Sum of Digits (`digits`)

Antonio, a computer science student with a great passion for mathematics, is a little bit lazy and always makes the minimum effort to solve every task he comes up with. In the first few weeks of school, Antonio's little cousin Francesco has a few problems with math exercises and asks Antonio to help him. These math exercises are all about the sum of digits of a number.

Antonio obviously teaches his little cousin how to solve them but he also assigns Francesco some exercises, to make sure that he really understood the concept. Due to his laziness, Antonio doesn't want to think of some numbers to use: to save time, he will use a recursive strategy to create N exercises of increasing difficulty that Francesco will use to practice.

Figure 1: Francesco trying to solve the N exercises.

The N exercises are defined by Antonio as follows. First, we define an initial exercise made out of a single digit $S_1 = d$. Then, we define the remaining exercises with the following formula:

$$S_N = S_{N-1} \star N \star S_{N-1}$$

Where $\star$ is the operation of concatenation, for example $12 \star 34 \star 56 = 123456$.

Now that the exercises are ready, help Antonio verify Francesco's solutions by writing an algorithm that, given the initial digit d and the index N of the exercise, calculates the correct answer, i.e. the sum of the digits of S_N.

Input

The first line contains two integers: d and N, respectively, the initial digit defined by Antonio and the index of the element of the sequence for which Antonio wants to calculate the sum of the digits.

Output

You need to write a single line containing the sum of digits of S_N.

Constraints

- $0 \le d \le 9$.
- $1 \le N \le 60$.
- It is guaranteed that the result will fit in a normal signed 64-bit integer variable. **It will definitely overflow a 32-bit variable**.

Examples

input	output
1 3	11
3 11	6104

Explanation

In the first example:

- $S_1 = 1$.

- $S_2 = 121$.

- $S_3 = 1213121$.

The sum of digits of S_3 is 11.