Problem F. Faulty Factorial

Input file:	*standard input*
Output file:	*standard output*
Time limit:	2 seconds
Memory limit:	512 mebibytes

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 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

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.

Examples

standard input	standard output
4 5 1	3 2
4 127 24	-1 -1