8161 Faulty Factorial

The *factorial* of a natural number is the product of all positive integers less than or equal to it. For example, the factorial of 4 is $1 \cdot 2 \cdot 3 \cdot 4 = 24$. A *faulty factorial* of length n is similar to the factorial of n, but it contains a fault: one of the integers is *strictly smaller* than what it should be (but still at least 1). For example, $1 \cdot 2 \cdot 2 \cdot 4 = 16$ is a faulty factorial of length 4.

Given the length n, a *prime* modulus p and a target remainder r, find some faulty factorial of length n that gives the remainder r when divided by p.

Input

The input file contains several test cases, each of them as described below.

The first line contains three integers n, p and r ($2 \leq n \leq 10^{18}$, $2 \leq p < 10^7$, $0 \leq r < p$) — the length of the faulty factorial, the prime modulus and the target remainder as described in the problem statement.

Output

For each test case, on a line by itself, must follow the description below.

If there is no faulty factorial satisfying the requirements output '`-1 -1`'. Otherwise, output two integers — the index k of the fault ($2 \leq k \leq n$) and the value v at that index ($1 \leq v < k$). If there are multiple solutions, output any of them.

Note: In the first example, the output describes the faulty factorial $1 \cdot 2 \cdot 2 \cdot 4 = 24 \equiv 1 \pmod 5$.

Sample Input

```
4 5 1
3 2
```

Sample Output

```
4 127 24
-1 -1
```