

Problem G. XOR Tree

Input file: *standard input*
Output file: *standard output*
Time limit: 2 seconds
Memory limit: 256 mebibytes

There is an undirected graph G with n vertices. It has an interesting property: **if we treat multiple edges as one**, the graph G will become a tree. Alice and Bob invented the following game:

- At the beginning, Alice and Bob choose two vertices S and T , $S \neq T$.
- There is another graph H with n vertices and, initially, no edges.
- On every turn, the current player chooses any edge $u - v$ in graph G , deletes it and changes the state of edge $u - v$ in graph H : if there was no such edge in graph H , it appears, and if there was such an edge, it disappears.
- Alice wins if there exists a moment of time when there is a path between S and T in graph H .
- If there is no edge in graph G and Alice hasn't won yet, Bob wins.
- Players take turns, Alice moves first.

Children like the game very much so they have played it q times. Now they are wondering who would win in each game if they were playing optimally. Help them find it out!

Input

The first line of input contains two integers n and q : the number of vertices in graph G and the number of games played by Alice and Bob ($2 \leq n \leq 10^5$, $1 \leq q \leq 10^5$).

The next $n - 1$ lines contain the description of graph G . Each line consists of three integers a , b and c ($1 \leq a, b \leq n$, $1 \leq c \leq 10^9$) which means there are exactly c edges between vertices a and b . It is guaranteed that, if we change all c to 1, the graph G will become a tree with n vertices.

The next q lines describe the games. Each of these lines contains two integers S and T : the parameters of the game ($1 \leq S, T \leq n$, $S \neq T$).

Output

For each game, print 1 if Alice wins, and print 2 otherwise. Separate the answers with line breaks.

Example

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