

Problem N. Cactus

Input file: *standard input*
Output file: *standard output*
Time limit: 5 seconds
Memory limit: 512 megabytes

A *cactus graph* is a connected undirected graph without self-loops and multiple edges in which each edge belongs to at most one simple cycle.

Given is a cactus graph G with N vertices, numbered from 1 to N , and M edges. The i -th edge connects vertices a_i and b_i , and its cost is c_i .

Let the cost of a simple path on graph G be bitwise XOR of the costs of all the edges on that path.

Answer Q queries of the form “ $x_i \ y_i \ k_i$ ”: consider the costs of all simple paths connecting vertices x_i and y_i , remove duplicate values, sort the values in ascending order, and take k_i -th element. If the number of these values is less than k_i , answer -1 .

Input

The first line of the input contains two integers N and M : the number of vertices and the number of edges in the graph ($2 \leq N \leq 10^5$, $N - 1 \leq M \leq 2 \cdot 10^5$).

Each of the next M lines describes one edge and contains three integers a_i , b_i and c_i ($1 \leq a_i, b_i \leq N$, $a_i \neq b_i$, $0 \leq c_i < 2^{30}$).

Then follows a line containing an integer Q : the number of queries ($1 \leq Q \leq 2 \cdot 10^5$).

Each of the next Q lines describes one query and contains three integers x_i , y_i and k_i ($1 \leq x_i, y_i \leq N$, $x_i \neq y_i$, $1 \leq k_i \leq 2^{30}$).

It is guaranteed that the graph given in the input is a cactus graph.

Output

For each query, print one integer on a separate line: the answer to that query.

Example

standard input	standard output
4 4	2
1 2 2	8
1 3 8	6
2 3 0	-1
1 4 6	
4	
2 1 1	
1 2 2	
4 1 1	
4 3 2020	