

KAM

Kam is a series of a very challenging problems. Here we begin with kam1 the easiest one. Given number N of at most 18 digit and M . output the result of the following:

For number consists of n digits from $d[0], \dots, d[n-1]$

$$\text{result} = \sum(d[0]^M \% (4 * 10^8) + \dots + d[(n/2)-1]^M \% (4 * 10^8)) * \sum(d[n/2]^M \% (4 * 10^8) + \dots + d[n-1]^M \% (4 * 10^8))$$

N will guarantee to have even number of digits

Input

2 numbers N and M where N will be a number of at most 18 digits and M will be between $0 \leq M \leq 1000000000$

Output

The same as problem said

print endl after test cases

Example

Input:

22 2

Output:

16