



## Imagestabilization

Mouse Daniel likes to create short films. But as he does not always have a stable arm his videos shake some times. He found a software which analyzes the video and determines how the video frames can be corrected. All frames are translated and scaled on an infinite black plane such that the corresponding pieces in the frames are placed exactly on top of each other. Daniel now wants to cut out a piece of the plane such that at no point in time the black background is visible. Can you help him find the biggest such piece?

### Input

The first line contains  $N$ , the number of video frames.

Each of the following  $N$  lines contains four integers  $x_i, y_i, w_i, h_i$ , separated by a single space, the position  $(x_i, y_i)$  of the bottom left corner of the  $i$  th frame and its width  $w_i$  and height  $h_i$ . Note that the  $x$  coordinates increase from left to right and the  $y$  coordinates increase from bottom to top. All frames are rectangles and are aligned along the axes. No frames are rotated.

### Output

You need to output one line containing four integers  $x, y, w, h$  separated by a single space. The position  $(x, y)$  of the bottom left corner of the biggest piece and its width  $w$  and height  $h$ . If there is no solution print "0 0 0 0".

### Constraints

For 30 points:

- $1 \leq N \leq 1\,000$
- $0 \leq x_i, y_i, w_i, h_i \leq 100$

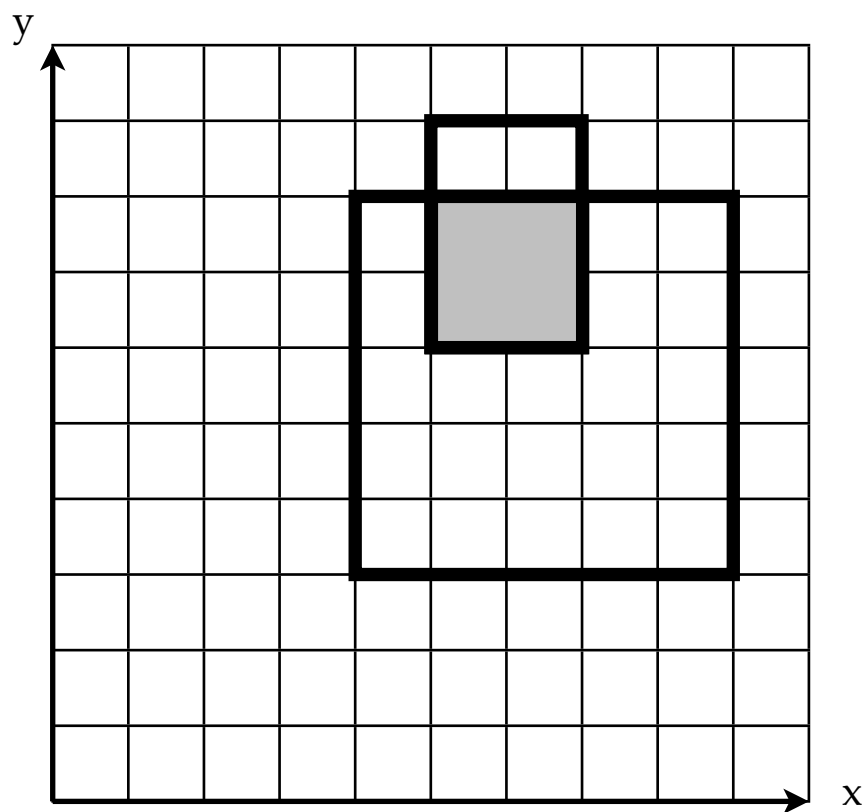
For 100 points:

- $1 \leq N \leq 10^5$
- $-10^{18} \leq x_i, y_i \leq 10^{18}$
- $0 \leq w_i, h_i \leq 10^{18}$

### Samples

Input	Output
2 4 3 5 5 5 6 2 3	5 6 2 2

In the figure below you can see how the two frames overlap.



Input	Output
2 1 2 3 4 5 6 7 8	0 0 0 0