Problem 1319: Number of Operations to Make Network Connected

Problem Information

Difficulty: Medium
Acceptance Rate: 65.76%
Paid Only: No
Tags: Depth-First Search, Breadth-First Search, Union Find, Graph

Problem Description

There are `n` computers numbered from `0` to `n - 1` connected by ethernet cables `connections` forming a network where `connections[i] = [ai, bi]` represents a connection between computers `ai` and `bi`. Any computer can reach any other computer directly or indirectly through the network.

You are given an initial computer network `connections`. You can extract certain cables between two directly connected computers, and place them between any pair of disconnected computers to make them directly connected.

Return _the minimum number of times you need to do this in order to make all the computers connected_. If it is not possible, return `-1`.

Example 1:

Input: n = 4, connections = [[0,1],[0,2],[1,2]] **Output:** 1 **Explanation:** Remove cable between computer 1 and 2 and place between computers 1 and 3.

Example 2:

Input: n = 6, connections = [[0,1],[0,2],[0,3],[1,2],[1,3]] **Output:** 2

Example 3:

Input: n = 6, connections = [[0,1],[0,2],[0,3],[1,2]] **Output:** -1 **Explanation:** There are not enough cables.

Constraints:

* `1 <= n <= 105` * `1 <= connections.length <= min(n * (n - 1) / 2, 105)` * `connections[i].length == 2` * `0 <= ai, bi < n` * `ai != bi` * There are no repeated connections. * No two computers are connected by more than one cable.

Code Snippets

C++:

```
class Solution {
public:
int makeConnected(int n, vector<vector<int>>& connections) {

}
};
```

Java:

```
class Solution {
public int makeConnected(int n, int[][] connections) {

}
}
```

Python3:

```
class Solution:
def makeConnected(self, n: int, connections: List[List[int]]) -> int:
```