Problem 1997: First Day Where You Have Been in All the Rooms

Problem Information

Difficulty: Medium
Acceptance Rate: 40.12%
Paid Only: No
Tags: Array, Dynamic Programming

Problem Description

There are `n` rooms you need to visit, labeled from `0` to `n - 1`. Each day is labeled, starting from `0`. You will go in and visit one room a day.

Initially on day `0`, you visit room `0`. The **order** you visit the rooms for the coming days is determined by the following **rules** and a given **0-indexed** array `nextVisit` of length `n`:

* Assuming that on a day, you visit room `i`, * if you have been in room `i` an **odd** number of times (**including** the current visit), on the **next** day you will visit a room with a **lower or equal room number** specified by `nextVisit[i]` where `0 <= nextVisit[i] <= i`; * if you have been in room `i` an **even** number of times (**including** the current visit), on the **next** day you will visit room `(i + 1) mod n`.

Return _the label of the**first** day where you have been in **all** the rooms_. It can be shown that such a day exists. Since the answer may be very large, return it **modulo** `109 + 7`.

Example 1:

Input: nextVisit = [0,0] **Output:** 2 **Explanation:** - On day 0, you visit room 0. The total times you have been in room 0 is 1, which is odd. On the next day you will visit room nextVisit[0] = 0 - On day 1, you visit room 0, The total times you have been in room 0 is 2, which is even. On the next day you will visit room (0 + 1) mod 2 = 1 - On day 2, you visit room 1. This is the first day where you have been in all the rooms.

Example 2:

Input: nextVisit = [0,0,2] **Output:** 6 **Explanation:** Your room visiting order for each day is: [0,0,1,0,0,1,2,...]. Day 6 is the first day where you have been in all the rooms.

Example 3:

Input: nextVisit = [0,1,2,0] **Output:** 6 **Explanation:** Your room visiting order for each day is: [0,0,1,1,2,2,3,...]. Day 6 is the first day where you have been in all the rooms.

Constraints:

* `n == nextVisit.length` * `2 <= n <= 105` * `0 <= nextVisit[i] <= i`

Code Snippets

C++:

```
class Solution {
public:
int firstDayBeenInAllRooms(vector<int>& nextVisit) {

}
};
```

Java:

```
class Solution {
public int firstDayBeenInAllRooms(int[] nextVisit) {

}
}
```

Python3:

```
class Solution:
def firstDayBeenInAllRooms(self, nextVisit: List[int]) -> int:
```