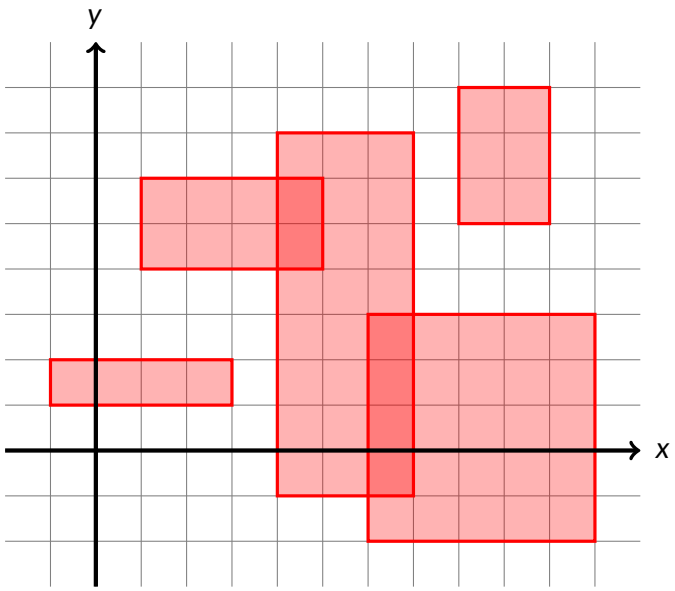
RECTANGLES

Given N axis-aligned rectangles on an xy-plane, find rectangles that do not overlap with any other rectangles. Calculate the sum of the areas of those rectangles.



Input

The first line contains an integer N ($1 \leqslant N \leqslant 1\,000$), the number of rectangles. Each of the following N lines contains integers $X_i, Y_i, X_i', \text{and } Y_i'$, ($-10\,000 \leqslant X_i, Y_i, X_i', Y_i' \leqslant 10\,000$ and $X_i < X_i'$ and $Y_i < Y_i'$) separated by a space, denoting that the rectangle has its lower-left coordinates at (X_i, Y_i) and its upper-right coordinates at (X_i', Y_i'). All x-coordinates and y-coordinates are different.

Output

Output the sum of the areas of rectangles that do not overlap with other rectangles.

Example

Input	Output
5 1 4 5 6 -1 1 3 2 4 -1 7 7 8 5 10 8 6 -2 11 3	10