## INCOGNITO

Spies use attributes to disguise themselves to make sure that they are not recognized. For example, when putting on sun- glasses, 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.


## Examples

| $№$ | stdin | stdout |
| :---: | :--- | :--- |
| 1 | 2 | 3 |
|  | 3 |  |
|  | hat headgear |  |
|  | sunglasses eyewear |  |
| turban headgear |  |  |
|  | 3 |  |
| mask face |  |  |
| sunglasses face |  |  |
| makeup face |  |  |

