Problem 3112: Minimum Time to Visit Disappearing Nodes

Problem Information

Difficulty: Medium
Acceptance Rate: 36.73%
Paid Only: No
Tags: Array, Graph, Heap (Priority Queue), Shortest Path

Problem Description

There is an undirected graph of `n` nodes. You are given a 2D array `edges`, where `edges[i] = [ui, vi, lengthi]` describes an edge between node `ui` and node `vi` with a traversal time of `lengthi` units.

Additionally, you are given an array `disappear`, where `disappear[i]` denotes the time when the node `i` disappears from the graph and you won't be able to visit it.

Note that the graph might be _disconnected_ and might contain _multiple edges_.

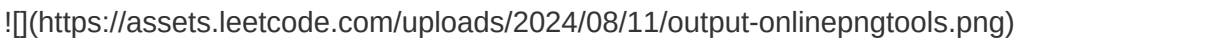
Return the array `answer`, with `answer[i]` denoting the **minimum** units of time required to reach node `i` from node 0. If node `i` is **unreachable** from node 0 then `answer[i]` is `-1`.

Example 1:

Input: n = 3, edges = [[0,1,2],[1,2,1],[0,2,4]], disappear = [1,1,5]

Output: [0,-1,4]

Explanation:



We are starting our journey from node 0, and our goal is to find the minimum time required to reach each node before it disappears.

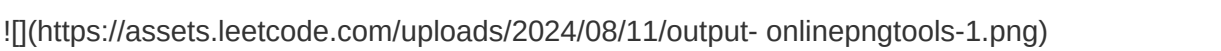
* For node 0, we don't need any time as it is our starting point. * For node 1, we need at least 2 units of time to traverse `edges[0]`. Unfortunately, it disappears at that moment, so we won't be able to visit it. * For node 2, we need at least 4 units of time to traverse `edges[2]`.

Example 2:

Input: n = 3, edges = [[0,1,2],[1,2,1],[0,2,4]], disappear = [1,3,5]

Output: [0,2,3]

Explanation:



We are starting our journey from node 0, and our goal is to find the minimum time required to reach each node before it disappears.

* For node 0, we don't need any time as it is the starting point. * For node 1, we need at least 2 units of time to traverse `edges[0]`. * For node 2, we need at least 3 units of time to traverse `edges[0]` and `edges[1]`.

Example 3:

Input: n = 2, edges = [[0,1,1]], disappear = [1,1]

Output: [0,-1]

Explanation:

Exactly when we reach node 1, it disappears.

Constraints:

* `1 <= n <= 5 * 104` * `0 <= edges.length <= 105` * `edges[i] == [ui, vi, lengthi]` * `0 <= ui, vi <= n - 1` * `1 <= lengthi <= 105` * `disappear.length == n` * `1 <= disappear[i] <= 105`

Code Snippets

C++:

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

}
};
```

Java:

```
class Solution {
public int[] minimumTime(int n, int[][] edges, int[] disappear) {

}
}
```

Python3:

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