1948

1948. Delete Duplicate Folders in System

Hard | Topics | Companies | Hint

Due to a bug, there are many duplicate folders in a file system. You are given a 2D array `paths`, where `paths[i]` is an array representing an absolute path to the i^{th} folder in the file system.

- For example, `["one", "two", "three"]` represents the path `"/one/two/three"`.

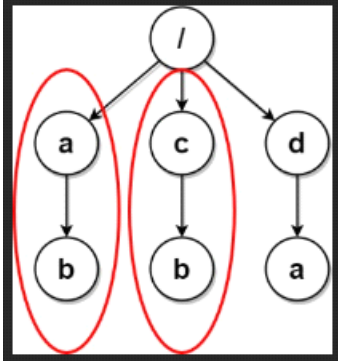
Two folders (not necessarily on the same level) are **identical** if they contain the **same non-empty** set of identical subfolders and underlying subfolder structure. The folders **do not** need to be at the root level to be identical. If two or more folders are **identical**, then **mark** the folders as well as all their subfolders.

- For example, folders `"/a"` and `"/b"` in the file structure below are identical. They (as well as their subfolders) should **all** be marked:
  - `/a`
  - `/a/x`
  - `/a/x/y`
  - `/a/z`
  - `/b`
  - `/b/x`
  - `/b/x/y`
  - `/b/z`
- However, if the file structure also included the path `"/b/w"`, then the folders `"/a"` and `"/b"` would not be identical. Note that `"/a/x"` and `"/b/x"` would still be considered identical even with the added folder.

Once all the identical folders and their subfolders have been marked, the file system will **delete** all of them. The file system only runs the deletion once, so any folders that become identical after the initial deletion are not deleted.

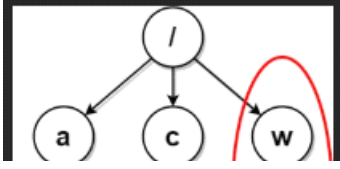
Return *the 2D array* `ans` *containing the paths of the* ***remaining*** *folders after deleting all the marked folders. The paths may be returned in* ***any*** *order.*

Example 1:

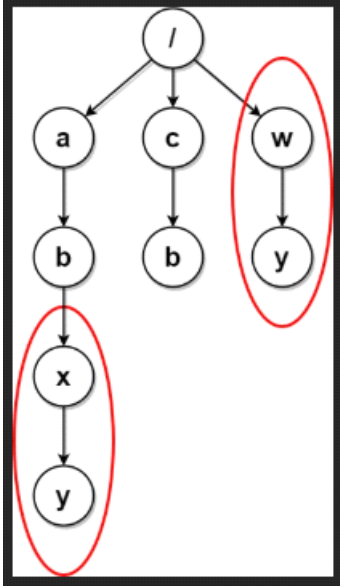



```
Input: paths = [["a"],["c"],["d"],["a","b"],["c","b"],["d","a"]]
Output: [["d"],["d","a"]]
Explanation: The file structure is as shown.
Folders "/a" and "/c" (and their subfolders) are marked for deletion because they both contain an empty
folder named "b".
```

Example 2:

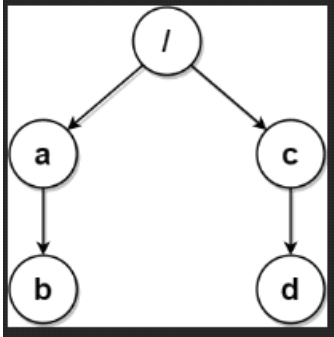


Example 2:




```
Input: paths = [["a"],["c"],["a","b"],["c","b"],["a","b","x"],["a","b","x","y"],["w"],["w","y"]]
Output: [["c"],["c","b"],["a"],["a","b"]]
Explanation: The file structure is as shown.
Folders "/a/b/x" and "/w" (and their subfolders) are marked for deletion because they both contain an empty folder named "y".
Note that folders "/a" and "/c" are identical after the deletion, but they are not deleted because they were not marked beforehand.
```

Example 3:



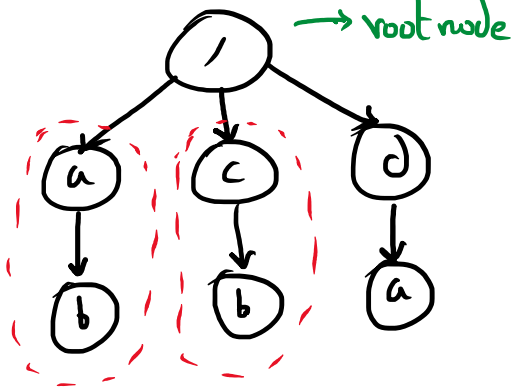

```
Input: paths = [["a","b"],["c","d"],["c"],["a"]]
Output: [["c"],["c","d"],["a"],["a","b"]]
Explanation: All folders are unique in the file system.
Note that the returned array can be in a different order as the order does not matter.
```

Constraints:

- `1 <= paths.length <= 2 * 10^4`
- `1 <= paths[i].length <= 500`
- `1 <= paths[i][j].length <= 10`
- `1 <= sum(paths[i][j].length) <= 2 * 10^5`
- `path[i][j]` consists of lowercase English letters.
- No two paths lead to the same folder.
- For any folder not at the root level, its parent folder will also be in the input.

