# Problem 2307: Check for Contradictions in Equations

## Problem Information

**Difficulty:** Hard
**Acceptance Rate:** 43.69%
**Paid Only:** Yes
**Tags:** Array, Depth-First Search, Union Find, Graph

## Problem Description

You are given a 2D array of strings `equations` and an array of real numbers `values`, where `equations[i] = [Ai, Bi]` and `values[i]` means that `Ai / Bi = values[i]`.

Determine if there exists a contradiction in the equations. Return `true` _if there is a contradiction, or_`false` _otherwise_.

**Note** :

* When checking if two numbers are equal, check that their **absolute difference** is less than `10-5`. * The testcases are generated such that there are no cases targeting precision, i.e. using `double` is enough to solve the problem.

**Example 1:**

**Input:** equations = [["a","b"],["b","c"],["a","c"]], values = [3,0.5,1.5] **Output:** false **Explanation:** The given equations are: a / b = 3, b / c = 0.5, a / c = 1.5 There are no contradictions in the equations. One possible assignment to satisfy all equations is: a = 3, b = 1 and c = 2.

**Example 2:**

**Input:** equations = [["le","et"],["le","code"],["code","et"]], values = [2,5,0.5] **Output:** true **Explanation:** The given equations are: le / et = 2, le / code = 5, code / et = 0.5 Based on the first two equations, we get code / et = 0.4. Since the third equation is code / et = 0.5, we get a contradiction.

**Constraints:**

* `1 <= equations.length <= 100` * `equations[i].length == 2` * `1 <= Ai.length, Bi.length <= 5` * `Ai`, `Bi` consist of lowercase English letters. * `equations.length == values.length` * `0.0 < values[i] <= 10.0` * `values[i]` has a maximum of 2 decimal places.

## Code Snippets

### C++:

```
class Solution {
public:
bool checkContradictions(vector<vector<string>>& equations, vector<double>&
values) {

}
};
```

### Java:

```
class Solution {
public boolean checkContradictions(List<List<String>> equations, double[]
values) {

}
}
```

### Python3:

```
class Solution:
def checkContradictions(self, equations: List[List[str]], values:
List[float]) -> bool:
```