Computational Number Theory
Programming HW 2

Due Date: 21/09/2025

You may reuse code/functions from your first assignment.

The input consists of three integers n, a, b, with $n > 1, 0 < a < n < 10^9$, $-10^9 < b < 10^9$.

The output is the value of a^b in $\mathbb{Z}_n$ if $b >= 0$ or if $gcd(a, n) = 1$. Otherwise output -1.

Note: There is no specified input format. It is adequate to accept a single input triple and print the output for that. The goal of this assignment is to write a function that you will use in your subsequent assignments.

Sample inputs and their outputs.

Input 1: $n = 2357$, $a = 2$, $b = 100$. Output: 1697

Input 2: $n = 1234567891011121314151617$, $a = 3$, $b = -100$.

Output: The inverse does not exist.

Input 3: $n = 1234567891011121314151617$, $a = 2$, $b = -567891011121314$.

Output: 79049452679903772398392