Problem F
A Simple Function

Time limit: 1 second
Memory limit: 512 megabytes

Problem Description

A function $f : \mathbb{N}^3 \to \mathbb{N}$ where $\mathbb{N}$ stands for the set of non-negative integers, is defined as follows.

- $f(i, 0, M) = 1$, for all i and M.
- $f(i, i, M) = 1$, for all i and M.
- $f(i, x, M) = 0$, for all $i < x$.
- $f(i, x, M) = f(i-1, x-1, M) + f(i-1, x, M)$, if $f(i-1, x-1, M) + f(i-1, x, M)$ is NOT a multiple of M, for all $0 < x < i$.
- $f(i, x, M) = 0$, if $f(i-1, x-1, M) + f(i-1, x, M)$ is a multiple of M, for all $0 < x < i$.

For example, $f(2, 1, 2) = 0$ and $f(4, 2, 5) = 6$.

Input Format

The first line of the input contains an integer T, the number of test cases. T lines follow, one line per test case consisting of three space-separated integers a, b and M indicating that the value of $f(a, b, M)$ is to be computed.

You may assume:

- $1 \le T \le 10^4$
- $0 \le a < 2^{31}$
- $0 \le b < 2^{31}$
- $M \le 10000$ is a prime

Output Format

For each test case, output a single integer which denotes your answer modulo $10^9 + 7$ in a line.

Sample Input

```
2
2 1 2
4 2 5
```

Sample Output

```
0
6
```