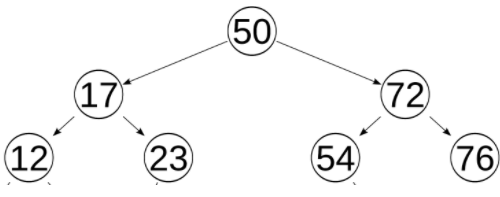
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IT12S1

Traverse the tree using preorder, in-order, and post-order tree traversal methods.

**Preorder**

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| --- | --- | --- |
| Step | Condition | Answer/ Update of Answer |
| Since, the traversal scheme, we are using is pre-order traversal, therefore, the first element to be printed is 50. | Visit the root. | 50 |
| Traverse the left subtree recursively. The root node of the left subtree is 17, print it, and move to left. | Traverse the left subtree. Visit the left subtree, using preorder. | 50, 17 |
| Pick the left child of the node 17, in this case node 12 is the left child of node 17. | Traverse the left subtree. Visit the left child of the left subtree, using preorder. | 50,17, 12, |
| Pick the right child of the node 17, node 23 is the right child of node 17. | Traverse the left subtree. Visit the right child of the left subtree, using preorder. | 50,17, 12,23 |
| Pick the right child of the root, in this case node 72 is the right child of root 50. | Traverse the right subtree. Visit the root of the left subtree using preorder. | 50,17, 12,23, 72 |
| Pick the left child of the node 72, node 54 is the left child of node 72 | Traverse the right subtree. Visit the left child of the right subtree using preorder. | 50,17, 12,23, 72, 54 |
| Pick the right child of the node 72, node 76 is the right child of node 72. | Traverse the right subtree. Visit the right child of the right subtree using preorder. | 50,17, 12,23, 72, 54, 76 |
| Completed the preorder traversal. | Finish | 50,17, 12,23, 72, 54, 76 |

**Inorder**

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| --- | --- | --- |
| Step | Condition | Answer/ Update of Answer |
| Pick the left most part of the tree, in this case node 12 is the left most part of the tree. Therefore, the first element to be printed is 12. | Traverse the left subtree. Visit the left child of the left subtree using inorder. | 12 |
| Pick the root of the left subtree, in this case node 17 is the root of the left subtree. | Traverse the left subtree. Visit the root of the left subtree using inorder. | 12, 17 |
| Pick the right child of the left subtree, node 23 is the right child of the left subtree | Traverse the left subtree. Visit the right child of the left subtree using inorder. | 12, 17, 23 |
| Since there is no more left part in the tree, we pick the root of the tree. The root of the tree is node 50. | Visit the root. | 12, 17, 23, 50 |
| Pick the left child of the root of the right subtree, in this case node 54 is left child of node 72. | Traverse the right subtree. Visit the left child of the right subtree using inorder. | 12, 17, 23, 50, 54 |
| Pick the root of the right subtree, in this case node 72 is the root of the right subtree. | Traverse the right subtree. Visit the root of the right subtree using inorder. | 12, 17, 23, 50, 54, 72 |
| Pick the right most part of the tree, which is the right child of the root of the right subtree. Node 76 is the right child of the root of the right subtree. | Traverse the right subtree. Visit the right child of the right subtree using inorder. | 12, 17, 23, 50, 54, 72, 76 |
| Completed the inorder traversal. | Finish | 12, 17, 23, 50, 54, 72, 76 |

**Postorder**

|  |  |  |
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| Step | Condition | Answer/ Update of Answer |
| We will start at the left subtree. Pick the left child of the left subtree. In this case node 12 is the left child of the left subtree. | Traverse the left subtree. Visit the left child of the left subtree using postorder. | 12 |
| Pick the right child of the left subtree. In this case node 23 is the right child of the left subtree. | Traverse the left subtree. Visit the right child of the left subtree using postorder. | 12, 23 |
| Pick the root of the left subtree, node 17 is the root of the left subtree. | Traverse the left subtree. Visit the root of the left subtree using postorder. | 12, 23, 17 |
| We will now move to the right subtree. Pick the left child of the right subtree. In this case node 54 is the left child of the right subtree. | Traverse the right subtree. Visit the left child of the right subtree using postorder. | 12, 23, 17, 54 |
| Pick the right child of the right subtree. In this case node 76 is the right child of the right subtree. | Traverse the right subtree. Visit the right child of the right subtree using postorder. | 12, 23, 17, 54, 76 |
| Pick the root of the right subtree, node 72 is the root of the right subtree. | Traverse the right subtree. Visit the root of the right subtree using postorder. | 12, 23, 17, 54, 76, 72 |
| Lastly, we will pick the root of the tree. In this case node 50 is the root of the entire tree. | Finish | 12, 23, 17, 54, 76, 72, 50 |