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**Metropolitan State University**

**ICS-365-01 —Organization of Programming Languages**

**Homework #8**

**Assume the following rules of associativity and precedence for expressions:**

**Precedence:** Highest \*, /, not

+, –, &, mod

- (unary)

=, /=, <, <=, >=, >

and

Lowest or, xor

**Associativity:** Left to right

Show the order of evaluation of the following expressions by parenthesizing all subexpressions and placing a superscript on the right parenthesis to indicate order. For example, for the expression **a + b \* c + d**, the order of evaluation would be represented as

**((a + (b \* c)1 )2 + d)3**

1. a \* b – 1 + c

Answer:

(((a \* b)1 - 1)2 + c)3

1. a \* (b – 1) / c mod d

Answer:

(((a \* (b - 1)1)2 / c)3 mod d)4

1. (a – b) / c & (d \* e / a – 3)

Answer:

(((a - b)1 / c)2 & ((d \* e)3 / a)4 - 3)5)6

1. -a or c = d and e

Answer:

((-a)1 or ((c = d)2 and e)3)4

1. a > b xor c or d <= 17

Answer:

((a > b)1 xor c)3 or (d <= 17)2)4

1. -a + b

Answer:

( - (a + b)1)2