Irresponsible Numbers

A number, x, is called *irresponsible* when adding x to $x+1$ requires a *carry* operation. For example, 5, 17, and 91 are irresponsible numbers because adding them to 6, 18, and 92 (respectively) requires a carry operation:

- In $5+(5+1)=5+6=11$, a 1 is carried over into the 10's place.
- In $17+(17+1)=17+18=35$, a 2 is carried over into the 10's place.
- In $91+(91+1)=91+92=183$, a 1 is carried over into the 100's place.

You have two integers, x and n. Construct a new number, s, by repeating x a total of n times. For example, if $x=3121$ and $n=4$, then $s=3121312131213121$.

Given x and n, construct s and find all the irreponsible numbers between 1 and s. Then print the number of irresponsible numbers in the aforementioned range; as this number can be quite large, your answer must be modulo 10^9+7.

Input Format

A single line with two space-separated integers denoting the respective values of x and n.

Constraints

- $1 \leq x \leq 10^{1,000,000}$
- $1 \leq n \leq 10^{18}$

Subtasks

For 15% of the maximum score:

- $1 \leq x \leq 10^6$
- $n=1$

For 40% of the maximum score:

- $1 \leq x \leq 10^{1,000,000}$
- $n=1$

Output Format

Print a single integer denoting the number of irresponsible numbers between 1 and s, modulo 10^9+7.

Sample Input

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1 2
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Sample Output

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4
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Explanation

When we repeat $x = 1$ a total of $n = 2$ times we get 11. The irresponsible numbers between 1 and 11 are 5, 6, 7, and 8. Because there are four irresponsible numbers, we print $4 \times (10^9 + 7) = 4$ on a new line.