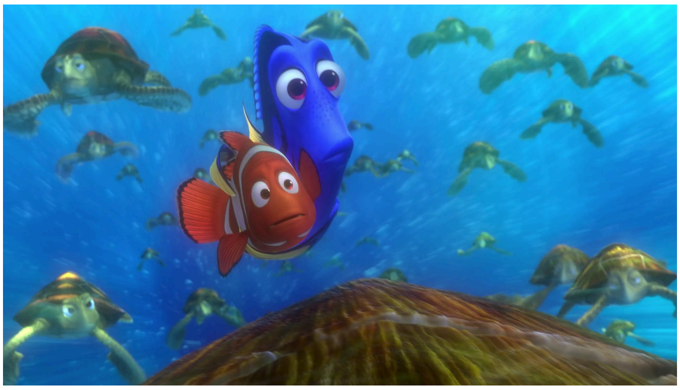
Assignment 3: Nemo Travels Back Home



In this assignment, you'll be diving into the adventurous world of Nemo and his friends as they embark on a journey back home. As fans of the beloved movie know, Nemo's journey is full of excitement, danger, and heartwarming moments.

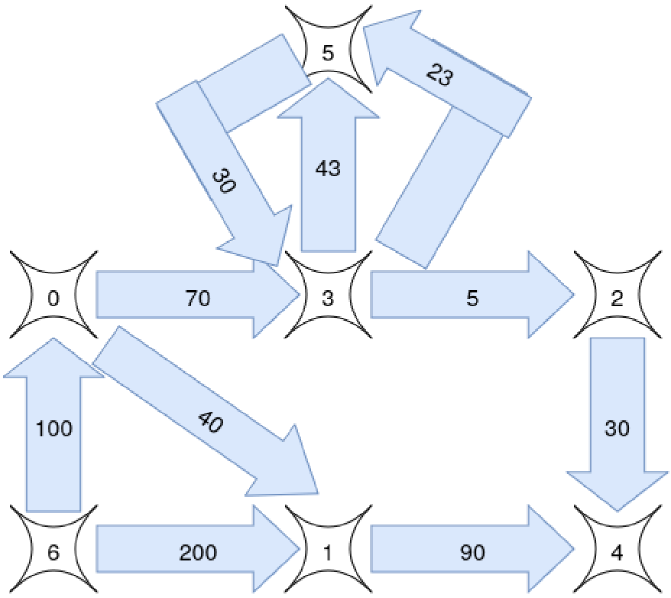
In the movie *Finding Nemo*, Nemo and his friends face numerous obstacles and adventures as they make their way back home to the Great Barrier Reef. Along the way, they encounter sharks, jellyfish, and other marine creatures, all while navigating the vast ocean currents.

Now, you'll be helping Nemo and his friends plan their journey home in the most efficient way possible. The ocean currents can either help or interfere with their progress, and it's up to you to determine the best route to conserve their energy. Conserving energy is crucial as they may encounter dangerous sea animals, so minimizing energy expenditure is essential.

Task

Nemo and his friends are eager to return home, but they want to conserve their energy for any unexpected challenges they may encounter along the way. To achieve this, they plan to utilize the ocean currents to assist them in their journey. However, swimming against the current can be exhausting and costly. For simplicity, consider that swimming against the current requires energy equal to the current strength. However, taking advantage of the current direction incurs zero energy consumption.

Your task is to develop a program that helps Nemo and his friends plan their route home, taking into account the direction and strength of the ocean currents. The program should determine the best path for them to follow, minimizing the energy consumed to reach their destination.



As an example, consider the ocean current chart above, where there are 7 locations connected by 10 ocean currents. An arrow from location l1 to location l2, labeled with number s, indicates an ocean current of strength s from l1 to l2. Let's examine some examples of the paths with the weakest current that lead to the lowest energy consumption:

- From location 3 to location 5, there are two paths with the weakest currents: one through a current with strength 23, and another through a current with strength 43. Taking advantage of the current direction incurs zero energy consumption.
- From location 2 to location 1, the only path with the weakest current is 2, 3, 0, 1, with an energy consumption of 75.
  Note that 2, 4, 1 represents a current path with an energy consumption of 90.
- From location 4 to location 1, there is also only one path with the weakest current, through a current with a strength of 90. The energy consumption for taking this path is 90.

Input

The input begins with three integers in the first line, L, C, and J, denoting respectively the number of locations, the number of connections between locations, and the number of journeys. Locations are labeled with integers ranging from 0 to L − 1. Following that, each of the C lines contains three integers, l1, l2, and s (where l1 ≠ l2), indicating the existence of an ocean current from location l1 to location l2 with a strength s. Subsequently, P lines follow, each containing two distinct integers, d_j and a_j, representing the departure and arrival locations for Nemo's j^{th} journey (for every j = 1, . . . , J).

Constraints

- $2 \le L \le 30{,}000$ (Number of locations)
- $1 \le C \le 150{,}000$ (Number of ocean currents)
- $1 \le J \le 10$ (Number of journeys)
- $1 \le s \le 10{,}000$ (Strength of the ocean currents)

Output

The output comprises J lines, each containing a single integer. The value on the j^{th} line denotes the energy consumption of the path containing the weakest current from the departure location d_j to the arrival location a_j (for every $j = 1, \ldots, J$).

Sample Input

```
7 10 3
0 1 40
0 3 70
1 4 90
2 4 30
3 2 5
3 5 43
3 5 23
5 3 30
6 0 100
6 1 200
2 1
4 3
3 5
```

Sample Output

```
75
35
0
```