Problem W
Derangement Rotations

Time Limit: 1

A *Derangement* is a permutation p of $1, 2, \ldots, n$ where $p_i \neq i$ for all i from 1 to n.

A *rotation* of a sequence $a_1, a_2, \ldots, a_n$ with offset k ($1 \leq k \leq n$) is equal to the sequence a_k, a_{k+1}, ..., a_n, a_1, a_2, ..., a_{k-1}. A sequence of length n has at most n distinct rotations.

Given a derangement D, let $f(D)$ denote the number of distinct rotations of D that are also derangements. For example, $f([2, 1]) = 1$, $f([3, 1, 2]) = 2$.

Given n and a prime number p, count the number of derangements D of $1, 2, \ldots, n$ such that $f(D) = n - 2$, modulo p.

Input

The single line of input contains two integers n ($3 \leq n \leq 10^6$) and p ($10^8 \leq p \leq 10^9 + 7$), where n is a permutation size, and p is a prime number.

Output

Output a single integer, which is the number of derangements D of size n with $f(D) = n - 2$, modulo p.

Sample Input 1	Sample Output 1
3 1000000007	0

Sample Input 2	Sample Output 2
6 999999937	20