

Task Povjerenstvo

Do you know how hard it is to choose a set of people for the problem selection committee? No? Well do you know who does? Mr. Malnar, of course. By observing human interactions, the all-knowing Mr. Malnar has decided what the ideal choice should look like.

A total of N people are being considered for the committee and M relations between them have been recorded. A relation is described by an ordered pair (a, b) representing the fact that person a dislikes person b . Mr. Malnar defines a *dislike circle* to be a sequence of distinct people x_1, x_2, \dots, x_k such that person x_i dislikes person x_{i+1} , for each $1 \leq i \leq k$ (it is assumed that $x_{k+1} = x_1$). Mr. Malnar noticed a peculiar property regarding the set of people in question: **there is no dislike circle consisting of an odd number of people.**

To minimize dissatisfaction with the choice of committee, Mr. Malnar is looking for a committee such that everyone within the committee agrees with each other and everyone outside of the committee is glad not to be in it. More precisely:

- There must not be two people within the committee such that one person dislikes the other.
- For each person outside the committee there should be someone in the committee who they dislike.

Can you find such a set of people?

Input

The first line contains positive integers N and M , the number of people and number of relations between them, respectively.

The i -th of the following M lines contains an ordered pair of positive integers a_i and b_i ($1 \leq a_i, b_i \leq N$), representing the fact that person a_i dislikes the person b_i . It holds that $a_i \neq b_i$ for all $i = 1, 2, \dots, M$ and no ordered pair is listed twice.

The given relations will be such that there is no dislike circle consisting of an odd number of people.

Output

If it is not possible to choose a set of people satisfying the given conditions, in the only line print -1 .

Otherwise, in the first line print a positive integer K ($1 \leq K \leq N$), the number of people in the committee. In the next line print K distinct positive integers p_1, p_2, \dots, p_K ($1 \leq p_i \leq N$), the indices of the people which make up the committee.

If there is more than one solution, output any one of them.

Scoring

In all subtasks, it holds that $1 \leq N \leq 500\,000$ and $0 \leq M \leq 500\,000$.

Subtask	Score	Constraints
1	13	There is no dislike circle.
2	21	There is no sequence of people of odd length x_1, x_2, \dots, x_k such that one of x_i or x_{i+1} dislikes the other, for all $1 \leq i \leq k$.
3	33	$N, M \leq 5000$
4	33	No additional constraints.



Examples

input

4 4
1 2
1 3
2 4
3 4

output

2
4 1

input

4 4
1 2
2 3
3 4
4 1

output

2
1 3

input

8 11
1 2
2 1
3 4
4 5
5 6
6 3
7 8
8 7
3 2
7 3
8 1

output

3
1 3 5

Explanation of the examples:

The set of chosen people is shown in the output of each test case.

The first example is a valid test case for the first subtask and for the second subtask.

The second example is not a valid test case for the first subtask, but it is valid for the second subtask.

The third example is not a valid test case for the first subtask nor for the second subtask.