BSSPC '19 P8 - Bayview's Music Department

Problem Statement

The Bayivew Music department is going to Ottawa! As such, magicalsoup is planning the trip, more specifically, the number of buses needed for trips between cities. There are N ($1 \leq N \leq 20,000$) cities in the town of Ottawa. Among these N cities, K ($1 \leq K \leq 200, K \leq N$) of them have been designated as tourist attractions. Currently, the coach bus company offers M ($1 \leq M \leq 20,000$) one-way trips, where road i that travels from city u_i to city v_i and costs the music department d_i ($1 \leq di \leq 10,000$) amount of money. For each of these trips, at least one of u_i and v_i is a tourist attraction. There is at most one direct trip between cities in any given direction, and no trip starts and ends at the same city.

magicalsoup has been given Q ($1 \leq Q \leq 50,000$) one way trips by Dr.Z. Where the i-th request is from city a_i to city b_i. Can you help magicalsoup figure out the total number of trips that are possible, and the minimum total cost for them (the music department is lacking some money).

Input Specification

The first line contains 4 integers N, M, K, and Q.

Each of the following M lines contains 3 integers u_i, v_i and d_i, there is a road between u_i and v_i with cost of d_i.

Each of the following K lines contains an integer x, the tourist attraction cities.

Each of the following Q lines contains two integers a_i and b_i, indicating a trip from city a_i to city b_i.

Output Specification

The first line contains one integer, the number of trips that are possible.

The second line contains one integer, the minimum total cost of fulfilling the possible trips.

Sample Input

```
3 3 1 2
1 2 10
2 3 10
2 1 5
2
1 3
3 1
```

Sample Output

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1
20
```

Explanation

For the first request, the only possible route is $1 \rightarrow 2 \rightarrow 3$, costing 20. There are no trips leaving from city 3, so the trip is not possible.