

## E. Wall

time limit per test: 3 seconds

memory limit per test: 512 megabytes

input: standard input

output: standard output

This is a problem from the IOI (International Informatics Olympiad) 2014. Try to solve it using the segment tree!

Jian-Jia is building a wall by stacking bricks of the same size together. This wall consists of  $n$  columns of bricks, which are numbered from  $0$  to  $(n - 1)$  from left to right. The columns may have different heights. The height of a column is the number of bricks in it.

Jian-Jia builds the wall as follows. Initially there are no bricks in any column. Then, Jian-Jia goes through  $k$  phases of adding or removing bricks. The building process completes when all  $k$  phases are finished. In each phase Jian-Jia is given a range of consecutive brick columns and a height  $h$ , and he does the following procedure:

- In an adding phase, Jian-Jia adds bricks to those columns in the given range that have less than  $h$  bricks, so that they have exactly  $h$  bricks. He does nothing on the columns having  $h$  or more bricks.
- In a removing phase, Jian-Jia removes bricks from those columns in the given range that have more than  $h$  bricks, so that they have exactly  $h$  bricks. He does nothing on the columns having  $h$  bricks or less.

Your task is to determine the final shape of the wall.

### Input

The first line contains two integers  $n$  and  $k$  ( $1 \leq n \leq 2\,000\,000$ ,  $1 \leq k \leq 500\,000$ ), the number of columns and number of phases.

The next  $k$  lines contain descriptions of phases. Each line contains four numbers. First, the number  $t$  denotes the type of phase: 1 if it is an adding phase, and 2 if it is a removing phase. The next two numbers  $l$  and  $r$  ( $0 \leq l \leq r \leq n - 1$ ) define the range of the phase: the the range of columns starts with column  $l$  and ends with column  $r$ . The fourth number  $h$  ( $0 \leq h \leq 100\,000$ ) is the height of the action.

### Output

Print  $n$  lines. In the  $i$ -th line print the number of bricks in the  $(i - 1)$ -th column after all phases are finished.

### Example

input	Copy
10 6 1 1 8 4 2 4 9 1 2 3 6 5 1 0 5 3 1 2 2 5 2 6 7 0	
output	Copy
3 4 5 4 3 3 0 0 1 0	

### Note

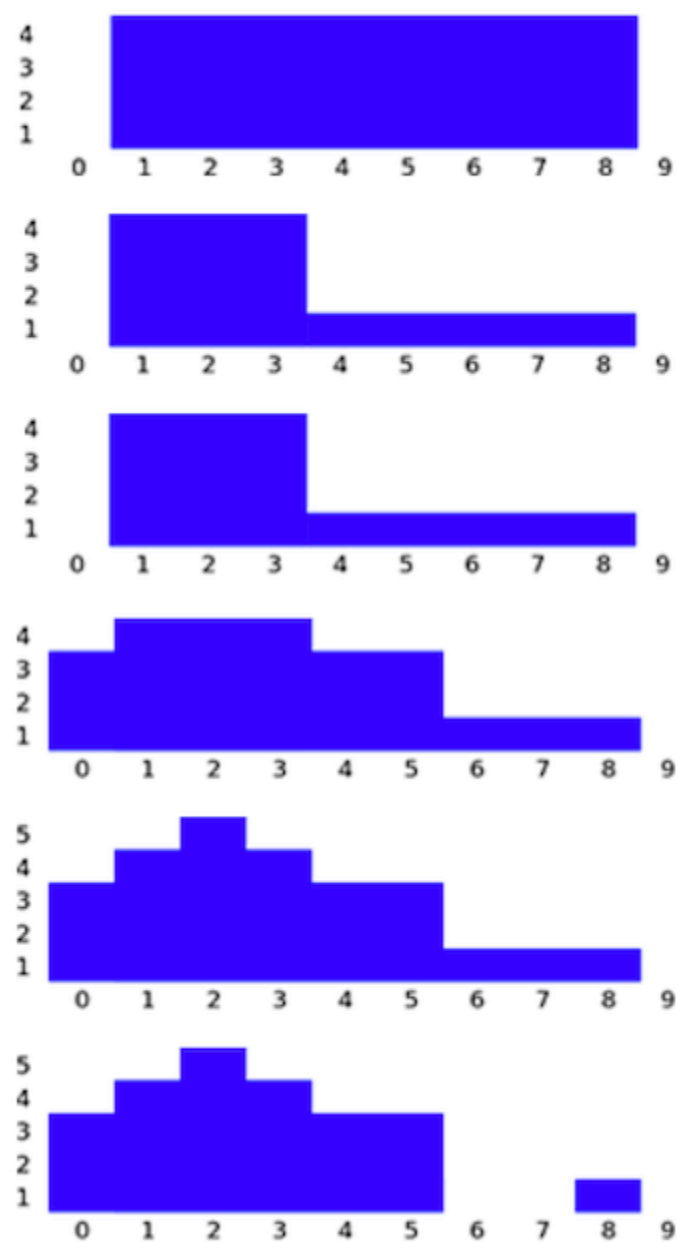
Picture for the example:

→ Submit?

Language: GNU G++20 13.2 (64 bit, win

Choose file: Choose File No file chosen

Submit



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