Ans) Trie is a prerequisite for this question

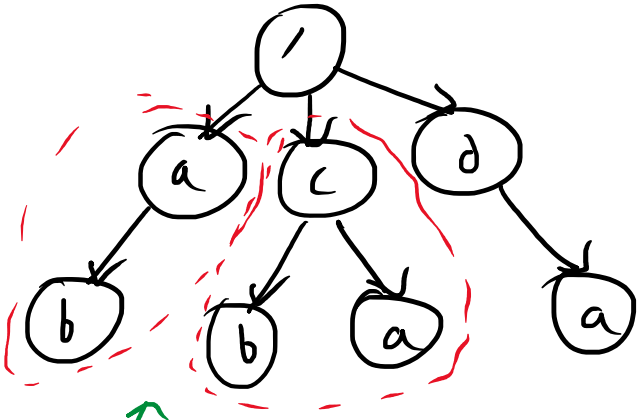
Eg:



→ root node

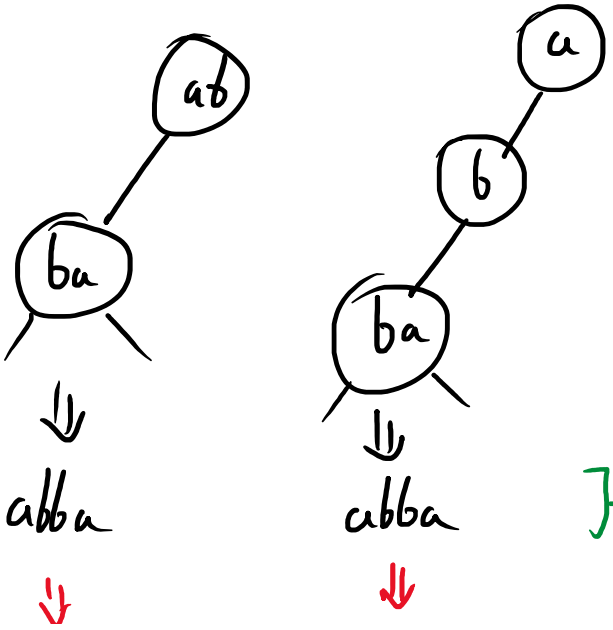
Identical folder → everything below is exactly the same

(same subfolders, same depth, same names)



↑ Not Identical

Serialization:



↑ Same string, diff structure.

[ab, ba] [a, b, ba]]→ Use a separator

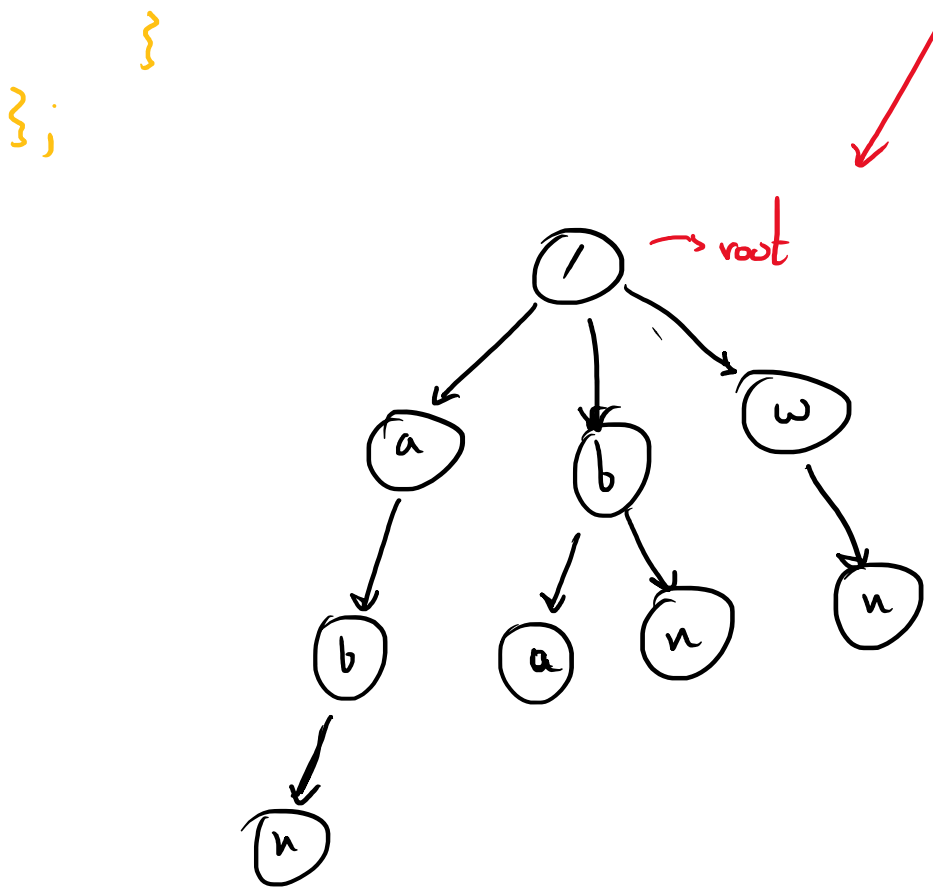
Given input:

