Lines

Task. There are given the coefficients of the four lines expressed in equations in the form: $y = a_i \times x + b_i$: a_1, b_1, a_2, b_2, a_3, b_3, a_4, b_4.

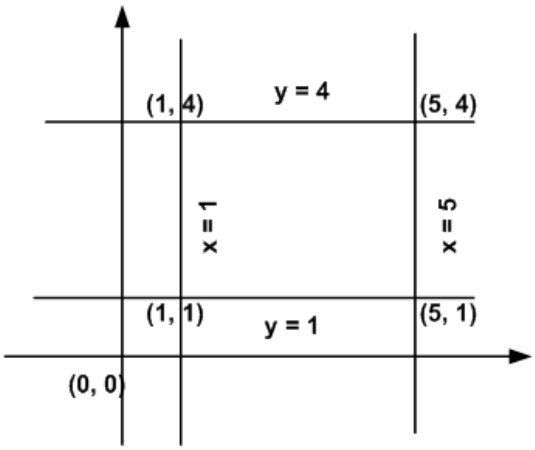
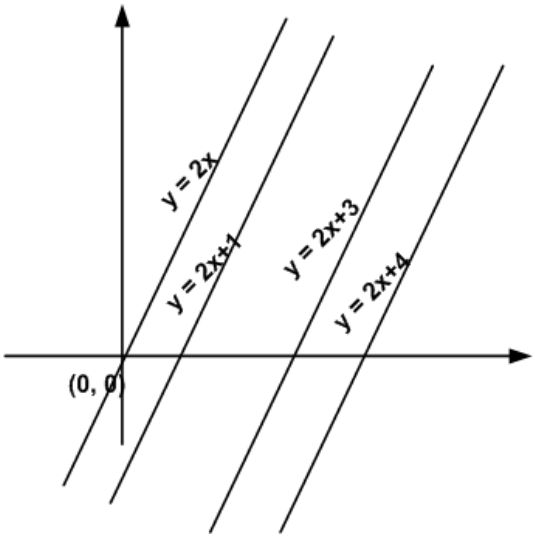
Write an algorithm to determine whether these four lines define a quadrangle by intersecting, and to find the coordinates of the vertexes of the quadrangle if they do.

The input is such, that the lines intersect at integer points.

Explain the idea of the solution.

Examples.

Input	Output	Comments
0 1 0 4 1 0 5 0	1 1 0 1 4 4 1 4	Example corresponds the drawing on the left.

Input	Output	Comments
2 1 2 0 2 3 2 4	NE	Example corresponds the drawing on the right.

Constraints. $-100 \leq a_1, b_1, a_2, b_2, a_3, b_3, a_4, b_4 \leq 100$.