

```

#include <iostream>

#include <stack>

using namespace std;

struct Node
{
    char data;

    Node* left;

    Node* right;
};

int isOperator(char c)
{
    return (c == '+' || c == '-' || c == '*' || c == '/');
}

Node* createNode(char d)
{
    Node* newNode = new Node;

    newNode->data = d;

    newNode->left = NULL;

    newNode->right = NULL;

    return newNode;
}

Node* constructExpressionTree(const string& postfix)
{
    stack<Node*> st;

    for (char c : postfix)
    {
        if (!isOperator(c))
            st.push(createNode(c));

        else
        {
            Node* rightOperand = st.top(); st.pop();

```

```
Node* leftOperand = st.top(); st.pop();
```

```
Node* newNode = createNode(c);
```

```
newNode->left = leftOperand;
```

```
newNode->right = rightOperand;
```

```
st.push(newNode);
```

```
}
```

```
}
```

```
Return st.top();
```

```
}
```

```
Void inorderTraversal(Node* root)
```

```
{
```

```
  If (root)
```

```
  {
```

```
    inorderTraversal(root->left);
```

```
    cout << root->data << " ";
```

```
    inorderTraversal(root->right);
```

```
  }
```

```
}
```

```
Void preorderTraversal(Node* root)
```

```
{
```

```
    If (root)
```

```
    {
```

```
        Cout << root->data << " ";
```

```
        preorderTraversal(root->left);
```

```
        preorderTraversal(root->right);
```

```
    }
```

```
}
```

```
Void postorderTraversal(Node* root)
```

```
{
```

```
    If (root)
```

```
    {
```

```
        postorderTraversal(root->left);
```

```
        postorderTraversal(root->right);
```

```
        cout << root->data << " ";
```

```
}
```

```
}
```

```
Int main()
```

```
{
```

```
String postfix;
```

```
Cout << "Enter Postfix Expression: ";
```

```
Cin >> postfix;
```

```
Node* root = constructExpressionTree(postfix);
```

```
Cout << "In-Order Traversal: ";
```

```
inorderTraversal(root);
```

```
cout << "\nPre-Order Traversal: ";
```

```
preorderTraversal(root);
```

```
cout << "\nPost-Order Traversal: ";
```

```
postorderTraversal(root);
```

```
return 0;
```

```
}
```

OUTPUT:

Enter Postfix Expression: xy^*z+

In-Order Traversal: $x * y + z$

Pre-Order Traversal: $+ * x y z$

Post-Order Traversal: $x y * z +$