2699. Modify Graph Edge Weights

Description

You are given an **undirected weighted** **connected** graph containing `n` nodes labeled from `0` to `n - 1`, and an integer array `edges` where `edges[i] = [a_i, b_i, w_i]` indicates that there is an edge between nodes `a_i` and `b_i` with weight `w_i`.

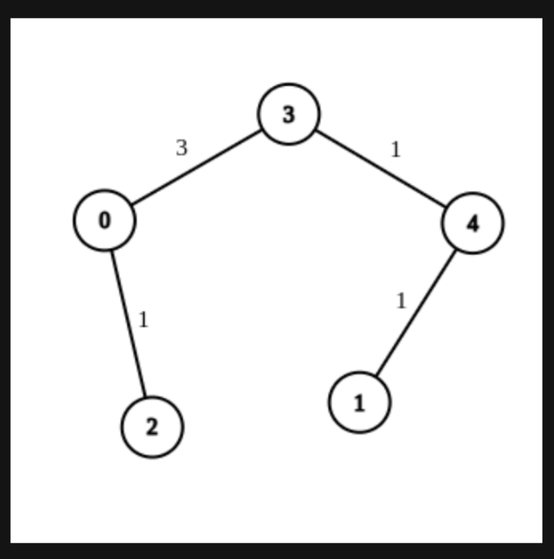
Some edges have a weight of `-1` (`w_i = -1`), while others have a **positive** weight (`w_i > 0`).

Your task is to modify **all edges** with a weight of `-1` by assigning them **positive integer values** in the range `[1, 2 * 10^9]` so that the **shortest distance** between the nodes `source` and `destination` becomes equal to an integer `target`. If there are **multiple** **modifications** that make the shortest distance between `source` and `destination` equal to `target`, any of them will be considered correct.

Return *an array containing all edges (even unmodified ones) in any order if it is possible to make the shortest distance from `source` to `destination` equal to `target`, or an **empty array** if it's impossible.*

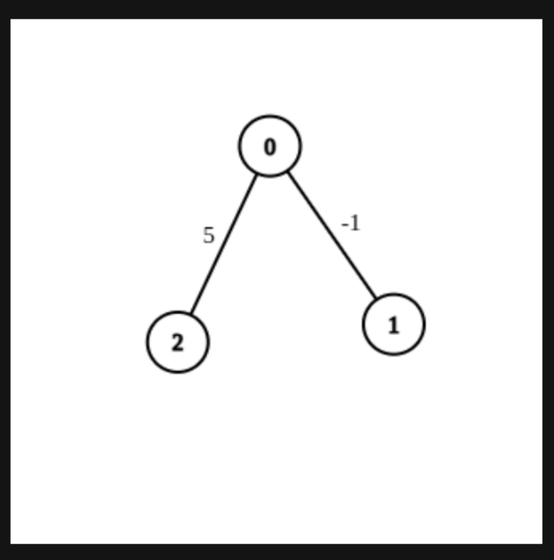
Note: You are not allowed to modify the weights of edges with initial positive weights.

Example 1:



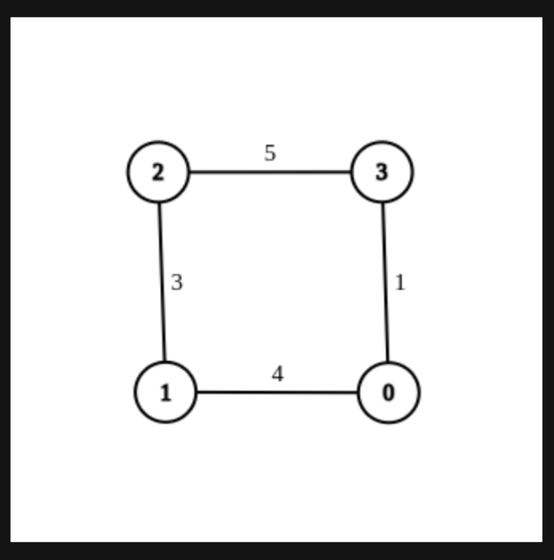

```
Input: n = 5, edges = [[4,1,-1],[2,0,-1],[0,3,-1],[4,3,-1]], source = 0, destination = 1, target = 5
Output: [[4,1,1],[2,0,1],[0,3,3],[4,3,1]]
Explanation: The graph above shows a possible modification to the edges, making the distance from 0 to 1 equal to 5.
```

Example 2:




```
Input: n = 3, edges = [[0,1,-1],[0,2,5]], source = 0, destination = 2, target = 6
Output: []
Explanation: The graph above contains the initial edges. It is not possible to make the distance from 0 to 2 equal to 6 by modifying the edge with weight -1. So, an empty array is returned.
```

Example 3:




```
Input: n = 4, edges = [[1,0,4],[1,2,3],[2,3,5],[0,3,-1]], source = 0, destination = 2, target = 6
Output: [[1,0,4],[1,2,3],[2,3,5],[0,3,1]]
Explanation: The graph above shows a modified graph having the shortest distance from 0 to 2 as 6.
```

Constraints:

- `1 <= n <= 100`
- `1 <= edges.length <= n * (n - 1) / 2`
- `edges[i].length == 3`
- `0 <= a_i, b_i < n`
- `w_i = -1` or `1 <= w_i <= 10^7`
- `a_i != b_i`
- `0 <= source, destination < n`
- `source != destination`
- `1 <= target <= 10^9`
- The graph is connected, and there are no self-loops or repeated edges