

Frank Sinatra

Input file: *standard input*
Output file: *standard output*
Time limit: 6 seconds
Memory limit: 256 mebibytes

You are given a bidirectional graph T which is a tree consisting of n vertices and $n - 1$ edges. Each edge of the tree is associated with some non-negative integer x_i .

Your task has a very simple description. You are given q queries. In j -th, query you have to find the smallest non-negative integer y that is not present in the set of all integers associated with edges of the simple path between vertices a_j and b_j .

Input

The first line of input contains two integers n and q ($2 \leq n \leq 10^5$, $1 \leq q \leq 10^5$), the number of vertices of the tree and the number of queries.

The following $n - 1$ lines contain triples of integers u_i, v_i, x_i ($1 \leq u_i, v_i \leq n$, $u_i \neq v_i$, $0 \leq x_i \leq 10^9$), each denoting an edge (u_i, v_i) associated with an integer x_i .

The following q lines contain pairs of integers a_j, b_j ($1 \leq a_j, b_j \leq n$), each denoting a query about the path between vertices a_j and b_j .

Output

For each query, output one line containing the smallest non-negative y such that there is no edge associated with y lying on the corresponding simple path.

Example

standard input	standard output
7 6	0
2 1 1	1
3 1 2	2
1 4 0	2
4 5 1	3
5 6 3	3
5 7 4	
1 3	
4 1	
2 4	
2 5	
3 5	
3 7	