Module 2: Shortest Path with Fuel Constraint

Problem Description

Time Limit: 1 second
Memory Limit: 256 MB

Now that TapNap has realized your ability to solve the first problem, they have presented the next one.

Every road that a truck travels consumes fuel equal to the length of that road. In other words, 1 unit of fuel is consumed per unit of distance. Also, every road takes time equal to its length. Therefore, the length of the roads is considered the weight of the edges.

In the routing program that TapNap wants to produce for its drivers, it knows how much fuel they have at the start of their route and what their maximum tank capacity is.

Given that we know at which intersections fuel pumps are located, a good routing program is expected to find the shortest path from intersection 1 to intersection n. Considering that the truck's fuel must not run out, it may sometimes be necessary to find a longer path to reach a fuel pump before the fuel runs out.

This router should be designed such that if reaching intersection n from intersection 1 is impossible, it detects this fact. Therefore, it is expected to inform the driver that such a trip is not possible.

You are expected to produce a good router for the given roads considering the intersections with fuel pumps, and report the length of this path or the infeasibility of the path.

Input Format

- The first line contains two integers n and m, representing the number of intersections and the number of streets, respectively.

- Each of the next m lines describes a two-way street, given as three numbers u, v, and w, where u and v are the two intersections at the ends of the street and w is the length of the street.

- The next line contains three integers:

  - k: The number of intersections where gas stations are located.
  - f_{cur}: The current fuel of the truck.
  - f_{max}: The maximum fuel capacity of the truck.

- The final line contains k integers, which are the indices of the intersections that have fuel pumps.

Constraints

- $1 \le k < n \le 10^5$

- $m \le 2 \times 10^5$

- $1 \le u, v \le n$

- $1 \leq w \leq 10^9$

- $1 \leq f_{cur} \leq f_{max} \leq 10^{18}$

Output Format

If it is possible to go from intersection 1 to intersection n with the given restrictions, output the length of the shortest desired path. Otherwise, print the string `nemisarfed`.