TLE '17 Contest 6 P4 - Willson and Travelling

Time limit: 2.0s **Memory limit:** 640M
Python: 8.0s

Willson the Canada Goose is like any other Canada Goose - he likes to fly around and practice honking.

Today, he will be flying around a city containing N buildings. Each building is a rectangle with a side parallel to the x axis. The lower left corner of the i^{th} building is at (p_i, q_i), and the upper right corner is at (r_i, s_i). A building can overlap with another building. It is possible for a building to be completely contained within another building. Also, it is possible that two different buildings represent the same rectangle.

However, corners are dangerous for Willson to fly into - much more dangerous than walls. A corner is an integer coordinate where exactly 1 of the 4 adjacent squares is contained within a building. The other 3 adjacent squares are not contained within a building.

Could you tell Willson the number of corners that he needs to look out for?

Willson flying around a city while making his presence known.

Constraints

$p_i < r_i$

$q_i < s_i$

Subtask	Points	N	Coordinate limits
1	30	$N = 2$	All coordinates satisfy $1 \leq c \leq 2\,000$.
2	20	$1 \leq N \leq 30\,000$	All coordinates satisfy $1 \leq c \leq 2\,000$.
3	30	$1 \leq N \leq 30\,000$	All coordinates satisfy $1 \leq c \leq 60\,000$.
4	20	$1 \leq N \leq 200\,000$	All coordinates satisfy $1 \leq c \leq 500\,000$.

Note: Python users are recommended to submit with PyPy. Also, Python users are recommended to optimize their memory usage.

Input Specification

The first line of input will contain a single integer, N.

N lines of input follow. The i^{th} line will contain four integers $p_i\ q_i\ r_i\ s_i$. The lower left corner of the i^{th} building is at (p_i, q_i), and the upper right corner is at (r_i, s_i).

Output Specification

Output the number of corners that are formed by the buildings.

Sample Input

```
6
1 1 2 2
1 2 2 3
2 2 3 3
6 1 7 4
5 2 8 3
6 2 7 3
```

Sample Output

```
13
```

Explanation for Sample Output

In the following diagram, the buildings are shown in red and the corners are shown in the black circles.