

Well, I was planning to set a problem for beginners, that is: given n distinct integers each between 2 and 10^9 , find the multiplication of all pairs. For example, $n = 4$ and the integers are 2, 5, 8 and 6, then the result would be 10 12 16 30 48 40. As the results can be printed in any order so, I wrote a special judge for this problem.

But it was a long time ago. Now I want to finish this problem and found that I only have the answer file of the problem. The input file is missing. All you have to do is to generate the input file from the answer file.

Input

Input starts with an integer T ($T \leq 25$), denoting the number of test cases.

Each case starts with an integer n ($3 \leq n \leq 200$). The next line contains $n * (n - 1)/2$ integers showing the all pair multiplications.

Output

For each case, print the case number and the input integers in ascending order, separated by a single space. If there are multiple solutions, print the one with the smallest first integer (after sorting), in case of tie, the one with the smallest second integer and so on. You can assume for the given input there will always be a possible solution.

Sample Input

```
2
4
10 12 16 30 48 40
3
10 20 8
```

Sample Output

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Case 1: 2 5 6 8
Case 2: 2 4 5
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