A. XORinacci

time limit per test: 1 second
memory limit per test: 256 megabytes
input: standard input
output: standard output

Cengiz recently learned Fibonacci numbers and now he is studying different algorithms to find them. After getting bored of reading them, he came with his own new type of numbers that he named *XORinacci* numbers. He defined them as follows:

- $f(0) = a$;
- $f(1) = b$;
- $f(n) = f(n-1) \oplus f(n-2)$ when $n > 1$, where $\oplus$ denotes the bitwise XOR operation.

You are given three integers a, b, and n, calculate $f(n)$.

You have to answer for T independent test cases.

Input

The input contains one or more independent test cases.

The first line of input contains a single integer T ($1 \le T \le 10^3$), the number of test cases.

Each of the T following lines contains three space-separated integers a, b, and n ($0 \le a, b, n \le 10^9$) respectively.

Output

For each test case, output $f(n)$.

Example

input Copy

```
3
3 4 2
4 5 0
325 265 1231232
```

output Copy

```
7
4
76
```

Note

In the first example, $f(2) = f(0) \oplus f(1) = 3 \oplus 4 = 7$.

Manthan, Codefest 19 (open for everyone, rated, Div. 1 + Div. 2)

Finished

Practice

→ Virtual participation

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ACM-ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

Start virtual contest

→ Practice

You are registered for practice. You can solve problems unofficially. Results can be found in the contest status and in the bottom of standings.

→ Clone Contest to Mashup

You can clone this contest to a mashup.

Clone Contest

→ Submit?

Language: GNU G++11 5.1.0

Choose file: 选择文件 未选择任何文件

Be careful: there is 50 points penalty for submission which fails the pretests or resubmission (except failure on the first test, denial of judgement or similar verdicts). "Passed pretests" submission verdict doesn't guarantee that the solution is absolutely correct and it will pass system tests.

Submit

→ Last submissions

Submission	Time	Verdict
59498207	Aug/26/2019 03:37	Accepted

→ Problem tags

math ×

Add tag

→ Contest materials

- Announcement (en)
- Tutorial (en)