Problem D
The Richest Sozi Presentation

Input File: *testdata.in*
Time Limit: 10 seconds

Problem Description

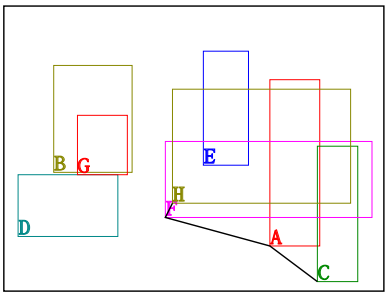
Powerpoint presentations look rather twenty-centry-ish compared to Prezi presentations – a cloud service that allows you to create presentations with dazzling sliding/zooming/rotating transition effects. Inkscape is a piece of free software for you to create svg (scalable vector graphics) drawings. Sozi is a plugin that turns Inkscape into a free (as in freedom) alternative to Prezi, with many additional benefits. Yes, all these are real software names for you to google.

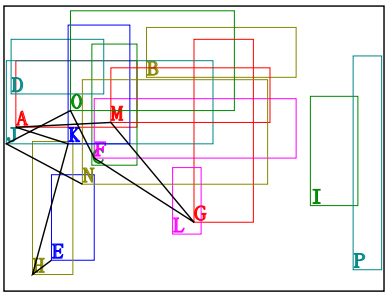
A sozi presentation is basically a linear arrangement of rectangular viewing frames within a single canvas (an svg drawing). Each viewing frame represents a slide in the presentation. Once you specify the sequence of the frames using sozi, it will then insert animation javascripts into your svg drawing, and Firefox or any other decent browser then becomes a presentaion player for your svg drawing.

You are given information about a set of rectangles representing the set of frames in a sozi presentation svg file. It is known that fortunately none of the frames has been rotated. Furthermore, only a subset of all frames were used in the presentation. They were selected and sequenced according to the following rules:

- no two frames have exactly the same size (in terms of area; regardless of aspect ratios).
- each selected successive frame is larger than the previous frame.
- two selected successive frames either overlap each other or touch each other at their boundary point or at their corners.

That is, only a successively growing and overlapping/touching subset of all frames are actually used in the presentation. You are requested to find out the number of slides (rectangular frames) in the richest presentation, namely the most number of frames picked, that can possibly be produced from this svg file. The following pictures illustrate one possible solution for each of test cases 1 and 3. Alphabetical names are added to the southwest corner of each rectangle in the same order as the rectangles appear in the input. These names are for your reading convenience only and are irrelevant to the actual problems.





Technical Specifications

1. There are no more than 20 test cases.
2. There are no more than 100 and at least 1 frames in each test case.
3. Coordinates of frame boundaries are always multiples of 5.
4. The size of a canvas (bounding box) is never larger than 2000x2000.
5. The origin is located at the northwest corner of an svg file.

6. Every frame is guaranteed to be fully within the canvas.

7. Frame borders are considered as infinitely thin lines. That is, they don't contribute to the area.

Input Format

There are multiple test cases in the input file. A triple of 0, 0, and 0 ends the input.

The first line of each test case contains three integers N, W, and H, indicating the number of frames, the width of the canvas, and the height of the canvas, respectively. Then N rows of input follows, each containing 4 integers l, t, w, h indicating the x coordinate and y coordinate of the northwest corner of the rectangular frame and its width and height, respectively.

All numbers are separated by spaces. Each line may be prefixed by zero or more spaces.

Zero or more empty lines separate test cases.

Output Format

For each test case, output the number of slides (rectangular frames) in the richest presentation possible.

Sample Input

```
8 800 600
 560  155  105  350
 105  125  165  225
 660  295   85  285
  30  355  210  130
 420   95   95  240
 340  285  435  160
 155  230  105  125
 355  175  375  240

12 800 600
  55   30   90  420
```

```
 305     0  325   75
  90   350  120   70
 440    55  140  195
 170   105  175  115
 190    70  135   60
 230   145  310  125
 120   350  415  245
 210    95  375  385
 360   365   85  120
 690   450   80  120
 310   105   95  220

16 800 600
  25   115  255  140
 300    45  315  105
 185    80   95  255
  15    70  195  115
 100   355   90  180
 190   195  425  125
 400    70  125  385
  60   285   85  280
 645   190  100  230
   5   115  435  175
 135    40  130  250
 355   340   60  140
 225   130  335  115
 165   155  390  220
 140    10  345  210
 735   105   60  450

0 0 0
```

Sample Output

```
4
5
10
```