

27/07/2024

1) Infix to postfix

Infix expression:  $A * (B * C + D * E) + F$

S.No	Current Token	Operator stack	Postfix string
			A
1.	A		A
2.	*	*	A
3.	C	*(	A
4.	B	*(	AB
5.	*	*(	AB
6.	C	*(	ABC
7.	+	*(	ABC*
8.	D	*(	ABC*D
9.	*	*(	ABC*D
10.	E	*(	ABC*DE
11.	)	+	ABC*DE*
12.	+	+	ABC*DE*+
13.	F	+	ABC*DE*+*F
14.			ABC*DE*+*F+

postfix Expression is:  $ABC * DE * + * F +$

2) Infix Expression:  $A * B * C + D$

S.No	Current Token	Operator stack	Postfix string
1.	A		A
2.	*	*	A
3.	B	*	AB
4.	*	* *	AB
5.	C	* *	ABC
6.	+	+	ABC*
7.	D	+	ABC* D
8.			ABC* D +

postfix Expression:  $ABC^* D +$

3) Postfix to Infix:

postfix Expression:  $AB - DE + F * /$

S.No	Reading of postfix	Stack top	Expression
1	A	A	<div style="border: 1px solid black; padding: 2px; display: inline-block;">A</div>
2	B	B	<div style="border: 1px solid black; padding: 2px; display: inline-block;">B</div>
3	-	A - B	<div style="border: 1px solid black; padding: 2px; display: inline-block;">A - B</div>
4	D	D	<div style="border: 1px solid black; padding: 2px; display: inline-block;">D</div>
5	E	E	<div style="border: 1px solid black; padding: 2px; display: inline-block;">E</div>
6	+	D + E	<div style="border: 1px solid black; padding: 2px; display: inline-block;">D + E</div>
7	F	F	<div style="border: 1px solid black; padding: 2px; display: inline-block;">F</div>
8	*	(D + E) * F	<div style="border: 1px solid black; padding: 2px; display: inline-block;">(D + E) * F</div>
9	/	(A - B) / (D + E) * F	<div style="border: 1px solid black; padding: 2px; display: inline-block;">(A - B) / (D + E) * F</div>

Infix Expression:  $(A - B) / (D + E) * F$

4) Post-fix conversion:  $abc * de - / +$

S.No	Symbol	Stack
1	a	a
2	b	ab
3	c	abc
4	*	$a(b*c)$
5	d	$a(b*c)d$
6	e	$a(b*c)de$
7	-	$a(b*c)(d-e)$
8	/	$a((b*c)/(d-e))$
9	+	$(a + ((b*c)/(d-e)))$

Infix conversion:  $(a + ((b*c)/(d-e)))$

5) Balanced symbols:-

S.No	Symbol	Stack	Action Token	Expression so far
1	(	(	Push '('	(
2	(	((	Push '('	((
3	a	((	Append 'a'	((a
4	+	((	Append '+'	((a+
5	b	((	Append 'b'	((a+b
6	)	((	Pop '('	((a+b
7	*	((*	push '*'	((a+b)*
8	(	((*(	push '('	((a+b)*((
9	c	((*(	Append 'c'	((a+b)*(c-
10	-	((*(	Append '-'	((a+b)*(c-d)
11	d	((*(	Append 'd'	((a+b)*(c-d
12	)	((*	pop 'c'	((a+b)*(c-d)
13	)	((	pop 'c'	((a+b)*(c-d)

It is valid for balanced symbol

# 6. Balancing symbol.

$$[(a+b)*c]-d]$$

S.No	Symbol	Stack	Action Token	Expression so far
				(
1.	(	[ ( ]	push '('	(
2.	a	[ ( ]	Append 'a'	(a
3.	+	[ (, + ]	push '+'	(a+
4.	b	[ (, + ]	Append 'b'	(a+b
5.	)	[ (, + ]	pop '('	(a+b)
6.	*	[ (, +, * ]	push '*'	(a+b)*
7.	c	[ (, +, * ]	Append 'c'	(a+b)*c
8.	)	[ (, +, * ]	pop 'c'	(a+b)*c
9.	-	[ (, +, * ]	pop 'c'	(a+b)*c-
10.	d	[ (, +, * ]	Append 'd'	(a+b)*c-d
11.	End	$\phi$	pop remaining operators	(a+b)*c-d.

It is valid for "Balanced symbol".