Bill's Binoculars

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

Bill recently got a hold of a fresh new pair of binoculars. Of course, there is just one thing left to do: spy on his neighbours!

Across the street, Bill sees N houses laid out in a row. During his spy session, a total of K events occur. On the ith event, x_i people leave House a_i and enter House b_i. Intrigued by this, Bill decides to keep track of all of these events. At the end, he wants to figure out the minimum number of people that must exist on that street.

Constraints

$2 \leq N \leq 5 \times 10^5$

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

$1 \leq a_i, b_i \leq N$

$1 \leq x_i \leq 10^9$

$a_i \neq b_i$

Input Specification

The first line contains two space-separated integers N and K, the number of houses, and number of events, respectively.

The next K lines of input contain three space-separated integers, a_i, b_i, and x_i, indicating that x_i people went from House a_i to House b_i.

Output Specification

On the first line, output the minimum number of people in total that must exist on the street.

On the second line, output N space-separated integers, describing the number of people in each house prior to the events, such that the total number of people is minimized. If there are multiple ways of doing this, output any.

Sample Input

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

Sample Output

```
5
3 2 0 0
```

Explanation

The number of people in each house between each event would be:

- $[3, 2, 0, 0]$ (initial count)
- $[0, 5, 0, 0]$ (1st event)
- $[0, 0, 0, 5]$ (2nd event)
- $[1, 0, 0, 4]$ (3rd event)