Common Area

Input file:	standard input
Output file:	standard output
Time limit:	1 second
Memory limit:	256 megabytes

Given N rectangles, each rectangle will be represented as two points:

the lower-left point (x_1,y_1) and the upper right point (x_2,y_2).

Determine the common area shared between all rectangles.

Input

First line contains a number T ($1 \le T \le 100$) number of test cases.

Each test described by a number of rectangles N ($1 \le N \le 30$).

Next N lines will contain 4 integers x1, y1, x2 and y2 ($-10^4 \le x1, y1, x2, y2 \le 10^4$).

It's guaranteed that all rectangle sides are parallel to Ox or Oy axes.

Output

For each test case output "Case **#i**: **a**". Where **i** is a test number, and **a** is the area shared between all rectangles.

Example

standard input	standard output
1 4 0 0 10 10 -1 -1 2 2 -10 0 2 100 -10 -10 10 10	Case #1: 4