2753 - Another Counting Problem

Description

Tom has been controlling the N (1 <= N <= 10^12345) mice that have prisoners for be robbing his cheese. Every afternoon mice should take a shirt from closet and out of prison to be in a row where Tom makes counting them, mice were placed in the order in which they come to the line and no two mice reaches the row the same time.

The shirts may be of C (1 <= C <= 2^15) different colors and for each color there is an infinite amount. Tom wants to know how many ways the mice can form the line, two ways are different if in the i-th position of the row the mice have a differents colors shirts, as this number can be very large print it modulo M (1 <= M <= 2^15).

Input specification

There multiple test cases. For each test case are three integers N, C, M.

Output specification

In how many ways can form the row of mice.

Sample input

```
1 2 5
```

Sample output

```
2
```

Hint(s)

Source	José Carlos González Fernández
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Time limit (ms)	30000
Test limit (ms)	6000
Memory limit (kb)	65536000
Output limit (mb)	64
Size limit (bytes)	15000
Enabled languages	Bash C C# C++ C++11 Java JavaScript-NodeJS Pascal Perl PHP Prolog Python Ruby Text