Lab 11

Problem Description:

Given a specified total t and a list of n integers, find number of distinct sums, using numbers from the list of n integers, that add up to the total t. For example, if $t = 4$, $n = 6$, and the list is [4, 3, 2, 2, 1, 1], then there are four different sums that equal 4: 4, 3+1, 2+2, and 2+1+1. (A number can be used within a sum as many times as it appears in the list, and a single number counts as a sum.) Your job is to solve this problem in general.

Input: The input contains three lines. The first line contains t, the total. The second line contains n, the number of integers in the list. The third line contains the list of n integers $x_1,\ldots,x_n$. t will be a positive integer less than 1000, n will be an integer between 1 and 12 (inclusive), and $x_1,\ldots,x_n$ will be positive integers less than 100. The numbers $x_1,\ldots,x_n$ will be separated by exactly one space. Numbers in each list appear in non-increasing order, and there may be repetitions.

Output: The output will contain number of sums for each test case. A number may be repeated in the sum as many times as it was repeated in the original list. Within each test case, all sums must be distinct; the same sum cannot appear more than once.

Test Case	Input	Output
1	4 6 4 3 2 2 1 1	4
2	6 4 2 1 1 1	0
3	300 10 50 50 50 50 25 25 25 25 25 25	2