

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

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

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.

$\$ \rightarrow 10$
 $\times \% / \rightarrow 9$
 $+ - \rightarrow 8$
 default $\rightarrow 0$

- 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.**

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

⑥ ⑦ ⑤ ② ① ⑧ ④ ③
 $5 + 9 - 4 * (8 - 6 / 2) + 1 * (7 - 3)$
 $5 + 9 - 4 * (8 - 1 / 62) + 1 * (7 - 3)$
 $5 + 9 - 4 * -8 / 62 + 1 * -73$
 $5 + 9 - 4 * -8 / 62 + 1 * 1 - 73$
 $5 + 9 - *4 - 8 / 62 + 1 * 1 - 73$
 $+59 - *4 - 8 / 62 + 1 * 1 - 73$
 $- +59 * 4 - 8 / 62 + 1 * 1 - 73$
 + - + 59 * 4 - 8 / 62 \$ 1 - 73 \rightarrow prefix

()
 ^ \rightarrow \$
 * / %
 + -

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

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