

Infix to Postfix Conversion

To convert infix expression to postfix the operators' priority is as shown in the following table.

operator	Priority
\wedge	3
$*, /$	2
$+,-$	1

Let the infix expression is $((a+b*c-d \wedge b/a)-e+b/e) +f$; convert this infix expression into postfix using stack.

<u>Infix</u>	<u>Stack</u>	<u>Postfix</u>
$((a+b*c-d \wedge b/a)-e+b/e) +f$		
$(a+b*c-d \wedge b/a)-e+b/e) +f$	(
$a+b*c-d \wedge b/a)-e+b/e) +f$	((
$+b*c-d \wedge b/a)-e+b/e) +f$	((a
$b*c-d \wedge b/a)-e+b/e) +f$	((+	a
$*c-d \wedge b/a)-e+b/e) +f$	((+	ab
$c-d \wedge b/a)-e+b/e) +f$	((+*	ab
$-d \wedge b/a)-e+b/e) +f$	((+*	abc
$d \wedge b/a)-e+b/e) +f$	((-	abc*+
$\wedge b/a)-e+b/e) +f$	((-	abc*+d
$b/a)-e+b/e) +f$	((^	abc*+d
$/a)-e+b/e) +f$	((^	abc*+db
$a)-e+b/e) +f$	((-/	abc*+db ^
$) -e+b/e) +f$	((-/	abc*+db ^ a
$-e+b/e) +f$	(abc*+db ^ a/-
$e+b/e) +f$	(-	abc*+db ^ a/-
$+b/e) +f$	(-	abc*+db ^ a/-e
$b/e) +f$	(+	abc*+db ^ a/-e-
$/e) +f$	(+	abc*+db ^ a/-e-b
$e) +f$	(+ /	abc*+db ^ a/-e-b
$) +f$	(+ /	abc*+db ^ a/-e-be

+f		$bc^*+db \wedge a/-e-be/+$
f	+	$abc^*+db \wedge a/-e-be/+$
	+	$abc^*+db \wedge a/-e-be/+$
		$abc^*+db \wedge a/-e-be/+f+$

Postfix Evaluation

Suppose $a=2$, $b=4$, $c=3$, $d=1$, $e=2$ and $f=1$, we can evaluate the postfix expression

$abc^*+db \wedge a/-e-be/+f+$ using the given values.

<u>postfix expression</u>	<u>stack</u>	<u>operation</u>
$abc^*+db \wedge a/-e-be/+f+$		
$bc^*+db \wedge a/-e-be/+f+$	a	
$c^*+db \wedge a/-e-be/+f+$	ab	
$*+db \wedge a/-e-be/+f+$	a b e	
$+db \wedge a/-e-be/+f+$	a 12	$b*c=4*3=12$
$db \wedge a/-e-be/+f+$	14	$a+12=2+12=14$
$b \wedge a/-e-be/+f+$	14 d	
$\wedge a/-e-be/+f+$	14 d b	
$a/-e-be/+f+$	14 1	$d \wedge b=1 \wedge 4=1$
$/-e-be/+f+$	14 1 a	
$-e-be/+f+$	14 1/2	$1/a=1/2= 1/2$
$e-be/+f+$	27/2	$14- 1/2 =27/2$
$-be/+f+$	27/2 e	
$be/+f+$	23/2	$27/2-2= 23/2$
$e/+f+$	23/2 b	
$/+f+$	23/2 b e	
$+f+$	23/2 2	$b/e=4/2=2$
$f+$	27/2	$23/2+2=27/2$

Reverse the expression of Prefix: A2*1CA4**2B↑-↑B-/

Let us consider A=2, B=1, C=2.		
Reverse expression of Prefix	Stack	Operation
A2*1CA4**2B↑-↑B-/		
2*1CA4**2B↑-↑B-/	A	
*1CA4**2B↑-↑B-/	A 2	
1CA4**2B↑-↑B-/	4	2*2=4
CA4**2B↑-↑B-/	4 1	
A4**2B↑-↑B-/	4 1 C	
4**2B↑-↑B-/	4 1C A	
**2B↑-↑B-/	4 1 C A 4	
*2B↑-↑B-/	4 1 C 8	2*4=8
2B↑-↑B-/	4 1 16	2*8=16
B↑-↑B-/	4 1 16 2	
↑-↑B-/	4 1 16 2 B	
-↑B-/	4 1 16 1	1↑2=1
↑B-/	4 1 -15	1-16=-15
B-/	4 -15	-15↑1=-15
-/	4 -15 B	
/	4 16	1-(-15)=16
	8	16/4