

2473. Minimum Cost to Buy Apples Premium

Medium Topics Companies Hint

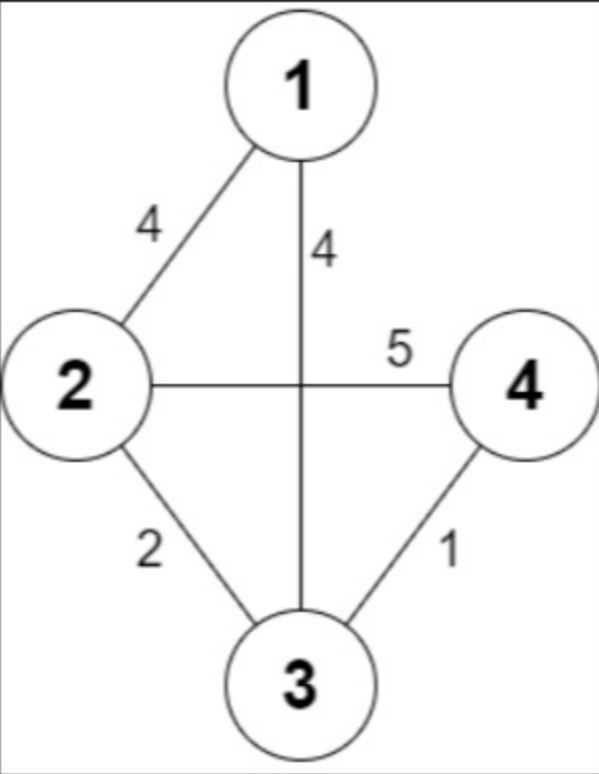
You are given a positive integer  $n$  representing  $n$  cities numbered from  $1$  to  $n$ . You are also given a **2D** array `roads`, where `roads[i] = [ai, bi, costi]` indicates that there is a **bidirectional** road between cities `ai` and `bi` with a cost of traveling equal to `costi`.

You can buy apples in **any** city you want, but some cities have different costs to buy apples. You are given the 1-based array `appleCost` where `appleCost[i]` is the cost of buying one apple from city `i`.

You start at some city, traverse through various roads, and eventually buy **exactly** one apple from **any** city. After you buy that apple, you have to return back to the city you **started** at, but now the cost of all the roads will be **multiplied** by a given factor `k`.

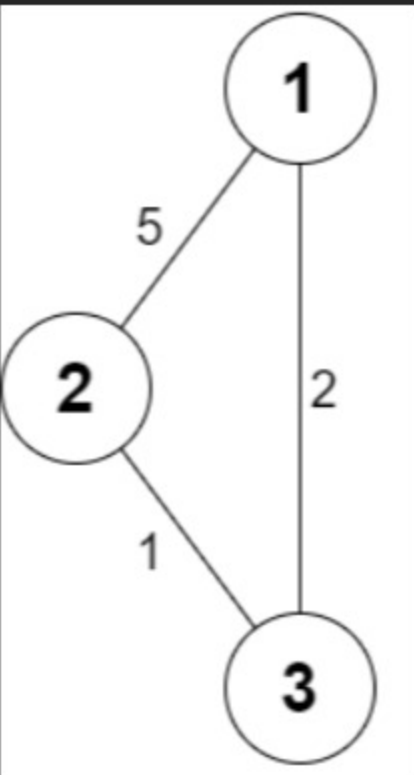
Given the integer `k`, return a 1-based array `answer` of size `n` where `answer[i]` is the **minimum** total cost to buy an apple if you start at city `i`.

Example 1:



**Input:** `n = 4, roads = [[1,2,4],[2,3,2],[2,4,5],[3,4,1],[1,3,4]], appleCost = [56,42,102,301], k = 2`  
**Output:** `[54,42,48,51]`  
**Explanation:** The minimum cost for each starting city is the following:  
- Starting at city 1: You take the path 1 -> 2, buy an apple at city 2, and finally take the path 2 -> 1. The total cost is  $4 + 42 + 4 * 2 = 54$ .  
- Starting at city 2: You directly buy an apple at city 2. The total cost is 42.  
- Starting at city 3: You take the path 3 -> 2, buy an apple at city 2, and finally take the path 2 -> 3. The total cost is  $2 + 42 + 2 * 2 = 48$ .  
- Starting at city 4: You take the path 4 -> 3 -> 2 then you buy at city 2, and finally take the path 2 -> 3 -> 4. The total cost is  $1 + 2 + 42 + 1 * 2 + 2 * 2 = 51$ .

Example 2:



**Input:** `n = 3, roads = [[1,2,5],[2,3,1],[3,1,2]], appleCost = [2,3,1], k = 3`  
**Output:** `[2,3,1]`  
**Explanation:** It is always optimal to buy the apple in the starting city.

Constraints:

- $2 \leq n \leq 1000$
- $1 \leq \text{roads.length} \leq 2000$
- $1 \leq a_i, b_i \leq n$
- $a_i \neq b_i$
- $1 \leq \text{cost}_i \leq 10^5$
- $\text{appleCost.length} == n$
- $1 \leq \text{appleCost}[i] \leq 10^5$
- $1 \leq k \leq 100$
- There are no repeated edges.

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

Yes No

Accepted 6.5K | Submissions 9.6K | Acceptance Rate 67.5%

Topics

ArrayGraphHeap (Priority Queue)Shortest Path

Companies

0 - 6 months

Media.net2Directi2

Hint 1

Notice that the path you take to buy an apple will be the same path to return to the starting city.

Hint 2

Starting from each city, use Dijkstra's algorithm to find the best city to travel to.

Discussion (13)