



Problem H. Exchanging Kubic 2

Little Cyan Fish is conducting a social experiment with Prof. Kubic. In this experiment, there are n people initially located at positions a_1, a_2, \dots, a_n . You need to perform exactly n operations, and each person can be chosen only once. In each of n operations, you must choose one person, and all other people will move one step towards this chosen person.

Specifically, if you choose the i -th person, then for each j -th person ($j \neq i$):

- If $a_i > a_j$, then $a_j \leftarrow a_j + 1$.
- If $a_i < a_j$, then $a_j \leftarrow a_j - 1$.
- If $a_i = a_j$, then a_j remains unchanged.

We define the value of an array $a = (a_1, a_2, \dots, a_n)$ as the minimum possible distance between the two farthest people after all operations.

Now, you are given n and n sets S_1, S_2, \dots, S_n . An array $a = (a_1, a_2, \dots, a_n)$ is valid if and only if:

1. $a_i \leq a_{i+1}$ for all $1 \leq i < n$
2. $a_i \in S_i$ for all $1 \leq i \leq n$

You need to find the sum of values of all valid arrays a . The answer should be taken modulo 998 244 353.

Input

The first line of the input contains one integer n ($1 \leq n \leq 400$).

The next n lines of the input describe each set S_i . The first integer of the i -th line of these lines is an integer $|S_i|$ ($0 \leq |S_i| \leq 800 + 1$). Then follow $|S_i|$ distinct integers in the range $[0, 800]$, representing the set.

Output

Output a single line containing a single integer, representing the answer.

Examples

standard input	standard output
5 3 1 2 3 1 2 0 4 0 2 3 4 2 2 3	0
5 4 1 2 3 7 4 5 7 8 9 4 2 3 6 9 5 0 1 4 7 9 8 0 1 2 3 6 7 8 9	16