

Contest Duration: 2025-07-26(Sat) 22:00 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20250726T2100&p1=248>) - 2025-07-26(Sat) 23:40 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20250726T2240&p1=248>) (local time) (100 minutes)

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## E - Development

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Time Limit: 3.5 sec / Memory Limit: 1024 MiB

Score : 450 points

### Problem Statement

AtCoder Country has  $N$  cities numbered from 1 to  $N$ ,  $M$  roads, and  $K$  airports.

The  $i$ -th road connects cities  $A_i$  and  $B_i$  bidirectionally and takes  $C_i$  hours to travel. There are airports in cities  $D_1, \dots, D_K$ , and you can travel between cities with airports in  $T$  hours.

Process  $Q$  queries in order. Each query is one of the following three types:

- 1  $x \ y \ t$ : A road connecting cities  $x$  and  $y$  bidirectionally in  $t$  hours is built.
- 2  $x$ : An airport is built in city  $x$ .
- 3: Let  $f(x, y)$  be the smallest number of hours needed to reach city  $y$  from city  $x$  using roads and airports if reachable, and 0 if unreachable. Find  $\sum_{x=1}^N \sum_{y=1}^N f(x, y)$ .

### Constraints

- $1 \leq N \leq 500$
- $0 \leq M \leq 10^5$
- $1 \leq A_i < B_i \leq N$
- $1 \leq C_i \leq 10^9$
- $0 \leq K \leq N$
- $1 \leq T \leq 10^9$
- $1 \leq D_1 < \dots < D_K \leq N$

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- $1 \leq Q \leq 1000$
- For type 1 queries:  $1 \leq x < y \leq N, 1 \leq t \leq 10^9$ .
- For type 2 queries:  $1 \leq x \leq N$ .
- All input values are integers.

## Input

The input is given from Standard Input in the following format:

```

N M
A1 B1 C1
⋮
AM BM CM
K T
D1 ... DK
Q
Query1
⋮
QueryQ

```

Query<sub>*i*</sub> represents the *i*-th query, whose format and meaning are as given in the problem statement.

## Output

Output the answers to type 3 queries in order, separated by newlines.

### Sample Input 1

Copy

```

4 1
1 2 10
2 100
1 3
5
3
1 2 3 60
3
2 4
3

```

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### Sample Output 1

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440  
280  
900

Copy

AtCoder Country has four cities. Initially, there is a road connecting cities 1 and 2 in 10 hours, and airports connecting cities 1 and 3 in 100 hours.

- Initially,  $f(1, 2) = f(2, 1) = 10$ ,  $f(1, 3) = f(3, 1) = 100$ ,  $f(2, 3) = f(3, 2) = 110$ , and others are 0, so  $\sum_{x=1}^N \sum_{y=1}^N f(x, y) = 440$ .
- A new road connecting cities 2 and 3 in 60 hours is built.
- $f(1, 2) = f(2, 1) = 10$ ,  $f(1, 3) = f(3, 1) = 70$ ,  $f(2, 3) = f(3, 2) = 60$ , and others are 0, so  $\sum_{x=1}^N \sum_{y=1}^N f(x, y) = 280$ .
- A new airport is built in city 4.
- $f(1, 2) = f(2, 1) = 10$ ,  $f(1, 3) = f(3, 1) = 70$ ,  $f(1, 4) = f(4, 1) = 100$ ,  $f(2, 3) = f(3, 2) = 60$ ,  $f(2, 4) = f(4, 2) = 110$ ,  $f(3, 4) = f(4, 3) = 100$ , and others are 0, so  $\sum_{x=1}^N \sum_{y=1}^N f(x, y) = 900$ .

Multiple roads may exist between some pair of cities. Also, a city may have multiple airports.

[/#telegram](#))

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