

D. Mashmikh and Water Tanks

time limit per test: 1 second

memory limit per test: 512 megabytes

input: standard input

output: standard output

Mashmikh is playing a new game. In the beginning he has k liters of water and p coins. Additionally he has a rooted tree (an undirected connected acyclic graph) that consists of m vertices. Each vertex of the tree contains a water tank that is empty in the beginning.

The game begins with the fact that Mashmikh chooses some (no more than k) of these tanks (except the root) and pours into each of them exactly 1 liter of water. Then the following process is performed until there is no water remained in tanks.

- The process consists of several steps.
- At the beginning of each step Mashmikh opens doors of all tanks. Then Mashmikh closes doors of some tanks (he is not allowed to close door of tank in the root) for the duration of this move. Let's denote the number of liters in some tank with closed door as w , Mashmikh pays w coins for the closing of that tank during this move.
- Let's denote by x_1, x_2, \dots, x_m as the list of vertices of the tree sorted (nondecreasing) by their depth. The vertices from this list should be considered one by one in the order. Firstly vertex x_1 (which is the root itself) is emptied. Then for each vertex x_i ($i > 1$), if its door is closed then skip the vertex else move all the water from the tank of vertex x_i to the tank of its father (even if the tank of the father is closed).

Suppose l moves were made until the tree became empty. Let's denote the amount of water inside the tank of the root after the i -th move by w_i then Mashmikh will win $\max(w_1, w_2, \dots, w_l)$ dollars. Mashmikh wanted to know what is the maximum amount of dollars he can win by playing the above game. He asked you to find this value for him.

Input

The first line of the input contains three space-separated integers m, k, p ($2 \leq m \leq 10^5$; $0 \leq k, p \leq 10^9$).

Each of the following $m - 1$ lines contains two space-separated integers a_i, b_i ($1 \leq a_i, b_i \leq m$; $a_i \neq b_i$) — the edges of the tree.

Consider that the vertices of the tree are numbered from 1 to m . The root of the tree has number 1.

Output

Output a single integer, the number Mashmikh asked you to find.

Examples

input
10 2 1 1 2 1 3 3 4 3 5 2 6 6 8 6 7 9 8 8 10
output
2
input

5 1000 1000 1 2 1 3 3 4 3 5
output
4

Note

The tree in the first sample is shown on the picture below. The black, red, blue colors correspond to vertices with 0, 1, 2 liters of water.

One way to achieve the maximum amount of money is to put 1 liter of water in each of vertices 3 and 4. The beginning state is shown on the picture below.

Then in the first move Mashmokh will pay one token to close the door of the third vertex tank. The tree after the first move is shown on the picture below.

After the second move there are 2 liters of water in the root as shown on the picture below.