



Recursive Digit Sum

by [wanbo](#)

Problem

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

We define super digit of an integer x using the following rules:

- If x has only **1** digit, then its super digit is x .
- Otherwise, the super digit of x is equal to the super digit of the digit-sum of x . Here, digit-sum of a number is defined as the sum of its digits.

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

```

super_digit(9875) = super_digit(9+8+7+5)
                  = super_digit(29)
                  = super_digit(2+9)
                  = super_digit(11)
                  = super_digit(1+1)
                  = super_digit(2)
                  = 2.

```

You are given two numbers n and k . You have to calculate the super digit of p .

p is created when number n is concatenated k times. That is, if $n = 123$ and $k = 3$, then $p = 123123123$.

Input Format

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

Constraints

- $1 \leq n < 10^{100000}$
- $1 \leq k \leq 10^5$

Output Format

Output the super digit of p , where p is created as described above.

Sample Input 0

```
148 3
```

Sample Output 0

```
3
```

Explanation 0

Here $n = 148$ and $k = 3$, so $P = 148148148$.

```
super_digit(P) = super_digit(148148148)
                = super_digit(1+4+8+1+4+8+1+4+8)
                = super_digit(39)
                = super_digit(3+9)
                = super_digit(12)
                = super_digit(1+2)
                = super_digit(3)
                = 3.
```

[f](#) [t](#) [in](#)Submissions: [7925](#)



Max Score: 30


Difficulty: Medium

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Java 7  

```
1 import java.io.*;
2 import java.util.*;
3 import java.text.*;
4 import java.math.*;
5 import java.util.regex.*;
6
7 public class Solution {
8
9     static int superDigit(String n, int k) {
10         // Complete this function
11     }
12
13     public static void main(String[] args) {
14         Scanner in = new Scanner(System.in);
15         String n = in.next();
16         int k = in.nextInt();
17         int result = superDigit(n, k);
18         System.out.println(result);
19         in.close();
20     }
21 }
22
```

Line: 1 Col: 1

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