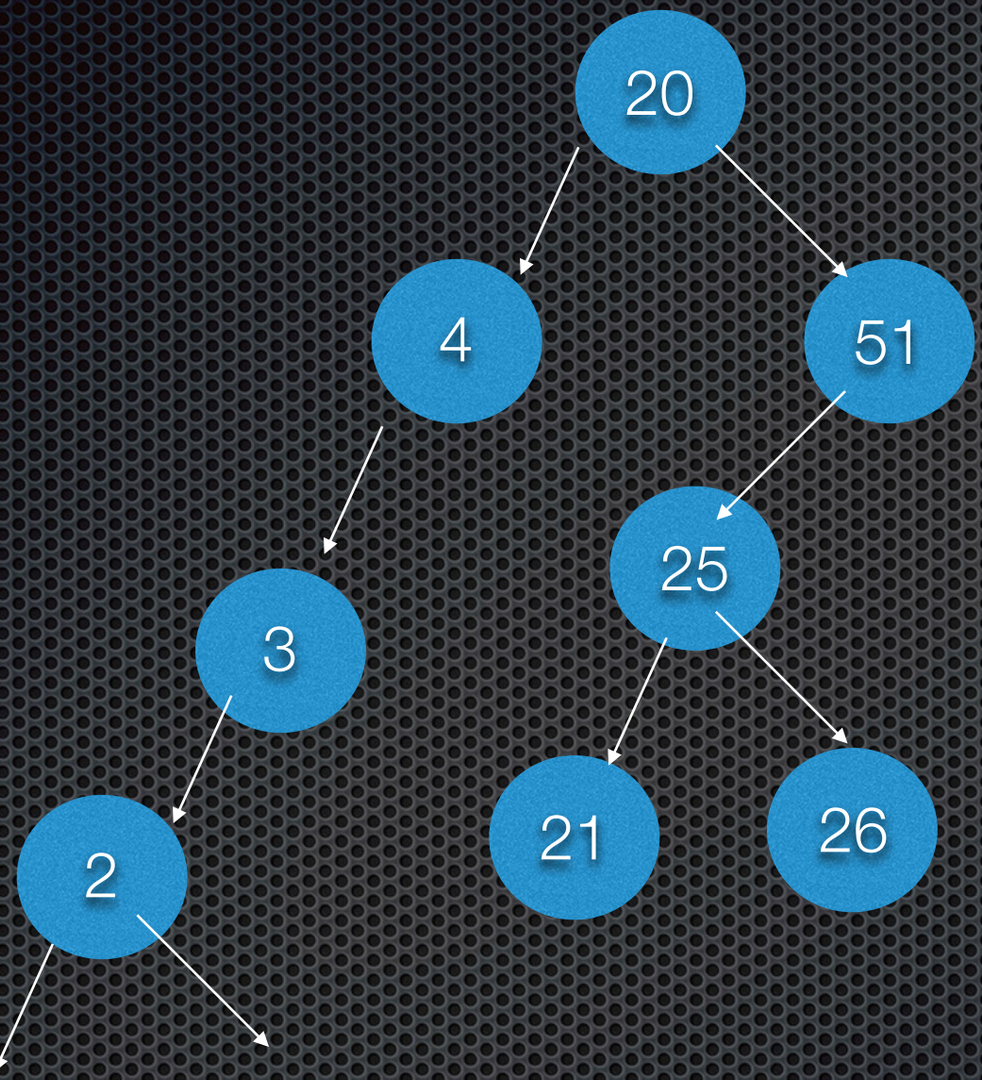
4,20,21,25,26

Inorder


A
B
C
D
E
F
G
D B E A F C G
Inorder Traversal : D , B , E , A , F , C , G


20
4
25
3
5
21
26
3 4 5 20 21 25 26

20, 4, 3, 51, 25, 21, 26,2



Left ,Root, Right

Preorde- 20, 4,3,2,51,25,21,26

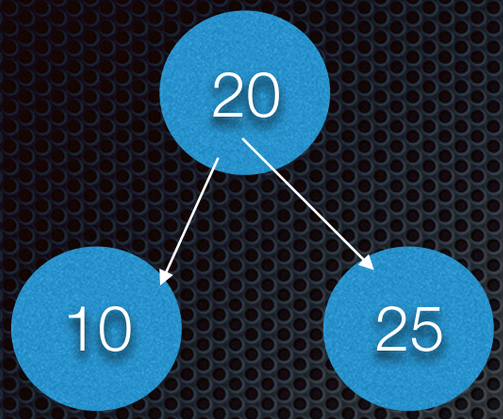
Inorder- 2,3,4,20,21 25,26,51

Post-order Traversal(Left , Right, Root)
In this traversal method, the left subtree is visited first, then the right sub-tree and later the root.

