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 $1, 2, \ldots, n$. 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 ($1 \le n \le 50\,000$, $1 \le m \le 100\,000$), 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 ($1 \le u_i < v_i \le n$, $v_i - u_i \le 1\,000$, $0 \le c_i \le 1$), 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 ($1 \le q \le 50\,000$), denoting the number of queries.

Each of the next q lines contains three integers a_i, b_i and x_i ($1 \le a_i, b_i \le 10\,000$, $1 \le x_i \le n$), 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 1 2 0 1 3 1 2 4 0 3 4 1 3 3 5 2 3 2 4 2 3 4	3 4 4