Problem J

Temperature Estimation Problem

Time limit: 1 second

Suppose you are a scientist exploring an alternate universe. In this universe, space and time act differently than the one where we live in. Space in this universe is very dynamic in terms of dimension. The dimension is keep changing, in one moment the space may have four dimensions and for another moment it may have six dimensions. What a bizzare universe indeed. Your interest is in studying the air temperature in this bizarre universe. A hypothesis is then constructed; it states that the air temperature in any given location is influenced by its surroundings and could be estimated by simply averaging the temperatures from its surroundings. You then start to assess this hypothesis by conducting an observation and try to find out how many surrounding locations which best influence the air temperature in the location of interest. Write a script to estimate air temperature in a given location based on the hypothesis.

Input

The input should be a list of key parameters which consist of list of locations (L), list of temperatures (T), and number of surrounding locations to be considered (N). Each key parameter is separated with colon (:). List of locations consist of coordinates of location of interest followed by its potential surrounding locations. Each location coordinate is separated with semicolon (;). Each coordinate will be formed by any number of dimensions and the number of dimension should be the same across all the locations since the measurement is taken at the same moment of time. Each coordinate is represented by axis position where each axis is separated by comma (,). The list of temperatures consist of air temperature from the potential surrounding locations, each temperature is separated with semicolon (;).

Output

The output would be the estimated air temperature in the location of interest.

Constraints:

$L <= 1*10^9$, $T <= 1*10^9$, $N<=10$

Sample Input 1:
3,7;7,7;7,4;3,4;1,4:450;200;355;425:3
Sample Output 1:
410.0

Sample Input 2:
4,1,0;5,1,0;3,1,1;1,1,0;4,0,1;4,0,0;2,0,0:300;225;75;200;150;50:4
Sample Output 2:
218.75

Sample Input 3:
5,5,6,5;3,4,3,2;4,3,8,5;4,5,9,1;1,1,3;4,5,4,7:300;225;75;200;150:3
Sample Output 3:
225.0