Intersection

2023/2024 SEASON – SECOND ROUND

Lazar got lost somewhere in the Cartesian plane, containing n straight lines. The only way to escape is by moving through a special point – a beautiful point. A point is called beautiful if it is an intersection point of at least $\left\lfloor \frac{n}{4} \right\rfloor$ lines and it has integer coordinates. Your task is to find a beautiful point and save Lazar.

Input

The first line of the file **intersection.in** contains an integer n – the number of straight lines. The next n lines comprise of 2 pairs of integers – the coordinates of the points, which denote the respective line: (x_1, y_1) and (x_2, y_2).

Output

On the first line of the file **intersection.out** print 2 integers – the coordinates of the beautiful point. On the next line print m – the number of lines which define the beautiful point. The last line should contain m numbers – the indexes of the lines that you have chosen.

Constraints

It is guaranteed that a beautiful point exists.

$8 \leq n \leq 10^5$

$-10^9 \leq x_1,\ y_1,\ x_2,\ y_2 \leq 10^9$

$\left\lfloor \frac{n}{4} \right\rfloor \leq m \leq n$

Time limit: 0.3 sec.

Memory limit: 256 MB

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Sample test

Input (intersection.in)	Output (intersection.out)
12 4 7 2 7 8 9 3 3 8 2 5 2 6 4 0 5 8 5 1 2 8 12 6 6 1 8 3 3 5 3 8 0 14 15 8 7 7 4 4 6 9 8 5 6 3 8 9 4	5 3 3 6 8 9