Metro Madness II

June 2025
C++ — 2 sec — 512 MB

Rumbling beneath the streets of Silhouettown, brand-new train-cars roar along the city's Metro system. This web of shiny tracks hidden deep underground ferries commuters daily from the sleepy suburbs to Silhouettown's beating heart. Every year, the Metro lines get older and older. Every year, the Metro lines get more and more popular.

After upgrading the city's Metro system, the mayor wants to know exactly how many people are now riding the shiny new rails.

The Silhouettown Metro system consists of **n** stations (numbered from 1 to **n**) connected by **n** bidirectional tracks. It is possible to move between any two stations by a sequence of tracks and there is a *unique* shortest path between any two stations. The city's Public Transport Agency has recorded **t** trips — a trip involves **p** passengers moving from station **a** to station **b** via the shortest path between them. A trip cannot start and end at the same station.

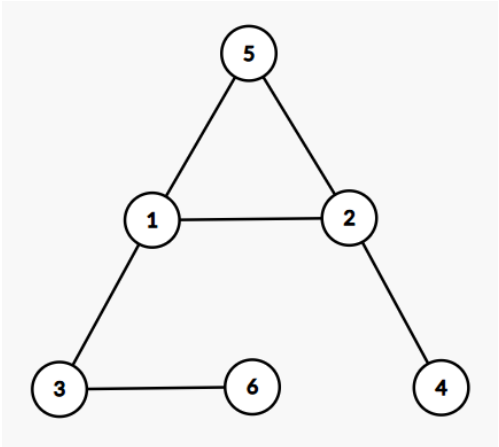
The mayor wants to know how many passengers pass through each station in the Metro system. A trip starting or ending at a given station counts as passing through that station.

INPUT You will be given two integers on a single line, **n** and **t**. This will be followed by **n** lines, each containing two integers, **a** and **b**, denoting that stations **a** and **b** are directly connected by a track. This will be followed by **t** lines, each containing three integers, **a**, **b**, and **p**, denoting that a trip involving **p** passengers occurred between stations **a** and **b**.

$2 \leq \mathbf{n} \leq 2^{16}$
$1 \leq \mathbf{t} \leq 2^{20}$
$1 \leq \mathbf{p} \leq 2^{10}$

OUTPUT For each station (from 1 to **n**), output the number of passengers who pass through that station.

SAMPLE For example, suppose there are 6 stations, connected as shown in the diagram below, and 4 trips: 2 passengers travelling from 4 to 5, 3 passengers travelling from 5 to 6, 10 passengers travelling from 1 to 2, and 1 passenger travelling from 1 to 6.



After these trips have been made, the numbers of passengers who have passed through each station are: 14, 12, 4, 2, 5, and 4.

INPUT

```
6 4
1 2
1 3
2 4
2 5
3 6
1 5
4 5 2
5 6 3
1 2 10
1 6 1
```

OUTPUT

```
14
12
4
2
5
4
```

INPUT

```
9 5
1 2
1 3
1 4
2 8
8 9
3 5
3 6
6 7
7 9
8 5 5
2 4 3
9 2 10
7 5 4
3 5 1
```

OUTPUT

```
8
18
10
3
10
4
4
15
10
```