

Mars Map

[English](#)

[Vietnamese](#)

(This task was inspired by task 'Atlantis' of the Mid-Central European Regional ACM-ICP Contest 2000/2001.)

In the year 2051, several Mars expeditions explored different areas of the red planet and produced maps of these areas. Now, the BaSA (Baltic Space Agency) has an ambitious plan: they would like to produce a map of the whole planet. In order to calculate the necessary effort, they need to know the total size of the area for which maps already exist. It is your task to write a program that calculates this area.

Input

The input starts with a line containing a single integer N ($1 \leq N \leq 10\,000$), the number of available maps. Each of the following N lines describes a map. Each of these lines contains four integers x_1, y_1, x_2 and y_2 ($0 \leq x_1 < x_2 \leq 30\,000$, $0 \leq y_1 < y_2 \leq 30\,000$). The values (x_1, y_1) and (x_2, y_2) are the coordinates of, respectively, the bottom-left and the top-right corner of the mapped area. Each map has rectangular shape, and its sides are parallel to the x - and y -axis of the coordinate system.

Output

The output should contain one integer A , the total area of the explored territory (i.e. the area of the union of all the rectangles).

Example

Input

```
2
10 10 20 20
15 15 25 30
```

Output

```
225
```