



American Computer Science League

2019-2020

Contest #2

JUNIOR DIVISION

考号/Exam Code : _____

姓名/Name : _____

学校/School : _____

1. Prefix/Infix/Postfix Notation

Convert this infix expression to a postfix expression:

$$a + b * c - 2 * (a * b - c) / (a^2 - b^2)$$

1.

2. Prefix/Infix/Postfix Notation

Evaluate this prefix expression: (Note: all numbers are single digits)

$$+ - / + 8^4 2^2 2 / * 3 2 6 / * / 8 4 2 4$$

2.

3. Bit-String Flicking

Evaluate the following expression:

$$10110 \text{ OR } 11001 \text{ AND } 01011$$

3.

4. Bit-String Flicking

Evaluate the following expression:

$$(\text{RSHIFT-1} (\text{LCIRC-2} (\text{LSHIFT-3} (\text{RCIRC-2 } 10101))))$$

4.



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5. What Does This Program Do? - Loops

Which of the following inputs would be printed by the program below?
5, 7, 15, 31, 35, 63, 101, 127, 255, 1023

```
INPUT N
FOR B = 3 TO N - 1 STEP 2
  IF N / B == INT(N / B) THEN
    END
  END IF
NEXT B
FOR I = 1 TO 20
  IF N == 2 ^ I - 1 THEN
    PRINT N
  END IF
NEXT I
END
```

5.



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1. Prefix/Infix/Postfix Notation

将下述中缀表达式转换为后缀表达式：

$$a + b * c - 2 * (a * b - c) / (a^2 - b^2)$$

1.

2. Prefix/Infix/Postfix Notation

计算下述前缀表达式的值：(注意：每个数字都是单个数字)

$$+ - / + 8^4 2^2 2 / * 3 2 6 / * / 8 4 2 4$$

2.

3. Bit-String Flicking

计算下述表达式的值：

$$10110 \text{ OR } 11001 \text{ AND } 01011$$

3.

4. Bit-String Flicking

计算下述表达式的值：

$$(\text{RSHIFT-1}(\text{LCIRC-2}(\text{LSHIFT-3}(\text{RCIRC-2 } 10101))))$$

4.



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5. What Does This Program Do? - Loops

执行下面的程序会打印输出以下哪些输入值？

5, 7, 15, 31, 35, 63, 101, 127, 255, 1023

```
INPUT N
FOR B = 3 TO N - 1 STEP 2
  IF N / B == INT(N / B) THEN
    END
  END IF
NEXT B
FOR I = 1 TO 20
  IF N == 2 ^ I - 1 THEN
    PRINT N
  END IF
NEXT I
END
```

5.