Order Delivery

Max. score: 20

This problem is no longer available for practice. Apology for any inconvenience!

In the parallel universe, where there are 13 months, Shopee has a 13.13 campaign. During this 13.13 campaign, Shopee gives free shipping delivery vouchers to all users who buy the item X. Shopee has N warehouses to store the item X, and each warehouse has W_i number of item X. Each warehouse is located in a city and all cities have at most one warehouse. To serve the customers, each warehouse has its own courier delivery. The cost of the delivery from the warehouse i is C_i dollar per kilometer. Interestingly, in this parallel universe, the distance between neighboring cities is exactly one kilometer. The cities can be represented as a graph, where a node represents the city and an edge represents the road between cities, and all the cities are connected. Warehouse i is located at city P_i.

During the 13.13 campaign, people are very excited to buy this item X because of the free shipping discounts. As a result, there are M orders created. The i-th order contains K_i number of item X, and it needs to be delivered to city G_i. To serve all the customers, multiple warehouses can be used to serve a single order. So, one order can be served by multiple warehouses.

Because of the free shipping discounts, Shopee needs to pay the delivery fee of all the orders. Your task is to help Shopee to minimize the delivery fee in this 13.13 campaign.

Input Format

The first line contains three integers N, D, and E $(1 \leq N \leq 20, 1 \leq D \leq N, N-1 \leq E \leq 200)$ representing the number of cities, warehouses, and roads in this parallel universe. The next E lines contain 2 integers X_i and Y_i $(1 \leq X_i, Y_i \leq N, Xi \neq Yi)$ which indicates that there is a road between city X_i and Y_i. The next D line contains 3 integers W_i, C_i, and P_i $(1 \leq W_i \leq 10^9, 1 \leq C_i \leq 10^6, 1 \leq P_i \leq N)$ which represents the number of item X in warehouse i and the delivery fee of warehouse $i$per kilometer and the location of warehouse i. The next line contains an integer $M(1 \leq M \leq 100000)$ which represents the number of orders. Each of the next M lines contain two integers K_i and G_i $(1 \leq K_i \leq 10^9, 1 \leq G_i \leq N, \text{sum of all } K_i <= 10^9)$ which represent the number of item X ordered in order-i and the city of order i.

Output Format

Output a single integer contains the total delivery cost of all orders. It is guaranteed that Shopee can serve all the orders.

SAMPLE INPUT

```
8 3 11
1 2
1 3
2 3
3 4
4 5
5 6
5 7
5 8
4 6
3 7
7 8
12 5 1
11 10 6
1 6 7
3
3 4
4 4
7 5
```

SAMPLE OUTPUT

```
136
```

Time Limit:	1.0 sec(s) for each input file.
Memory Limit:	256 MB
Source Limit:	1024 KB
Marking Scheme:	Score is assigned when all the testcases pass.
Allowed Languages:	Bash, C, C++, C++14, C++17, Clojure, C#, D, Erlang, F#, Go, Groovy, Haskell, Java, Java 8, Java 14, JavaScript(Rhino), JavaScript(Node.js), Julia, Kotlin, Lisp, Lisp (SBCL), Lua, Objective-C, OCaml, Octave, Pascal, Perl, PHP, Python, Python 3, Python 3.8, R(RScript), Racket, Ruby, Rust, Scala, Swift-4.1, Swift, TypeScript, Visual Basic