2247. Maximum Cost of Trip With K Highways

Premium

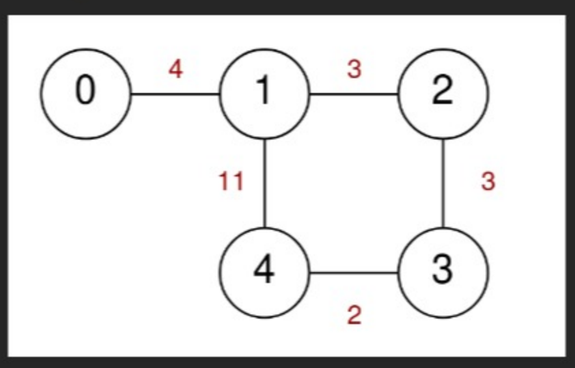
Hard | Topics | Hint

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 `k`. You are going on a trip that crosses **exactly** `k` highways. You may start at any city, but you may only visit each city **at most** once during your trip.

Return *the **maximum** cost of your trip. If there is no trip that meets the requirements, return* `-1`.

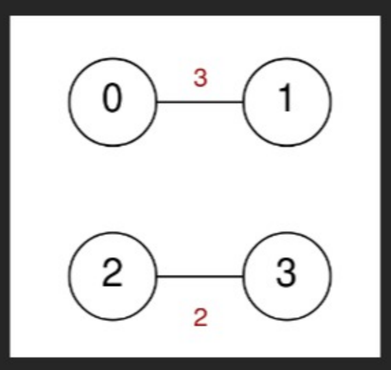
Example 1:




```
Input: n = 5, highways = [[0,1,4],[2,1,3],[1,4,11],[3,2,3],[3,4,2]], k = 3
Output: 17
Explanation:
One possible trip is to go from 0 -> 1 -> 4 -> 3. The cost of this trip is 4 + 11 + 2 = 17.
Another possible trip is to go from 4 -> 1 -> 2 -> 3. The cost of this trip is 11 + 3 + 3 = 17.
It can be proven that 17 is the maximum possible cost of any valid trip.

Note that the trip 4 -> 1 -> 0 -> 1 is not allowed because you visit the city 1 twice.
```

Example 2:




```
Input: n = 4, highways = [[0,1,3],[2,3,2]], k = 2
Output: -1
Explanation: There are no valid trips of length 2, so return -1.
```

Constraints:

- `2 <= n <= 15`
- `1 <= highways.length <= 50`
- `highways[i].length == 3`
- `0 <= city1ᵢ, city2ᵢ <= n - 1`
- `city1ᵢ != city2ᵢ`
- `0 <= tollᵢ <= 100`
- `1 <= k <= 50`
- There are no duplicate highways.

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

Yes No

Accepted **1.9K** | Submissions **3.8K** | Acceptance Rate **50.2%**

Topics

Dynamic Programming | Bit Manipulation | Graph | Bitmask

Hint 1

Are there any computations being repeated?

Hint 2

The same path can be visited multiple times. Could we reuse the previously calculated result?

Hint 3

Store the nodes seen on the current path and the last node on the current path as a dynamic programming state.

Similar Questions

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Discussion (0)