1786. Number of Restricted Paths From First to Last Node

Description

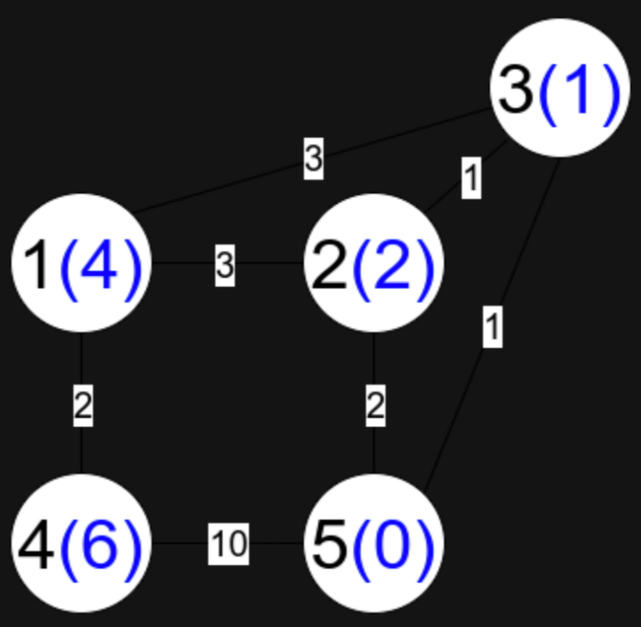
There is an undirected weighted connected graph. You are given a positive integer `n` which denotes that the graph has `n` nodes labeled from `1` to `n`, and an array `edges` where each `edges[i] = [u_i, v_i, weight_i]` denotes that there is an edge between nodes `u_i` and `v_i` with weight equal to `weight_i`.

A path from node `start` to node `end` is a sequence of nodes `[z_0, z_1, z_2, ..., z_k]` such that `z_0 = start` and `z_k = end` and there is an edge between `z_i` and `z_{i+1}` where `0 <= i <= k-1`.

The distance of a path is the sum of the weights on the edges of the path. Let `distanceToLastNode(x)` denote the shortest distance of a path between node `n` and node `x`. A **restricted path** is a path that also satisfies that `distanceToLastNode(z_i) > distanceToLastNode(z_{i+1})` where `0 <= i <= k-1`.

Return *the number of restricted paths from node* `1` *to node* `n`. Since that number may be too large, return it **modulo** `10^9 + 7`.

Example 1:

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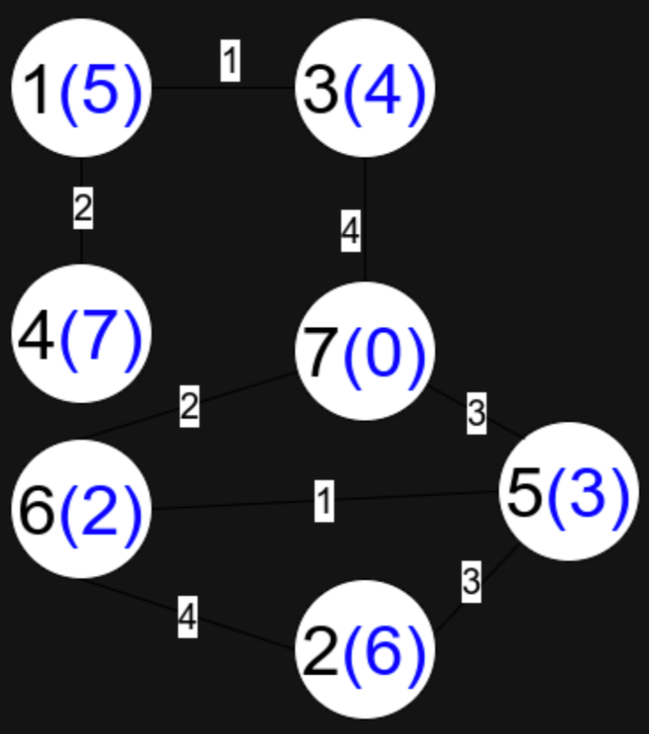
Input: n = 5, edges = [[1,2,3],[1,3,3],[2,3,1],[1,4,2],[5,2,2],[3,5,1],[5,4,10]]
Output: 3
Explanation: Each circle contains the node number in black and its distanceToLastNode value in blue. The three restricted paths are:
1) 1 --> 2 --> 5
2) 1 --> 2 --> 3 --> 5
3) 1 --> 3 --> 5
```

Example 2:




```
Input: n = 7, edges = [[1,3,1],[4,1,2],[7,3,4],[2,5,3],[5,6,1],[6,7,2],[7,5,3],[2,6,4]]
Output: 1
Explanation: Each circle contains the node number in black and its distanceToLastNode value in blue. The only restricted path is 1 --> 3 --> 7.
```

Constraints:

- `1 <= n <= 2 * 10^4`
- `n - 1 <= edges.length <= 4 * 10^4`
- `edges[i].length == 3`
- `1 <= u_i, v_i <= n`
- `u_i != v_i`
- `1 <= weight_i <= 10^5`
- There is at most one edge between any two nodes.
- There is at least one path between any two nodes.