

## COS 301 Fall 2011

### Homework #4-5 Due Thursday Nov 10

1. (3 pts) Text Ch 7 ex. 9 p.345
2. (3 pts) Text Ch 7 ex. 10 p.346
3. (3 pts) Text Ch 7 ex. 11 p.346
4. (1 pt) Text Ch 7 ex 20 p. 347
5. (2 pts) Translate each of the following expressions to Polish (prefix) and Reverse Polish (postfix). Assume conventional priority and associativity of operators, where  $\wedge$  is exponentiation
  - a.  $x + y^z - d$
  - b.  $(a + b) / (c + d) * e$
  - c.  $x - j * c ^ (d - e) - 1$
  - d.  $((a - c) + (d - e)) / (d - c * a) + z$
6. (2 pts) Translate the following expressions from prefix to infix notation
  - a.  $+ y t$
  - b.  $+ - z x / z c$
  - c.  $/ - x y + a b$
  - d.  $* - j i + / c b a$
7. (2 pts) Translate each of the following expressions from postfix to infix notation
  - a.  $a b * w -$
  - b.  $w x y z - + *$
  - c.  $x y + a b - x * /$
  - d.  $a b c + - x y z / * +$
8. (4 pts) Write a program in any language (your project language is preferred but not required) to evaluate postfix expressions. Show the results of evaluating expressions in problem 7 using  $a=1$ ,  $b=3.4$ ,  $c = 17$ ,  $w= -2.7$ ,  $y=42$ , and  $z=3$

Note that you can parse and tokenize the input by requiring a space between operators and operands. You can either use literal values in your expressions or assign values to variables a, b, c etc in your program code. You do not need to treat unary - as an operator.