Swordfighting

What a time to be alive. Lea just watched the new “Super Intense Sword Arena” movie. The whole movie was two glorious hours of intense sword dueling between a whole cast of different combatants that would do anything to crush their opponent. At the beginning of each fight, both combatants would be given a random sword from a huge assortment of long swords, broad swords, bastard swords, rapiers, estocs and the like (spoilers: the ones that were lucky enough to get a lightsaber won almost always).

At home, she looks for the frames she found the coolest – every time the two combatants had their swords locked and both tried to push the other one back. After Lea admired the stills for a while, she noticed something – some of the swords did not seem to be straight lines starting from the hilt but rather curved a little. Fascinated she began to investigate and measured several coordinates of the hilts of both swords in the frame. Also she measured the point where both swords clashed (where the sparks fly off).

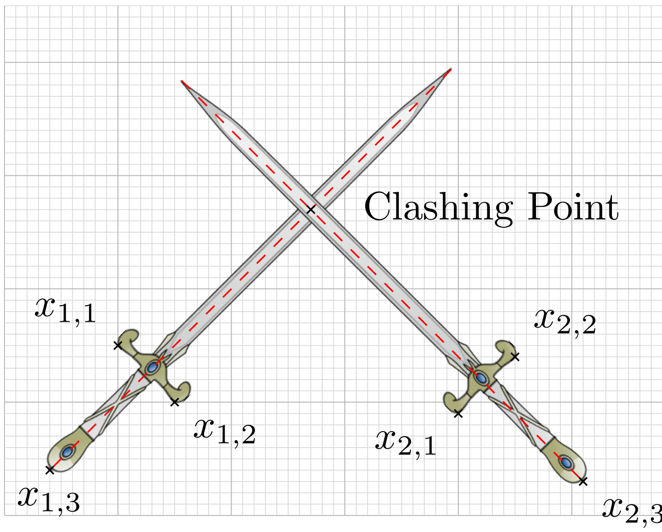

Figure 1: Visual representation of the first case of the sample input. Sword Image taken from https://upload.wikimedia.org/wikipedia/commons/4/44/Long_sword.svg

Can you tell her if the clashing point is consistent – i.e. both swords seem to have straight blades?

Input

The first line of the input contains an integer t. t test cases follow.

Each test case consists of a single line containing 12 integers $x_{1,1}$ $y_{1,1}$ $x_{1,2}$ $y_{1,2}$ $x_{1,3}$ $y_{1,3}$ $x_{2,1}$ $y_{2,1}$ $x_{2,2}$ $y_{2,2}$ $x_{2,3}$ $y_{2,3}$, where the first index specifies which sword it is and the second which part of the sword. Sword parts 1 and 2 are outer points of the crossguard at the same height (i.e. form a line orthogonal to the blade), while 3 is a point at the end of the pommel (see picture). Due to perspective and sword arena physics, you can ignore the width of the blades and think of the blade of the i–th sword as a single straight line extending from the crossguard. $(x_{i,3}, y_{i,3})$ always lies on an imaginary extension of the blade.

Output

For each test case, print a line containing “Case #i: x_c y_c” where i is its number, starting at 1 and (x_c, y_c) is the point where the two blades should clash with an error of up to 10^{-4}. If the blades of both swords do not clash, print a line containing “Case #i: strange”. The hilt of a sword never clashes, only the blade. Even if two hilts overlap, it is still “strange”. Both swords’ blades are long enough to eventually clash. Each line of the output should end with a line break.

Constraints

- $1 \leq t \leq 20$
- $0 \leq x_{i,j}, y_{i,j} \leq 100$ for all $i \in \{1, 2\}, j \in \{1, 2, 3\}$.
- $y_{i,3} < \min(y_{i,1}, y_{i,2})$ for all $i \in \{1, 2\}$.
- $(x_{i,1}, y_{i,1}) \neq (x_{i,2}, y_{i,2})$ for all $i \in \{1, 2\}$.
- The projection of $(x_{i,3}, y_{i,3})$ onto $(x_{i,1}, y_{i,1}) - (x_{i,1}, y_{i,1})$ lies between $(x_{i,1}, y_{i,1})$ and $(x_{i,1}, y_{i,1})$ for $i \in \{1, 2\}$.
- $(x_{1,3}, y_{1,3})$, (x_c, y_c) and $(x_{2,3}, y_{2,3})$ will never be collinear.

Sample Input 1	Sample Output 1

`2`
`10 15 15 10 5 4 40 9 45 14 51 3`
`10 25 20 25 15 10 40 20 50 20 45 15`
	`Case #1: 27.5 26.5`
	`Case #2: strange`

Sample Input 2	Sample Output 2

`8`
`5 1 1 1 3 0 8 2 10 2 9 0`
`2 2 4 1 2 0 10 2 7 2 9 1`
`3 2 5 1 2 0 10 2 7 2 8 1`
`9 2 6 1 8 0 2 2 4 1 3 0`
`2 1 4 1 2 0 9 1 7 1 8 0`
`2 1 4 1 4 0 10 1 8 1 9 0`
`2 2 4 1 2 0 7 2 10 2 9 0`
`6 2 9 1 6 0 2 2 5 2 5 1`
	`Case #1: strange`
	`Case #2: 9.0 14.0`
	`Case #3: 8.0 12.0`
	`Case #4: 6.0 6.0`
	`Case #5: strange`
	`Case #6: strange`
	`Case #7: 9.0 14.0`
	`Case #8: strange`