F. Restaurant Ratings

A famous travel web site has designed a new restaurant rating system. Each restaurant is rated by n ($1 \leq n \leq 15$) critics, each giving the restaurant a nonnegative numeric rating (higher score means better). The restaurants in each city are ranked as follows. First, sum up the ratings given by all the critics for a restaurant. A restaurant with a higher total sum is always better than one with a lower total sum. For restaurants with the same total sum, we rank them based on the ratings given by just critic 1. If there is still a tie, it is broken by comparing the ratings by critic 2, etc.

A restaurant owner received the ratings for his restaurant, and is curious about how it ranks in the city. He can easily find the sum of his own ratings, but he does not know the ratings or sums for all the other restaurants in the city. He decides to estimate his ranking by comparing his ratings to the number of possible unique sets of ratings that is no better than his own. You are asked to write a program to calculate this estimate (whether or not you think this will be very accurate).

Input:

The input may consist of a number of cases. Each case is specified on one line. On each line, the first integer is n, followed by n integers containing the ratings given by the n critics (in order). You may assume that the total sum of ratings for each restaurant is at most 30. The input is terminated by a line containing a 0 (zero). All restaurants in one city are assumed to be rated by the same number of critics, n.

Output:

For each input, print the number of different sets of ratings that is no better than the given set of ratings. You may assume that the output fits in a 64-bit signed integer. Follow this format exactly: "Case", one space, the case number, a colon and one space, and the answer for that case with no trailing spaces.

Sample Input	Sample Output
1 3	Case 1: 4
2 4 3	Case 2: 33
5 4 3 2 1 4	Case 3: 10810
0	