

## C • Pass the Buck

In the *Pass the Buck* game, there are several players and each player has one or more neighbors among the other players.

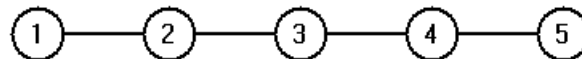
Each game begins with one player chosen at random who receives a buck (the current holder). (For this game, chosen at random means each possible outcome has the same probability.)

Then, at each step, if the current holder has  $d$  neighbors, he/she chooses an integer  $k$  in the range  $[0, d]$  at random. If 0 is chosen, the current holder is the winner and keeps the buck. Otherwise, the holder passes the buck to the neighbor with index  $k$ , who becomes the new holder.

The game continues until some holder wins.

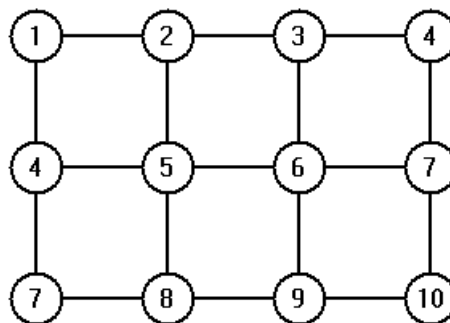
Write a program to find the probability that player  $j$  wins if player  $k$  is the first holder.

The configuration of players and neighbors can be modeled as a graph with the players as vertices and an edge between two vertices if the corresponding players are neighbors. For example, if they are seated in a row then the neighbors are the players to the left and right (if any).



If they are seated around a table, then each player has a neighbor to the right and left.

If they are seated in multiple rows, they may have neighbors left, right, in front and/or behind.



**Input and Output specification are on the back of this page**



## Input

The input consists of multiple lines of input. The first line contains the number,  $N$ , ( $2 \leq N \leq 20$ ) of players followed by a space followed by the number,  $P$ , ( $1 \leq P \leq 20$ ) of start/winner pairs.

The next  $N$  lines of input give the neighbors of each player. Line  $m$  gives the neighbors of player  $m$ . The first integer on the line is the number,  $d(m)$ , of neighbors of player  $m$ . This is followed by  $d(m)$  integers giving the indices of the neighbors of  $m$ , separated by spaces.

The next  $P$  lines of input give the index,  $s$ , of the start holder and the index,  $w$ , of the player whose probability of winning when  $s$  is the first holder is to be found. Each line contains three integers,  $j$ ,  $s(j)$  and  $w(j)$  separated by spaces where  $j$  is the index of the pair.

## Output

Your program will generate  $P$  lines of output.

The  $j^{\text{th}}$  line contains the integer  $j$  a space and a 5 decimal point value which is the probability that player  $w(j)$  wins if player  $s(j)$  is the first holder.

Sample Input	Sample Output
5 4	1 0.61818
1 2	2 0.47273
2 1 3	3 0.45455
2 2 4	4 0.47273
2 3 5	
1 4	
1 1 1	
2 2 2	
3 3 3	
4 4 4	