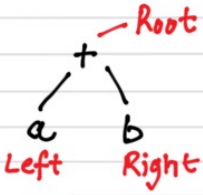
3.4.3

REVERSE POLISH NOTATION (RPN): A mathematical equation is always INORDER; means, all of the operators are between operands. E.g: n+e÷m

operands operators



- A computer doesn't recognise inorder equations.
- It converts every inorder equation to its equivalent postorder equation.
- This conversion eleminates the complication in formation & solution order. E.g: in postorder there is no need of BODMAS implementation.

WRITE	NOTATION	READ	
infix	a+b	inorder	Left, Root, Right
prefix	+ab	preorder	Root, Left, Right
postfix	ab+	postorder	Left, Right, Root

↓ Reverse Polish Notation (RPN)

- Conversion from infix to other forms of notations is only possible through BINARY TREE, i.e. firstly BT is made and then read in a different required order...

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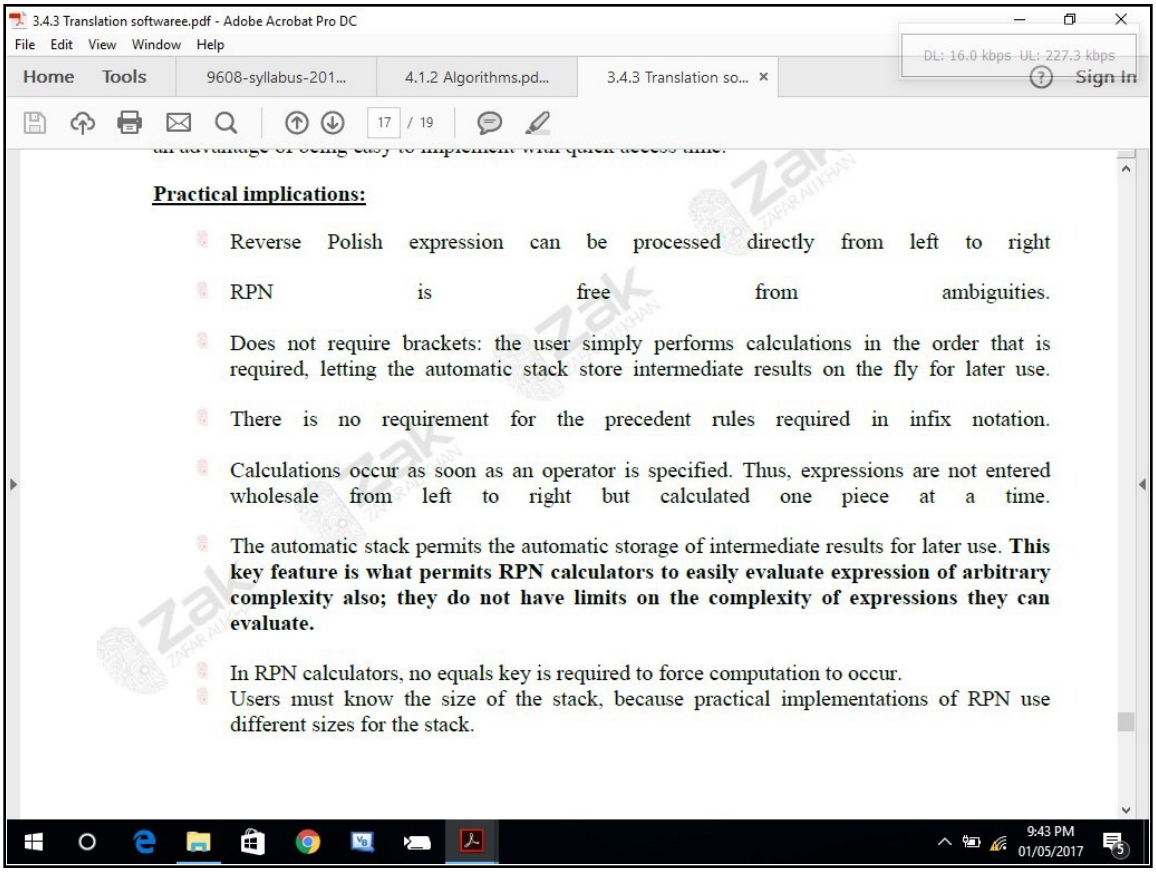


