

Problem C: Gauss's Detention

Filename: gauss

Timelimit: 10 seconds

Gauss and his class misbehaved, so his teacher gave the class the task of adding the first 100 integers. Gauss thwarted his teacher's intention by discovering a formula for the sum and avoided doing any addition! Now, his teacher wants revenge! He's figured out that Gauss doesn't like adding large numbers. In fact, if he's adding two numbers a and b , it takes him $a+b$ ms. Thus, his teacher has decided to give Gauss a random string of numbers with no pattern, to add. For example, if Gauss had to add 137, 213, 98 and 49, he could add $137+213 = 350$, then add $98 + 49 = 147$ and finally add $350 + 147 = 497$. The total amount of time this would take him if he added the numbers in this order is $350 \text{ ms} + 147 \text{ ms} + 497 \text{ ms} = 994 \text{ ms}$. It turns out, it would have been better if he added $98 + 49 = 147$, $147 + 137 = 284$ and $284 + 213 = 497$, which would have taken him $147 \text{ ms} + 284 \text{ ms} + 497 \text{ ms} = 928 \text{ ms}$. Given a list of numbers Gauss has been asked to add, determine the minimum amount of time it will take him in ms to calculate the sum, assuming he adds up the numbers in the optimal order.

Input

The first line will contain a single positive integer, t , ($t \leq 50$), specifying the number of input cases.

The first line of each input case will contain a single positive integer n ($n \leq 30000$), representing the number of positive integers Gauss has to add for the input case.

The second line of each input case will contain the n space separated integers, a_i ($1 \leq i \leq n$, $1 \leq a_i \leq 4000$) that Gauss must add for the input case.

Output

For each input case, output the minimum amount of time in ms that it will take Gauss to complete the addition posed to him.

Samples

Input	Output
3	9
3	928
1 2 3	329
4	
137 213 98 49	
7	
1 4 9 16 25 36 49	