

Given N regular rectangles in a sequence. Following this sequence you have to draw every rectangles if it does not overlap with any rectangle which has been drawn already. Calculate the total area of drawn rectangles.

Note: A rectangle is regular if and only if its sides are all parallel to the axis.

Input

The first line of the input contains the number of test cases T ($1 \leq T \leq 100$). Each case starts with a single line containing N ($0 \leq N \leq 10000$), the number of rectangles in the sequence. Next N lines will represent the sequence of rectangles. Each of the next N lines will represent one rectangle having four integers x_1, y_1, x_2, y_2 ($-100 < x_1, y_1, x_2, y_2 < 100, x_1 < x_2, y_1 < y_2$), here (x_1, y_1) is the lower left corner of the rectangle and (x_2, y_2) is the upper right corner of the rectangle.

Output

For each test case, print the case number and a single integer, the total area covered by rectangles you drew.

Sample Input

```
1
3
-1 -1 1 1
0 0 10 10
1 0 2 2
```

Sample Output

```
Case 1: 6
```