

## Problem B

You have a lot of rectangular sheets of paper lying on your table, with their sides parallel to the sides of the table. You are interested in how deep is the heap of papers at certain points.

### Input and output

The first line contains two integers  $n, m \leq 100\,000$ , the number of papers and the number of points. Each of the  $n$  following lines contains four integers  $x_1, y_1, x_2, y_2$  ( $0 \leq x_1 < x_2 < 10^6$ ,  $0 \leq y_1 < y_2 < 10^6$ ), describing a paper whose lower left corner has coordinates  $(x_1, y_1)$  and upper right corner has coordinates  $(x_2, y_2)$ .

On each of the following  $m$  lines, there are two integers  $x'$  and  $y'$  ( $0 \leq x', y' < 10^6$ ). For each of these lines, let  $p$  be the last number that you printed out ( $p = 0$  in the beginning), and print out the number of the papers containing the point with coordinates  $((x' + p) \bmod 10^6, (y' + p) \bmod 10^6)$ . You can assume this point is not contained on the boundary of any of the papers.

### Example

Input:

```
2 2
0 0 10 10
5 5 15 15
9 9
14 14
```

Output:

```
2
0
```