Equation

2022/2023 SEASON – SIXTH ROUND

You are given natural numbers n and c.

Let x be a number such that $x^1 + x^{-1} = c$ (such x is guaranteed to exist).

Find the value of $x^n + x^{n-1} + \cdots + x^1 + x^0 + x^{-1} + x^{-2} + \cdots + x^{-n}$.

Input

The only line of the file **equation.in** contains the numbers n and c.

Output

It is provable that for all possible x the required value is equal and can be represented as a rational fraction $\frac{s}{t}$. Let $M = 900\ 000\ 011$. The tests will be selected so that t and M have no common divisors. On the single line of the file **equation.out**, print $s * t^{-1}$ modulo M.

Constraints

$2 \leq c \leq 10^{18}$

$1 \leq n \leq 10^{18}$

Time limit: 0.2 sec.
Memory limit: 256 MB.

Sample test

Input (equation.in)	Output (equation.out)
1 3	4