Maze

Time Limit: 1000 MS   Memory Limit: 64M Special Judge

[Description]
When wake up, lxhgww find himself in a huge maze.

The maze consisted by N rooms and tunnels connecting these rooms. Each pair of rooms is connected by one and only one path. Initially, lxhgww is in room 1. Each room has a dangerous trap. When lxhgww step into a room, he has a possibility to be killed and restart from room 1. Every room also has a hidden exit. Each time lxhgww comes to a room, he has chance to find the exit and escape from this maze.

Unfortunately, lxhgww has no idea about the structure of the whole maze. Therefore, he just chooses a tunnel randomly each time. When he is in a room, he has the same possibility to choose any tunnel connecting that room (including the tunnel he used to come to that room). What is the expect number of tunnels he go through before he find the exit?

[Input]
First line is an integer T (T ≤ 30), the number of test cases.

At the beginning of each case is an integer N (2 ≤ N ≤ 10000), indicates the number of rooms in this case.

Then N-1 pairs of integers X, Y (1 ≤ X, Y ≤ N, X ≠ Y) are given, indicate there is a tunnel between room X and room Y.

Finally, N pairs of integers K_i and E_i (0 ≤ K_i, E_i ≤ 100, K_i + E_i ≤ 100, K_1 = E_1 = 0) are given, indicate the percent of the possibility of been killed and exit in the ith room.

[Output]
For each test case, output one line "Case k: ". k is the case id, then the expect number of tunnels lxhgww go through before he exit. The answer with relative error less than 0.0001 will get accepted. If it is not possible to escape from the maze, output "impossible".

[Sample Input]
3
3
1 2
1 3
0 0
100 0
0 100
3
1 2
2 3

0 0
100 0
0 100
6
1 2
2 3
1 4
4 5
4 6
0 0
20 30
40 30
50 50
70 10
20 60

[Sample Output]
Case 1: 2.000000
Case 2: impossible
Case 3: 2.895522