# Worksheet 6 Reverse Polish Notation

# Task 1

1. Convert to Reverse Polish Notation by numbering: (e – f) + a^b \* g
2. Convert to Reverse Polish Notation by bracketing: g \* (f + e) / h
3. Convert to Reverse Polish Notation by any method: 12 \* v – 8 \* v - 5
4. Check your answer by bracketing

# Task 2

1. Create a binary tree for 6 \* a \* (~4 + 8 \* a), with the second \* at the root. (~ is unary minus)
   1. Show pre-order traversal (Polish Notation, prefix)
   2. Show in-order traversal (infix)
   3. Show post-order traversal (Reverse Polish Notation, post-fix)

# Task 3

6. Convert the following expression from RPN to infix using the scanning method.

b c \* a c \* – b a c \* / +

7. Convert the following expression from RPN to infix using the bracketing method.

a b c + c a ^ - /

# Task 4

8. Evaluate RPN by stack: 3 2 \* 4 5 \* +

* + If the token is an operand, push it on the stack
  + If the token is operator, pop required number of operands from stack; perform the operation; push the result

Note: when popping operands, pop right operand first and left operand second

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| **Stack** | **Pop, execute, push** | **3 2 \* 4 5 \* +** |
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