

6243. Minimum Fuel Cost to Report to the Capital

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There is a tree (i.e., a connected, undirected graph with no cycles) structure country network consisting of n cities numbered from 0 to $n - 1$ and exactly $n - 1$ roads. The capital city is city 0 . You are given a 2D integer array `roads` where `roads[i] = [ai, bi]` denotes that there exists a **bidirectional road** connecting cities a_i and b_i .

There is a meeting for the representatives of each city. The meeting is in the capital city.

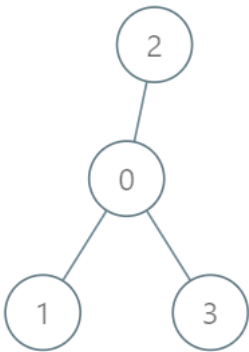
There is a car in each city. You are given an integer `seats` that indicates the number of seats in each car.

A representative can use the car in their city to travel or change the car and ride with another representative. The cost of traveling between two cities is one liter of fuel.

Return the minimum number of liters of fuel to reach the capital city.

User Accepted:	0
User Tried:	0
Total Accepted:	0
Total Submissions:	0
Difficulty:	Medium

Example 1:



Input: `roads = [[0,1],[0,2],[0,3]]`, `seats = 5`

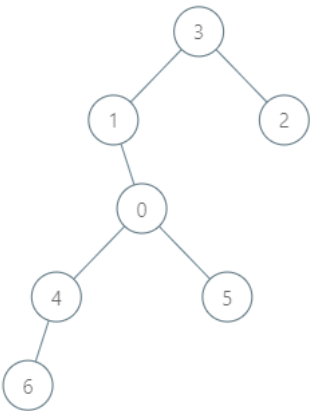
Output: `3`

Explanation:

- Representative₁ goes directly to the capital with 1 liter of fuel.
- Representative₂ goes directly to the capital with 1 liter of fuel.
- Representative₃ goes directly to the capital with 1 liter of fuel.

It costs 3 liters of fuel at minimum.
It can be proven that 3 is the minimum number of liters of fuel needed.

Example 2:



Input: roads = [[3,1],[3,2],[1,0],[0,4],[0,5],[4,6]], seats = 2

Output: 7

Explanation:

- Representative₂ goes directly to city 3 with 1 liter of fuel.
 - Representative₂ and representative₃ go together to city 1 with 1 liter of fuel.
 - Representative₂ and representative₃ go together to the capital with 1 liter of fuel.
 - Representative₁ goes directly to the capital with 1 liter of fuel.
 - Representative₅ goes directly to the capital with 1 liter of fuel.
 - Representative₆ goes directly to city 4 with 1 liter of fuel.
 - Representative₄ and representative₆ go together to the capital with 1 liter of fuel.
- It costs 7 liters of fuel at minimum.
It can be proven that 7 is the minimum number of liters of fuel needed.

Example 3:



Input: roads = [], seats = 1

Output: 0

Explanation: No representatives need to travel to the capital city.

Constraints:

- $1 \leq n \leq 10^5$
- $\text{roads.length} == n - 1$
- $\text{roads}[i].\text{length} == 2$
- $0 \leq a_i, b_i < n$
- $a_i \neq b_i$
- roads represents a valid tree.
- $1 \leq \text{seats} \leq 10^5$

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 let res, k, g;
5 const minimumFuelCost = (roads, seats) => {
6   let n = roads.length + 1;
7   k = seats, res = 0, g = initializeGraph(n);
8   packUG(g, roads);
9   dfs(0, -1);
10  return res;
11 };
12
13 const dfs = (cur, par) => {
14   let sum = 1;
15   for (const child of g[cur]) {
16     if (child !== par) sum += dfs(child, cur);
17   }
18   if (cur !== 0) res += parseInt((sum + k - 1) / k);
19   return sum;
20 }

```

☐ Custom Testcase

Use Example Testcases

Run

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Submission Result: **Accepted** (/submissions/detail/846696987/) ?

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