Problem M. Discrete Logarithm is a Joke

Input file:	*standard input*
Output file:	*standard output*
Time limit:	5 seconds
Memory limit:	256 mebibytes

Let's take $M = 10^{18} + 31$ which is a prime number, and $g = 42$ which is a primitive root modulo M, which means that $g^1 \bmod M, g^2 \bmod M, \ldots, g^{M-1} \bmod M$ are all distinct integers from $[1; M)$. Let's define a function $f(x)$ as the smallest positive integer p such that $g^p \equiv x \pmod{M}$. It is easy to see that f is a bijection from $[1; M)$ to $[1; M)$.

Let's then define a sequence of numbers as follows:

- $a_0 = 960\,002\,411\,612\,632\,915$ (you can copy this number from the sample);
- $a_{i+1} = f(a_i)$.

Given n, find a_n.

Input

The only line of input contains one integer n ($0 \le n \le 10^6$).

Output

Print a_n.

Examples

standard input	standard output
0	960002411612632915
1	836174947389522544
300300	263358264583736303
1000000	300