



Problem J. Walking Plan

Input file: *standard input*
Output file: *standard output*
Time limit: 2 seconds
Memory limit: 512 mebibytes

There are n intersections in Bytetown, connected with m one-way streets. These intersections are labeled by $1, 2, \dots, n$. Little Q likes sport walking very much, he plans to walk for q days. On the i -th day, Little Q plans to start walking at the s_i -th intersection, move along a street at least k_i times, and finally arrive to the t_i -th intersection. Note that k_i is the required number of *moves*, not *streets*: it is allowed to use any street more than once.

Little Q's smartphone will record his walking route. Little Q cares more about statistics than about staying healthy. So he wants to minimize the total walking length on each day. Please write a program to help him find the best route.

Input

The first line contains a single integer T ($1 \leq T \leq 10$), the number of test cases. For each test case:

The first line contains two integers n and m ($2 \leq n \leq 50$, $1 \leq m \leq 10\,000$) denoting the number of intersections and one-way streets.

Each of the next m lines contains three integers u_i, v_i, w_i ($1 \leq u_i, v_i \leq n$, $u_i \neq v_i$, $1 \leq w_i \leq 10\,000$) denoting a one-way street from intersection u_i to intersection v_i with length w_i .

In the next line, there is an integer q ($1 \leq q \leq 100\,000$) denoting the number of days.

Each of the next q lines contains three integers s_i, t_i, k_i ($1 \leq s_i, t_i \leq n$, $1 \leq k_i \leq 10\,000$) describing the walking plan.

Output

For each walking plan, print a line containing a single integer: the minimum total walking length. If there is no solution, please print “-1”.

Example

standard input	standard output
2	111
3 3	1
1 2 1	11
2 3 10	-1
3 1 100	
3	
1 1 1	
1 2 1	
1 3 1	
2 1	
1 2 1	
1	
2 1 1	