2077. Paths in Maze That Lead to Same Room Premium

Medium | Topics | Companies | Hint

A maze consists of `n` rooms numbered from `1` to `n`, and some rooms are connected by corridors. You are given a 2D integer array `corridors` where `corridors[i] = [room1ᵢ, room2ᵢ]` indicates that there is a corridor connecting `room1ᵢ` and `room2ᵢ`, allowing a person in the maze to go from `room1ᵢ` to `room2ᵢ` **and vice versa**.

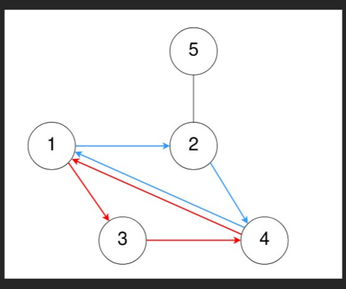
The designer of the maze wants to know how confusing the maze is. The **confusion score** of the maze is the number of different cycles of **length 3**.

- For example, `1 → 2 → 3 → 1` is a cycle of length 3, but `1 → 2 → 3 → 4` and `1 → 2 → 3 → 2 → 1` are not.

Two cycles are considered to be **different** if one or more of the rooms visited in the first cycle is **not** in the second cycle.

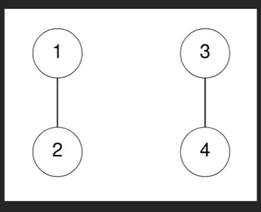
Return *the **confusion score** of the maze.*

Example 1:




```
Input: n = 5, corridors = [[1,2],[5,2],[4,1],[2,4],[3,1],[3,4]]
Output: 2
Explanation:
One cycle of length 3 is 4 → 1 → 3 → 4, denoted in red.
Note that this is the same cycle as 3 → 4 → 1 → 3 or 1 → 3 → 4 → 1 because the rooms are the same.
Another cycle of length 3 is 1 → 2 → 4 → 1, denoted in blue.
Thus, there are two different cycles of length 3.
```

Example 2:




```
Input: n = 4, corridors = [[1,2],[3,4]]
Output: 0
Explanation:
There are no cycles of length 3.
```

Constraints:

- `2 <= n <= 1000`
- `1 <= corridors.length <= 5 * 10⁴`
- `corridors[i].length == 2`
- `1 <= room1ᵢ, room2ᵢ <= n`
- `room1ᵢ != room2ᵢ`
- There are no duplicate corridors.

Seen this question in a real interview before? 1/5

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Hint 1

If the path starts at room i, what properties must the other two rooms in the cycle have?

Hint 2

The other two rooms must be connected to room i, and must be connected to each other.

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Rohit Singh Dec 21, 2022

Question : Let `n` be V, and `corridors.length` be E. What will be the best Time Complexity for this problem **?**

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Soumya Ray Aug 15, 2023

`class Solution {
public:
void dfs(int node, vector& vis, vector<vector>& adjList, int connectedCorners, int connectedEdges){
vis[node] = 1;
connectedEdges += adjList[node].size();
connectedCorners++;
for(auto a : adjList[node]){
if(!vis[a]) dfs(a, vis, adjList, connectedCorners, connectedEdges);
}
}`

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