
Problem A. Coloring Roads

Input file: **standard input**
Output file: **standard output**
Time limit: 4 seconds
Memory limit: 1024 megabytes

In RUN-land, there are n cities numbered 1 to n . Some pairs of cities are connected by a bidirectional road. It happens that there are $n - 1$ roads in total and that for any two cities, and there is a unique path from one to the other.

The city number 1 is the capital. Initially all roads have no color. Alex, the king of RUN-land asks you to perform the following query Q times.

- **u c m**: Given a city u , a color c , and an integer m , color all the roads on the unique path from u to the capital in the color c . Even if a road already has a color, change its color to c . After coloring, compute the number of colors in which exactly m roads are colored.

Given Q queries in total, compute the answer for the second part of each query.

Input

The first line of the input contains three integers n, C, Q ($1 \leq n, C, Q \leq 2 \times 10^5$), separated by a single space, which are the number of cities in RUN-land, the number of possible colors, and the number of queries, respectively. Each of the next $n - 1$ lines contains two integers u, v ($1 \leq u, v \leq n$) meaning that there is a bidirectional road directly connecting the cities numbered u and v .

Each of the next Q lines contains a query, which contains 3 integers u, c, m as described in the statement. ($1 \leq u \leq n, 1 \leq c \leq C, 0 \leq m \leq n - 1$)

Output

Print Q lines, one for each query. Each line must contain one integer, the answer to the corresponding query.

Example

standard input	standard output
6 5 5	1
1 3	2
2 3	2
1 4	3
6 3	1
5 2	
5 1 3	
6 2 2	
2 3 1	
4 4 1	
1 5 0	

Note

The answer for the last query is 1 since color 5 is used in 0 roads.