

## Problem D. Shortest Path Query

Input file:            **standard input**  
Output file:         **standard output**  
Time limit:          2 seconds  
Memory limit:       1024 megabytes

You will be given a directed acyclic graph with  $n$  vertices, labeled by  $1, 2, \dots, n$ . There are  $m$  edges in the graph, each edge is either black or white. It is guaranteed that you can reach every vertex from the 1-st vertex.

You will be given  $q$  queries. In the  $i$ -th query, you will be given three integers  $a_i$ ,  $b_i$  and  $x_i$ . You need to report the length of the shortest path from the 1-st vertex to the  $x_i$ -th vertex if we regard the length of each black edge as  $a_i$  and regard the length of each white edge as  $b_i$ .

### Input

The first line of the input contains two integers  $n$  and  $m$  ( $1 \leq n \leq 50\,000$ ,  $1 \leq m \leq 100\,000$ ), denoting the number of vertices and the number of directed edges.

In the next  $m$  lines, the  $i$ -th line contains three integers  $u_i, v_i$  and  $c_i$  ( $1 \leq u_i < v_i \leq n$ ,  $v_i - u_i \leq 1\,000$ ,  $0 \leq c_i \leq 1$ ), describing a directed edge from the  $u_i$ -th vertex to the  $v_i$ -th vertex. When  $c_i = 0$ , its color is black, and when  $c_i = 1$ , its color is white.

The next line contains a single integer  $q$  ( $1 \leq q \leq 50\,000$ ), denoting the number of queries.

Each of the next  $q$  lines contains three integers  $a_i, b_i$  and  $x_i$  ( $1 \leq a_i, b_i \leq 10\,000$ ,  $1 \leq x_i \leq n$ ), denoting a query.

It is guaranteed that you can reach every vertex from the 1-st vertex.

### Output

For each query, print a single line containing an integer, denoting the length of the shortest path.

### Example

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