

| Postfix 2 Prefix in C++ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| <pre>#include <iostream> #include <stack> using namespace std; // Function to convert a postfix expression to a prefix expression. string postToPre(string exp) { stack<string> op; for (int i = 0; i < exp.length(); i++) { char ch = exp[i]; if (ch == '+' ch == '-' ch == '*' ch == '/') { string val2 = op.top(); op.pop(); string val1 = op.top(); op.pop(); string cal = ch + val1 + val2; op.push(cal); } else { op.push(string(1, ch)); } } return op.top(); } int main() { string postfix1 = "ab+c*"; cout << "Postfix: " << postfix1 << " -> Prefix: " << postToPre(postfix1) << endl; // Expected: "+abc" return 0; }</pre> | | <p>Input:</p> <p>Postfix Expression = "ab+c*" Expected Prefix = "+abc"</p> <p>📌 Dry Run Table:</p> <table><tr><th>i</th><th>ch</th><th>Stack Before</th><th>Action</th><th>Stack After</th></tr><tr><td>0</td><td>'a'</td><td>[]</td><td>Operand → push "a"</td><td>["a"]</td></tr><tr><td>1</td><td>'b'</td><td>["a"]</td><td>Operand → push "b"</td><td>["a", "b"]</td></tr><tr><td>2</td><td>'+'</td><td>["a", "b"]</td><td>Operator → pop "b", "a" → form +ab, push it</td><td>["+ab"]</td></tr><tr><td>3</td><td>'c'</td><td>["+ab"]</td><td>Operand → push "c"</td><td>["+ab", "c"]</td></tr><tr><td>4</td><td>'*'</td><td>["+ab", "c"]</td><td>Operator → pop "c", "+ab" → form *+abc, push it</td><td>["+*+abc"]</td></tr></table> | | | i | ch | Stack Before | Action | Stack After | 0 | 'a' | [] | Operand → push "a" | ["a"] | 1 | 'b' | ["a"] | Operand → push "b" | ["a", "b"] | 2 | '+' | ["a", "b"] | Operator → pop "b", "a" → form +ab, push it | ["+ab"] | 3 | 'c' | ["+ab"] | Operand → push "c" | ["+ab", "c"] | 4 | '*' | ["+ab", "c"] | Operator → pop "c", "+ab" → form *+abc, push it | ["+*+abc"] |
| i | ch | Stack Before | Action | Stack After | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 'a' | [] | Operand → push "a" | ["a"] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 'b' | ["a"] | Operand → push "b" | ["a", "b"] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | '+' | ["a", "b"] | Operator → pop "b", "a" → form +ab, push it | ["+ab"] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 'c' | ["+ab"] | Operand → push "c" | ["+ab", "c"] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | '*' | ["+ab", "c"] | Operator → pop "c", "+ab" → form *+abc, push it | ["+*+abc"] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | <p>✔ Final Output:</p> <p>Prefix: *+abc</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Postfix: ab+c* -> Prefix: *+abc | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |