Problem I. Intellectual Implementation

Input file:	*standard input*
Output file:	*standard output*
Time limit:	6 seconds
Memory limit:	512 mebibytes

There are n rectangles on the coordinate plane, with sides parallel to the coordinate axis. The i-th rectangle covers all points (x, y) with $l_i \leq x \leq r_i$ and $d_i \leq y \leq u_i$.

For simplicity, for every $i \neq j$, we have $l_i \neq l_j$, $r_i \neq r_j$, $l_i \neq r_j$, $d_i \neq d_j$, $u_i \neq u_j$, $d_i \neq u_j$.

Count the number of triples (i, j, k) with $1 \leq i < j < k \leq n$ for which i-th, j-th, and k-th rectangles are pairwise disjoint (every pair of them has no common points).

Input

The first line of the input contains a single integer n ($1 \leq n \leq 2 \cdot 10^5$), the number of rectangles.

The i-th of the next n lines contains four integers describing the i-th rectangle: l_i, r_i, d_i, u_i ($-10^9 \leq l_i < r_i \leq 10^9$, $-10^9 \leq d_i < u_i \leq 10^9$).

It is guaranteed that, for every $i \neq j$, we have $l_i \neq l_j$, $r_i \neq r_j$, $l_i \neq r_j$, $d_i \neq d_j$, $u_i \neq u_j$, $d_i \neq u_j$.

Output

Output the number of triples (i, j, k) with $1 \leq i < j < k \leq n$ for which i-th, j-th, and k-th rectangles are pairwise disjoint.

Examples

standard input	standard output
5 1 5 1 5 4 8 2 6 3 7 3 7 2 6 28 32 42 46 42 46	3
6 1 8 6 10 2 5 3 12 3 4 15 20 0 9 2 22 -5 22 -2 23 -7 11 -1 17	0