D - Nowhere P

Time Limit: 2 sec / Memory Limit: 1024 MB

Score : 400 points

Problem Statement

You are given a prime number P not less than 2, which you don't like.

Let's call an array of integers $A_1, A_2, \ldots, A_N$ **very good** if it satisfies the following condition:

- there is no i with $1 \leq i \leq N$ and $A_1 + A_2 + \cdots + A_i \equiv 0 \mod P$.

Consider all $(P-1)^N$ arrays of length N with elements from 1 to $P-1$. How many of them are **very good**?

As this number can be very big, output it modulo (10^9+7).

Constraints

- N and P are integers.
- $1 \leq N \leq 10^9$
- $2 \leq P \leq 10^9$

Input

Input is given from Standard Input in the following format:

N P

Output

Print the count modulo $(10^9 + 7)$.

Sample Input 1 Copy

```
3 3
```

Copy

Sample Output 1 Copy

```
2
```

Copy

Two arrays, $(1, 1, 2)$ and $(2, 2, 1)$, satisfy the condition.

Sample Input 2 Copy

```
3 2
```

Copy

Sample Output 2 Copy

```
0
```

Copy

Sample Input 3 Copy

```
45108 2571593
```

Copy

Sample Output 3 Copy

```
224219544
```

Copy

Language

Python (3.8.2)

Remaining Time
00:06:53

Source Code

```
1
```

* at most 512 KiB

* Your source code will be saved as Main.*extension*.

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telegram)

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