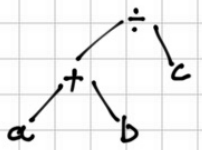
Walkthrough Chart for infix – postfix conversion

INFIX
↓
BINARY TREE
↓
POSTFIX (RPN)
↓
STACK
↓
Are there any variables in STACK data structure?
Yes ← ↓ No (means only constants)
Solve and find absolute answer.

1/ INFIX (a+b)/c

2/ BINARY TREE

Follow BODMAS



3/ POSTFIX (L, Ri, Root)

ab+c÷ (RPN)

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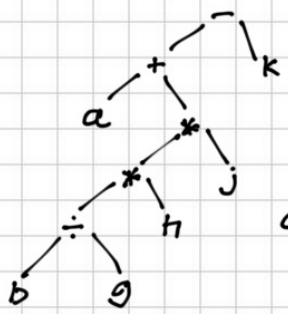
– BODMAS –

Find RPN of following infix notation:

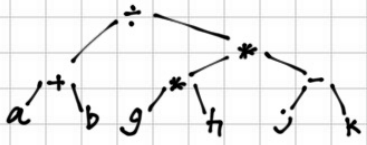
1/ a+b/g*h*j-k
2/ ((a+b)/((g*h)*(j-k)))
3/ ((a-b)*(c+d))÷e
4/ abc-d
5/ a+b+c/d

1/ a+b/g*h*j-k



abg÷h*j*+k-

2/ ((a+b)/((g*h)*(j-k)))



ab+gh*jk-*÷

3)

ab-cd+*e÷ (RPN)

