

3108. Minimum Cost Walk in Weighted Graph

Solved ●

Hard Topics Companies Hint

There is an undirected weighted graph with n vertices labeled from 0 to $n - 1$.

You are given the integer n and an array `edges`, where `edges[i] = [ui, vi, wi]` indicates that there is an edge between vertices u_i and v_i with a weight of w_i .

A walk on a graph is a sequence of vertices and edges. The walk starts and ends with a vertex, and each edge connects the vertex that comes before it and the vertex that comes after it. It's important to note that a walk may visit the same edge or vertex more than once.

The **cost** of a walk starting at node u and ending at node v is defined as the bitwise **AND** of the weights of the edges traversed during the walk. In other words, if the sequence of edge weights encountered during the walk is $w_0, w_1, w_2, \dots, w_k$, then the cost is calculated as $w_0 \& w_1 \& w_2 \& \dots \& w_k$, where $\&$ denotes the bitwise **AND** operator.

You are also given a 2D array `query`, where `query[i] = [si, ti]`. For each query, you need to find the minimum cost of the walk starting at vertex s_i and ending at vertex t_i . If there exists no such walk, the answer is -1 .

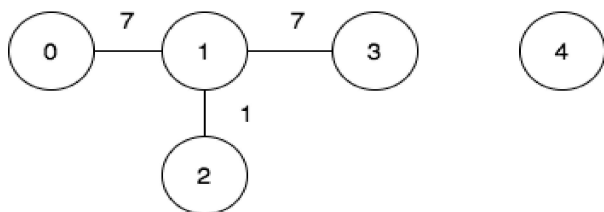
Return the array `answer`, where `answer[i]` denotes the **minimum** cost of a walk for query i .

Example 1:

Input: $n = 5$, `edges = [[0,1,7],[1,3,7],[1,2,1]]`, `query = [[0,3],[3,4]]`

Output: `[1,-1]`

Explanation:



To achieve the cost of 1 in the first query, we need to move on the following edges: $0 \rightarrow 1$ (weight 7), $1 \rightarrow 2$ (weight 1), $2 \rightarrow 1$ (weight 1), $1 \rightarrow 3$ (weight 7).

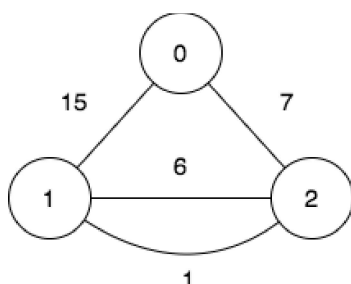
In the second query, there is no walk between nodes 3 and 4, so the answer is -1 .

Example 2:

Input: $n = 3$, `edges = [[0,2,7],[0,1,15],[1,2,6],[1,2,1]]`, `query = [[1,2]]`

Output: `[0]`

Explanation:



To achieve the cost of 0 in the first query, we need to move on the following edges: $1 \rightarrow 2$ (weight 1), $2 \rightarrow 1$ (weight 6), $1 \rightarrow 2$ (weight 1).

Constraints:

- `2 <= n <= 105`
- `0 <= edges.length <= 105`
- `edges[i].length == 3`
- `0 <= ui, vi <= n - 1`
- `ui != vi`
- `0 <= wi <= 105`
- `1 <= query.length <= 105`
- `query[i].length == 2`
- `0 <= si, ti <= n - 1`
- `si != ti`

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

Yes No

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Discussion (21)	▼

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