# RECTANGLES

DAY 2 (23-APR-2004)
**ENGLISH VERSION**

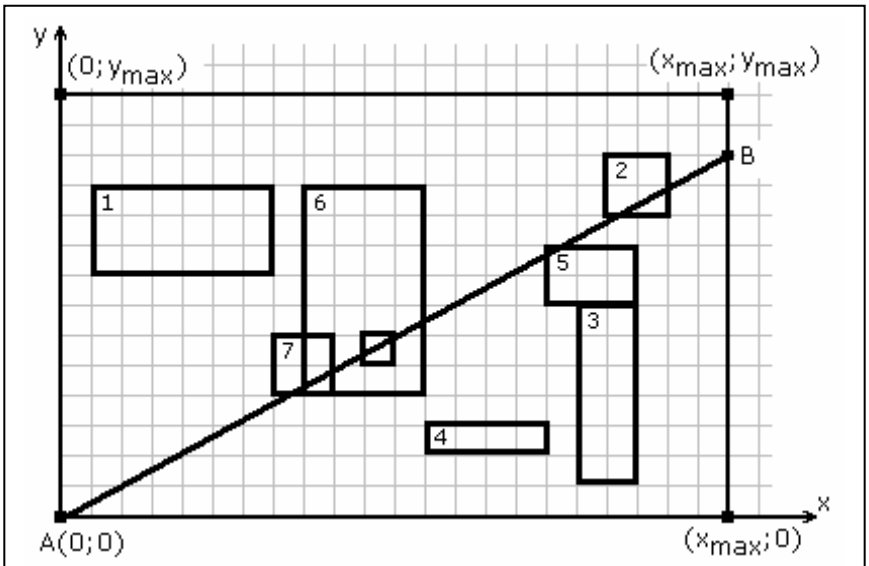
BOI Ventspils 2004

There are given N rectangles on the plane. Rectangle sides are parallel to coordinate axis. These rectangles may overlap, coincide or be drawn inside one another. Their vertices have non-negative integer coordinates and $x$ coordinates do not exceed $x_{max}$ and $y$ coordinates do not exceed $y_{max}$.

A segment is started in the point A(0, 0) and ended in point B. The coordinates of the point B (the other end of the segment) satisfy the following conditions:

- The coordinates of B are integer numbers;
- The point B belongs either to the segment $[(0, y_{max}), (x_{max}, y_{max})]$ or to the segment $[(x_{max}, 0), (x_{max}, y_{max})]$;

The segment AB might cross rectangles (we assume that crossing takes place even if only one rectangle vertex is crossed).




*Example with 8 rectangles. The segment AB crosses 5 of them.*

### *Task*

Write a program to find a point B for which the segment AB crosses as many rectangles as possible.

### *Input*

The first line of the input file `rect.in` contains three integers: $x_{max}, y_{max}$ ($0 < x_{max}, y_{max} \le 10^9$) and N ($1 \le N \le 10000$). Each of the following N lines contains four integers: coordinates of the bottom left corner $x_{bl}$ and $y_{bl}$ and coordinates of the top right corner $x_{tr}$ and $y_{tr}$. Neighbouring numbers are separated by single space character.

### *Output*

On the first and only line of the output file `rect.out` three integer numbers should be written. First – the maximum number of crossed rectangles followed by x and y coordinates of point B. Neighbouring numbers must be separated by single space character.

If there are several solutions, find any one of them.

***Example*** (corresponds to the drawing)

| rect.in | rect.out |
|---|---|
| 22 14 8<br>1 8 7 11<br>18 10 20 12<br>17 1 19 7<br>12 2 16 3<br>16 7 19 9<br>8 4 12 11<br>7 4 9 6<br>10 5 11 6 | 5 22 12<br><br><br><br>*Remark:* Another possible solution is<br>5 22 11 |