Problem P
Fabonacci and Modulo Operation

Time limit: 3 seconds
Memory limit: 256 megabytes

Problem Description

The n-th Fabonacci number F_i is defined as follows.

$$F_n = \begin{cases} 1, & n \leq 2 \\ F_{n-1} + F_{n-2}, & n > 2 \end{cases}$$

Please write a program to compute F_n modulo p efficiently.

Input Format

The first line of the input contains an integer t ($t \leq 1000$) indicating the number of test cases. Each test case is a line containing two integers n and p. You may assume $1 \leq n < 10^{100}$ and $1 \leq p < 2^{63}$.

Output Format

For each test case, output F_n modulo p efficiently.

Sample Input

```
3
5 4
9 33
100000000000000000000000000000000000000000000000000 2
```

Sample Output

```
1
1
1
```