

$(A+B) \# \rightarrow$ Balanced symbol.

27/7/24

ASSIGNMENT-1

1) Infix to Postfix

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

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

Postfix Expression $\rightarrow ABC * DE * + * F +$

2. Infix Expression $A * B^{\wedge} C + D$

S.No	Current	operator	Postfix
1.	A		A
2.	*	*	A
3.	B	*	AB
4.	\wedge	$*^{\wedge}$	AB
5.	C	$*^{\wedge}$	ABC
6.	+	+	$ABC^{\wedge} *$
7.	D	+	$ABC^{\wedge} * D$
8.	Postfix Expression $\rightarrow ABC^{\wedge} * D +$		

3) POSTFIX TO INFIX:

$abc * de - / +$

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 exp \rightarrow		$(a + ((b * c) / (d - e)))$

4) ^{Post}Prefix to Infix

AB - DE + F * /

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

5. Balanced Symbols:

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

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 '('	((a+b)* (c-d)
13.	)		pop '*'	((a+b)* (c-d))

It is a valid for "Balanced Symbol".

$$6. [(a+b)*c]-d]$$

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