1531. Number of Ways to Wear Different Hats to Each Other

Difficulty : Hard

https://leetcode.com/problems/number-of-ways-to-wear-different-hats-to-each-other

There are `n` people and `40` types of hats labeled from `1` to `40`.

Given a 2D integer array `hats`, where `hats[i]` is a list of all hats preferred by the `i`th person.

Return *the number of ways that the `n` people wear different hats to each other*.

Since the answer may be too large, return it modulo `10^9 + 7`.

Example 1:

```
Input: hats = [[3,4],[4,5],[5]]
Output: 1
Explanation: There is only one way to choose hats given the conditions.
First person choose hat 3, Second person choose hat 4 and last one hat 5.
```

Example 2:

```
Input: hats = [[3,5,1],[3,5]]
Output: 4
Explanation: There are 4 ways to choose hats:
(3,5), (5,3), (1,3) and (1,5)
```

Example 3:

```
Input: hats = [[1,2,3,4],[1,2,3,4],[1,2,3,4],[1,2,3,4]]
Output: 24
Explanation: Each person can choose hats labeled from 1 to 4.
Number of Permutations of (1,2,3,4) = 24.
```

Constraints:

- `n == hats.length`
- `1 <= n <= 10`
- `1 <= hats[i].length <= 40`
- `1 <= hats[i][j] <= 40`
- `hats[i]` contains a list of **unique** integers.