A Bosses

A company of n employees is due for a restructuring. In the resulting hierarchy, represented as a rooted tree, every node will be the boss of its children.

Each employee has a list of bosses they will accept. In addition, all employees must be assigned a salary. The salary must be a positive integer, and the salary of each boss must be larger than the sum of salaries of their immediate subordinates.

Your task is to structure the company so that all above conditions hold, and the sum of all the salaries is as small as possible.

Input

The first input line contains an integer n: the number of employees. The employees are numbered $1, 2, \ldots, n$.

After this, the input contains n lines that describe the preferences of the employees. The ith such line contains an integer k_i, followed by a list of k_i integers. The list consists of all employees that the ith employee accepts as their boss.

Output

You should output the lowest total salary among all valid restructurings. You can assume that at least one solution exists.

Example

Input:
```
4
1 4
3 1 3 4
2 1 2
1 3
```

Output:
```
8
```

Subtask 1 (22 points)

- $2 \leq n \leq 10$
- $\sum_{i=1}^{n} k_i \leq 20$

Subtask 2 (45 points)

- $2 \leq n \leq 100$
- $\sum_{i=1}^{n} k_i \leq 200$

Subtask 3 (33 points)

- $2 \leq n \leq 5000$
- $\sum_{i=1}^{n} k_i \leq 10000$