Traffic

Time limit for each test: 1000 miliseconds
Memory limit: 8 megabytes

Recently traffic has become one of the main problems of Nearburg and Rancid Rabbit (the mayor) is currently under pressure. He has gathered some information about the city's structure and citizen transportation and he needs your help to specify the amount of traffic for each street.

In Nearburg there are n intersections and m one-way streets. Each street starts at an intersection and ends at another, and doesn't cross any other street or intersrction on the way.

Although streets can pass one another by bridges, they are not connected other than at the intersections. Between every pair of intersections, A and B, there is at most one street from A to B and at most one street from B to A.

Rancid Rabbit has noticed that every citizen who wants to travel throughout the city uses a personal car and starts at a single intersection and, by passing through one or more streets, ends at another intersection. The information Rancid Rabbit has gathered consists of the number of citizens who travel from A to B each day, for every pair of intersections, A and B. Obviously if there is no path from A to B, this number is zero.

When a driver wants to travel from a starting point to a specific destination, at every intersection he/she chooses the street that leads him/her from the current intersection to the specified destination, by a shortest path. (Each street has a length and the length of a path is the sum of the lengths of each of its streets.) If there is only one shortest path from the starting intersection to the destination, the driver has only a single choice at each intersection. Generally, it may occur that a driver encouters a situation where there is more than one street that leads to a shortest path, and he/she has many options. In such a case, if there are k streets that are optimal (and lead to a shortest path) the driver chooses one of them randomly giving equal probabilities to each of the options (with a probability of $\frac{1}{k}$).

Rancid Rabbit wants to find the average number of cars that pass through each of Nearburg's streets. Because of the random decisions, this is not necessarily an integer (it can be decimal valued). You have been chosen to help him. (Lucky you!)

Problem

Write a program that

- Reads the structure of Nearburg and the statistics of citizen transportation from the *Standard Input*.

- Computes the average number of cars that pass each of Nearburgs's streets.

- Writes the calculated values in the *Standard Output*.

Input Sepcification

In the first line, two natural numbers n and m are given.
In each of the next m lines, three positive integers a, b, and l are given that describe a single one-way

street that starts from intersection a and ends at intersection b with a length of l. (Intersections are numbered from 1 to n.)

In each of the next n lines, n integers are given. The jth integer of the ith row, shows the average number of cars that want to travel each day, starting at intersection i and ending at intersection j. This non-negative integer is zero if there is no path between the two intersections mentioned. Additionally the ith integer of the ith row is always zero because no citizen wants to travel from an intersection to the same intersection.

The integers on each line of the input are seperated by single-spaces.

Output Specification

Write m lines in the output, the ith line being the average number of cars that pass each day through the ith street (in the same order given in the input). The error of your output should be less than 10^{-2}.

Restrictions

- $0 < n \le 100$

- The total number of cars does not exceed 10^5.

- The length of a street cannot exceed 10^6.

Example

Standard Input	Standard Output
4 5	2.5
1 2 1	4.5
2 3 1	5
3 4 1	2
4 3 1	1.5
1 3 2	
0 1 1 2	
0 0 1 2	
0 0 0 1	
0 0 2 0	