Task: MYJ
Car washes

Olimpiada Informatyczna

XXII OI, Stage III, Day one. Source file `myj.*` Available memory: 256 MB. *16.04.2015*

Byteasar plans to place a bid in a tender for operating n car washes along the main express way in Byteotia. Before he does though, he would like to estimate the revenue he can attain.

To this end, he has commissioned a market research. The research results conclude that m potential customers are going to drive along the way. In particular, the i-th of them is going to drive along the segment between the washes a_i and b_i (inclusively), and would be interested in having their car washed if the price were at most c_i bythalers. Byteasar intends to set the price in each car wash independently. Assuming that each customer is a rational (and tidy!) agent, i.e., chooses the cheapest wash along their way, or none if all the washes exceed their budget, Byteasar wants to set the prices so as to maximize his total revenue.

Input

The first line of the standard input contains two integers, n and m ($1 \leq n \leq 50$, $1 \leq m \leq 4000$), separated by a single space, that specify the numbers of car washes and customers respectively. The washes are numbered from 1 to n. The m lines that follow describe the customers: the i-th of these contains three integers, a_i, b_i, and c_i ($1 \leq a_i \leq b_i \leq n$, $1 \leq c_i \leq 500\,000$), separated by single spaces, which indicate that the i-th customer is driving along the segment between the washes a_i and b_i, and has a budget of c_i bythalers for car washing.

In tests worth 75% of the total score, an additional condition $m \leq 250$ holds.

Output

The first line of the standard output should contain a single integer s that equals the maximum total revenue of Byteasar, expressed in bythalers. The second line should contain a price list that attains the revenue s (under the rational agents assumption), namely, a sequence of n integers $p_1, p_2, \ldots, p_n$ ($1 \leq p_i \leq 500\,000$), separated by single spaces, where p_i is the price in the i-th car wash. If more than one correct answer exists, your program can pick one out of those arbitrarily.

Example

For the input data:

```
7 5
1 4 7
3 7 13
5 6 20
6 7 1
1 2 5
```

the correct result is:

```
43
5 5 13 13 20 20 13
```

Grading

If the first output line is incorrect, you will receive no points for the given test. If the first output line is correct but the rest of the output is not, you will receive 60% of the score for the test. This remains valid even if the answer does not conform with the output format, e.g., if only one or more than two lines are printed, or if the price list is incorrect or in wrong format.

Sample grading tests:

- `1ocen:` $n = 5$, $m = 2$; the first customer drives next to all the car washes and has a budget of 10, and the second one drives next to only the third car wash and has a budget of 9; In the optimal solution, the price at the third car wash should be 9 bythalers, and the price at all other washes should be higher than 9 – in such case, both customers will pay 9 bythalers each for having their cars washed, granting Byteasar a revenue of $2 \cdot 9 = 18$;

`2ocen:` $n = 2$, $m = 8$; three customers, each with a budget of 3, drive next to all the car washes, three customers, each with a budget of 1, drive next to only the first car wash, and two customers, each with a budget of 1, drive next to only the second car wash; In the optimal solution, the price at each car wash should be 3 bythalers – in such case, only the first three customers will pay 3 bythalers each for having their cars washed, granting Byteasar a revenue of $3 \cdot 3 = 9$;

`3ocen:` $n = 50$, $m = 1000$; the i-th customer drives next to all the car washes and has a budget of $500 \cdot i$; In the optimal solution, the price at each car wash should be 250 000 bythalers – in such case, only the customers no. 500 to 1000 will have their cars washed, granting Byteasar a revenue of $501 \cdot 250\,000 = 125\,250\,000$.