

2497. Maximum Star Sum of a Graph

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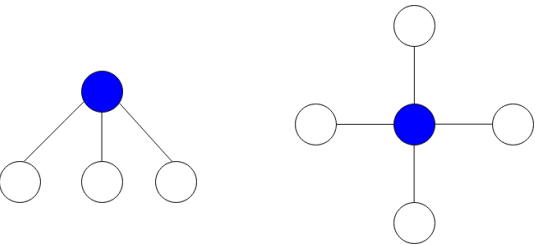
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There is an undirected graph consisting of n nodes numbered from 0 to $n - 1$. You are given a **0-indexed** integer array `vals` of length n where `vals[i]` denotes the value of the i^{th} node.

You are also given a 2D integer array `edges` where `edges[i] = [ai, bi]` denotes that there exists an **undirected** edge connecting nodes a_i and b_i .

A **star graph** is a subgraph of the given graph having a center node containing 0 or more neighbors. In other words, it is a subset of edges of the given graph such that there exists a common node for all edges.

The image below shows star graphs with 3 and 4 neighbors respectively, centered at the blue node.

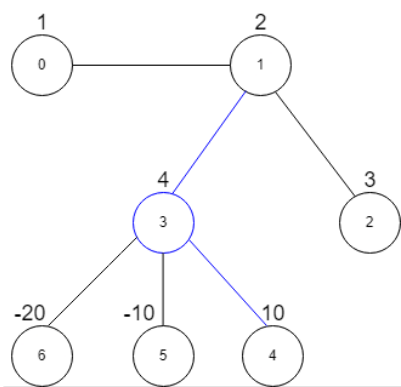


The **star sum** is the sum of the values of all the nodes present in the star graph.

Given an integer k , return the **maximum star sum** of a star graph containing **at most** k edges.

User Accepted:	4214
User Tried:	5307
Total Accepted:	4338
Total Submissions:	14061
Difficulty:	Medium

Example 1:



Input: `vals = [1,2,3,4,10,-10,-20]`, `edges = [[0,1],[1,2],[1,3],[3,4],[3,5],[3,6]]`, $k = 2$
Output: 16
Explanation: The above diagram represents the input graph. The star graph with the maximum star sum is denoted by blue. It is centered at 3 and includes its neighbors 1 and 4. It can be shown it is not possible to get a star graph with a sum greater than 16.

Example 2:

Input: `vals = [-5]`, `edges = []`, $k = 0$
Output: -5
Explanation: There is only one possible star graph, which is node 0 itself. Hence, we return -5.

Constraints:

- $n == \text{vals.length}$
- $1 \leq n \leq 10^5$
- $-10^4 \leq \text{vals}[i] \leq 10^4$
- $0 \leq \text{edges.length} \leq \min(n * (n - 1) / 2, 10^5)$
- $\text{edges}[i].\text{length} == 2$
- $0 \leq a_i, b_i \leq n - 1$
- $a_i \neq b_i$

- $0 \leq k \leq n - 1$

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JavaScript



```
1 const initializeGraph = (n) => { let g = []; for (let i = 0; i < n; i++) { g.push([]); } return g; };
2 const packUG = (g, edges) => { for (const [u, v] of edges) { g[u].push(v); g[v].push(u); } };
3
4 const maxStarSum = (v, edges, k) => {
5     let n = v.length, g = initializeGraph(n), res = Number.MIN_SAFE_INTEGER;
6     packUG(g, edges);
7     for (let i = 0; i < n; i++) {
8         let a = g[i].map(x => v[x]), sum = v[i], cnt = 0;
9         a.sort((x, y) => y - x);
10        for (const x of a) {
11            if (x > 0 && cnt < k) {
12                sum += x;
13                cnt++;
14            } else {
15                break;
16            }
17        }
18        res = Math.max(res, sum);
19    }
20    return res;
21 };
```

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