Problem M: Massive Mountains
Time limit: 2 seconds

A gondola going up a snowy mountain. Image by Photo Mix Company, Pixabay

Mia and Mohammed are spending their vacation in a very scenic region of the Alps, and today they want to go to one of the peaks to enjoy the advertised magnificent view. As it is winter and the mountains are beautifully snowy, the hiking trails are metres deep under snow. Hence, Mia and Mohammed have to use the network of aerial lifts used by thousands of enthusiastic skiers, snowboarders and the occasional sled drivers.

Curiously, the lifts are operated by two different companies, namely Skylifts Ltd and M&M Ropeways. To the annoyance of many tourists, those two companies are absolutely unwilling to cooperate on anything, to the point that there is no single ticket that lets you use lifts from both companies.

Unfortunately, Mia and Mohammed somehow managed to buy one day ticket from Skylifts Ltd and one from M&M Ropeways. The ticket control systems of the two companies are very thorough and modern and not only register when a ticket is used to enter a lift but also when the passenger with that ticket leaves the lift. This makes it impossible for both Mia and Mohammed to use a lift of the same company at the same time. However, the tickets they bought are digital and not tied to a specific person, so Mia and Mohammed can switch between their tickets as they like. Note that such switching is only useful when neither of them is currently using a lift, because the ticket control systems keep track of which tickets are currently in use.

Since gondolas are not very comfortable and the view is definitely better from the mountain top, Mia and Mohammed want to get from the hotel to the destination as quickly as possible. To find the optimal route to take, they compiled a list of all stations and the time for all connections between stations.

Input

The input consist of:

- One line with three integers n, x and y ($2 \leq n \leq 75, 0 \leq x, y \leq n^2$), the number of stations, lifts operated by Skylifts Ltd and lifts operated by M&M Ropeways, respectively.
- x lines with three integers u, v and w ($1 \leq u, v \leq n, 1 \leq w \leq 10^9, u \neq v$), each indicating a lift operated by Skylifts Ltd going from station u to station v, where it takes w minutes to use that lift.
- y lines with three integers u, v and w ($1 \leq u, v \leq n, 1 \leq w \leq 10^9, u \neq v$), each indicating a lift operated by M&M Ropeways going from station u to station v, where it takes w minutes to use that lift.

It is guaranteed that it is possible to reach the mountain top, i.e. station n, from the hotel, i.e. station 1. Note that a lift from u to v does not necessarily imply a lift from v to u. Also, it is guaranteed that for any two stations u, v there is at most one lift of Skylifts Ltd and at most one lift of M&M Ropeways per direction.

Output

Print the minimum time such that Mia and Mohammed can reach station n if they both start at station 1.

Notes

In Sample Input 1 and 2, the optimal solution for Mia is to use only lifts from company Skylifts Ltd and for Mohammed to use only lifts from company M&M Ropeways.

In Sample Input 3, the optimal solution goes as follows. Mia first uses the lift from station 1 to 2, which is operated by M&M Ropeways, then switches the tickets and uses the lift from station 2 to 3, which is operated by Skylifts Ltd. Mohammed waits for 1 minute and then uses the same lifts that Mia used.

In Sample Input 4, one optimal solution goes as follows. Mia uses only lifts from Skylifts Ltd to get from station 1 to station 3. Mohammed waits for 2 minutes and then uses only lifts from Skylifts Ltd to get from station 1 to station 3.

Sample Input 1

```
3 2 2
1 2 3
2 3 5
1 2 5
2 3 3
```

Sample Output 1

```
8
```

Sample Input 2

```
4 2 2
1 2 5
2 4 5
1 3 3
3 4 3
```

Sample Output 2

```
10
```

Sample Input 3

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

Sample Output 3

```
3
```

Sample Input 4

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

Sample Output 4

```
4
```