

# Problem E. Cirno's Perfect Bitmasks Classroom

**Time limit** 1000 ms

**Mem limit** 262144 kB

Even if it's a really easy question, she won't be able to answer it

— *Perfect Memento in Strict Sense*

Cirno's perfect bitmasks classroom has just started!

Cirno gave her students a positive integer  $x$ . As an assignment, her students need to find the **minimum positive** integer  $y$ , which satisfies the following two conditions:

$$x \text{ and } y > 0$$

$$x \text{ xor } y > 0$$

Where `and` is the [bitwise AND operation](#), and `xor` is the [bitwise XOR operation](#).

Among the students was Mystia, who was truly baffled by all these new operators. Please help her!

## Input

The first line of input contains a single integer  $t$  ( $1 \leq t \leq 10^3$ ) — the number of input test cases.

For each test case, the only line of input contains one integer  $x$  ( $1 \leq x \leq 2^{30}$ ).

## Output

For each test case, print a single integer — the minimum number of  $y$ .

### Sample 1

Input	Output
7	3
1	3
2	1
5	1
9	17
16	2
114514	64
1000000	

## Note

Test case 1:

$1 \text{ and } 3 = 1 > 0, 1 \text{ xor } 3 = 2 > 0.$

Test case 2:

$2 \text{ and } 3 = 2 > 0, 2 \text{ xor } 3 = 1 > 0.$