B. New Year and Ascent Sequence

time limit per test: 2 seconds
memory limit per test: 1024 megabytes

A sequence $a = [a_1, a_2, \ldots, a_l]$ of length l has an **ascent** if there exists a pair of indices (i, j) such that $1 \le i < j \le l$ and $a_i < a_j$. For example, the sequence $[0, 2, 0, 2, 0]$ has an ascent because of the pair $(1, 4)$, but the sequence $[4, 3, 3, 3, 1]$ doesn't have an ascent.

Let's call a concatenation of sequences p and q the sequence that is obtained by writing down sequences p and q one right after another without changing the order. For example, the concatenation of the $[0, 2, 0, 2, 0]$ and $[4, 3, 3, 3, 1]$ is the sequence $[0, 2, 0, 2, 0, 4, 3, 3, 3, 1]$. The concatenation of sequences p and q is denoted as $p + q$.

Gyeonggeun thinks that sequences with ascents bring luck. Therefore, he wants to make many such sequences for the new year. Gyeonggeun has n sequences $s_1, s_2, \ldots, s_n$ which may have different lengths.

Gyeonggeun will consider all n^2 pairs of sequences s_x and s_y $(1 \le x, y \le n)$, and will check if its concatenation $s_x + s_y$ has an ascent. Note that he may select the same sequence twice, and the order of selection matters.

Please count the number of pairs (x, y) of sequences $s_1, s_2, \ldots, s_n$ whose concatenation $s_x + s_y$ contains an ascent.

Input

The first line contains the number n $(1 \le n \le 100\,000)$ denoting the number of sequences.

The next n lines contain the number l_i $(1 \le l_i)$ denoting the length of s_i, followed by l_i integers $s_{i,1}, s_{i,2}, \ldots, s_{i,l_i}$ $(0 \le s_{i,j} \le 10^6)$ denoting the sequence s_i.

It is guaranteed that the sum of all l_i does not exceed $100\,000$.

Output

Print a single integer, the number of pairs of sequences whose concatenation has an ascent.

Examples

input

```
5
1 1
1 1
1 2
1 4
1 3
```

output

```
9
```

input

```
3
4 2 0 2 0
6 9 9 8 8 7 7
1 6
```

output

```
7
```

input

```
10
3 62 24 39
1 17
1 99
1 60
1 64
1 30
2 79 29
2 20 73
2 85 37
1 100
```

output Copy

```
72
```

Note

For the first example, the following 9 arrays have an ascent:
$[1,2],[1,2],[1,3],[1,3],[1,4],[1,4],[2,3],[2,4],[3,4]$. Arrays with the same contents are counted as their occurences.