Telefrogs

Input File	Output File	Time Limit	Memory Limit
standard input	standard output	1 second	256 MiB

Opal is a scientist studying the movement patterns of a particular species of supernatural amphibian, called the teleporting frog, or *telefrog* for short. Telefrogs are just like normal frogs, but instead of hopping, they *teleport*[1].

There is a colony of K telefrogs living together in a pond that Opal has been studying for D days. The pond contains N lily-pads numbered from 1 to N which the telefrogs like to sit on. Every frog was sitting on lily-pad 1 before Opal began studying the colony.

- At the start of each day, each telefrog *may* choose to teleport to another lily-pad in the pond.
- At the end of each day, Opal records the number of frogs on each lily-pad. In particular, there are exactly c_{ij} frogs on the j-th lily-pad during the i-th day.

No new frogs joined the colony and no frog ever went missing during her study.

At the end of her study, Opal realised that some of the K frogs might actually be *impostor frogs*, who do not have the ability to teleport! She found $N - 1$ hidden one-way tunnels between pairs of lily-pads. The i-th tunnel allows impostors on lily-pad a_i to travel to lily-pad b_i ($a_i < b_i$). It is possible to travel from lily-pad 1 to any other lily-pad through a sequence of tunnels.

Every night, the impostors, as they lack the ability to teleport, may travel to another lily-pad through a sequence of tunnels.

Your task is to help Opal determine the *maximum* number of impostors there could be.

Subtasks and Constraints

For all subtasks, you are guaranteed that:

- $2 \leq N \leq 1000$, $1 \leq K \leq 10^9$ and $2 \leq D \leq 200$
- $0 \leq c_{ij} \leq K$, for all i and j.
- $c_{i1} + c_{i2} + \ldots + c_{iN} = K$, for all i. That is, the number of frogs observed on each day is K.
- $1 \leq a_i < b_i \leq N$, for all i.
- It is possible to travel from lily-pad 1 to any other lily-pad through a sequence of tunnels.

Additional constraints for each subtask are given below.

Subtask	Points	Additional constraints
1	14	$D = 2$ and $a_i + 1 = b_i$, for all i.
2	26	$a_i + 1 = b_i$, for all i.
3	16	$D = 2$
4	13	$a_i = 1$, for all i.
5	31	No additional constraints.

[1] Nobody knows how the frogs actually teleport. Seems sus.

Input

- The first line of input contains the integers N, K and D.
- The next $N-1$ lines describe the one-way tunnels. The i-th line contains a_i and b_i.
- The next D lines of input contain N integers each. The j-th integer on the i-th such line is c_{ij}.

Output

Output a single integer, the maximum number of impostors that could have been among the telefrogs.

Sample Input 1

```
6 4 3
1 2
3 6
2 5
3 4
1 3
2 1 0 0 0 1
1 3 0 0 0 0
1 1 0 1 0 1
```

Sample Output 1

```
2
```

Sample Input 2

```
4 3 2
2 3
3 4
1 2
0 0 2 1
3 0 0 0
```

Sample Output 2

```
0
```

Explanation

In Sample Case 1, there could have been two impostors:

- The first impostor travels to lily-pad 2 on the first day, does nothing on the second day, and does nothing on the third day.
- The second impostor does nothing on the first day, does nothing on the second day, and travels to lily-pad 6 via lily-pad 3 on the third day.
- The first telefrog does nothing on the first day, teleports to lily-pad 2 on the second day, and teleports to lily-pad 1 on the third day.
- The second telefrog teleports to lily-pad 6 on the first day, teleports to lily-pad 2 on the second day, and teleports to lily-pad 4 on the third day.

It can be shown that there could not have been more than two impostors.

In Sample Case 2, none of the frogs could have been impostors.

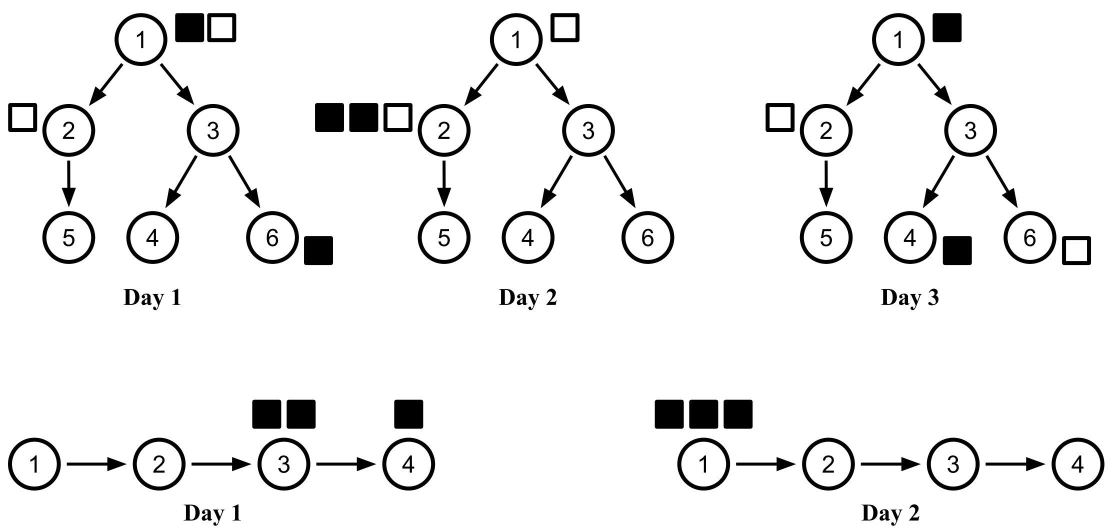

Figure 1: In each case, black squares represent telefrogs and white squares represent impostors.