It's a common phenomenon to mix up direction when you go to a new place. Some people are so clever that they just look at sky and can tell you which one is north. And some dumb people try to remember the whole way they travelled: "First we were east facing, then we turned left, then right, then again right ... and so this one is ..." and thus end up with a direction. But the roads are not always in 90 degrees with each other and they do not always run from north to south or from east to west. So this kind of calculation ends up with some ridiculous answer almost all the times.

The city we are talking about is a square shaped one with vertices at $(0, 0)$, $(S, 0)$, (S, S) and $(0, S)$. Although the city is nice square shaped one, the road network is already messed up. But there is only one rail track and it is a straight one. So city corporation decides to build another rail track which is perpendicular to the existing one. They do not care if the new track intersects with the previous rail track or not, they just need location of two rail stations so that if a rail track is built along the straight line connecting these two stations the line would be perpendicular to the existing rail track. The problem is you have to build the stations in integer co-ordinates.

So to sum it up, you will be given co-ordinates of two stations on the already existing rail track, you have to give any two distinct integer co-ordinates within the city for building new rail track. One of the new co-ordinates may coincide with the given co-ordinates, if you want it to.

Input

First line of input will contain an integer T, the number of test cases ($T \leq 15000$). For each case there will be a line of four integers X_1, Y_1, X_2, Y_2 ($0 \leq X_1, Y_1, X_2, Y_2 \leq 10^9$). Here (X_1, Y_1) and (X_2, Y_2) are the coordinates of two stations on the already existing rail track.

You may assume that these two points are different and within the city.

Output

For each test case produce one line of output. This line contains the case number followed by four integers: where the first two integers are the x and y co-ordinate of the first station and the next two integers are the x and y co-ordinate of the second station. **They should be within the city for any possible value of S and the line passing through them must be perpendicular to the existing line (may not necessarily intersect the previous track within the city)!** Since there can be multiple answers, you may output any of them but you have to make sure that absolute value of any of these coordinates does not exceed 2×10^9. For details please go through the explanation of the sample cases.

Explanation

First Sample: In the first sample, the existing rail track goes through points (4, 4) and (5, 5). If you establish two new rail stations at (1, 0) and (0, 1) the rail track passing through them will be perpendicular to the existing rail track. Note, if you output something like (5, 5) and (6, 4) you will get Wrong Answer, since if $S = 5$, point (6, 4) will not be within the city. But for any value of S such that (4, 4) and (5, 5) is within the city, points (1, 0) and (0, 1) will also be within the city.

Second Sample: In this case, there are many correct answers. One of them is (10, 0) and (10, 2). Note that, unlike first sample here the rail tracks intersect.

Sample Input

```
2
4 4 5 5
9 0 10 0
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Sample Output

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Case 1: 1 0 0 1
Case 2: 10 0 10 2
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