# 2124. First Day Where You Have Been in All the Rooms

# Difficulty : Medium

https://leetcode.com/problems/first-day-where-you-have-been-in-all-the-rooms

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** $10^9 + 7$.

### 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 <=` $10^5$
- `0 <= nextVisit[i] <= i`