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PROBLEMS SUBMIT CODE MY SUBMISSIONS STATUS HACKS ROOM STANDINGS CUSTOM INVOCATION

D. Gellyfish and Camellia Japonica

time limit per test: 2 seconds memory limit per test: 512 megabytes

Gellyfish has an array of n integers c_1, c_2, \ldots, c_n . In the beginning, $c = [a_1, a_2, \ldots, a_n]$.

Gellyfish will make q modifications to c.

For $i=1,2,\ldots,q$, Gellyfish is given three integers x_i,y_i , and z_i between 1 and n. Then Gellyfish will set $c_{z_i}:=\min(c_{x_i},c_{y_i})$.

After the q modifications, $c = [b_1, b_2, \dots, b_n]$.

Now Flower knows the value of b and the value of the integers x_i , y_i , and z_i for all $1 \leq i \leq q$, but she doesn't know the value of a.

Flower wants to find any possible value of the array a or report that no such a exists.

If there are multiple possible values of the array a, you may output any of them.

Input

Each test contains multiple test cases. The first line contains the number of test cases t ($1 \le t \le 10^4$). The description of the test cases follows.

The first line of each test case contains two integers n and q ($1 \le n, q \le 3 \cdot 10^5$) — the size of the array and the number of modifications.

The second line of each test case contains n integers b_1,b_2,\ldots,b_n $(1\leq b_i\leq 10^9)$ — the value of the array c after the q modifications.

The following q lines each contain three integers x_i, y_i , and z_i $(1 \le x_i, y_i, z_i \le n)$ — describing the i-th modification.

It is guaranteed that the sum of n and the sum of q over all test cases does not exceed $3 \cdot 10^5$.

Output

For each test case, if a exists, output n integers a_1, a_2, \ldots, a_n ($0 \le a_i \le 10^9$) in a single line. Otherwise, output "-1" in a single line.

If there are multiple solutions, print any of them.

Example

input	Сору
3	
2 1	
1 2	
2 1 2	
3 2	
1 2 3	
2 3 2	
1 2 1	
6 4	
1 2 2 3 4 5	
5 6 6	
4 5 5	
3 4 4	
2 3 3	
output	Сору
-1	
1 2 3	
1 2 3 4 5 5	

Note

In the first test case, based on the given sequence of modifications, we know that $b_1=a_1$ and $b_2=\min(a_1,a_2)$. Therefore, it is necessary that $b_2\leq b_1$. However, for the given b, we have

Codeforces Round 1028 (Div. 2)

Finished

Practice



→ Virtual participation

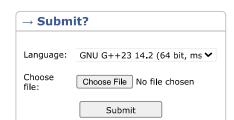
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Start virtual contest

→ Clone Contest to Mashup

You can clone this contest to a mashup.

Clone Contest



→ Last submissions		
Submission	Time	Verdict
322832186	Jun/04/2025 12:21	Accepted
322831574	Jun/04/2025 12:17	Wrong answer on test 3



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→ Contest materials

Announcement (en)

 $b_1 < b_2$. Therefore, there is no solution.

In the second test case, we can see that the given c becomes b from a after the given modifications, and c is not changed at each modification.

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