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<Submit a solution> [0/100]

Task statistics
Number of users: 25
Number of users with 100 points: 17
Average result: 78.8

Chessboard

Memory limit: 64 MB

Byteasar admires chess puzzles. He is a long-time subscriber of the Chess Player's Magazine. The most recent issue of this magazine contains the following puzzle:

> A chessboard of size $n \times n$ is given. In how many ways one can place n rooks on the chessboard, so that no two rooks attack each other and the i-th rook is located neither in the i-th column nor in the i-th row? The rooks, the rows and the columns are numbered from 1 to n. The result should be given modulo m.

Puzzles of the type "mate in 13 moves" are a piece of cake for Byteasar, but this new type of puzzle seems very hard for him. Could you please help him?

Input

The only line of input contains two integers n and m ($1 \leq n \leq 10^{18}$, $1 \leq m \leq 10^6$).

Output

Your program should output the number of possible placements of rooks.

Example

For the input data:

```
3 120
```

the correct result is:

```
4
```

Task author: Tomasz Idziaszek.

<Submit a solution> [0/100]