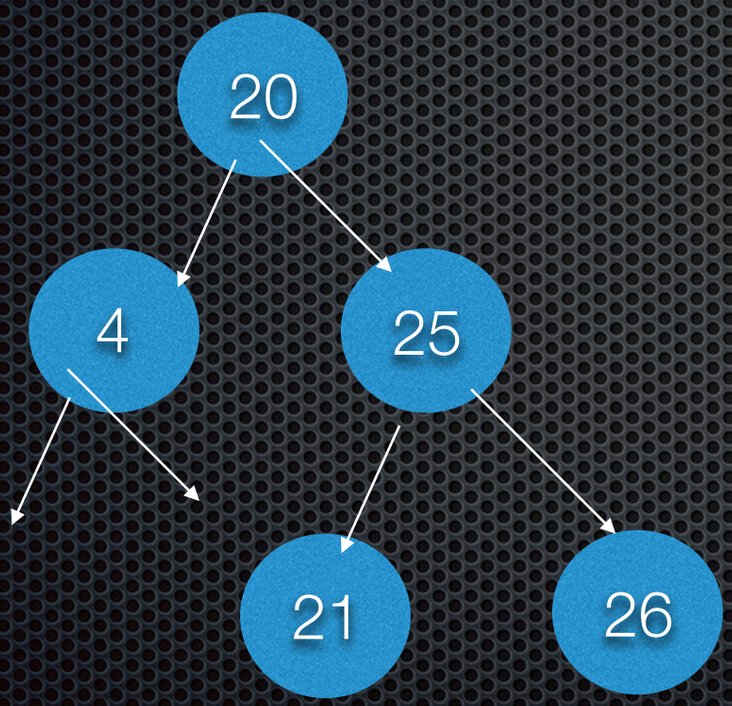
we visit the left subtree and the right subtree before visiting the current node in recursion

1. Go to left-subtree
2. Go to right-subtree
3. Visit Node

Left , Right, Root



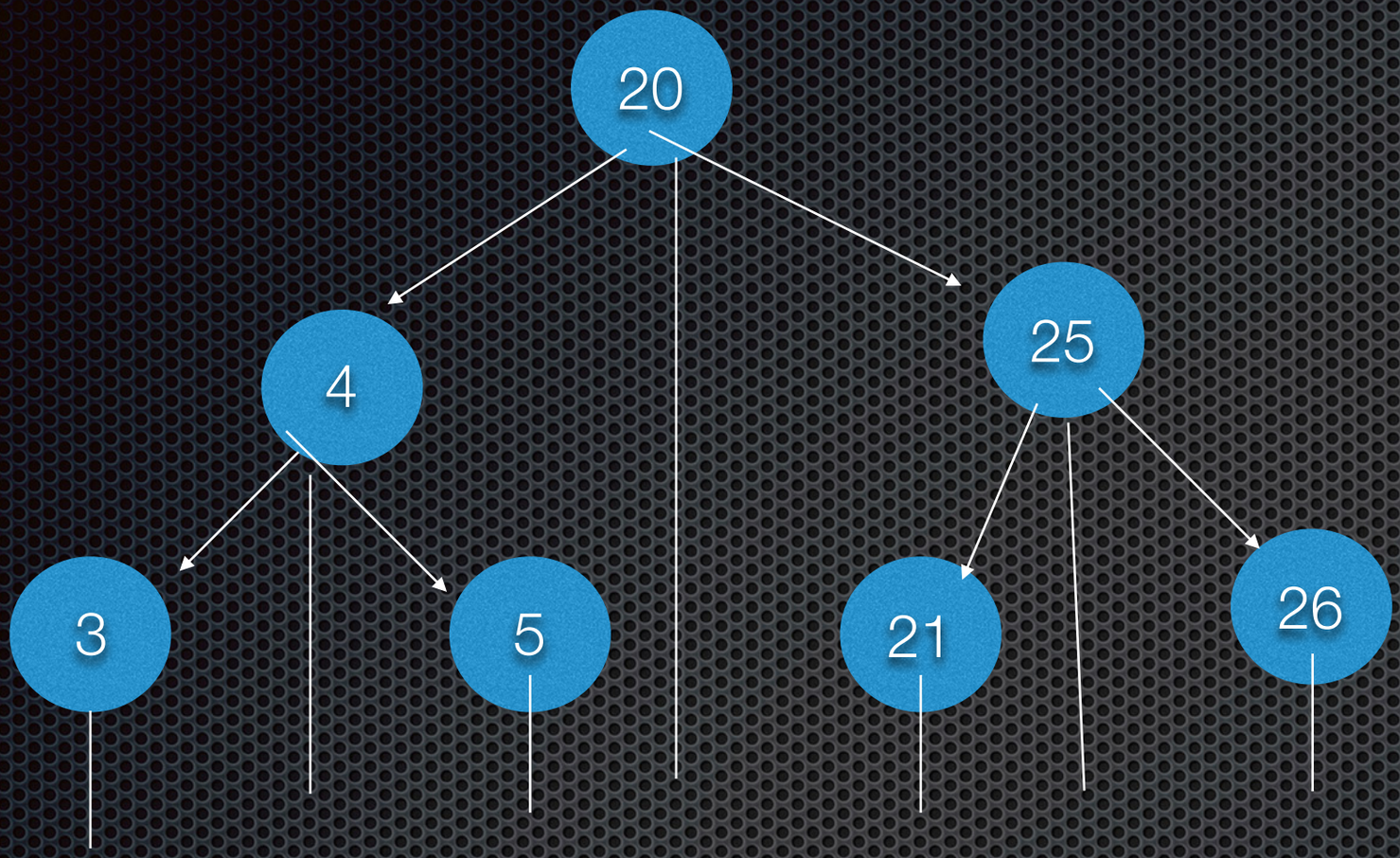
10,25,20



4,21,26,25,20

Post-order

Leaf break from left side



3 ,5 ,4, 21,26,25,20