Problem F. Flowers

Time limit: 3 seconds
Memory limit: 1024 megabytes

"Among Little Grass, Little Flower, Little Chicken, and Little Rabbit, who is better at network flow?"
"Little Flower, because it's a flower."

—Smoked-chicken

Frank is fascinated by the beauty of numbers.

One day, Frank was watering flowers in his garden. Looking at the beautiful petals, he thought it would be wonderful if each flower could grow numbers.

So, he took out paper and pen and started sketching his ideal "number flower". An undirected connected graph is called a "number flower" if and only if it satisfies the following three conditions:

1. If the graph contains n nodes, these nodes should be labeled from 1 to n.
2. The graph contains exactly $n-1$ edges. No node has a degree greater than 2 except for node 1.
3. Nodes directly connected to node 1 are called *key nodes*. All *key nodes* have pairwise coprime labels. For each *non-key node* (except node 1), its label is a multiple of the nearest *key node*'s label, and the labels along the simple path from the *non-key node* to its nearest *key node* are monotonically decreasing.

Given an integer n, how many different "number flowers" with n nodes are there? Two graphs G_1 and G_2 are considered the same if and only if for any edge (u, v) in G_1, a corresponding edge (u, v) exists in G_2.

Since the answer is huge, you only need to output it modulo a prime number p.

Input

There is only one test case in each test file.

The first line contains two positive integers n and p ($1 \le n \le 10^{10}$, $10^8 < p < 10^9$).

It is guaranteed that p is a prime number.

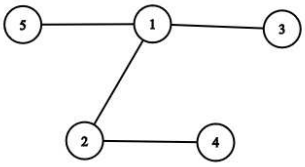
Output

Output a single integer, which is the number of different "number flowers" modulo p.

Examples

standard input	standard output
5 998244353	1
10 998244353	4
10000000000 998244353	889033323

Note



Example 1 Illustration

For the first example, there is only one "number flower", which is shown in the figure.