Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	64 megabytes

TCPC2016 contest has just started! Unfortunately, the printer that prints the accepted problems and balloon colors for the teams was down for half an hour at the beginning of the contest, but Nourhene and Maha were there to save the day and fix the printer,now there was another problem that needs to be solved, which is distributing the balloons for teams that got accepted solution during the time when the printer was down, and there was a lot of them!

Volunteers were waiting in the balloons room, but after 4 days of preparing for the contest they were exhausted, and each of them could walk for a certain distance only, the contest floor has tables, cables and blocked areas, and the lanes that the volunteers can move in turned out to be shaped like a tree, where its root is the balloon room where all the volunteers gathered.

Given the contest hall tree of N nodes, colors of required balloons in each Node, each volunteer's maximum level D that he can walk through the tree, and the balloon color that volunteer is carrying, Can you determine the maximum number of volunteers that can leave the balloon room and visit the nodes?

Input

The input file contains T $(1 \leq T \leq 512)$ − the number of test cases.

The first of each test cases consists of 2 integers N, M $(1 \leq N-1, M \leq 10^3)$ − the number of teams plus the balloon room located in node number 1 and the number of volunteers.

$N-1$ lines follow, each line consists of 2 integers u, v $(1 \leq u, v, u \neq v \leq N)$.

A line of $N-1$ integers follow, the i_{th} integer represents the balloon color of the i_{th} team, the first number represents the node number 2 and so on.

A line of M integers follow, the i_{th} integer represents the balloon color of the i_{th} volunteer.

$(1 \leq ballooncolor \leq 10^3)$

A line of M integers follow, the i_{th} integer represents the maximum distance d_i $(0 \leq d_i \leq 10^3)$ which the i_{th} volunteer can walk.

Output

For each test case print a single integer in a single line − the required answer.

Examples

standard input	standard output