

2497. Maximum Star Sum of a Graph

Hint

Medium

178

15

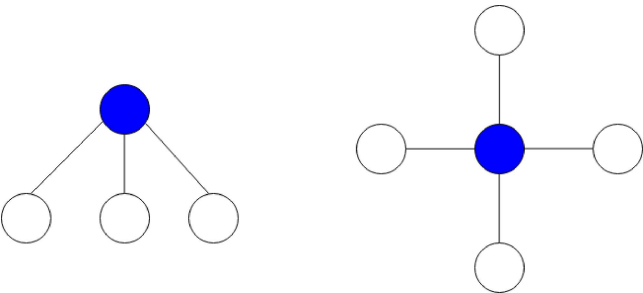
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There is an undirected graph consisting of  $n$  nodes numbered from  $0$  to  $n - 1$ . You are given a **0-indexed** integer array `vals` of length  $n$  where `vals[i]` denotes the value of the  $i^{\text{th}}$  node.

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

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.

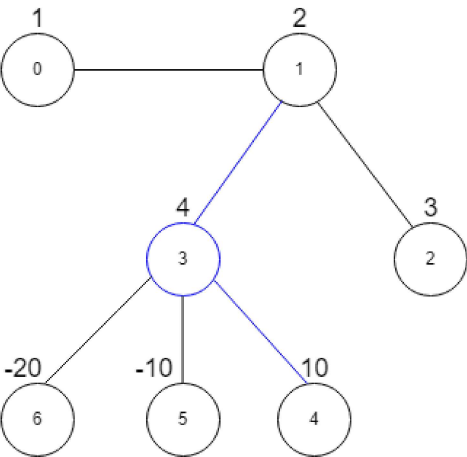
The image below shows star graphs with  $3$  and  $4$  neighbors respectively, centered at the blue node.



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.

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 == vals.length`
- `1 <= n <= 105`
- `-104 <= vals[i] <= 104`
- `0 <= edges.length <= min(n * (n - 1) / 2 , 105)`
- `edges[i].length == 2`
- `0 <= ai, bi <= n - 1`
- `ai != bi`
- `0 <= k <= n - 1`

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