Task AT13. Teams contest

Soon the contest will start! Teams from n schools came to participate in the contest, exactly two teams came from each school. The teams had already taken their places when it was discovered that some teams from the same school were sitting too close to each other. The organizers face a serious task: they need to rearrange the teams.

The tables at which the teams sit are arranged in one row. The distance between the workplaces of adjacent teams is 10 meters. The organizers want the minimum distance between two teams from the same school to be as large as possible.

When relocating the team, the organizers must transfer to a new place all the equipment prepared by the team. Therefore, the organizers want to transfer the teams so that the sum of the distances between old and new team workplaces is as small as possible.

For example, let two teams of schools 1, 2, 3 and 4 take part in the competition. Let the teams be initially seated in the following order: 1, 3, 2, 2, 1, 4, 4, 3 (for each team we write the number of the school it represents). With this distribution of workplaces, the teams from school 2 sit too close, and so do the teams from school 4. By changing the order to the following: 1, 3, 2, 4, 1, 3, 2, 4, the jury can achieve its goal: teams from one school sit in places, the distance between which is at least 40 m, and a greater distance cannot be achieved. The sum of the distances between the old and the new position in this example is 0 + 0 + 0 + 20 + 0 + 20 + 30 + 10 = 80 m, which is minimally possible.

You are given the initial seating order of teams. It is required to rearrange them so that the minimum distance between teams from the same school is as large as possible. At the same time, among all possible new arrangements of teams you should choose one for which the sum of the distances between old and new places of the teams is as small as possible.

Input. The first line of the input contains a number n − the number of teams ($1 \le n \le 100$). The second line contains the initial seating order of teams − the sequence $a_1, a_2, \ldots, a_{2n}$. For each team the number of the school it represents is written. It is guaranteed that the sequence consists of numbers from 1 to n and that each number occurs in it exactly twice.

Output. In a single line of the output print how the teams should be rearranged so that the minimum distance between teams from the same school is as large as possible. At the same time, among all possible such arrangements of teams, you should choose one for which the sum of the distances between old and new workplaces of the teams is as small as possible. If there are several optimal answers, you can print any one of them. There must be exactly one space between any two adjacent integers in the output.

Example

Input

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4
1 3 2 2 1 4 4 3
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Output

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1 3 2 4 1 3 2 4
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