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① **infix to postfix:-**

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

S·NO	current token	operator stack	postfix string
1	A		A
2	*	*	A
3	(	*(	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 : $A*B\wedge C+D$**

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+

post expression : $ABC\wedge *D+$

③ POSTFIX TO INFIX :

POSTFIX EXPRESSION : AB-DE+F*/

S.NO	Reading of POSTFIX	Stack TOP	Expression
1	A	A	A
2	B	B	B / A
3	-	A-B	A-B
4	D	D	D / A-B
5	E	E	E / D / A-B
6	+	D+E	D+E / A-B
7	F	F	F / D+E / A-B
8	*	((D+E)*F)	(D+E)*F / A-B
9	/	(A-B)/((D+E)+F)	

INFIX EXPRESSION : (A-B)/((D+E)*F)

④ Postfix conversion: $abc+dc-/+$

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 :-
$$((a+b)*(c-d))$$

S.NO	Symbol	Stack	Action taken	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-
11	d	(*(	Append 'd'	((a+b)*(c-d
12	)	(*	POP '('	((a+b)*(c-d)
13	)		POP '('	((a+b)*(c-d))

It is valid for Balance symbol.

(2) (ii) $[\{ (a+b)^* c \} - d]$

S.NO	symbol	stack	Action Taken	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 '['	[a+b)*c
9	-	[[,-]	push '-'	[a+b)*c -
10	d	[[,-]	Append 'd'	[a+b)*c-d
11	ead	∅	pop remain	[a+b)*c-d

It is valid for "Balanced symbol"