

Infix to prefix algorithm

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- 1) start scanning from right to left
- 2) If(current element is an operand)
 - Append it to the prefix expression
- 3) Else if (current element is closing bracket ')')
 - Push it onto the stack
- 4) Else if (current element is opening bracket '(')
 - Pop elements from the stack and append them to prefix exp till its corresponding closing brackets does not occur
 - Pop closing brackets from the stack and discard both the brackets

Else

```
// If(current element is an operator)
While(stack is not empty && priority of topmost element > priority of current element)
{
  Pop element from the stack and append it to prefix expression
}
Push current element onto the stack.
```

- 5) Repeat the above steps till end of infix expression
- 6) Pop all the remaining elements from the stack one by one and append them to prefix expression.
- 7) Reverse the prefix expression.

Infix expression :

5+9-4*(8-6/2)+1\$(7-3)

Stack :

Current element :

Prefix Expression: 37-1\$26/8-4*95++

Reverse: +-+59*4-8/62\$1-73

\$ → 10
% / → 9
 + - → 8
 default → 0

5+9-4*(8-6/2)+1\$

⑥ ⑦ ⑤ ② ① ⑧ ④ ③
 $\underline{5 + 9 - 4 * (\underline{8 - \underline{6 / 2}})} + 1 \$$ (7-3)
 $5 + 9 - 4 * (\underline{8 - \underline{6 / 2}}) + 1 \$$ (7-3)

$5 + 9 - 4 * -8/62 + 1 \$ - 73$

$5 + 9 - 4 * -8/62 + \$1-73$

$\cancel{5 + 9} - \cancel{4 * -8/62} + \$1-73$

$\cancel{5 + 9} - \cancel{4 * -8/62} + \$1-73$

$\cancel{- + 59 * 4 - 8/62} + \$1-73$

$\boxed{+-+59*4-8/62\$1-73} \rightarrow \text{prefix}$

+-+59*4-8/62\$1-73

++-+59*4-8/62\$1-73