

## Problem H. Hamiltonian Farm

Input file: `stdin`  
Output file: `stdout`  
Time limit: 3 seconds  
Memory limit: 256 MB

Last year, your team failed on helping the Codefalsler **Suzukaze** AK the problemset. Therefore, **Suzukaze** decided to retire from competitive programming and became a farmer since he wants to own a farm as **pittoresque** does. **Suzukaze** is an orange-lover so he decided to plant only orange trees in his farm in spring. Winter is coming next week! **Suzukaze** is planning to walk inside his farm to harvest his favorite fruit. However, as a forgetful farmer, **Suzukaze** loses his memory about the configuration of his farm. Fortunately, as a careful programmer, **Suzukaze** stored the configuration of his farm in the computer as a function in case of he gets into this kind of desperate situation.

The farm can be modelled as a graph with  $n$  vertices where vertices are orange trees, and the edges in the graph can be derived from the function  $f$ :

$$f(i, j) = \begin{cases} 0 & i = j \\ ((ip)^{jq} \bmod (10^9 + 7)) \bmod 2 & i < j \\ 1 - f(j, i) & i > j \end{cases}$$

where  $i$  and  $j$  are the indices of the vertices ( $1 \leq i, j \leq n$ ),  $p$  and  $q$  are non-negative integers less than  $10^9 + 7$ . If  $f(i, j) = 1$ , there is a directed edge from  $i$  to  $j$ .

As a lazy farmer, **Suzukaze** wants to find a path that can visit each orange tree exactly once. Can you help him find this path in compensation for your failure last year?

### Input

The first line contains three integers  $n$ ,  $p$  and  $q$  ( $1 \leq n \leq 10^5$ ,  $0 \leq p, q < 10^9 + 7$ ,  $p$  and  $q$  can't be 0 at the same time), the number of orange trees and the parameters of the function. You may assume that the orange trees have indices  $1, \dots, n$ .

### Output

If the path exists, output the vertices on the path from the beginning vertex to the end vertex as the example shows. Any of the path that satisfies **Suzukaze**'s demand will be accepted. Otherwise, output  $-1$ , which means that you fail on **Suzukaze**'s request again.

### Examples

stdin	stdout
6 1 1	1 3 5 6 4 2

### Explanation

The path  $1 \rightarrow 3 \rightarrow 5 \rightarrow 6 \rightarrow 4 \rightarrow 2$  satisfies **Suzukaze**'s demand in the example.