

---

## Problem A. Baby

Input file:            **standard input**  
Output file:           **standard output**  
Time limit:            5 seconds  
Memory limit:         1024 megabytes

Seokhwan is a cute 4-year-old baby. His teacher, Suryal, is teaching some knowledge suited for babies. Suryal brought a big whiteboard, which is essentially  $N$  empty vectors (vectors filled with zeroes) of size  $M$ , denoted by  $V_1, V_2, \dots, V_N$ .

Yesterday, Seokhwan learned how to write numbers. To test his ability, Suryal gave  $Q$  queries to Seokhwan. For each query, Seokhwan is given four number  $S, E, P, X$ . For all vectors  $V_S, V_{S+1}, \dots, V_E$ , Seokhwan should write  $X$  to  $P$ -th element of each vectors. It's guaranteed that Seokhwan never overwrites (he never writes in a place where he already wrote something).

Today, Seokhwan learned how to sort a sequence in  $O(N \log N)$  time complexity. To test his ability, Seokhwan should sort the vectors. Formally, Seokhwan should find a size- $N$  permutation  $P_1, P_2, \dots, P_N$  where  $V_{P_i} \leq V_{P_{i+1}}$  for all  $1 \leq i < N$ . Suryal expects Seokhwan to do stable sort, thus if there are many such  $P$ , then you should print the one which is lexicographically minimum.

Seokhwan did all those tasks in 5 seconds, which Suryal don't know how. You should help Suryal, and do what Seokhwan did. For two sequence  $L, R$  of same size,  $R$  is lexicographically greater than  $L$  if and only if there exists some  $j \in [1, M]$  such that  $L_i = R_i$  for all  $1 \leq i < j$  and  $L_j < R_j$ .

### Input

The first line contains the number of vector  $N$ , size of each vector  $M$ , and number of queries  $Q$ . ( $1 \leq N, M, Q \leq 250000$ )

In next  $Q$  lines, four integer  $S, E, P, X$  is given. This indicates that for all vectors  $V_S, V_{S+1}, \dots, V_E$ , Seokhwan should write  $X$  to  $P$ -th element of each vector. ( $1 \leq S, E \leq N, 1 \leq P \leq M, 1 \leq X \leq 250000$ ).

### Output

In  $i$ -th line, print the  $i$ -th element of permutation, which is the lexicographically minimum permutation which  $V_{P_i} \leq V_{P_{i+1}}$  holds.

### Example

standard input	standard output
5 5 3	1
3 5 2 1	5
2 2 2 2	3
1 4 4 3	4
	2