Problem
Colourful Graph
Time limit: 2 seconds

Consider an undirected graph on n vertices. A k-colouring of the graph is simply an assignment to each vertex one of the k colours. There are no other restrictions – two vertices can get the same colour even if they are connected by an edge.

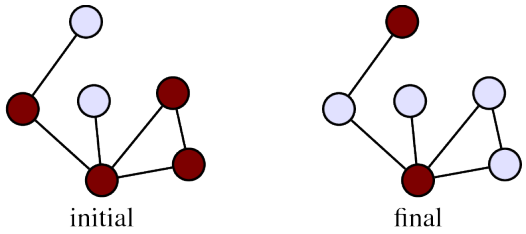
You are given two k-colourings s and t. You want to transform from the initial colouring s to the final colouring t step by step. In each step, each vertex may change its colour to one of its neighbours' colour, or keep its current colour.

Formally, you are looking for a sequence of k-colourings $C_0, C_1, C_2, \ldots, C_\ell$ such that $C_0 = s$, $C_\ell = t$, and every $C_i(x)$ equals either

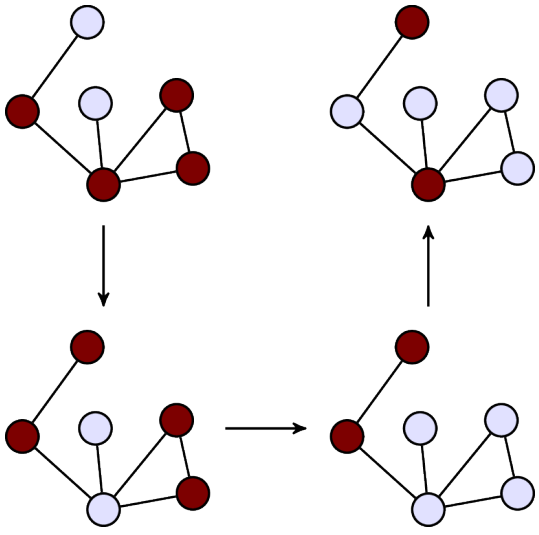
- $C_{i-1}(x)$; or
- $C_{i-1}(y)$ where (x, y) is an edge in the graph

The input graph is guaranteed to be connected and has no self loops. Determine whether it is possible to construct such a sequence, and output one if there is any. The sequence need not be the shortest as long as it uses at most $20\,000$ steps.

For example, suppose you need to start with the initial colouring on the left and end up with the final colouring on the right:



One solution is as follows:



Input

The first line of input contains three integers n, m, and k. Here n is the number of vertices, m is the number of edges and k is the number of colours ($1 \leq n, k \leq 100, 0 \leq m \leq \binom{n}{2}$). The second line of input contains n integers, each in the range $[0, k-1]$. They indicate the initial colouring. The third line of input contains n integers, each in the range $[0, k-1]$. They indicate the final colouring. Each of the following m lines contains two integers x_i and y_i, representing an edge in the graph ($1 \leq x_i, y_i \leq n$).

The input graph is connected. There are no self loops or multiple edges.

Output

Output Impossible if there is no such sequence. Otherwise, output one or more lines describing a sequence of colouring $C_0, C_1, C_2, \ldots, C_\ell$ ($\ell \leq 20\,000$). Each line contains n integers separated by a single space, describing the colouring. The first line indicates the initial colouring and the last line indicates the final colouring.

You can use at most $20\,000$ steps, therefore the output contains at most $20\,001$ lines.

Sample Input 1

```
6 6 2
0 1 0 1 1 1
1 0 0 0 1 0
1 2
2 3
3 5
5 4
4 6
6 5
```

Sample Output 1

```
0 1 0 1 1 1
1 1 0 1 0 1
1 1 0 0 1 0
1 0 0 0 1 0
```

Sample Input 2

```
1 0 2
0
1
```

Sample Output 2

```
Impossible
```

In Sample 1, every vertex either keeps its previous colour or copies a neighbour's previous colour in each displayed transition. In Sample 2, the only vertex has no neighbour and cannot change from colour 0 to colour 1.