Two Teams

You are helping a teacher organize a field day for a group of students. The teacher wants to divide the students into two teams for the games, with exactly the same number of students on each team. They want to be able to quickly tell which student is on which team without having to spend time looking up each student's name on a list. Being a creative problem-solver, you come up with a solution: find and give a string by which it is possible to determine whether the student's name is alphabetically less than or greater that the string.

Given the even number of students n and their unique names, find the shortest possible string *s* such that exactly half of the students have name less than or equal to *s*, and exactly half are greater than *s*. If there are multiple strings of shortest length, output alphabetically first one.

Input

The input will consist of multiple test cases. Each test case will include an even integer n ($2 \le n \le 1{,}000$) on a single line. Following that, there will be n lines, with each line containing the name of a student. Each name will consist of only capital letters and be at least one letter long but no more than 30 letters. All the students' names in each test case will be unique. The input will terminate with a single line containing the number 0.

Output

For each test case, output the shortest possible string that can be used to separate the students into two teams of equal size. If there are multiple strings of the same length that work, output the one that comes first alphabetically. The string should be in all uppercase letters with no spaces. Do not output any blank lines between outputs.

Sample Input

```
4
PETER
ADAM
MARCEL
BEATA
2
JAN
JANKO
2
STANISLAV
STANO
0
```

Sample Output

```
C
JAN
STANJ
```