

2093. Minimum Cost to Reach City With Discounts Premium

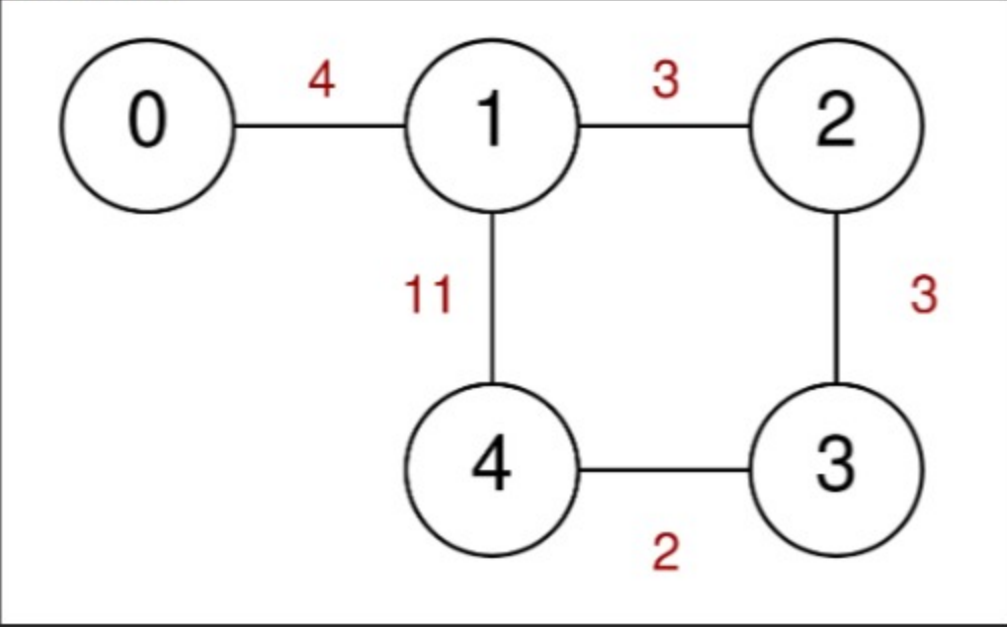
Medium 🔖 Topics 🏢 Companies 💡 Hint

A series of highways connect n cities numbered from 0 to $n - 1$. You are given a 2D integer array `highways` where `highways[i] = [city1i, city2i, tolli]` indicates that there is a highway that connects `city1i` and `city2i`, allowing a car to go from `city1i` to `city2i` and **vice versa** for a cost of `tolli`.

You are also given an integer `discounts` which represents the number of discounts you have. You can use a discount to travel across the i^{th} highway for a cost of `tolli / 2` (**integer division**). Each discount may only be used **once**, and you can only use at most **one** discount per highway.

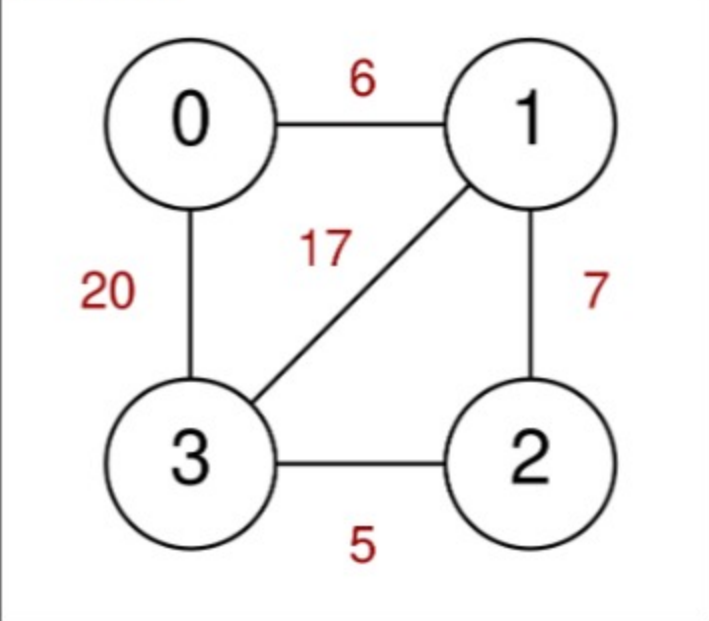
Return *the **minimum total cost** to go from city 0 to city $n - 1$, or -1 if it is not possible to go from city 0 to city $n - 1$.*

