

3607. Power Grid Maintenance

Solved ●

Medium

Topics



Hint

You are given an integer c representing c power stations, each with a unique identifier id from 1 to c (1-based indexing).

These stations are interconnected via n **bidirectional** cables, represented by a 2D array `connections`, where each element `connections[i] = [ui, vi]` indicates a connection between station u_i and station v_i . Stations that are directly or indirectly connected form a **power grid**.

Initially, **all** stations are online (operational).

You are also given a 2D array `queries`, where each query is one of the following two types:

- `[1, x]`: A maintenance check is requested for station x . If station x is online, it resolves the check by itself. If station x is offline, the check is resolved by the operational station with the smallest id in the same **power grid** as x . If **no operational** station exists in that grid, return -1.
- `[2, x]`: Station x goes offline (i.e., it becomes non-operational).

Return an array of integers representing the results of each query of type `[1, x]` in the **order** they appear.

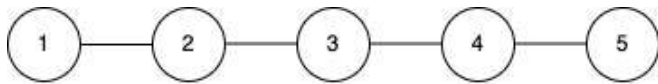
Note: The power grid preserves its structure; an offline (non-operational) node remains part of its grid and taking it offline does not alter connectivity.

Example 1:

Input: $c = 5$, `connections = [[1,2],[2,3],[3,4],[4,5]]`, `queries = [[1,3],[2,1],[1,1],[2,2],[1,2]]`

Output: `[3,2,3]`

Explanation:



- Initially, all stations $\{1, 2, 3, 4, 5\}$ are online and form a single power grid.
- Query `[1,3]`: Station 3 is online, so the maintenance check is resolved by station 3.
- Query `[2,1]`: Station 1 goes offline. The remaining online stations are $\{2, 3, 4, 5\}$.
- Query `[1,1]`: Station 1 is offline, so the check is resolved by the operational station with the smallest id among $\{2, 3, 4, 5\}$, which is station 2.
- Query `[2,2]`: Station 2 goes offline. The remaining online stations are $\{3, 4, 5\}$.
- Query `[1,2]`: Station 2 is offline, so the check is resolved by the operational station with the smallest id among $\{3, 4, 5\}$, which is station 3.

Example 2:

Input: $c = 3$, `connections = []`, `queries = [[1,1],[2,1],[1,1]]`

Output: `[1,-1]`

Explanation:

- There are no connections, so each station is its own isolated grid.
- Query `[1,1]`: Station 1 is online in its isolated grid, so the maintenance check is resolved by station 1.

- Query `[2,1]`: Station 1 goes offline.
- Query `[1,1]`: Station 1 is offline and there are no other stations in its grid, so the result is -1.


Constraints:

- $1 \leq c \leq 10^5$
- $0 \leq n = \text{connections.length} \leq \min(10^5, c * (c - 1) / 2)$
- $\text{connections}[i].\text{length} == 2$
- $1 \leq u_i, v_i \leq c$
- $u_i \neq v_i$
- $1 \leq \text{queries.length} \leq 2 * 10^5$
- $\text{queries}[i].\text{length} == 2$
- $\text{queries}[i][0]$ is either 1 or 2.
- $1 \leq \text{queries}[i][1] \leq c$

Seen this question in a real interview before? 1/5

Yes No

Accepted 15.929/36.2K | Acceptance Rate 44.0%

Topics	▼
	▼
Hint 1	▼
Hint 2	▼
Hint 3	▼
Hint 4	▼
Hint 5	▼
Discussion (34)	▼