

399. Evaluate Division

Description

You are given an array of variable pairs `equations` and an array of real numbers `values`, where `equations[i] = [Ai, Bi]` and `values[i]` represent the equation `Ai / Bi = values[i]`. Each `Ai` or `Bi` is a string that represents a single variable.

You are also given some `queries`, where `queries[j] = [Cj, Dj]` represents the `jth` query where you must find the answer for `Cj / Dj = ?`.

Return *the answers to all queries*. If a single answer cannot be determined, return `-1.0`.

Note: The input is always valid. You may assume that evaluating the queries will not result in division by zero and that there is no contradiction.

Note: The variables that do not occur in the list of equations are undefined, so the answer cannot be determined for them.

Example 1:

```
Input: equations = [["a","b"],["b","c"]], values = [2.0,3.0], queries = [["a","c"],["b","a"],["a","e"],["a","a"],["x","x"]]
Output: [6.00000,0.50000,-1.00000,1.00000,-1.00000]
Explanation:
Given: a / b = 2.0, b / c = 3.0
queries are: a / c = ?, b / a = ?, a / e = ?, a / a = ?, x / x = ?
return: [6.0, 0.5, -1.0, 1.0, -1.0 ]
note: x is undefined => -1.0
```

Example 2:

```
Input: equations = [["a","b"],["b","c"],["bc","cd"]], values = [1.5,2.5,5.0], queries = [["a","c"],["c","b"],["bc","cd"],["cd","bc"]]
Output: [3.75000,0.40000,5.00000,0.20000]
```

Example 3:

```
Input: equations = [["a","b"]], values = [0.5], queries = [["a","b"],["b","a"],["a","c"],["x","y"]]
Output: [0.50000,2.00000,-1.00000,-1.00000]
```

Constraints:

- `1 <= equations.length <= 20`
- `equations[i].length == 2`
- `1 <= Ai.length, Bi.length <= 5`
- `values.length == equations.length`
- `0.0 < values[i] <= 20.0`
- `1 <= queries.length <= 20`
- `queries[i].length == 2`
- `1 <= Cj.length, Dj.length <= 5`
- `Ai, Bi, Cj, Dj` consist of lower case English letters and digits.

