

River II

Input File	Output File	Time Limit	Memory Limit
standard input	standard output	1.5 seconds	256 MiB

The N residents of Ragden reside underground in dingy rectangular hollows far below the extravagant royal palaces of the Great Tree.

Tired of the constant flooding from events such as the *Great Storm* and *Lauren Forgot To Turn Off The Sprinklers*, the residents have asked you to build an artificial underground river through which the storm waters can flow.

The *Underground* can be described as a rectangle W metres wide, and H metres deep. The point x metres from the left edge of The Underground and y metres below the surface is denoted (x, y) .

The i -th hollow is defined by the rectangle with top-left corner (a_i, b_i) and bottom-right corner (c_i, d_i) . **No two hollows intersect.** Hollows may touch on their sides or at corners.

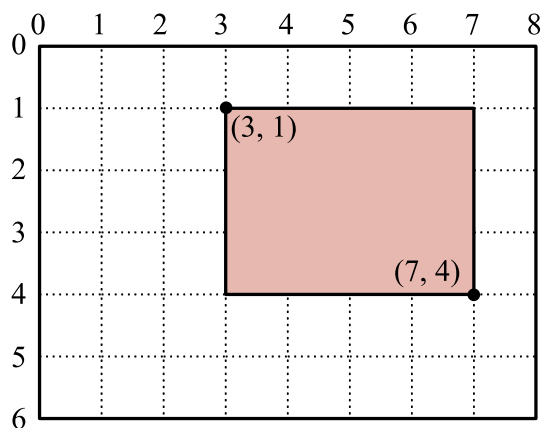


Figure 1: An example with $W = 8$, $H = 6$

The river can be thought of as a sequence of points $(x_0, y_0), (x_1, y_1), (x_2, y_2), \dots, (x_k, y_k)$, that form a poly-line.

- The river must start on the surface. That is, $y_0 = 0$.
- The river must end on the bottom of The Underground. That is, $y_k = H$.
- The river must never flow upwards. That is, $y_i \leq y_{i+1}$ for all i .
- The river must not intersect the interior of any hollows. The river may touch the sides or corners of the hollows.

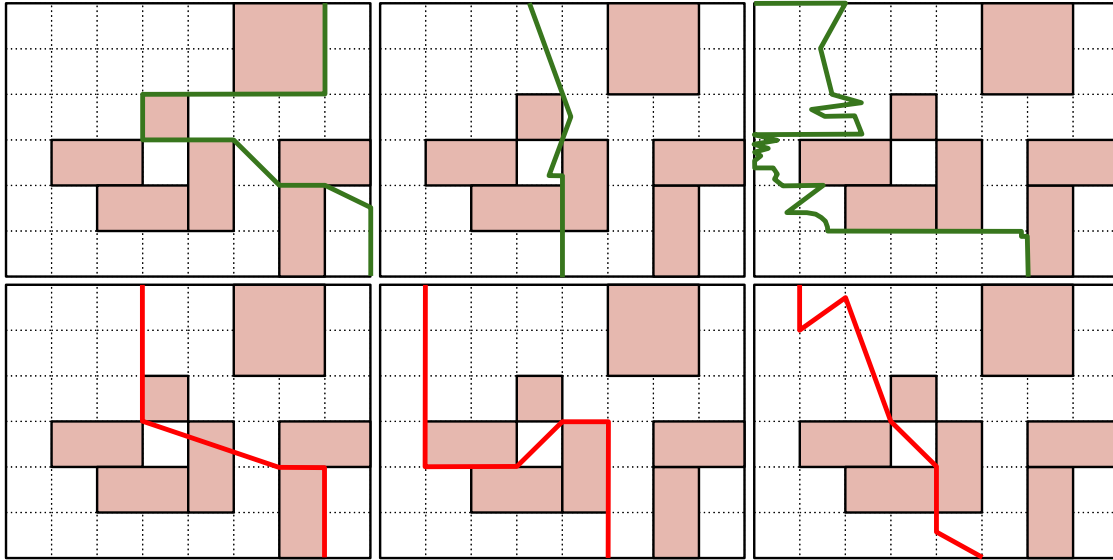


Figure 2: The top three rivers are valid. The bottom three rivers are invalid.

Notice that the river splits The Underground into a *left-side* and a *right-side*. If the i -th hollow is on the *left-side*, then the residents will generate l_i happiness points. Similarly, if the i -th hollow is on the *right-side*, then the residents will generate r_i happiness points. Note that l_i and r_i may be negative.

What is the greatest total happiness you can achieve?

Subtasks and Constraints

For all subtasks, you are guaranteed that:

- $1 \leq N \leq 100\,000$.
- $1 \leq W, H \leq 1\,000\,000$.
- $0 \leq a_i < c_i \leq W$, for all i .
- $0 \leq b_i < d_i \leq H$, for all i .
- $-10\,000 \leq l_i, r_i \leq 10\,000$, for all i .
- No two hollows intersect.

Additional constraints for each subtask are given below.

Subtask	Points	Additional constraints
1	6	All hollows have height 1. That is, $b_i + 1 = d_i$ for all i .
2	23	$W, H, N \leq 100$.
3	14	$W, H \leq 1000$.
4	25	$N \leq 5000$.
5	28	All hollows have width 1. That is, $a_i + 1 = c_i$ for all i .
6	4	No additional constraints.

Input

- The first line of input contains the three integers N , W and H .
- The next N lines describe the hollows. The i -th line contains a_i , b_i , c_i , d_i , l_i and r_i .

Output

Output a single integer, the greatest total happiness you could achieve.

Sample Input

```
7 8 6
5 0 7 2 -30 -9
3 2 4 3 1 9
1 3 3 4 -3 -8
2 4 4 5 -10 10
4 3 5 5 0 2
6 3 8 4 40 6
6 4 7 6 1 3
```

Sample Output

30

Explanation

By drawing the river as shown, we can achieve a total happiness of $-9+9+-3+-10+0+40+3 = 30$.

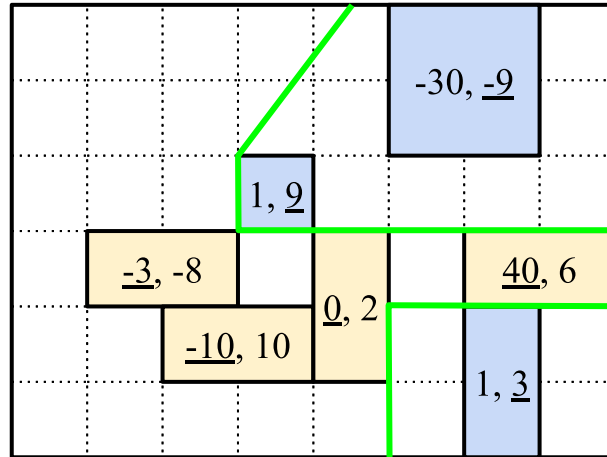


Figure 3: The sample case. Hollows on the left of the river are marked yellow, hollows on the right are blue.