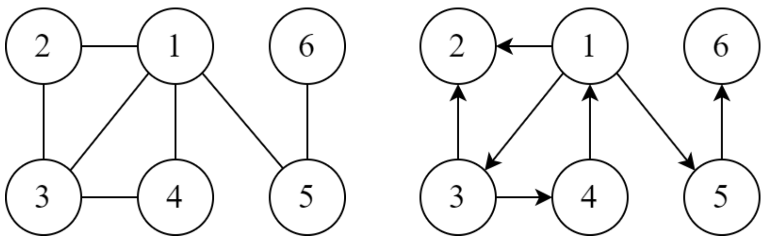
Problem G
Graph Director

You are given a simple graph consisting of N vertices (numbered from 1 to N) and M bidirectional edges (numbered from 1 to M). Edge i connects vertices U_i and V_i. You are asked to convert each edge into a directed edge. For each edge i, you can choose to direct it from U_i to V_i or in the opposite direction.



The final directed graph has to satisfy the following requirements. For each vertex j, there are exactly A_j different possible vertices that can be visited by a walk starting from vertex j. A walk consists of traversing **zero** or more directed edges, following the direction in the final directed graph.

Direct the edges, or determine whether it is impossible to achieve. If there are several solutions, you can choose any of them.

Input

The first line consists of two integers N M $(2 \leq N \leq 2000; 1 \leq M \leq 4000)$.

Each of the next M lines consists of two integers U_i V_i $(1 \leq U_i, V_i \leq N)$. There are no self-loops or multi-edges.

The following line consists of N integers A_j $(1 \leq A_j \leq N)$.

Output

If it is impossible to direct the edges in a way that meets the requirements, output `-1`.

Otherwise, output M lines, each containing two integers u and v representing a directed edge from vertex u to v in your final directed graph. You can output the edges in any order. If there are several solutions, you can output any of them.

Sample Input #1

```
6 7
3 1
1 4
1 5
3 2
2 1
3 4
5 6
6 1 6 6 2 1
```

Sample Output #1

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

Explanation for the sample input/output #1

The illustration in the description shows both the original graph and the final directed graph of this sample. In the final directed graph:

- If you start from vertex 1, 3, or 4, you can visit all the vertices.
- If you start from vertex 2, you can visit vertex 2.
- If you start from vertex 5, you can visit vertices 5 and 6.
- If you start from vertex 6, you can visit vertex 6.

Sample Input #2

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

Sample Output #2

```
-1
```

Sample Input #3

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

Sample Output #3

```
1 2
```