[["a"],
["a", "b"],
["a", "b", "n"],
["b"],
["b", "a"],
["b", "n"],
["w"],
["w", "n"]]

→ Absolute Paths

↳ Convert into a trie

```
struct trie node {
    string folder;
    bool remove;
    map<string, trinode*> child;
    trinode (String folder) {
        this -> folder = folder;
    }
};
```



bring into format:

"[" + folder + Subfolder + "]"

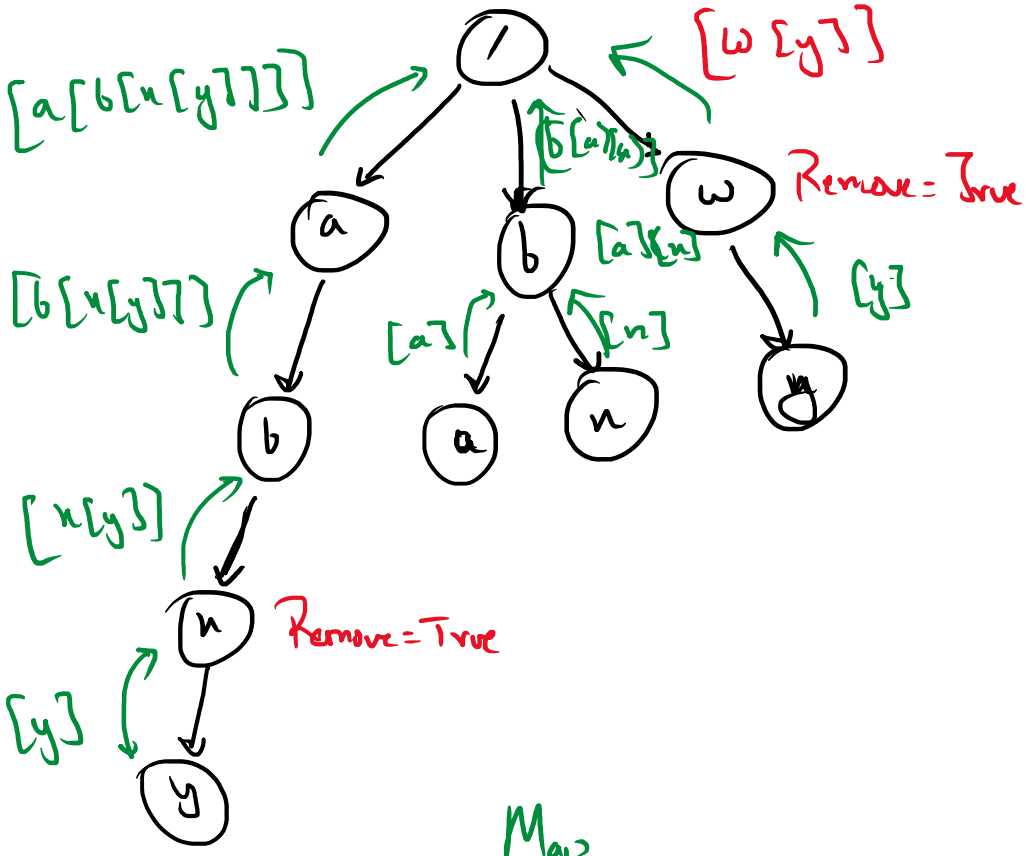
[/[a[b[n]]][b[a][n]][w[n]]]

[Output of this process]

De-Duplication using map

↳ path

have to remove the previous occurrence as well



Map

Path	trie node*
[y]	n
[n[y]]	b
[b[n[y]]]	a
[ ][ ]	b

[a] [n]

(b)

Step 1: Build the Trie

Step 2: Serialize + De-duplication

Step 3: Clear the Marked Nodes.