Example 1:



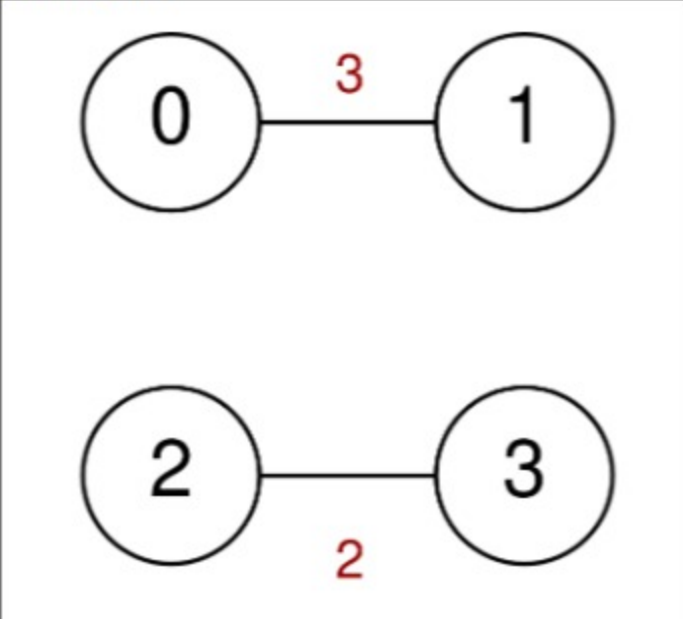
Input: `n = 5, highways = [[0,1,4],[2,1,3],[1,4,11],[3,2,3],[3,4,2]]`, `discounts = 1`
Output: `9`
Explanation:
Go from `0` to `1` for a cost of `4`.
Go from `1` to `4` and use a discount for a cost of `11 / 2 = 5`.
The minimum cost to go from `0` to `4` is `4 + 5 = 9`.

Example 2:



Input: `n = 4, highways = [[1,3,17],[1,2,7],[3,2,5],[0,1,6],[3,0,20]]`, `discounts = 20`
Output: `8`
Explanation:
Go from `0` to `1` and use a discount for a cost of `6 / 2 = 3`.
Go from `1` to `2` and use a discount for a cost of `7 / 2 = 3`.
Go from `2` to `3` and use a discount for a cost of `5 / 2 = 2`.
The minimum cost to go from `0` to `3` is `3 + 3 + 2 = 8`.

Example 3:



Input: `n = 4, highways = [[0,1,3],[2,3,2]]`, `discounts = 0`
Output: `-1`
Explanation:
It is impossible to go from `0` to `3` so return `-1`.

Constraints:

- $2 \leq n \leq 1000$
- $1 \leq \text{highways.length} \leq 1000$
- $\text{highways}[i].\text{length} == 3$
- $0 \leq \text{city1}_i, \text{city2}_i \leq n - 1$
- $\text{city1}_i \neq \text{city2}_i$
- $0 \leq \text{toll}_i \leq 10^5$
- $0 \leq \text{discounts} \leq 500$
- There are no duplicate highways.

Seen this question in a real interview before? 1/5

Yes No

Accepted **10.4K** | Submissions **17.4K** | Acceptance Rate **59.7%**

🔖 Topics

Graph Heap (Priority Queue) Shortest Path

🏢 Companies

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💡 Hint 1

Try to construct a graph out of highways. What type of graph is this?

💡 Hint 2

We essentially need to find the minimum distance to get from node `0` to node `n - 1` in an undirected weighted graph. What algorithm should we use to do this?

💡 Hint 3

Use Dijkstra's algorithm to find the minimum weight path. Keep track of the minimum distance to each vertex with `d` discounts left

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💬 Discussion (12)