ACSL

American Computer Science League

**All-Star #1**

**008 2015 - 2016**

**ACSL BOOLEO JR**

**PROBLEM**: Booleo is a card game using boolean logic gates. It was first published by Tessera Games LLC in 2009. The cards are of 2 types: BINARY which contain either a 1 or a 0 and GATES which contain the operators AND, OR and XOR with an operation result of 1 or 0.  
  
The object of the game is to try, with the cards dealt, to build a pyramid of cards that follow the boolean rules.

AND 0

AND 1

XOR 0

AND 1

XOR 1

OR 1

1

1

0

1

**INPUT**: There will be 5 lines of input. Each input line will contain the number of BINARY cards followed by their values. This will be followed by the GATE cards used to form the pyramid. The cards are placed in the pyramid from left to right and bottom to top. Sample Input line #1 has the data for the pyramid above. The number of BINARY cards will not be more than 6. A, R and X will be used to represent AND, OR and XOR on the input lines.

**OUTPUT**: For each input line determine if the pyramid is correct. If it is correct, then print TRUE. If it is not correct, then print the GATE (use AND, OR and XOR) that produces the first error (left to right and bottom to top), followed by the row number and the box number in that row.

**SAMPLE INPUT** **SAMPLE OUTPUT**  
1. 4, 1, 0, 1, 1, R1, X1, A1, X0, A1, A0 1. TRUE

2. 3, 1, 1, 0, A1, X0, R1 2. XOR, 2, 2

3. 4, 0, 1, 1, 0, A0, A1, A0, R0, R1, X1 3. OR, 3, 1

4. 5, 0, 1, 0, 1, 0, R1, A0, A0, X1, X1, 4. OR, 3, 2  
 R1, A0, R0. X0, A1

5. 6, 1, 1, 0, 0, 1, 1, A1, R1, X0, R1, A1, 5. TRUE  
 R1, A0, A0, R1, X1, R0, X1, A0, R1, X1

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**TEST DATA**

**TEST INPUT TEST OUTPUT**  
1. 3, 1, 0, 1, A0, R1, X1 1. TRUE

2. 4, 0, 0, 1, 1, R0, R1, R1, X1, X1, A0 2. XOR, 3, 2

3. 5, 1, 1, 1, 0, 0, X0, R1, A0, X1, R1, A1, 3. XOR, 2, 4   
 X1, A0, A0, R0

4. 5, 0, 1, 1, 0, 1, A0, R1, R1, X1, A0, X0, 4. TRUE  
 A1, R0, X1, A0

5. 6, 1, 1, 1, 1, 1, 1, A1, R1, R1, A1, X0, X0, 5. XOR, 6, 1  
 A1, R1, X1, R1, A1, R1, A1, R1, X1