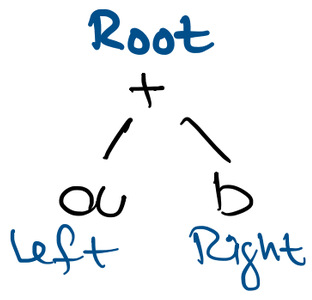
Reverse Polish Notation (RPN)

Monday, 6 November 2023 2:37 PM

Write	Notation	Read	
Infix	a+b	Inorder	Left, Root, Right
Prefix	+ab	Preorder	Root, left, Right
Postfix	ab+	Postorder	left, Right, Root

(RPN) Reverse Polish Notation



Create BT:

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

BODMAS

( ) ( )

÷, * ÷

+, − *

\+

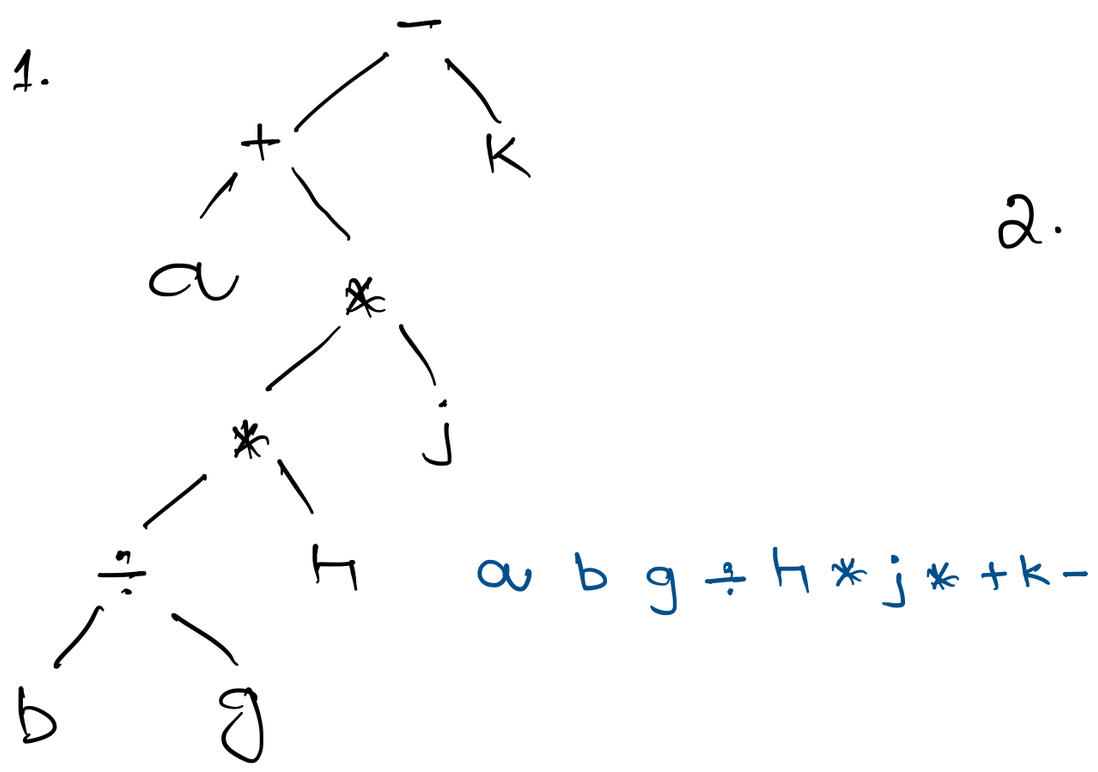
−

operator

a+b

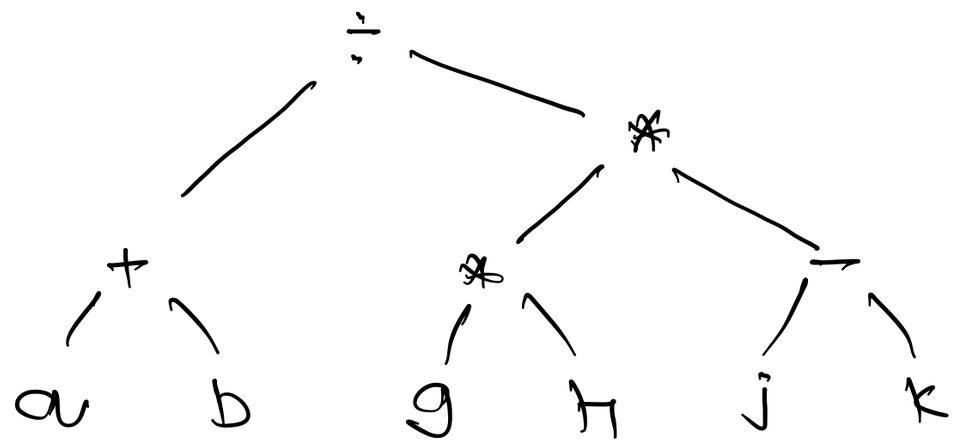
operand

1.



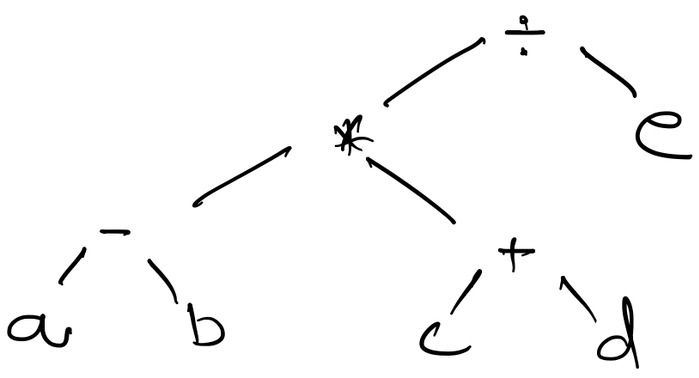
a b g ÷ h * j * + k −

2.



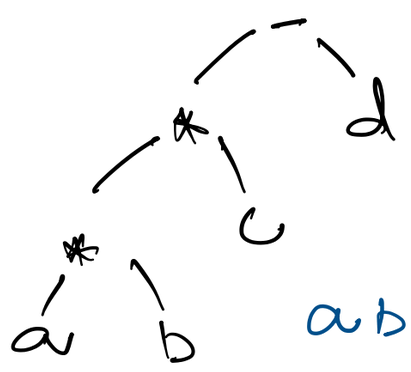
a b + g h * j k − * ÷

3.



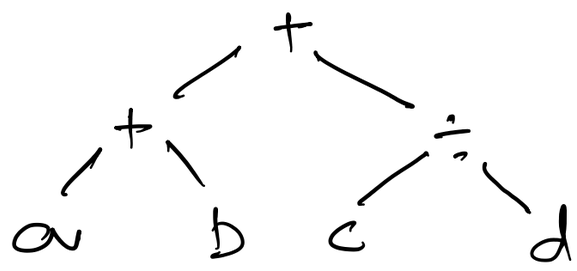
a b − c d + * e ÷

4.



a b * c * d −

5.



a b + c d ÷ +

Reverse polish notation, also known as postfix notation, is a mathematical notation in which every operator follows all its operands. It is a way of expressing arithmetic expressions that avoids the need of parentheses that are required by infix notations.
For example, the infix expression (3+4)*5 would be 3 4 + 5 * in RPN.

Uses:

1. Clarity: It eliminates the need of parentheses to denote operation precedence. The order of operations is determined by the positions of the operators and operands.
2. Easy to evaluate: Computers and calculators can evaluate RPN expression easily using stack data structure.
3. Reduced Error: Operations order ambiguity is eliminated to reduce error chances.
4. Efficient Computations: Any algorithm require to process arithmetic expressions uses RPN's simplication.
5. History in Computing: HP calculators famously used RPN, which allows users to perform complex calculations easily without the need of parentheses.