2493. Divide Nodes Into the Maximum Number of Groups

Description

You are given a positive integer `n` representing the number of nodes in an **undirected** graph. The nodes are labeled from `1` to `n`.

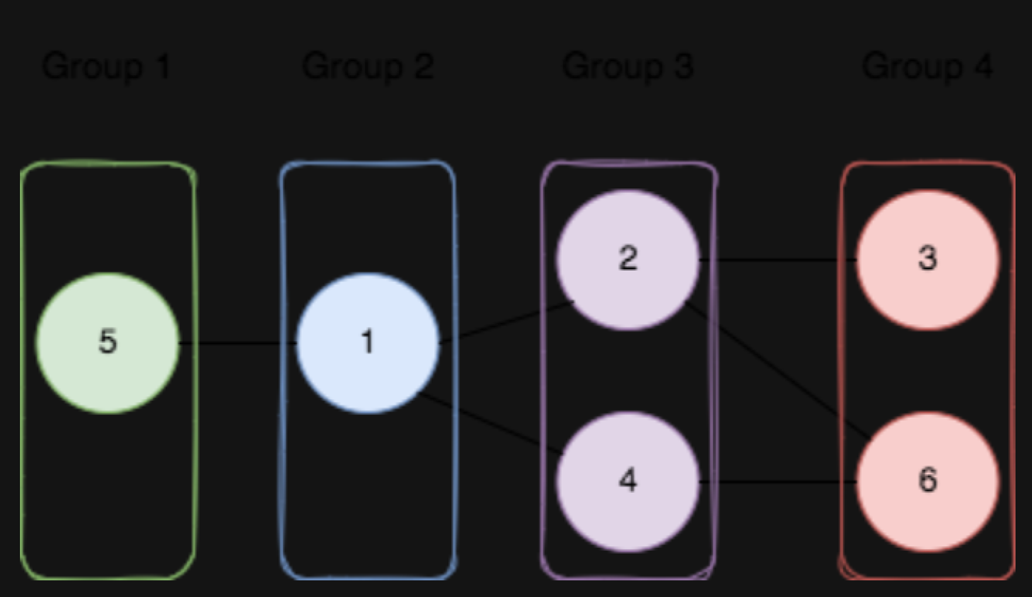
You are also given a 2D integer array `edges`, where `edges[i] = [a_i, b_i]` indicates that there is a **bidirectional** edge between nodes a_i and b_i. **Notice** that the given graph may be disconnected.

Divide the nodes of the graph into `m` groups (**1-indexed**) such that:

- Each node in the graph belongs to exactly one group.
- For every pair of nodes in the graph that are connected by an edge `[a_i, b_i]`, if a_i belongs to the group with index `x`, and b_i belongs to the group with index `y`, then `|y - x| = 1`.

Return *the maximum number of groups (i.e., maximum* `m` *) into which you can divide the nodes*. Return `-1` *if it is impossible to group the nodes with the given conditions*.

Example 1:




```
Input: n = 6, edges = [[1,2],[1,4],[1,5],[2,6],[2,3],[4,6]]
Output: 4
Explanation: As shown in the image we:
- Add node 5 to the first group.
- Add node 1 to the second group.
- Add nodes 2 and 4 to the third group.
- Add nodes 3 and 6 to the fourth group.
We can see that every edge is satisfied.
It can be shown that that if we create a fifth group and move any node from the third or fourth group to it, at least on of the edges will not be satisfied.
```

Example 2:

```
Input: n = 3, edges = [[1,2],[2,3],[3,1]]
Output: -1
Explanation: If we add node 1 to the first group, node 2 to the second group, and node 3 to the third group to satisfy the first two edges, we can see that the third edge will not be satisfied.
It can be shown that no grouping is possible.
```

Constraints:

- $1 <= n <= 500$
- $1 <= edges.length <= 10^4$
- `edges[i].length == 2`
- $1 <= a_i, b_i <= n$
- $a_i != b_i$
- There is at most one edge between any pair of vertices.