

# EVALUATING A PREFIX EXPRESSION

$$(6) + (3) \times (4) / (2)$$

$$(6) + (\times 34) / (2)$$

$$(6) + (/ \times 342)$$

$$+ 6 / \times 342$$

Example 2

0	1	2	3	4	5	6	7
'+'	'6'	'/'	'x'	'3'	'4'	'2'	'/'



<u>Ele</u>	<u>Stack</u>
'2'	2
'4'	2, 4
'3'	2, 4, 3
'x'	2, 12
'/'	6
'6'	6, 6
'+'	(12) ← <u>Ans</u>
end	

Example 2

Infix :  $5 + 6 / 2 - 1 \times 4 + 7$

Prefix : 

0	1	2	3	4	5	6	7	8	9	10	11
'+'	'-'	'+'	'5'	'/'	'6'	'2'	'x'	'1'	'4'	'7'	'0'

<u>El</u>	<u>Stack</u>		<u>El</u>	<u>Stack</u>
'7'	7		'/'	7, 4, 3
'4'	7, 4		'5'	7, 4, 3, 5
'2'	7, 4, 1		'+'	7, 4, 8
'x'	7, 4		'-'	7, 4
'2'	7, 4, 2		'+'	11
'6'	7, 4, 2, 6		end	ans

### Algorithm For Evaluating A Prefix Expression

1. Scan the given PREFIX expression from RIGHT to LEFT , one character at a time.
2. Check whether it is an OPERAND or OPERATOR.
3. If it is an OPERAND then PUSH it in the STACK and goto STEP 5.
4. If it is an operator then:
  - a. POP the top 2 elements from the STACK
  - b. Apply the operator on them
  - c. Push back the result in the Stack
5. Repeat the above steps until the PREFIX expression finishes.
6. POP and return the last and only remaining element from the STACK which is the answer of the expression