

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)

[Back to Home \(/home\)](#)

 [Top \(/contests/abc416\)](#)

 [Tasks \(/contests/abc416/tasks\)](#)

 [Clarifications \(/contests/abc416/clarifications\)](#)  [Results ▾](#)

 [Standings \(/contests/abc416/standings\)](#)

 [Virtual Standings \(/contests/abc416/standings/virtual\)](#)  [Editorial \(/contests/abc416/editorial\)](#)

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E - Development

[Editorial \(/contests/abc416/tasks/abc416_e/editorial\)](#)

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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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05:27:40 +11:00

- $1 \leq Q \leq 1000$
 - 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_i 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

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```
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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