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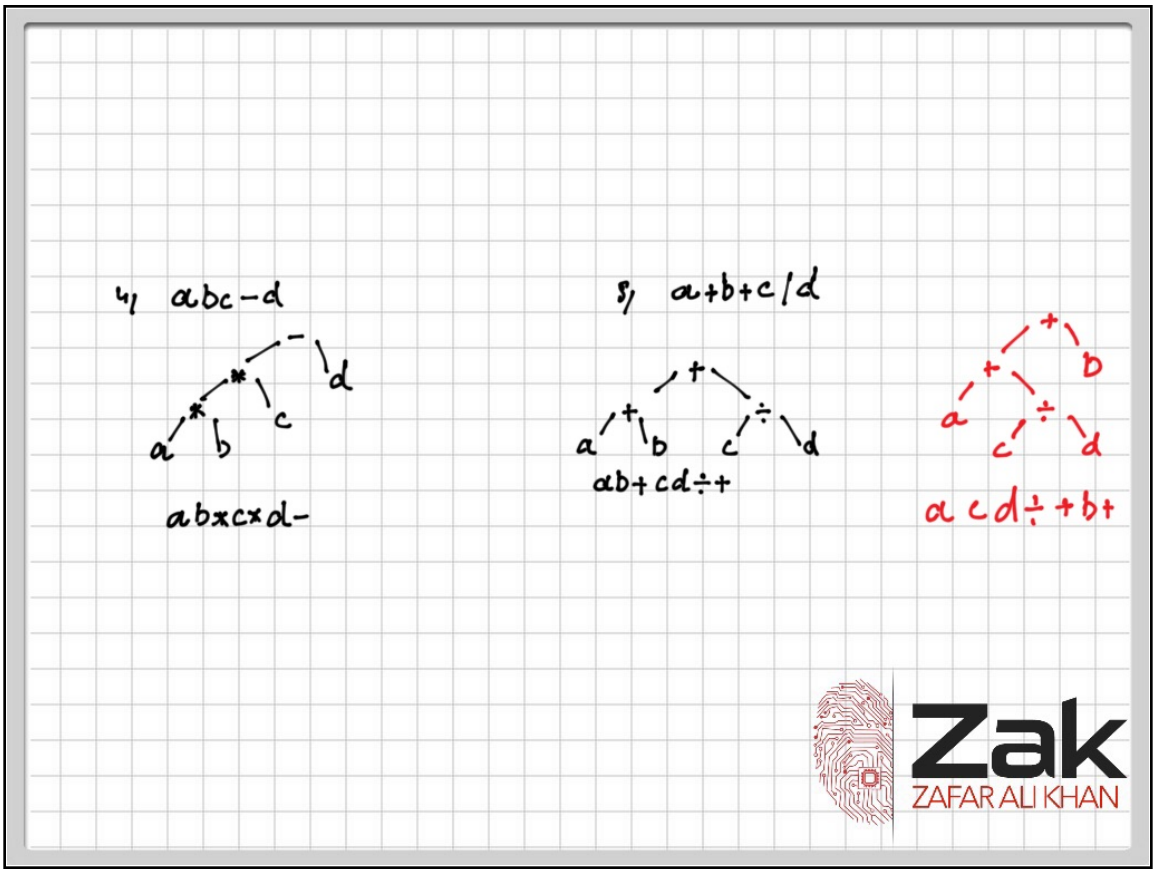
4) abc-d
ab*c*d-
5) a+b+c/d
ab+cd÷+
acd÷+b+
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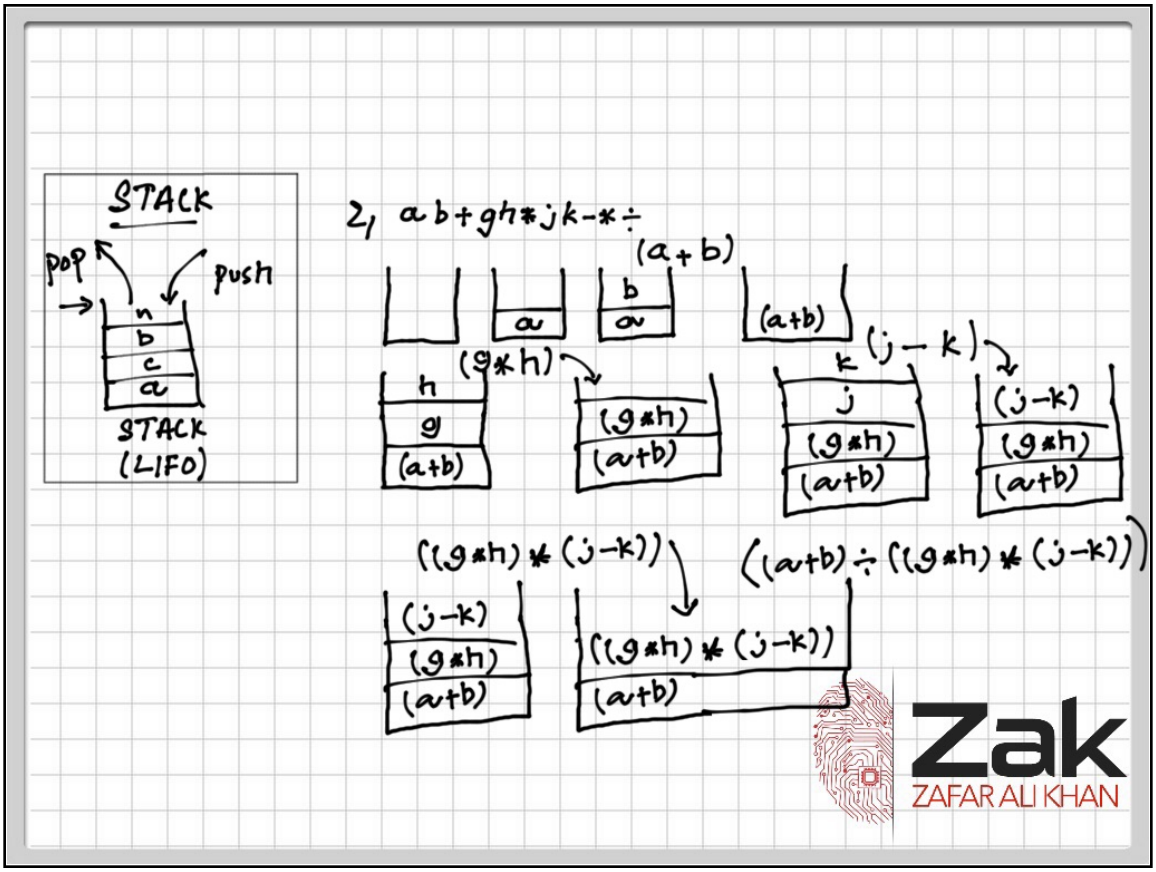
STACK
pop
push
