DMOPC '21 Contest 7 P2 - Knitting Scarves

Time limit: 2.0s **Memory limit:** 256M

Kanna's scarf is coloured with patches of colours that can be numbered from 1 to N. Kanna likes her scarf in a certain pattern and Edward needs to be able to recreate this scarf. Kanna is going to give sequential instructions of how she would like her scarf, starting from the default pattern where the patches are numbered in increasing order. At the i-th step, she wants Edward to perform a knitting operation, taking the continuous segment of colours starting with **colour** L_i and ending with **colour** R_i and moving it right after **colour** K_i if $1 \leq K_i \leq N$. If $K_i = 0$, then she wants the continuous segment to be moved to the very front of the scarf.

Can you tell Edward what the scarf should look like after all Q steps?

Constraints

$1 \leq N \leq 10^6$

$1 \leq Q \leq 5 \times 10^5$

$1 \leq L_i, R_i \leq N$

$0 \leq K_i \leq N$

After the first $i-1$ steps have been performed:

- Colour L_i appears no later than colour R_i in the scarf.
- K_i is not contained in the continuous segment of colours starting with colour L_i and ending with colour R_i.

Input Specification

The first line contains 2 integers N and Q.

The i-th of the following Q lines contains 3 integers L_i, R_i, and K_i.

Output Specification

As a space-separated sequence of N integers, output the sequence of colours on the scarf after all Q steps have been performed.

Sample Input

```
6 3
4 5 1
5 6 0
2 2 3
```

Sample Output

```
5 3 2 6 1 4
```

Explanation

Initially, the colours on the scarf are $[1, 2, 3, 4, 5, 6]$.

After the first step, the colours on the scarf are $[1, 4, 5, 2, 3, 6]$.

After the second step, the colours on the scarf are $[5, 2, 3, 6, 1, 4]$.

After the final step, the colours on the scarf are $[5, 3, 2, 6, 1, 4]$.