Operator

We know that operator is important. Because of that, we need to have a good understanding in it. Every operator will have precedence. To test your understanding about that, you will be given several operators and you need to output it from the operator with highest precedence until operator with the lowest precedence.

Format Input
There will be T test cases. In each test case, there will be 3 different operators separated by a blank space. You may assume that the operator will be one of these : "&" (bitwise AND), "^" (bitwise XOR), "%" (remainder) , "|" (bitwise OR), "!" (logical NOT).

Format Output
In each test case, you need to output number of case followed by operator from the operator with highest precedence until operator with the lowest precedence.

Constraints
1 <= T <= 100

Sample Input	Sample Output
3 & ^ % & ^ ! & ^ !	Case #1: % & ^ Case #2: ! & ^ Case #3: ! & ^

Note
The precedence of the operators (from the highest to the lowest) are "!" (logical NOT), "%" (remainder), "&" (bitwise AND), "^" (bitwise XOR), , "|" (bitwise OR).