Recursive Digit Sum



We define super digit of an integer $m{x}$ using the following rules:

Given an integer, we need to find the super digit of the integer.

- If $m{x}$ has only $m{1}$ digit, then its super digit is $m{x}$.
- Otherwise, the super digit of x is equal to the super digit of the sum of the digits of x.

For example, the super digit of 9875 will be calculated as:

Example

```
n = 9875'
k = 4
```

The number p is created by concatenating the string n k times so the initial p = 9875987598759875.

All of the digits of p sum to 116. The digits of 116 sum to 8. 8 is only one digit, so it is the super digit.

Function Description

Complete the function *superDigit* in the editor below. It must return the calculated super digit as an integer.

superDigit has the following parameter(s):

- string n: a string representation of an integer
- int k: the times to concatenate n to make p

Returns

• *int:* the super digit of n repeated k times

Input Format

The first line contains two space separated integers, n and k.

Constraints

• $1 \le n < 10^{100000}$

• $1 \le k \le 10^5$