Problem 271: Build-A-Title

Difficulty: Hard

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Problem Background

While on a long car ride with your friends, you decide to start playing the game Build-A-Title together. However, you need an impartial judge that can accurately determine the winning answer.

Problem Description

Given a list of titles, determine the longest string that can be constructed by joining titles together on the common characters whenever the ending characters of one title equal the beginning characters of another title. The titles may be provided in any order. For example, with this list of titles:

- LA Law
- Courtroom Capers
- Law and Order
- Order in the Court
- Rick Steves Europe

The longest string would be:

- LA Law and Order in the Courtroom Capers

Each title may only be used once within each chain.

Sample Input

The first line of your program's input, received from the standard input channel, will contain a positive integer representing the number of test cases. Each test case will contain:

- A line with a positive integer, **N**, representing the number of titles to be provided.
- **N** lines, each containing a title with upper- and lower-case letters and spaces.

Due to its length, the sample input is provided on the next page.

```
2
3
Homestuck
Home Alone
Alone in the Dark
2
Driving Miss Daisy
The Daisy Chain
```

Sample Output

For each test case, your program must print the longest string that can be constructed by joining the titles together. If two or more possible strings have the same length, print the one that comes first in default string ordering.

```
Home Alone in the Dark
Driving Miss Daisy
```