**Problem 6** | **72 Points**

# What's Not On The Menu

**Program Name: menu.java  Input File: menu.in**

Ebola is a contagious disease that cafeteria workers don't like. Since they can't control what kinds of contagious folks come in the door, they take every possible precaution to prevent the spread of disease with the notable exception of cleaning the food trays. They have only one tray stack, and customers both get trays from and return trays to the top of the stack without any cleaning.

Tracking an Ebola infection through a tray stack can be tough work. Each tray has two sides, each of which can be infected or not infected. People can infect trays, trays can infect people, and trays can infect each other. Here is a list of exactly what actions can transmit the virus:

- If an infected person takes a tray, that tray becomes infected on both sides.
- If any person takes a tray that is infected on either side, that person becomes infected and spreads the infection to both sides of the tray.
- When an infected tray is returned to the tray stack, it is placed on top of another tray, whose top side then becomes infected.
- If any tray is returned to the stack and placed on top of another tray whose top side is infected, the bottom of the new tray is infected.

Tracking the virus would be simplified if these rules could be put into a computer model, so it's your job to write a program that uses the above rules to determine which customers are infected by analyzing the order in which they take and return trays.

### Input

The first line of input will contain a single integer *n* indicating the number of data sets to be processed.

Each data set will consist of two lines:

1. The first line will contain a single integer *m* (between 1 and 20, inclusive) indicating the number of 'tray actions' performed by customers.
2. The second line will contain a space-separated list of *m* tray actions. A tray action is a two-part string of at most 20 characters that identifies a person and indicates whether they take a tray from, or return a tray to, the tray stack. The first character in the string is a 'g' if the customer gets a tray or a 'r' if the customer returns a tray. The remainder of the string is the customer's name.

Please make the following assumptions:

At the beginning of each data set, all trays are in the tray stack and no trays are infected.
In a given data set, the first person performing a tray action is the only person infected before getting a tray.

### Output

For each data set, output a single line containing the names of customers that are infected. List them in the order they become infected, and do not list the same customer multiple times.

### Example Input File

```
3
1
gEbolaJoe
3
gBob rBob gJack
11
gBob gJack rBob gCarl gLenny gHomer gMarge rLenny rJack gBurns gSmithers
```

### Example Output To Screen

```
EbolaJoe
Bob Jack
Bob Carl Lenny Burns Smithers
```