

# Math Game

Time Limit	1s
Memory Limit	32MB

## Description

Jehian and Reiva playing with  $N \times M$  blocks. The basic rule of this game is simple. Given a value of  $K$  (1 or  $-1$ ), each of player must fill those blocks with value of  $x$  (not necessary same) so that each all rows and each all columns has product  $K$ .

This is boring game you know, so both of them only curious how many final state can be structured. Two states are considered different if and only if there exists at least one block where the numbers in the first final state and in the other are different. Of course the result may be big, so with their warmness heart, you only output the answer in modulo  $10^9 + 7$ .

## Input Format

Single line contains integer  $N$ ,  $M$ , and  $K$ .

## Output Format

Print single number denoting the answer modulo  $10^9 + 7$ .

## Constraint

- $1 \leq N \leq 10^{18}$
- $1 \leq M \leq 10^{18}$
- $K \in \{1, -1\}$

## Sample Input 1

1 1 -1

## Sample Output 1

1

## Sample Input 2

1 3 1

## Sample Output 2

1

### Sample Input 3

3 3 -1

### Sample Output 3

16