STACK
(LIFO)
2) ab+gh*jk-*÷
(a+b)
(g*h)
(j-k)
((g*h)*(j-k))
((a+b)÷((g*h)*(j-k)))
Zak
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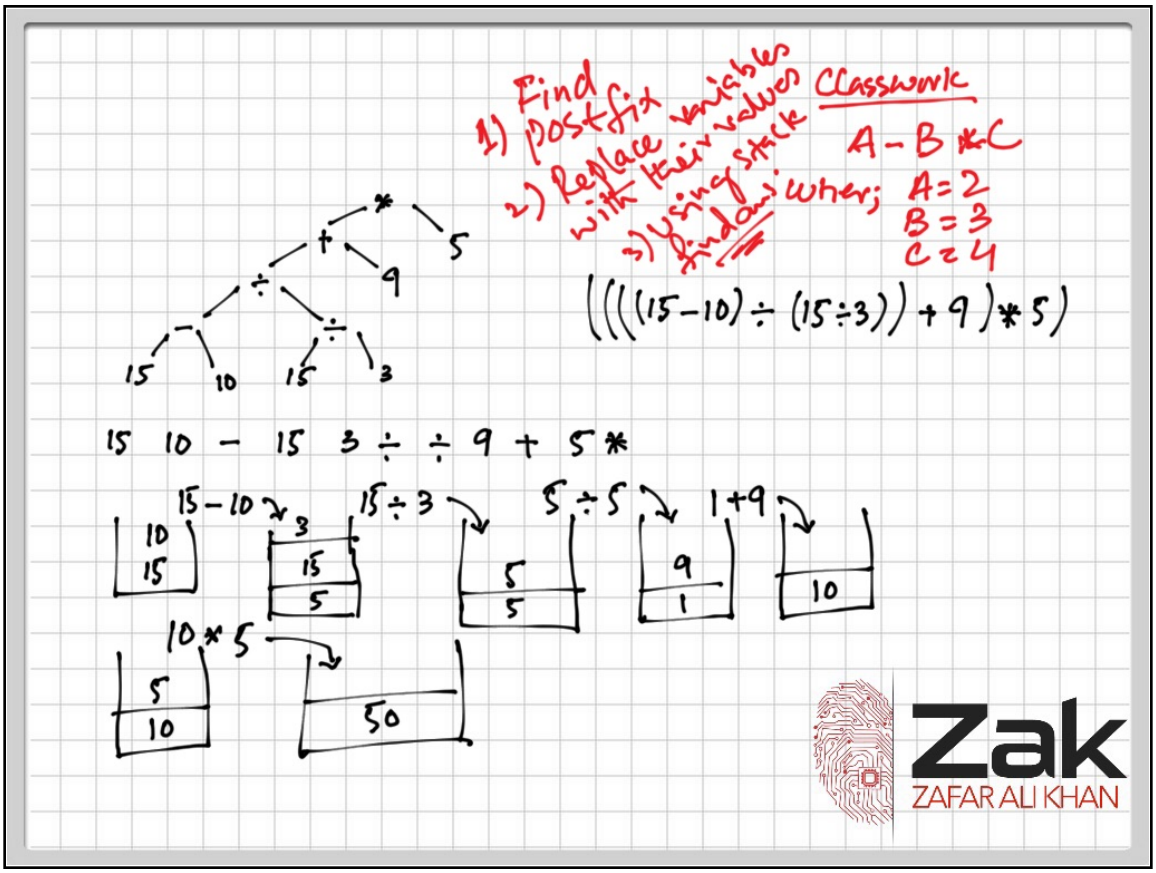
1) Find postfix
2) Replace variables with their values
