

Problem 1203: Sort Items by Groups Respecting Dependencies

Problem Information

Difficulty: Hard

Acceptance Rate: 65.63%

Paid Only: No

Tags: Depth-First Search, Breadth-First Search, Graph, Topological Sort

Problem Description

There are n items each belonging to zero or one of m groups where $\text{group}[i]$ is the group that the i -th item belongs to and it's equal to -1 if the i -th item belongs to no group. The items and the groups are zero indexed. A group can have no item belonging to it.

Return a sorted list of the items such that:

* The items that belong to the same group are next to each other in the sorted list. * There are some relations between these items where $\text{beforeItems}[i]$ is a list containing all the items that should come before the i -th item in the sorted array (to the left of the i -th item).

Return any solution if there is more than one solution and return an **empty list** if there is no solution.

Example 1:

Input: $n = 8, m = 2, \text{group} = [-1, -1, 1, 0, 0, 1, 0, -1], \text{beforeItems} = [[], [6], [5], [6], [3, 6], [], [], []]$

Output: $[6, 3, 4, 1, 5, 2, 0, 7]$

Example 2:

Input: $n = 8, m = 2, \text{group} = [-1, -1, 1, 0, 0, 1, 0, -1], \text{beforeItems} = [[], [6], [5], [6], [3], [], [4], []]$

Output: $[]$ **Explanation:** This is the same as example 1 except that 4 needs to be before 6 in the sorted list.

****Constraints:****

*`1` <= m <= n <= 3 * 10⁴ * `group.length == beforeItems.length == n` * `-1` <= group[i] <= m - 1 * `0` <= beforeItems[i].length <= n - 1 * `0` <= beforeItems[i][j] <= n - 1 * `i` != beforeItems[i][j]` * `beforeItems[i]` does not contain duplicates elements.

Code Snippets

C++:

```
class Solution {
public:
    vector<int> sortItems(int n, int m, vector<int>& group, vector<vector<int>>&
beforeItems) {

    }

};
```

Java:

```
class Solution {
    public int[] sortItems(int n, int m, int[] group, List<List<Integer>>
beforeItems) {

    }

}
```

Python3:

```
class Solution:
    def sortItems(self, n: int, m: int, group: List[int], beforeItems:
List[List[int]]) -> List[int]:
```