1313. Count Ways to Build Rooms in an Ant Colony

Difficulty : Hard

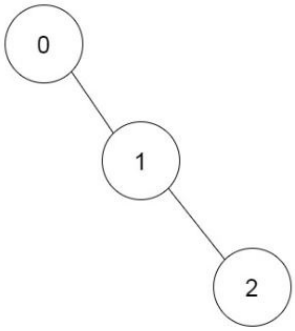
https://leetcode.com/problems/count-ways-to-build-rooms-in-an-ant-colony

You are an ant tasked with adding `n` new rooms numbered `0` to `n-1` to your colony. You are given the expansion plan as a **0-indexed** integer array of length `n`, `prevRoom`, where `prevRoom[i]` indicates that you must build room `prevRoom[i]` before building room `i`, and these two rooms must be connected **directly**. Room `0` is already built, so `prevRoom[0] = -1`. The expansion plan is given such that once all the rooms are built, every room will be reachable from room `0`.

You can only build **one room** at a time, and you can travel freely between rooms you have **already built** only if they are **connected**. You can choose to build **any room** as long as its **previous room** is already built.

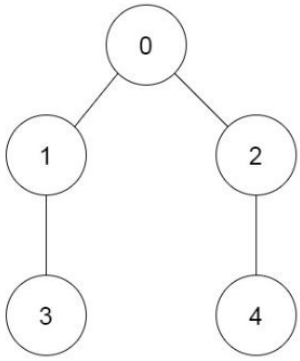
Return *the **number of different orders** you can build all the rooms in*. Since the answer may be large, return it **modulo** $10^9 + 7$.

Example 1:



Input: prevRoom = [-1,0,1]
Output: 1
Explanation: There is only one way to build the additional rooms: 0 → 1 → 2

Example 2:



Input: prevRoom = [-1,0,0,1,2]
Output: 6
Explanation:
The 6 ways are:
0 → 1 → 3 → 2 → 4
0 → 2 → 4 → 1 → 3
0 → 1 → 2 → 3 → 4
0 → 1 → 2 → 4 → 3
0 → 2 → 1 → 3 → 4
0 → 2 → 1 → 4 → 3

Constraints:

- `n == prevRoom.length`
- `2 <= n <= 10^5`
- `prevRoom[0] == -1`
- `0 <= prevRoom[i] < n` for all `1 <= i < n`

- Every room is reachable from room `0` once all the rooms are built.