Problem 1334: Find the City With the Smallest Number of Neighbors at a Threshold Distance

Problem Information

Difficulty: Medium
Acceptance Rate: 71.54%
Paid Only: No
Tags: Dynamic Programming, Graph, Shortest Path

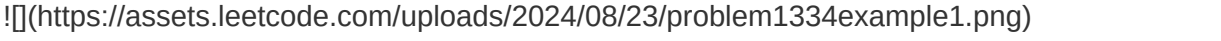
Problem Description

There are `n` cities numbered from `0` to `n-1`. Given the array `edges` where `edges[i] = [fromi, toi, weighti]` represents a bidirectional and weighted edge between cities `fromi` and `toi`, and given the integer `distanceThreshold`.

Return the city with the smallest number of cities that are reachable through some path and whose distance is **at most** `distanceThreshold`, If there are multiple such cities, return the city with the greatest number.

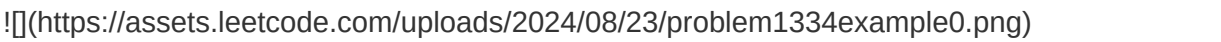
Notice that the distance of a path connecting cities _**i**_ and _**j**_ is equal to the sum of the edges' weights along that path.

Example 1:



Input: n = 4, edges = [[0,1,3],[1,2,1],[1,3,4],[2,3,1]], distanceThreshold = 4 **Output:** 3 **Explanation:** The figure above describes the graph. The neighboring cities at a distanceThreshold = 4 for each city are: City 0 -> [City 1, City 2] City 1 -> [City 0, City 2, City 3] City 2 -> [City 0, City 1, City 3] City 3 -> [City 1, City 2] Cities 0 and 3 have 2 neighboring cities at a distanceThreshold = 4, but we have to return city 3 since it has the greatest number.

Example 2:



Input: n = 5, edges = [[0,1,2],[0,4,8],[1,2,3],[1,4,2],[2,3,1],[3,4,1]], distanceThreshold = 2 **Output:** 0 **Explanation:** The figure above describes the graph. The neighboring cities at a distanceThreshold = 2 for each city are: City 0 -> [City 1] City 1 -> [City 0, City 4] City 2 -> [City 3, City 4] City 3 -> [City 2, City 4] City 4 -> [City 1, City 2, City 3] The city 0 has 1 neighboring city at a distanceThreshold = 2.

Constraints:

* `2 <= n <= 100` * `1 <= edges.length <= n * (n - 1) / 2` * `edges[i].length == 3` * `0 <= fromi < toi < n` * `1 <= weighti, distanceThreshold <= 10^4` * All pairs `(fromi, toi)` are distinct.

Code Snippets

C++:

```
class Solution {
public:
int findTheCity(int n, vector<vector<int>>& edges, int distanceThreshold) {

}
};
```

Java:

```
class Solution {
public int findTheCity(int n, int[][] edges, int distanceThreshold) {

}
}
```

Python3:

```
class Solution:
def findTheCity(self, n: int, edges: List[List[int]], distanceThreshold: int)
-> int:
```