Problem C: Party Games

You've been invited to a party. The host wants to divide the guests into 2 teams for party games, with exactly the same number of guests on each team. She wants to be able to tell easily which guest is on which team as she greets them when they arrive. Being a good computer scientist, you have an idea: give her a single string, and all she has to do is compare the guest's name alphabetically to that string. To make this easier, you want the string to be as short as possible. Given the unique names of n guests (n is even), find the shortest string S such that exactly half the names are less than or equal to S, and exactly half are greater than S. If there are multiple strings of the same shortest length, choose the alphabetically smallest string from among them.

Input Specification

There may be several test cases. Each test case begins with an even integer n ($2 \leq n \leq 1,000$) on its own line. The next n lines contain the names, one per line. Each name is a single string consisting only of capital letters A-Z of length up to 30. The input will end with a 0 on its own line.

Output Specification

For each case, print a single line containing the shortest possible string (with ties broken in favor of the alphabetically smallest) that your host could use to separate her guests. The strings should be printed in all capital letters.

Sample Input	Output for Sample Input
4 FRED SAM JOE MARGARET 2 FRED FREDDIE 2 JOSEPHINE JERRY 2 LARHONDA LARSEN 0	K FRED JF LARI