

### **Problem 3:** Construct A Binary Tree from Inorder and Postorder Traversal.

```
class TreeNode:
```

```
    def __init__(self, val=0, left=None, right=None):
```

```
        self.val = val
```

```
        self.left = left
```

```
        self.right = right
```

```
def build_tree(inorder, postorder):
```

```
    if not inorder or not postorder:
```

```
        return None
```

```
    root_val = postorder[-1]
```

```
    root = TreeNode(root_val)
```

```
    root_index = inorder.index(root_val)
```

```
    root.left = build_tree(inorder[:root_index], postorder[:root_index])
```

```
    root.right = build_tree(inorder[root_index + 1:], postorder[root_index:-1])
```

```
    return root
```

```
def inorder_traversal(root):
```

```
    if root:
```

```
        inorder_traversal(root.left)
```

```
        print(root.val, end=' ')
```

```
        inorder_traversal(root.right)
```

```
def postorder_traversal(root):
```

```
    if root:
```

```
postorder_traversal(root.left)
postorder_traversal(root.right)
print(root.val, end=' ')
```

```
inorder = [9, 3, 15, 20, 7]
postorder = [9, 15, 7, 20, 3]
```

```
tree_root = build_tree(inorder, postorder)
```

```
print("Inorder traversal:")
inorder_traversal(tree_root)
```

A screenshot of a terminal window with a title bar that says "input". The terminal has a black background with white and green text. The output shows "Inorder traversal:" followed by "9 3 15 20 7" on the next line. Below that, in green text, it says "...Program finished with exit code 0" and "Press ENTER to exit console." with a white cursor at the end of the second line.

```
input
Inorder traversal:
9 3 15 20 7

...Program finished with exit code 0
Press ENTER to exit console.
```