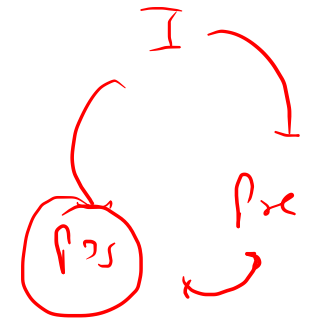
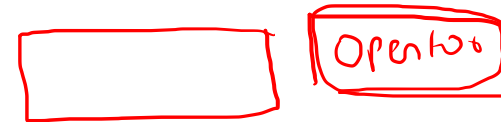
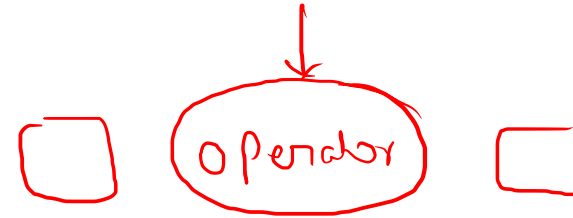


Infix, Postfix, Prefix

Infix: $x \oplus y$

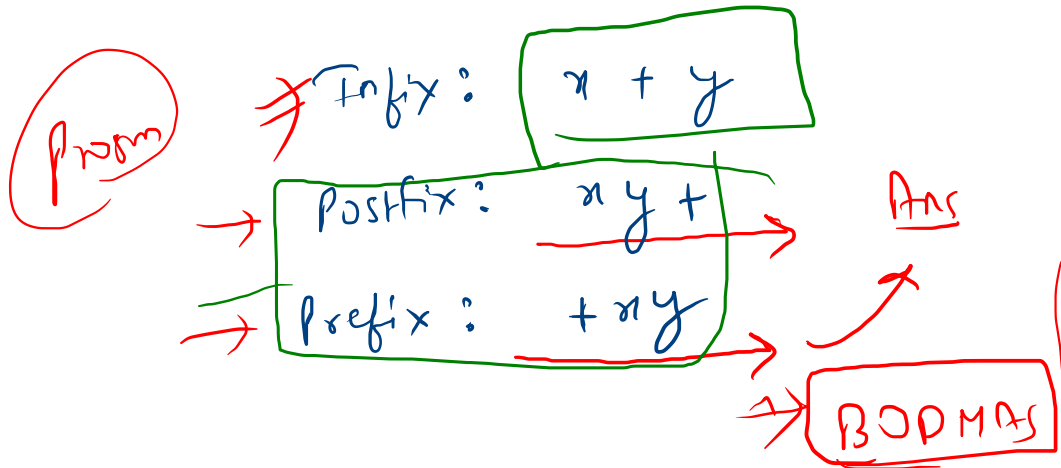
Postfix: $xy \oplus$

Prefix: $\oplus xy$



Infix, Postfix, Prefix

{ operator *
operand



3 steps

$$\begin{aligned} & (5 \times 3) + (2 / 1) \\ & (15 + 2) = 17 \end{aligned}$$

Advantage of Prefix and Postfix

- ① we can evaluate the expression in single traversal
- ② No need, Precedence rule, Paranthesis, Associativity rule.

Let's understand
Precedence and Associativity

BODMAS

$$\Rightarrow \rightarrow 10 + (20 * 2) \Rightarrow (10 + 40) = 50$$

(Precedence)

$$\rightarrow (10 + 2) - 3 \Rightarrow 12 - 3 = 9$$

(Associativity (L to R))

$$\rightarrow (2 \wedge (1 \wedge 2)) \Rightarrow 2 \wedge (1^2) \Rightarrow (2^1) = 2$$

[Associativity (R to L)]

$$\rightarrow 2^2 = 4$$

$(*) -$ $(*) \rightarrow$

$$7^2 = 49 \quad [7^2] = 49$$

\Rightarrow

\rightarrow

\Rightarrow

Operator	Associativity
\wedge	Right to left
$*, /$	left to right
$+, -$	left to right

$\therefore \wedge \rightarrow$ Exponent

High
Precedence



Low
Precedence

- \rightarrow Precedence
Come when we
have 2 or more
operator
- \rightarrow Precedence, Associativity
helps us to parenthesis
expression.

$$(2+3 \times 5 - 6)$$

postfix

Conversion

Infix \rightarrow Postfix
Prefix

NAIVE METHOD

\Rightarrow Infix: $x + y * z$

\hookrightarrow postfix \Rightarrow $xyz * +$

Prefix \Rightarrow $+ x * y z$

Ex \Rightarrow "a + b * c"

Ans: Post $(a + (b * c))$
 $\Rightarrow (a + bc*)$
 \Rightarrow a b c * +

Prefix

$(a + (b * c))$
 $\Rightarrow (a + (*bc))$
 $\Rightarrow (+ a * bc)$

$$\Rightarrow \underline{\underline{"(x+y) * z"}}$$

\Rightarrow Postfix

$$\Rightarrow ((x+y) * z)$$

$$((xy+) * z)$$

$$\Rightarrow (xy+z*)$$

Prefix

$$\rightarrow ((+xy) * z)$$

$$\Rightarrow (*+xyz)$$

$$\text{I/P} = \underline{a \wedge b \wedge c}$$

Postfix

$$\hookrightarrow (a \wedge (\underline{b \wedge c}))$$

$$\Rightarrow (a \wedge (\underline{b \wedge c}))$$

$$\Rightarrow a \wedge (bc \wedge)$$

$$\Rightarrow \underline{(abc \wedge \wedge)}$$

Prefix

$$\hookrightarrow \left(\underset{2}{a} \wedge \underset{1}{(\wedge \underset{3}{b c})} \right)$$

$$\Rightarrow \left(\underset{1}{\wedge} \underset{2}{a} \wedge \underset{3}{b c} \right)$$

Q " $(a+b)$ * $(c+d)$ "

⇒ Postfix

↳ $(ab+)$ * $(cd+)$

Postfix ⇒ $(ab+cd+*)$

Prefix

↳ $(+ab)$ * $(+cd)$

→ $(*+ab+cd)$

6 " a + b * (c - d) "

o/b

$$\Rightarrow a + \left(\underline{b * (c - d)} \right)$$

postfix

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

$$\Rightarrow (a b c d - * +)$$

∴

$$a + b * \underline{c} / \underline{d} + e$$

$$\begin{array}{c} \rightarrow \\ * / \end{array}$$

o/b:

Postfix

$$\hookrightarrow (a + ((\underline{b * c}) / d) + e)$$

$$\Rightarrow a + (bc * \underline{d} /) + e$$

$$\Rightarrow [a + (\underline{bc * d /})] + e$$

$$\rightarrow (abc * d / +) + e$$

$$\Rightarrow \underline{abc * d / + e +}$$

Postfix