Bit Operation Name

In digital computer programming, a bitwise operation operates on one or more bit patterns or binary numerals at the level of their individual bits. It is a fast, primitive action directly supported by the processor, and is used to manipulate values for comparisons and calculations. For more details please click here.

There are many types of bitwise operations. This problem is considering only 6 among them. They are **AND, OR, XOR, NAND, NOR, XNOR**. Here is a truth table giving definitions of all 6 of the possible truth functions of two binary variables (**A** and **B** are thus boolean variables).

A	B	A or B	A nor B	A and B	A nand B	A xor B	A xnor B
0	**0**	0	1	0	1	0	1
0	**1**	1	0	0	1	1	0
1	**0**	1	0	0	1	1	0
1	**1**	1	0	1	0	0	1

For more details please click here.

There will be three 32 bit signed integer **A, B** and **R**. Write a code to determine that which bitwise operations are needed to satisfy this relationship **A bitwise_operator B = R.**

Input:

First line of the input will consist of an integer which represent the test case **T (0<T<=10000)**. Next **T** lines will contain **A, B** and **R**.

Output:

For each test case print "**Case X:"** (without quotes) where **X** is the number of test case (start from 1). After that print the name of bitwise operator(s), if has any. If there are more than one operator that can produce the same result **R**, then print them in lexicographically with separated by **comma (,)**. There should be a **space** before the name of each operator. Please check sample input/output for better understanding of the format.

Sample Input	Sample Output
3 6 11 2 25 25 26 6 12 4	Case 1: AND, XNOR Case 2: Case 3: AND

Explanation:

For first test case,

A	B	OR	AND	XOR	NOR	NAND	XNOR
6_{10} => 0110_2	11_{10} => 1011_2	1111_2 => 15_{10}	0010_2 => 2_{10}	1101_2 => 13_{10}	0000_2 => 0_{10}	1101_2 => 13_{10}	0010_2 => 2_{10}

So,

6 **AND** 11 = 2; 6 **XNOR** 11 = 2;

6 **OR** 11 ≠ 2; 6 **XOR** 11 ≠ 2; 6 **NOR** 11 ≠ 2; 6 **NAND** 11 ≠ 2

Limits:

Language	Time	Memory
C	2 Second	50MB
C++	2 Second	50MB
Java	4 Second	50MB
C#	4 Second	50MB

For Java, use main as class name, do not mark your class as public and do not use custom package. Follow Ideone rule for java compilation, if you get compile error, try your code in ideone.com to see your problem.