# Problem G. Rectangle

Input file: standard input
Output file: standard output

Prof. Pang has $n$ rectangles, the coordinate of the lower left corner of the $i$-th rectangle is $(x_{i,1}, y_{i,1})$, and the coordinate of the upper right corner is $(x_{i,2}, y_{i,2})$. Rectangles may overlap.

You need to choose three straight lines such that:

- Each line should be parallel to the $x$-axis or the $y$-axis, which means its formula is $x = a$ or $y = a$.
- In the formula $x = a$ or $y = a$, $a$ should be an integer in $[1, 10^9]$.
- These three lines should be distinct.
- Each rectangle is **touched** by at least one line. A line touches a rectangle if it intersects with the boundary and/or the interior of the rectangle.

You need to compute the number of ways to choose three lines. Since the answer can be very large, output it modulo 998244353. Two ways are considered the same if only the order of three lines differs in these two ways.

## Input

The first line contains a single integer $T$ ($1 \le T \le 10^5$), denoting the number of test cases.

For each test case, the first line contains an integer $n$ ($1 \le n \le 10^5$). The $i$-th line of the next $n$ lines contains four integers $x_{i,1}, y_{i,1}, x_{i,2}, y_{i,2}$ ($1 \le x_{i,1} < x_{i,2} \le 10^9, 1 \le y_{i,1} < y_{i,2} \le 10^9$).

It is guaranteed that the sum of $n$ over all test cases does not exceed $2 \times 10^5$.

## Output

For each test case, output one integer representing the answer in one line.

## Example

| standard input | standard output |
|---|---|
| 3<br>1<br>1 1 1000000000 1000000000<br>3<br>1 1 2 2<br>3 3 4 4<br>5 5 6 6<br>5<br>581574116 47617804 999010750 826131769<br>223840663 366320907 613364068 926991396<br>267630832 51913575 488301124 223957497<br>217461197 492085159 999485867 913732845<br>28144453 603781668 912516656 993160442 | 230616300<br>64<br>977066618 |