Problem F
It's Surely Complex
Time Limit: 30 seconds

As you know, a complex number is often represented as the sum of a real part and an imaginary part. $3 + 2i$ is such an example, where 3 is the real part, 2 is the imaginary part, and i is the imaginary unit.

Given a prime number p and a positive integer n, your program for this problem should output the product of all the complex numbers satisfying the following conditions.

- Both the real part and the imaginary part are non-negative integers less than or equal to n.
- At least one of the real part and the imaginary part is not a multiple of p.

For instance, when $p = 3$ and $n = 1$, the complex numbers satisfying the conditions are $1\ (= 1 + 0i)$, $i\ (= 0 + 1i)$, and $1 + i\ (= 1 + 1i)$, and the product of these numbers, that is, $1 \times i \times (1 + i)$ is $-1 + i$.

Input

The input consists of a single test case of the following format.

$p\ n$

p is a prime number less than 5×10^5. n is a positive integer less than or equal to 10^{18}.

Output

Output two integers separated by a space in a line. When the product of all the complex numbers satisfying the given conditions is $a + bi$, the first and the second integers should be a modulo p and b modulo p, respectively. Here, x modulo y means the integer z between 0 and $y - 1$, inclusive, such that $x - z$ is divisible by y.

As exemplified in the main section, when $p = 3$ and $n = 1$, the product to be calculated is $-1 + i$. However, since -1 modulo 3 is 2, 2 and 1 are displayed in Sample Output 1.

Sample Input 1	Sample Output 1
3 1	2 1

Sample Input 2	Sample Output 2
5 5	0 0

Sample Input 3	Sample Output 3
499979 1000000000000000000	486292 0