

Mock CCC '19 Contest 1 S5 - Pusheen Eats Even More Tuna Sashimi and Tuna Nigiri

Time limit: 0.5s **Memory limit:** 256M

Pusheen has been dreaming about tuna sashimi! She has decided that she needs to eat more tuna in her life, so she decides to go on a tuna tour to eat tuna sashimi and tuna nigiri!

Pusheen has made a note of N restaurants serving tuna sashimi and tuna nigiri and has made plans to eat at many of them! She has Q trips planned - on trip i , she will start by eating lunch at restaurant s_i and then walk over to restaurant e_i for dinner.

The N restaurants are connected by M bidirectional roads that Pusheen can walk along in either direction. Pusheen is excited to eat as much tuna sashimi and tuna nigiri as possible, so she wants to know the length of the shortest path between each of these restaurants. Pusheen will not need her helicopter for this, as it is guaranteed that she can walk from any restaurant to any other restaurant along these roads.

Constraints

$$2 \leq N \leq 5 \cdot 10^4$$

$$N - 1 \leq M \leq N + 200$$

$$1 \leq a_i, b_i \leq N, a_i \neq b_i$$

There will be at most one road between two restaurants.

It is possible to reach any restaurant from any other restaurant via the given roads.

$$1 \leq w_i \leq 10^3$$

$$1 \leq Q \leq 5 \cdot 10^4$$

$$1 \leq s_i, e_i \leq N, s_i \neq e_i$$

Input Specification

The first line contains two space-separated positive integers, N and M .

M lines follow, each containing three space-separated positive integers, a_i , b_i , and w_i , indicating a bidirectional road of length w_i between restaurants a_i and b_i .

A single line follows with a single positive integer, Q .

Q lines follow, each containing two space-separated positive integers, s_i and e_i , indicating that Pusheen's i th trip will be between restaurants s_i and e_i .

Output Specification

Output Q lines. On the i th line, compute the length of the shortest path for Pusheen's i th trip.

Sample Input

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

Sample Output

```
1
3
```