

American Computer Science League

2018-2019

Contest #2

INTERMEDIATE DIVISION

1. Pre/Post/Infix Notation

Evaluate this prefix expression where the numbers are single digits:

$+ - / + 2\ 4\ 3\ / - 9\ 1\ 2\ // * 8\ 3\ * 6\ 2\ \uparrow 1 - 4\ 1$

1.

2. Pre/Post/Infix Notation

Convert this infix expression to postfix.

$$\frac{A(B+C)}{2} - \frac{3A+4}{A-C}$$

2.

3. Bit-String Flicking

Evaluate the following:

$(\text{RCIRC-2}(\text{LSHIFT-1}(\text{LCIRC-1}(\text{RSHIFT-2}(\text{NOT } 10100))))$

3.

4. Bit-String Flicking

Solve for X (5-bit string):

$(\text{LCIRC-2 } X) \text{ OR } (\text{RSHIFT-2 } 01010) = (\text{NOT } 00000) \text{ AND } X$

4.

5. LISP

Evaluate the following expression:

$(\text{ADD } (\text{SUB } 4\ 1) (\text{EXP } 2\ 4) (\text{MULT } 3\ 5) (\text{MULT } (\text{EXP } 3\ 2) (\text{SUB } 2\ 4)))$

5.