Problem E: Portal

Time Limit: 2 Sec Memory Limit: 256 MB
Submit: 0 Solved: 0
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Description

Yuki is a magical girl and she has the ability to activate portals.

The country Yuki lives in has n cities and m roads at certain distances. The cities are numbered from 1 to n and all the roads are **unidirectional**, that is a road from u to v **cannot** be passed from v to u. Also, there are p portals in the country, each of them connects two cities **unidirectional** with **no** distance. Since Yuki doesn't grasp magic thoroughly, she can activate **at most** k portals.

Now Yuki is curious about what is the **minimum** distance between S and T if she activates at most k portals.

Input

The first line contains four integers: n, m, p and k ($1 \le n, m, p \le 50\,000, 0 \le k \le 10$) --- the number of cities, roads, portals and the number of portals Yuki can activate at most.

Each of the next m lines contains three integers: u, v and w ($1 \le u, v \le n, 1 \le w \le 1\,000\,000$), meaning that there is a unidirectional road from city u to city v at distance w.

Each of the next p lines contains two integer: u and v ($1 \le u, v \le n$), meaning that there is an inactive portal from city u to city v. Please note that when it is **active**, Yuki can **only be** teleported from city u to v unidirectionally.

The last line contains two integers: S and T ($1 \le S, T \le n$) --- the origin and destination.

Output

Print one line with the result --- the minimum distance between city S and T.

It is guaranteed that Yuki can move from city S to T by activating at most k portals.

Sample Input

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

Sample Output

```
2
```

HINT

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