

I Incognito

Spies use attributes to disguise themselves to make sure that they are not recognized. For example, when putting on sunglasses, a spy suddenly looks completely different and cannot be recognized anymore. Every combination of attributes gives a different appearance, but not all combinations are possible. For example, a hat and a turban are both headgear and cannot be used at the same time. Given the list of available attributes, compute how many distinct disguises can be made.



Input

On the first line one positive number: the number of test cases, at most 100. After that per test case:

- one line with an integer n ($0 \leq n \leq 30$): the number of available attributes.
- n lines with two space-separated strings: the name and the category of the attribute.

All strings consist of at least 1 and at most 20 lowercase letters. Within a test case all names are distinct.

Output

Per test case:

- one line with an integer: the number of possible distinct disguises that can be made with the given attributes, such that at most one attribute from each category is used.

Sample in- and output

Input	Output
2	5
3	3
hat headgear	
sunglasses eyewear	
turban headgear	
3	
mask face	
sunglasses face	
makeup face	