D. Xor the graph

time limit per test: 1 second
memory limit per test: 256 megabytes
input: standard input
output: standard output

You are given an undirected graph with n nodes and m edges.

The graph doesn't contain self-loops but it may contain multiple edges.

There is a number a_i attached to the i_{th} $(1 \le i \le n)$ node.

You can do the following operation once: Choose a set of nodes and a value x $(0 \le x < 2^{20})$ and change all the values of the nodes in the set from a_i into $a_i \bigoplus x$.

You should choose any set and any value x so that for each edge the values of the nodes connected with that edge are different.

Is it possible?

Input

The first line of input contains two integers n and m, which are the number of nodes and the number of edges $(1 \le n, m \le 3 \times 10^5)$.

The second line contains n integers, the ith one is a_i which is the value attached to the ith node $(0 \le a_i < 2^{20})$.

The next m lines will contain two integers for each u and v, $(1 \le u, v \le n)$ $(u \ne v)$, which means that there is an edge between nodes u and v.

it is guaranteed that the given graph doesn't contain self-loops but it may contain multiple edges.

Output

If there is no way to choose a set and a value x, print -1.

Otherwise print two integers k and x on the first line, which is the size of the chosen set and the chosen value, $(1 \le k \le n)$ $(0 \le x < 2^{20})$.

In the second line print k integers, which describes the chosen nodes in the set.

Make sure that no node appears more than one time in the set.

Examples

input	Copy

```
3 3
1 1 1
1 2
2 3
1 3
```

output	Copy

```
-1
```

input	Copy

```
3 3
1 1 2
1 2
2 3
1 3
```

output	Copy

```
1 1
2
```

input	Copy

```
5 4
1 2 3 4 5
```

```
1 2
1 3
1 4
4 5
```

output   Copy

```
0 1
```

```
1 2
1 3
1 4
4 5
```

output

```
0 1
```