

4396 Slides

There are N slides lying on the table. Each of them is transparent and formed as a rectangle. In a traditional problem, one may have to calculate the intersecting area of these N slides. The definition of intersection area is such area which belongs to all of the slides.

But this time I want to take out some one of the N slides, so that the intersecting area of the left $N - 1$ slides should be maximal. Tell me the maximum answer.

Input

The first line of the input contains a single integer T , the number of test cases, followed by the input data for each test case. The first line of each test case contains a single integer N ($1 \leq N \leq 100$), the number of rectangles. Followed by N lines, each line contains four integers x_1, y_1, x_2, y_2 ($-10000 \leq x_1 < x_2 \leq 10000, -10000 \leq y_1 < y_2 \leq 10000$), pair (x_1, y_1) gives out the bottom-left corner and pair (x_2, y_2) gives out the top-right corner of the rectangle.

Output

There should be one line per test case containing the maximum intersecting area of corresponding $N - 1$ slides.

Sample Input

```
2
2
0 0 2 2
1 1 2 2
3
0 0 2 2
1 0 3 2
1 1 3 3
```

Sample Output

```
4
2
```