

The i 'th Fibonacci number $f(i)$ is recursively defined in the following way:

- $f(0) = 0$ and $f(1) = 1$
- $f(i + 2) = f(i + 1) + f(i)$ for every $i \geq 0$

Your task is to compute some values of this sequence.

Input

Input begins with an integer $t \leq 10,000$, the number of test cases. Each test case consists of three integers a, b, n where $0 \leq a, b < 2^{64}$ (a and b will not both be zero) and $1 \leq n \leq 1000$.

Output

For each test case, output a single line containing the remainder of $f(a^b)$ upon division by n .

Sample Input

```
3
1 1 2
2 3 1000
18446744073709551615 18446744073709551615 1000
```

Sample Output

```
1
21
250
```



Oooh...pretty