Alikhan and studying

Input file:	`standard input`
Output file:	`standard output`
Time limit:	3 seconds
Memory limit:	256 megabytes

Conscientious student Alikhan studies in the kingdom of Batyr II. The kingdom of Batyr II consists of n cities and m roads, where the i-th road has a length of w_i. Also, from any city in the kingdom, it is possible to reach any other city using these roads. In other words, the kingdom of Batyr II can be represented as a connected weighted undirected graph with n vertices and m edges.

Alikhan may be interested in studying in several cities. However, due to a lack of time and resources, he will have to limit himself to only some of them. Alikhan has not made a final decision on his choices, so one of the following events occurs q times:

1. Alikhan changes his desire to study in city x (i.e., if he previously wanted to study, he stops, and vice versa).
2. Alikhan decides that he wants to live along road number e and wants to consider exactly k cities for studying. Let's denote the length of road e as W, and its ends as cities A and B. To choose a place to live, Alikhan will first choose an integer x ($0 \le x \le W$), and then choose a location for his home along the road, such that the distance from it to city A is x, and the distance to city B is $W - x$. Let l be the number of cities in which Alikhan wants to study, and $d_1, \ldots, d_l$ be the shortest distances from his home to these cities. Let's order this list in descending order $d_1 \ge d_2 \ge \ldots \ge d_l$. Alikhan is interested in the value of d_k. He finds it difficult to determine the value of x, so he wants to calculate the sum of the values of d_k for all possible $0 \le x \le W$.

Help Alikhan find the answers to his questions.

Input

The first line contains three integers n, m, and q ($2 \le n \le 10^3$, $1 \le m \le min(\frac{n(n-1)}{2}, 10^3)$, $1 \le q \le 5000$) — the number of cities, roads, and events, respectively.

Each of the next m lines contains the roads of the kingdom u_i, v_i, and w_i ($1 \le u_i, v_i \le n$, $1 \le w_i \le 10^7$) — the numbers of cities connected by the i-th road and its length (all numbers are integers).

Each of the following q lines describes the events. First, one integer t_i ($1 \le t_i \le 2$) is given — the type of event i.

If $t_i = 1$, then in the same line, one integer x_i ($1 \le x_i \le n$) is additionally given — the number of the city in which Alikhan changes his desire to study.

If $t_i = 2$, then in the same line, two integers e_i and k_i ($1 \le e_i \le m$, $1 \le k_i \le 10$) are additionally given — the number of the road along which Alikhan wants to live and the number of cities he will consider for studying.

Initially, Alikhan does not want to study anywhere. It is also guaranteed that during any event i of the second type, there are at least k_i cities in which Alikhan wants to study.

Output

For each event of the second type, output the answer on a separate line.

Scoring

Let's denote the maximum weight of an edge as L. Also, let's denote the maximum number of cities in which at the time of the event of the second type Alikhan wants to study as S (note that initially before all events $S = 0$).

Group	Additional constraints	Points
0	Examples	0
1	$S = 1$	8
2	$n, q \leq 100, L = 1$	8
3	$n, L \leq 100, q \leq 10^3$	12
4	$m = n - 1, u_i = i, v_i = i + 1, k_j = 1$	10
5	$m = n - 1, k_j = 1$	15
6	$k_j = 1$	24
7	—	23

Example

standard input	standard output
4 3 5 1 2 10 2 3 10 3 4 10 1 1 2 1 1 1 4 2 2 1 2 2 2	55 195 135

Note

For the second event, the value of d_k will be $[0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10]$, which will sum up to 55.

For the fourth event, the value of d_k will be $[20, 19, 18, 17, 16, 15, 16, 17, 18, 19, 20]$, which will sum up to 195.

For the fifth event, the value of d_k will be $[10, 11, 12, 13, 14, 15, 14, 13, 12, 11, 10]$, which will sum up to 135.