Union & Intersection

Write a program that finds union and intersection of the given sets.

Input

The first line is an integer n, for the number of sets to be inputted.

The next n lines are integer sets, one set per line. For each line, list all the integer members, separated by a space.

Output

The first line is the size of the union of all given sets.

The second line is the size of the intersection of all given sets.

Example

Input (from keyboard)	Output (on screen)
3 1 2 1 2 3 1 2 1 2 1 2 3 2 5 4 3	5 2
6 100 1000 101 123 200 201 -1 -2 -3	9 0
6 -1 0 1 -1 1 0 0 -1 1 1 -1 0 1 0 -1	3 3