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Binary Tree Traversals

Traversal means visiting each node in the tree exactly once. Unlike linear data structure, a Tree can be traversed in different ways. We have the following three fundamental ways to traverse a binary tree:

- Preorder Traversal
- Inorder Traversal
- Postorder Traversal

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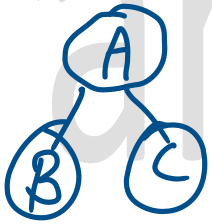
Preorder traversal

In this traversal, the root is visited first, then the left sub-tree in a preorder fashion, and then the right subtree in a preorder fashion. Its algorithm can be written as

- Visit the root node R
- Traverse the left subtree of R in preorder
- Traverse the right subtree of R in preorder

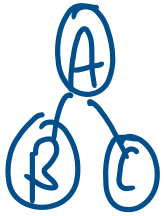


Pre: A, B, C

Inorder Traversal

With this traversal, before visiting the root node, the left subtree of the root node is visited, then the root node is visited and after the visit of the root node, the right subtree of the root is visited. Remember we visit both left and right subtrees in the same fashion as we visit the tree. Inorder traversal can be stated as follows:

- Traverse the left subtree of the root node R in inorder
- Visit the root node
- Traverse the right subtree of the root node R in inorder



In: B, A, C

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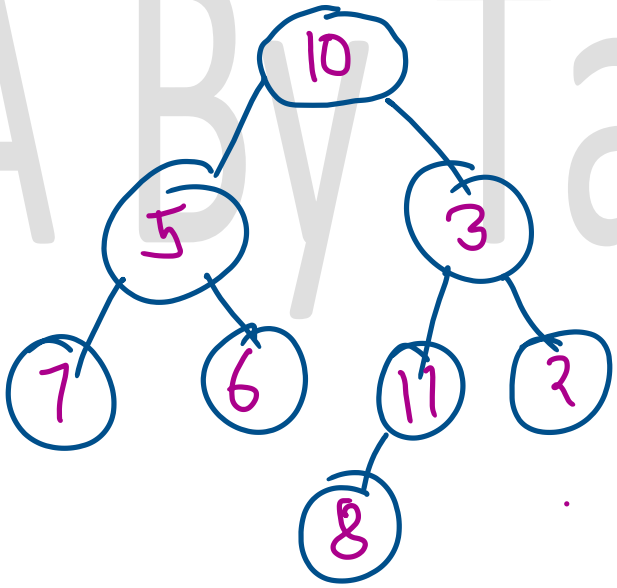
Postorder Traversal

In postorder traversal we visit the left subtree of root, then visit the right subtree of root, and at the end we traverse the root itself. The postorder can be defined as follows:

- Traverse the left subtree of the root node R in postorder
- Traverse the right subtree of the root node R in postorder
- Visit the root node

Lets traverse the following three in all three orders one by one:



Preorder: 10,5,7,6,3,11,8,2

Inorder: 7,5,6,10,8,11,3,2

Postorder: 7,6,5,8,11,2,3,10

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