Project Euler #186: Connectedness of a network.

This problem is a programming version of Problem 186 from projecteuler.net

Here are the records from a busy telephone system with one million users:

RecNr	Caller	Called
1	200007	100053
2	600183	500439
3	600863	701497
...	...	...

The telephone number of the caller and the called number in record n are $Caller(n) = S_{2n-1}$ and $Called(n) = S_{2n}$ where $S_{1,2,3...}$ come from the "Lagged Fibonacci Generator":

For $1 \leq k \leq 55$, $S_k = 100003 - 200003k + 300007k^3 \pmod{1000000}$
For $56 \leq k$, $S_k = S_{k-24} + S_{k-55} \pmod{1000000}$

If $Caller(n)$ = $Called(n)$ then the user is assumed to have misdialled and the call fails; otherwise the call is successful.

From the start of the records, we say that any pair of users X and Y are friends if X calls Y or vice-versa. Similarly, X is a friend of a friend of Z if X is a friend of Y and Y is a friend of Z; and so on for longer chains.

The Prime Minister's phone number is $NUMBER$. After how many successful calls, not counting misdials, will p% of the users (including the PM) be a friend, or a friend of a friend etc., of the Prime Minister?

Input Format

Every input file contains exactly one line with two integers separated by a single space: $NUMBER$ and p.

Constraints

$NUMBER$ is a 6-digit integer from 000000 to 999999.

$1 \leq p \leq 100$.

Output Format

Output the only number - an answer to the problem.

Sample Input

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000000 1
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Sample Output

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622572
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