3) using stack find answer;
Classwork
A - B * C
A = 2
B = 3
C = 4
(((15-10) ÷ (15÷3)) + 9) * 5)
15 10 - 15 3 ÷ ÷ 9 + 5 *
15-10
15÷3
5÷5
1+9
10*5
50
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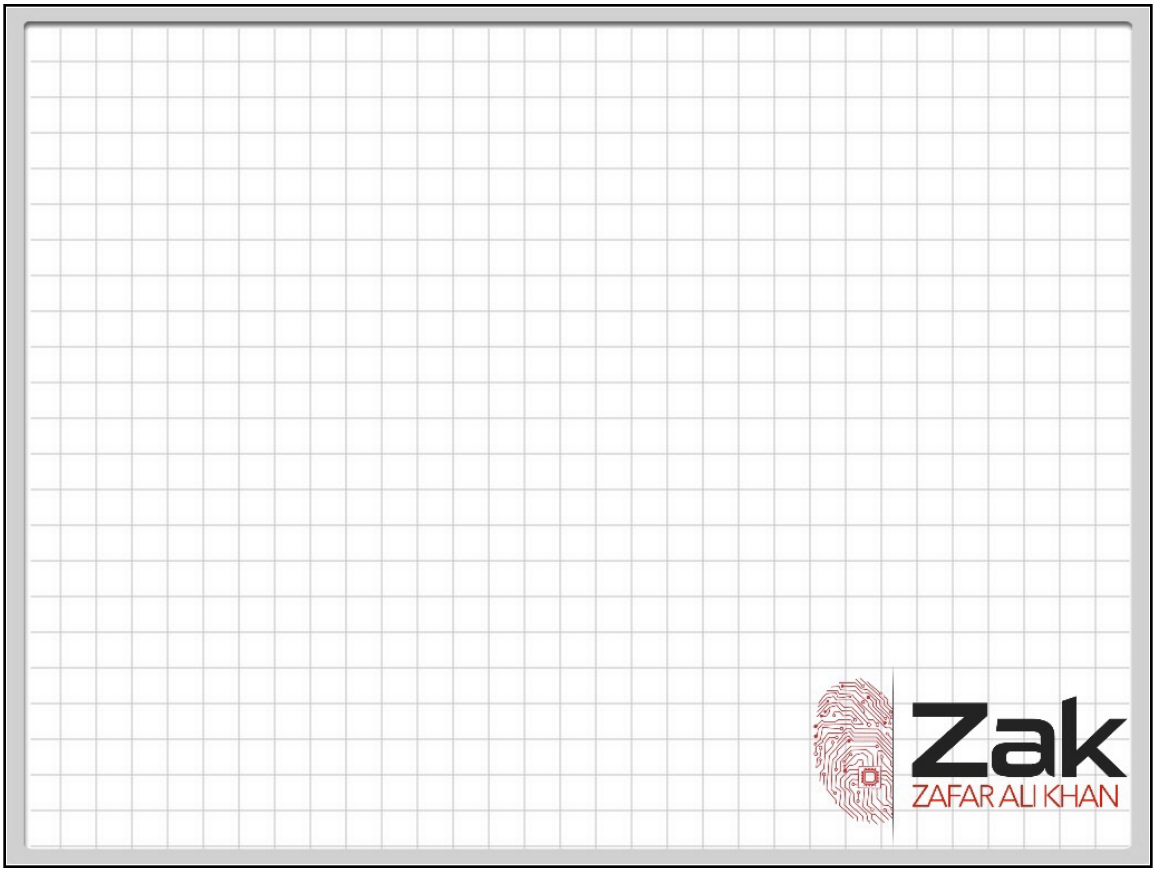
Zak
ZAFAR ALI KHAN