A catenym is a pair of words separated by a period such that the last letter of the first word is the same as the first letter of the second. For example, the following are catenyms:

```
dog.gopher
gopher.rat
rat.tiger
aloha.aloha
arachnid.dog
```

A compound catenym is a sequence of three or more words separated by periods such that each adjacent pair of words forms a catenym. For example,

```
aloha.aloha.arachnid.dog.gopher.rat.tiger
```

Given a dictionary of lower case words, you are to find a compound catenym that contains each of the words exactly once.

Input

The first line of standard input contains t, the number of test cases. Each test case begins with $3 \leq n \leq 1000$ - the number of words in the dictionary. n distinct dictionary words follow; each word is a string of between 1 and 20 lowercase letters on a line by itself.

Output

For each test case, output a line giving the lexicographically least compound catenym that contains each dictionary word exactly once. Output '`***`' if there is no solution.

Sample Input

```
2
6
aloha
arachnid
dog
gopher
rat
tiger
3
oak
maple
elm
```

Sample Output

```
aloha.arachnid.dog.gopher.rat.tiger
***
```