

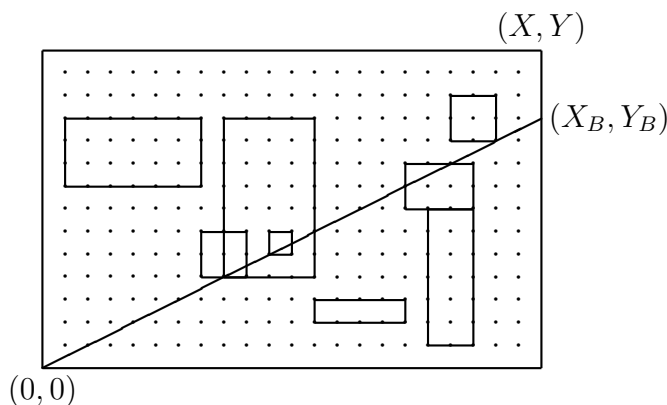
IOI Training Camp 2010 – Test 5, 22 June, 2010

Problem 1 Grid

Within a rectangle that is X units wide and Y units tall with bottom left corner $(0, 0)$ and top right corner (X, Y) , there are N smaller rectangles with sides parallel to the outside rectangle. The corners of these inner rectangles lie at grid points (points with integer coordinates). These inner rectangles may overlap, coincide or lie one inside the other.

We draw a line segment from $(0, 0)$ to a grid point (X_B, Y_B) on the upper or right boundary of the outer rectangle (i.e., X_B, Y_B are integers.) This segment might cross inner rectangles, where we assume that a crossing takes place even if only one vertex of the rectangle is crossed.

The task is to write a program to find a grid point (X_B, Y_B) on the boundary for which the segment from $(0, 0)$ to (X_B, Y_B) crosses as many inner rectangles as possible.



Example *This segment crosses 5 of the 8 inner rectangles, which is the maximum possible.*

Input format

The first line of the input contains three integers X , Y and N . Each of the following N lines describes a rectangle in terms of four space separated integers X_1 , Y_1 , X_2 and Y_2 , where (X_1, Y_1) and (X_2, Y_2) are the coordinates of the bottom left and top right corners of the rectangle, respectively.

Output format

The output should be a single line containing three integers X_B , Y_B and M separated by spaces, where (X_B, Y_B) is the grid point on the boundary for which the segment from $(0, 0)$ to (X_B, Y_B) crosses as many rectangles as possible and M is the number of crossed rectangles. If there are several solutions, find any one of them.

Test Data

You may assume that $0 < X \leq 10^9$, $0 < Y \leq 10^9$ and $1 \leq N \leq 10,000$.

Example

Here is the sample input and output corresponding to the example above.

Sample input

```
22 14 8
1 8 7 11
18 10 20 12
17 1 19 7
12 2 16 3
16 7 19 9
8 4 12 11
7 4 9 6
10 5 11 6
```

Sample output

```
22 11 5
```

Note The sample input and output corresponds to the figure above. Another possible solution for this input is

```
22 12 5
```

Time and memory limits

The time limit for this task is 1 second. The memory limit is 44 MB (actual limit 32 MB, plus 12 MB buffer for 64-bit compilation).