

Problem L. Lidia Perovskaya

Input file: *standard input*
Output file: *standard output*
Time limit: 2 seconds
Memory limit: 512 mebibytes

n players are playing in an elimination tournament. The tournament is a sequence of $n - 1$ matches. Each match consists of two people playing against each other. One of them loses and is eliminated from the tournament (i.e. he can't participate in any further matches) and the other one wins and is not eliminated. The last match is called the **final**, because it consists of the only two not eliminated players. No two consecutive matches, none of which is the final, may share a participant.

How many different possible tournaments are there? Two tournaments are considered different if there exists a pair of players which played against each other in one of them but didn't in the other.

Output the correct answer modulo a prime number m . Formally, if the actual answer is y and your answer is x , it will be considered correct if $-2^{63} \leq x < 2^{63}$ and $x - y$ is divisible by m .

Input

The only line contains two integers n and m ($2 \leq n \leq 10^6$, $10^6 + 3 \leq m \leq 10^9 + 9$, m is prime), the number of players and the modulo.

Output

Print a single integer — the number of possible tournaments modulo m .

Examples

standard input	standard output
2 1000003	1
3 756871351	3
4 79415263	12
10 62493391	37074959
228 602495767	489051459
1000 347390201	71907364
3228 172329319	92438468
10000 288002747	214265262
32228 839393021	778284082
100000 625953467	462027594
322228 493329803	424612739
1000000 1000000009	195243062