Line Intersection

Given some horizontal or vertical line segments, compute all intersections of those lines.

Input

The first line of the input contains an integer t. t test cases follow, each of them separated by a blank line.

The first line of each case contains an integer n, the number of segments. n lines follow, each containing four integers x_1 y_1 x_2 y_2 where (x_1, y_1) and (x_2, y_2) are the end points of a segment.

Output

For each test case, print a line containing "Case #i:" where i is its number, starting at 1. Output one more line per intersection point containing two integers x y where (x, y) is a intersection point. You can output the points in any order, but you may not output an intersection point more than once. Each line of the output should end with a line break.

Constraints

- $1 \leq t \leq 20$
- $1 \leq n \leq 100$
- $0 \leq x_1, x_2 \leq 1000$
- $0 \leq y_1, y_2 \leq 1000$
- Either $x_1 = x_2$ or $y_1 = y_2$.
- No line segment will consist of a single point.
- No two horizontal line segments will intersect.
- No two vertical line segments will intersect.

Sample Input 1

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

3
2 1 2 5
0 2 5 2
1 3 4 3
```

Sample Output 1

```
Case #1:
2 2
Case #2:
2 2
2 3
```