

# Nucleic Acid Test

Input file: standard input  
Output file: standard output  
Time limit: 1 second  
Memory limit: 128 megabytes



In 2022, the COVID-19(omicron) has been widely spread around the world.

To prevent further spreading, the government decided to restrict people's travel by requiring negative result of *Nucleic Acid Test* for all travellers.

To meet with the restriction, people should take *Nucleic Acid Test* regularly. Now, in your city, there are  $n$  buildings, connected by  $m$  bidirectional roads. Some of the buildings have *Nucleic Acid Test* station, in which you can take a *Nucleic Acid Test* to get one negative result.

Also, the government announced that a **valid** *Nucleic Acid Test* result should be within  $t$  minutes. That is to say, for any time  $i$ , you should guarantee that the time of your last *Nucleic Acid Test* is no earlier than  $i - t$ . You must make sure that you have a **valid** *Nucleic Acid Tests* result everytime you enter a building, or you are not allowed to step in.

You want to visit all the buildings without violating the restriction (i.e. Having a **valid** *Nucleic Acid Test* result at anytime of your trip). You must start at one building with *Nucleic Acid Test* station and take one test at 0-th minute, and also end with one building with test station to take a test for your safety. During the whole trip, you should move with a fixed moving speed  $v$ , which means that for a road with length  $l$ , the time you go through the road will be  $\frac{l}{v}$ . Specially, the velocity must be an **integer**.

You wonder what's the minimum valid moving speed for finishing the trip according to the restrictions above.

## Input

The first line contains three integers  $n$  ( $2 \leq n \leq 300$ ),  $m$  ( $0 \leq m \leq \frac{n(n-1)}{2}$ ),  $k$  ( $1 \leq k \leq n$ ), denoting the number of buildings, the number of roads and the number of *Nucleic Acid Test* stations.

The second line contains a single integer  $t$  ( $0 \leq t \leq 10^9$ ), denoting the biggest time gap between two contiguous *Nucleic Acid Tests*.

Each of the following  $m$  lines contains 3 integers  $a_i, b_i, c_i$ , ( $1 \leq a_i, b_i \leq n$ ,  $1 \leq c_i \leq 10^9$ ). All the roads are bidirectional. Each pair of cities is connected by at most one road. None of the roads connect the same building.

The last line contains  $k$  integers  $s_i$ , denoting the building number of  $i$ -th *Nucleic Acid Test* station. It is guaranteed that when  $i \neq j$ ,  $s_i \neq s_j$ .

## Output

One integer in one line, indicates the smallest valid moving speed.

If no such moving speed exists, print  $-1$  in a single line.

## Example

standard input	standard output
4 5 2 3 1 2 2 2 3 4 3 4 3 1 4 2 2 4 3 2 3	2

## Note

The valid period of *Nucleic Acid Test* result is 3 minutes.

You can set your moving speed as 2, and start at the *Nucleic Acid Test* station 3, and then go to building 4, taking 1.5 minutes. And return to building 2 and take a *Nucleic Acid Test* taking 1.5 minutes.

After that, you can go to building 1 under 1 minute, and return to building 2 under another minute. Totally, your gap this time is 2 minutes, and you end up at a *Nucleic Acid Test* station to confirm that you are safe.

