CCC '09 S4 - Shop and Ship

Time limit: 2.0s
Java: 3.0s
Python: 5.0s

Memory limit: 256M
Python: 768M

Canadian Computing Competition: 2009 Stage 1, Senior #4

In Doubleclickland, there are N cities $(2 \leq N \leq 5\,000)$, with each city having various trade routes to other cities. In total, there are T trade routes $(1 \leq T \leq 5\,000\,000)$ in Doubleclickland. For each trade route between two cities x and y, there is a transportation cost $C(x, y)$ to ship between the cities, where $C(x, y) > 0$, $C(x, y) \leq 10\,000$ and $C(x, y) = C(y, x)$. Out of the N cities, K $(1 \leq K \leq N)$ of these cities have stores with really nice pencils that can be purchased online. The price for each pencil in city x is P_x $(0 \leq P_x \leq 10\,000)$.

Find the minimal price to purchase one pencil online and have it shipped to a particular city D $(1 \leq D \leq N)$ using the cheapest possible trade-route sequence. Notice that it is possible to purchase the pencil in city D and thus require no shipping charges.

Input Specification

The first line of input contains N, the number of cities. You can assume the cities are numbered from 1 to N. The second line of input contains T, the number of trade routes. The next T lines each contain 3 integers, x, y, $C(x, y)$, to denote the cost of using the trade route between cities x and y is $C(x, y)$. The next line contains the integer K, the number of cities with a store that sells really nice pencils online. The next K lines contain two integers, z and P_z to denote that the cost of a pencil in city z is P_z. The last line contains the integer D, the destination city.

Output Specification

Output the minimal total cost of purchasing a pencil online and shipping it to city D.

Sample Input

```
3
3
1 2 4
2 3 2
1 3 3
3
1 14
2 8
3 3
1
```

Sample Output

```
6
```