# Culca-te Gazda

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|---|---|
| Input file: | `standard input` |
| Output file: | `standard output` |
| Time limit: | 0.3 seconds |
| Memory limit: | 1024 megabytes |

> *Through the blizzard and the snow, (Go to sleep, dear host) Santa Claus with all his reindeer, They got stuck in Urziceni!*
>
> Fără Zahăr - "Culcă-te Gazdă"

You are given $3$ integers $x$, $y$ and $z$.

Print the number of pairs of integers $(a, b)$ which satisfy the following conditions:

- $0 \leq a, b$.

- $a \& b = x$, where $\&$ denotes the bitwise AND operation.

- $a | b = y$, where $|$ denotes the bitwise OR operation.

- $a \oplus b = z$, where $\oplus$ denotes the bitwise XOR operation.

## Input

Each test contains multiple test cases. The first line of input contains a single integer $t$ $(1 \leq t \leq 10^5)$ — the number of test cases. The following lines contain the descriptions of the test cases:

The first (and only) line of each test case contains three integers $x$, $y$ and $z$ $(0 \leq x, y, z < 2^{30})$.

## Output

For each test case print one integer, the number of pairs of integers $(a, b)$ which satisfy all of the conditions from the statement.

## Example

| standard input | standard output |
|---|---|
| 8 | 4 |
| 2 7 5 | 1 |
| 0 0 0 | 0 |
| 1 5 3 | 0 |
| 6 9 3 | 1 |
| 1 1 0 | 2 |
| 0 1 1 | 32 |
| 177 511 334 | 16777216 |
| 1 33554431 33554430 | |

## Note

In the first test case, the 4 pairs $(a, b)$ which satisfy the conditions from the statement are: $(2, 7), (3, 4), (4, 3)$ and $(7, 2)$.

In the second test case, the only pair $(a, b)$ which satisfies the conditions from the statement is: $(0, 0)$.

We can show that no suitable pairs $(a, b)$ exist for the third and fourth test cases.

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In the fifth test case, the only pair $(a, b)$ which satisfies the conditions from the statement is: $(1, 1)$.

In the sixth test case, the 2 pairs $(a, b)$ which satisfy the conditions from the statement are: $(0, 1)$ and $(1, 0)$.