6085. Maximum Total Importance of Roads

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

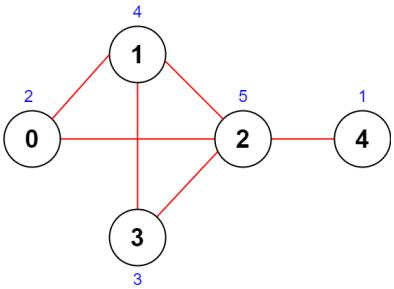
You are given an integer `n` denoting the number of cities in a country. The cities are numbered from `0` to `n - 1`.

You are also given a 2D integer array `roads` where `roads[i] = [a_i, b_i]` denotes that there exists a **bidirectional** road connecting cities `a_i` and `b_i`.

You need to assign each city with an integer value from `1` to `n`, where each value can only be used **once**. The **importance** of a road is then defined as the **sum** of the values of the two cities it connects.

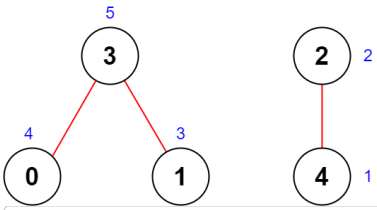
Return *the **maximum total importance** of all roads possible after assigning the values optimally.*

Example 1:




```
Input: n = 5, roads = [[0,1],[1,2],[2,3],[0,2],[1,3],[2,4]]
Output: 43
Explanation: The figure above shows the country and the assigned values of [2,4,5,3,1].
- The road (0,1) has an importance of 2 + 4 = 6.
- The road (1,2) has an importance of 4 + 5 = 9.
- The road (2,3) has an importance of 5 + 3 = 8.
- The road (0,2) has an importance of 2 + 5 = 7.
- The road (1,3) has an importance of 4 + 3 = 7.
- The road (2,4) has an importance of 5 + 1 = 6.
The total importance of all roads is 6 + 9 + 8 + 7 + 7 + 6 = 43.
It can be shown that we cannot obtain a greater total importance than 43.
```

Example 2:




```
Input: n = 5, roads = [[0,3],[2,4],[1,3]]
Output: 20
Explanation: The figure above shows the country and the assigned values of [4,3,2,5,1].
- The road (0,3) has an importance of 4 + 5 = 9.
- The road (2,4) has an importance of 2 + 1 = 3.
- The road (1,3) has an importance of 3 + 5 = 8.
The total importance of all roads is 9 + 3 + 8 = 20.
It can be shown that we cannot obtain a greater total importance than 20.
```

Constraints:

- `2 <= n <= 5 * 10^4`
- `1 <= roads.length <= 5 * 10^4`
- `roads[i].length == 2`
- `0 <= a_i, b_i <= n - 1`
- `a_i != b_i`
- There are no duplicate roads.

JavaScript

```javascript
const initializeGraph = (n) => { let g = []; for (let i = 0; i < n; i++) { g.push([]); } return g; };
const packUG = (g, edges) => { for (const [u, v] of edges) { g[u].push(v); g[v].push(u); } };

const maximumImportance = (n, roads) => {
    let g = initializeGraph(n);
    packUG(g, roads);
    g = g.map((x, i) => [[...x], i]);
    g.sort((x, y) => x[0].length - y[0].length);
    let res = Array(n).fill(0), assign = 1, sum = 0;
    for (const [, node] of g) res[node] = assign++;
    for (const [x, y] of roads) {
        sum += res[x];
        sum += res[y];
    }
    return sum;
};
```

Custom Testcase | Use Example Testcases

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