Mahir's TREAT

Mahir Kabir is the most popular senior among his juniors . But his university is going to end soon so he is planning to treat all of his juniors . But Some of them had problems with others rather we can say each person has some dissatisfaction with others . Which can be describe as dissatisfaction factor .

Say dissatisfaction factor are given as $\mathbf{d_{ij}}$. $\mathbf{d_{ij}}$ means the dissatisfaction factor according to person **i** towards **j**. If the value is negative that means $\mathbf{i^{th}}$ person likes $\mathbf{j^{th}}$ person. Positive value means $\mathbf{i^{th}}$person hates $\mathbf{j^{th}}$ person. 0 means $\mathbf{i^{th}}$ person is neutral about $\mathbf{j^{th}}$ person. Obviously $\mathbf{d_{ij}}$ can be different from $\mathbf{d_{ji}}$ since $\mathbf{i^{th}}$ person may like $\mathbf{j^{th}}$ person, but $\mathbf{j^{th}}$ person may not like $\mathbf{i^{th}}$ person and vice versa.

Now, if Mahir groups some people, the dissatisfaction factor is the summation of all the members' dissatisfaction factors towards other people in the group. Mahir has to group them with minimum dissatisfaction factor. he can make as many groups as he like .

Mahir wants to treat all of his juniors with minimum dissatisfaction factor . Can you help him .

Input

Input starts with an integer **T (≤ 50)**, denoting the number of test cases.

Each case starts with a line containing an integer **n (2 ≤ n ≤ 15)**. Each of the next **n** lines contains **n** space separated integers. The $\mathbf{j^{th}}$ integer in the $\mathbf{i^{th}}$ line denotes $\mathbf{d_{ij}}$. You can assume that $\mathbf{-200 \le d_{ij} \le 200}$ and of course $\mathbf{d_{ii} = 0}$.

Output

For each case, print the case number and the minimum dissatisfaction factor you can make after grouping them.

2 3 0 2 3 -3 0 5 2 3 0 4 0 -1 -2 -3 1 0 -2 3 1 2 0 -1 2 -2 1 0	Case 1: -1 Case 2: -2