

IOI Training Camp 2010 – Test 4, 21 June, 2010

Problem 2 Conflict

A long time ago in a three-dimensional space far away, a tribe of rectangles lived happily. The rectangles lived a spiritual life, lying parallel to one of the coordinate planes with both sides parallel to the axes in that plane.

One day, a cuboid walked into their small world, riding steadily on an icosahedron, showing off its sharp corners and positive volume. The rectangles watched in awe and dreamed of being cuboids. Nothing would ever be the same from that day on. The rectangles started comparing each other by area, perimeter and even by the ratio of the lengths of their sides.

Soon the first conflict ensued over the ownership of shared points. In time, each pair of rectangles sharing at least one point (including those merely touching each other at a corner) got into a conflict and became enemies. It is up to you to restore peace in the community, by meeting with every pair of rectangles in conflict. Write a program that finds how many such pairs there are.

Input format

The first line of input contains the integer N , the number of rectangles. Each of the following N lines contains 6 integers separated by single spaces. The first three numbers represent the coordinates of one corner of the rectangle, the other three are the coordinates of the opposite corner. Each rectangle is parallel to one of the coordinate planes, meaning that in *exactly* one of the three dimensions, the two corresponding coordinates will be equal. Since the two sides are parallel to the axes on the plane in which the rectangle lies, the other two corners of the rectangle are fixed unambiguously.

Output format

A single line with an integer that is the total number of rectangles in conflict.

Test Data

You may assume that $1 \leq N \leq 100000$. All the coordinates of the rectangles are integers in the range $[1..999]$.

Example

Here is the sample input and output corresponding to the example above.

Sample input 1

```
3
1 1 1 1 3 3
1 3 3 1 6 6
1 4 4 1 5 5
```

Sample output 1

```
2
```

Sample input 2

```
3
15 10 10 15 20 20
10 15 10 20 15 20
10 10 15 20 20 15
```

Sample output 2

```
3
```

Sample input 3

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

Sample output 3

```
4
```

Time and memory limits

The time limit for this task is 2 seconds. The memory limit is 44 MB (actual limit 32 MB, plus 12 MB buffer for 64-bit compilation).