VI. COVID TRACING

G6

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You have to develop an application that traces covid people.
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1 Problem Details

1. There are N stations, some of the stations are directly connected by the bidirectional roads. There are a total of K people staying in different stations.

2. The people who meet the covid positive people are declared as the primary contacts and those who meet the primary contacts are secondary contacts.

3. As the stations are small, it is assumed that all the people at the station will come in contact with each other and hence if one covid positive person P comes to the station, all the people in that station will be declared as the primary contacts of the P and so on.

4. The danger value of the Station S is defined as: (number of covid positive people) + (number of primary contacts / 5) + (number of secondary contacts / 10). The danger value of the path is the sum of the danger value of the stations in the path. The safety of the path is inversely proportional to the danger value of the path.

2 Major Tasks

You are expected to complete the following tasks:

1. Given the list L of covid positive people on day D, you need to print the list of primary and secondary contacts of the L in the last X ($1 \leq X \leq 15$) days. All the people in the L will be quarantined for 14 days at their current stations.

2. A person P is currently at station S and wants to go to station $S2$ on day D. You need to find the top 3 (if exists) safest and shortest path from S to $S2$. After that, P may choose one of the path to $S2$ and will

go through that path, stopping at each intermediate station and reach $S2$ on the same day or may decide to not go. Note that safest and shortest path means that you need to rank paths based on their safety value first and then for the paths with the same safety value you need to rank the shorter path higher.

3. You need to handle other queries like status (negative, positive, primary contact, secondary contact) of a person, location of a person, list of covid positive, primary contacts, secondary contacts at station S.

3 Input

1. In the first line you will be given three integers N, M, K, denoting number of stations, number of roads, number of people respectively.
2. Then M lines follow, the $i^{th}$of them contains three integers U, V, W, meaning there is a bidirectional road between U^{th} station and V^{th} station of length W.
3. The next line contains K space separated integers where i^{th} integer represents the initial station number of the i^{th} person.

4 Instructions

1. You are allowed to change the above input format and you need to define the input format for the queries so that the user can ask multiple queries. Mention the input format in the Report or Readme.
2. You are allowed to make suitable assumptions wherever you feel. Mention the assumptions in the Report or Readme.
3. Write neat and clean code and add comments.
4. You will be evaluated based on the correctness of your code and, time complexity of each type of queries and memory complexity of the code.