

The screenplay for *The Masked Lady Gathers No Moss* — a shameless and rushed 1982 adaption of *The Masked Lady and the Circumrotary Cobblestone* aiming to capitalise on the success of a popular film from the previous year — saw our heroine shooting down a succession of slippery slopes to stay scatheless ahead of a surprisingly substantial stone sweeping solemnly down said slopes. The scene was to be shot from the side, showing a superlative set of separate slopes, so that the supreme status of our heroine would surprise. Spoiler: she survives.

Each slope in the film, from the side view, appeared as a line sloping down to the right. No two slopes intersected, even at an end. The masked lady raced down a slope and, when she reached the end, dropped vertically down to the next slope below. This continued until she reached the end-point of a slope without another slope below, when the music swelled and the scene faded to black.

Forward momentum, both physically and of the plot, meant that our heroine only ever landed on a slope that continued from the point directly below the previous slope's endpoint. Landing on the end of another slope would be bad for the box-office and was ignored.

For example, suppose the slopes ran  $(0,0)-(3,-1)$ ,  $(1,-2)-(2,-4)$ ,  $(2,-3)-(4,-4)$  and  $(3,-2)-(5,-3)$ , and our heroine started at  $(0,0)$ :

- The Masked Lady runs down the first slope until she reaches  $(3,-1)$ ;
- She drops down to the  $(3,-2)-(5,-3)$  slope and continues to run to  $(5,-3)$  where the scene ends;
- If the fourth slope had not been present, she would have dropped from  $(3,-1)$  to the middle of the  $(2,-3)-(4,-4)$  slope and the scene would have ended at  $(4,-4)$ .

#### SAMPLE INPUT

```
4
0 0 3 -1
1 -2 2 -4
2 -3 4 -4
3 -2 5 -3
```

The first line of input will consist of a single integer,  $s$  ( $1 \leq s \leq 2^{19}$ ), indicating the number of slopes. The next  $s$  lines will contain four integers,  $a_i b_i c_i d_i$  ( $0 \leq a_i < c_i \leq 2^{30}$  and  $0 \geq b_i > d_i \geq -2^{30}$ ), giving a slope  $(a_i, b_i)-(c_i, d_i)$ .

The Masked Lady will always begin at  $(0,0)$  which will be a point on one of the slopes.

You should output 2 lines. The first line should contain the number of slopes the Masked Lady runs along. The second line should contain the co-ordinates of her final destination.

#### SAMPLE OUTPUT

```
2
5 -3
```