Problem R. Connect the Graph

Time Limit	1000 ms
Mem Limit	131072 kB
Code Length Limit	10240 B

You are given a graph with nodes and edges. On this graph you can perform the following type of operations:

- Delete an edge and add another one (this counts as a single operation).
  You should perform the minimum number of operations in order to make the graph .

Standard input

The first line contains two integer values and .
Each of the next lines contains two integer values, representing two nodes that share an edge.

Standard output

If there is no solution output .
Otherwise, on the first line output a single integer representing the minum number of operations needed.
On the following lines output four integers describing the operations, where is a deleted edge and is an added edge.

Constraints and notes

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- The nodes are numbered from to .
- There are no multiple edges or self loops in the input graph.
- If the solution is not unique you can output any of them.

Example 1

Input	Output
4 3 1 2 1 3 3 2	1 3 1 1 4

The red edge was deleted and the green one was added.
This is only one of the possible solutions.
<graph width="{250}" height="{250}" directed="{false}" forcepaused="{false}" indextype="{"custom"}" nodeoptions="{{" circleattr: {radius: 20} }} nodes="{[" {label: *1*}, 2}, *3*}, *4*},]} edges="{[" {source: 0, target: 1}, 2, color: *red*}, 1, 2}, 3, *green*}>

Example 2

Input	Output
4 2 1 2 3 4	-1

There's no way to make this graph connected.

<graph width="{250}" height="{250}" directed="{false}" forcepaused="{false}" indextype="{"custom"}" nodeoptions="{{" circleattr: {radius: 20} }} nodes="{[" {label: *1*}, 2}, *3*}, *4*},]} edges="{[" {source: 0, target: 1}, 2, 3},>

Example 3

Input	Output
6 6 1 3 3 5 1 5 2 4 2 6 4 6	1 6 2 1 2

The red edge was deleted and the green one was added.
This is only one of the possible solutions.
<graph width="{250}" height="{250}" directed="{false}" forcepaused="{false}" indextype="{"custom"}" nodeoptions="{{" circleattr: {radius: 20} }} nodes="{[" {label: *1*}, 2}, *3*}, *4*}, *5*}, *6*},]} edges="{[" {source: 0, target: 2}, 2, *4*}, 1, 3}, 5, color:*red*}, 3, 5}, color:*green*}>