Split Sequence

Input File: Problem5.txt

In a card game, a deck of cards with positive numbers printed on them are provided to the players. A winning player is the one who will split the deck of cards with the minimum cost. The cost of splitting a deck of cards, where deck D= $<c_1, c_2,\ldots.,c_n>$ into two sub-decks, $<x_1, x_2,\ldots.,x_k>$ and $<x_{k+1},\ldots.,x_n>$ is x_1+x_n. A *split* of deck D is a sequence of splits of D and the resulting sub-decks of D so that after applying all splits on the deck, every sub-deck of D has exactly one element. The cost of the split of deck D, then, is the sum of the costs of each split. Given a deck of cards D, we wish to find a split of D with the minimum cost.

For instance, if D = <5, 7, 3, 6>, then a sequence of splits and the cost of each split is:

Subsequences	**Split**	**Cost**
<5, 7, 3, 6>	Split <5, 7, 3, 6> into <5, 7, 3>, <6>	11
<5, 7, 3> <6>	Split <5, 7, 3> into <5>, <7, 3>	8
<5> <7, 3> <6>	Split <7, 3> into <7>, <3>	10
<5> <7> <3> <6>		0

The total cost for the sequence is 29. Write the code to solve this problem.

Input

The input consists of multiple test cases. The first line of input is the number of test cases N. Each of the following N lines contain the sequence length followed by the *sequence D.*

Output

For each test case, print a single line that says "Case #i:", where i is the test case number followed by the split cost. Follow the format of the output given below:

Sample Input:

3

4 5 7 3 6

2 19 10

3 10 10 9

Sample Output:

Case #1: 29

Case #2: 29

Case #3: 38