**Mail Merge Madness**

The Digital Systems Office uses different networks and emails. An individual user might have different email addresses on different networks. To complicate matters, the user might have different account names too! As the IT admin, you are tasked to consolidate the different user accounts and emails.

Task

Given a list of *accounts* where each element accounts[i] is a list of strings. The first element, accounts[i][0], is an *account name*, and the rest of the elements, accounts[i][1..], are *email addresses* associated with this *account name*.

Now, we would like to merge these accounts. Two *account names* belong to the same user if there is a common *email address* to both *account names*. Note that even if two accounts have the same *account name*, they may belong to different users as users could have the same name. A user can have any number of *account names.* However, you are not told the number of accounts for each user and that is something you need to deduce too.

Examples of accounts merging

|  |  |  |
| --- | --- | --- |
| **Account #1** | **Account #2** | **To Merge?** |
| [“Jack S”,  “JS@mail.com”, “JS1@red.mail.com”] | [“Jack S”,  “JS@mail.com”, “JS@ext.mail.com”] | YES as “JS@mail.com” is common to both accounts. |
| [“Jack S”,  “JS@mail.com”] | [“Jack Sparrow”, “JS@mail.com”, “JSparrow@ext.mail.com”] | YES as “JS@mail.com” is common to both even though they have different account names |
| [“Jack S”,  “JS@mail.com”] | [“Jack S”,  “JS@ext.org”,  “JS@org.sg”] | NO as they do not share a common email even though they have a common account name. |

After merging the accounts, return the accounts in the following format: the first element of each account is the shortest *account name* for the user, and the rest of the elements are emails in sorted order. The accounts themselves can be returned in any order.

Examples of Inputs and Outputs

Sample #1

|  |  |
| --- | --- |
| Input | [["John","johnsmith@mail.com","john\_newyork@mail.com"],  ["John","johnsmith@mail.com","john00@mail.com"],  ["Mary","mary@mail.com"],  ["John","johnnybravo@mail.com"]] |
| Output | [["John","john00@mail.com","john\_newyork@mail.com","johnsmith@mail.com"],  ["Mary","mary@mail.com"],  ["John","johnnybravo@mail.com"]] |
| Explanation | The first and second "John" are the same person as they have the common email "johnsmith@mail.com". The third "John" and "Mary" are different people as none of their email addresses are used by other accounts. |

Sample #2

|  |  |
| --- | --- |
| Input | [["David","David0@m.co","David1@m.co"],  ["David","David1@m.co","David2@m.co"],  ["David","David2@m.co","David3@m.co"],  ["David","David3@m.co","David4@m.co"],  ["David","David4@m.co","David5@m.co"]] |
| Output | [[“David”, “David0@m.co”, “David1@m.co”, “David2@m.co”, “David3@m.co”, “David4@m.co”, “David5@m.co”]] |
| Explanation | All the accounts share one email address with the next account therefore the accounts can be merged as they belong to the same user. |

Sample #3

|  |  |
| --- | --- |
| Input | [["David","David0@m.co","David1@m.co"],  ["David1","David1@m.co","David2@m.co"],  ["David11","David2@m.co","David3@m.co"],  ["David111","David3@m.co","David4@m.co"],  ["David1111","David4@m.co","David5@m.co"]] |
| Output | [[“David”, “David0@m.co”, “David1@m.co”, “David2@m.co”, “David3@m.co”, “David4@m.co”, “David5@m.co”]] |
| Explanation | This is the same case as Sample 2. Since “David” is the shortest account name among the merged accounts, it is output as the representative account name. |

Sample #4

|  |  |
| --- | --- |
| Input | [["David","David0@m.co","David1@m.co"],  ["David","MD@m.co","MikeDave@m.co"]  ["David\_admin","David1SA@m.co","David0@m.co"]] |
| Output | [[“David”, “David0@m.co”, “David1@m.co”, “David1SA@m.co”],  ["David","MD@m.co","MikeDave@m.co"]] |
| Explanation | The first two “David” belong to different users as they do not share any email address. The first and third account belongs to the same user as they share “David0@m.co”. Since “David” is shorter than “David\_admin”, it is output as the representative account name. |