Peanuts! waku waku

Time Limit 1 sec/Memory Limit 256 MB

There are \(n\) restaurants in Ostania.
It is known that each restaurant is located at an intersection, and the restaurants are connected by one-way roads.
Anya and Damian live in Ostania. Their favorite restaurants are different. Anya's favorite is the restaurant numbered \(1\), while Damian's favorite is the restaurant numbered \(n\).
One day, Anya and Damian were so hungry, so they decided to choose a random restaurant first. But after eating, they still felt very hungry and wanted to eat again. This time, both Anya and Damian insisted on going to their favorite restaurant. In order to resolve the dispute, they played a game to make the decision.
If Anya won, they would both go to the restaurant numbered \(1\), and they would go to the restaurant numbered \(1\) and \(n\) if Damian won the game.
Anya and Damian want to know what is the minimum total length of the road they need to walk to eat the second restaurants if they eat at the restaurant numbered \(i\) first after school.
Notes: If Anya and Damian walk the same road, the length of this road will only be counted once.

Input Format

- The first line contains two number $\mathrm{T}, sub\ (\mathrm{T} < 5, sub\ \mathrm{e}\ \{1,2,3,4,5,6\})$, — the number of testcase and the subcase it belong to.

- Then, there is three integers $\mathrm{n}, \mathrm{m}, k\ (2 < n < 200000, 1 < m < 200000, k\ \mathrm{e}\ \{1,2\})$, — the number of the restaurants, the number of the one-way road and the person who won the game. ($k = 1$ means Anya won * $k = 2$ means Damian won)

- Each of the next m line contains three integers Ui, Vi, Wi ($1 < Ui, Vi < n, Ui \quad Vi, 1 < Wi < 10^9$) — the start point of the ith one-way road, the end point of the ith one-way road and the length of the zth road.

Output format

- For every testcase,
- o if Anya won, output n numbers.
  The zth number represents the minimum length from restaurant numbered i to restaurant numbered 1. (If restaurant numbered 1 is unreachable, then output —1)
- o if Damian won, output n numbers.
  The zth represent the minimum length from restaurant numbered i to restaurant numbered 1 and restaurant numbered n. (If restaurant numbered 1 or restaurant numbered n is unreachable, then output —1)

Credits & Hints

Scoring

Subcase	Additional constraints	Score
1	$n.m < 500, k = 1$	10
2	$n, m < 500$	20
3	n < 100000, m = 2 x (ti —1), fc= 1, street (ti, i>) and (v, u) have the same length	10
4	n < 100000, m = 2 x (n - l)street (u, tr) and (t», u) have the same length	20
5	fc= 1	10
6	No additional constraints	30

- In the first testcase, consider they start at restaurant numbered 2, Anya and Damian's route are 2->3->l, and the total length is 1 + 2 = 3.
- In the second testcase, consider they start at restaurant numbered 2, Anya's route is 2->3->l, and Damian route is 2->3->4. They share the same route 2->3. The total length of the route is (3->l)+(3->4)+(2->3) =2+3+l=6

sample input #1	sample output #1
2 2 4 5 1 2 3 1 3 1 2 3 4 3 2 4 3 2 1 4 4 5 2 2 3 1 3 1 2 3 4 3 2 4 3 2 1 4	0 3 2 -1 -1 6 5 -1

sample input #2	sample output #2
2 4 4 6 1 1 2 2 2 1 2 2 3 4 3 2 4 4 2 3 2 4 3 4 6 2 1 2 2 2 1 2 2 3 4 3 2 4 4 2 3 2 4 3	0 2 6 5 5 5 9 5