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Exercise – *Burning Coins from Two Sides*

A friend of yours who recently sold his internet startup for several million dollars wants to share parts of his money with you. The catch is that he will not just give it to you but that he wants to play a game that will determine how much you actually get. The game works as described below.

There are n coins lined up in a row ($1 \leq n \leq 1000$). Each coin has a specific, known value $1 \leq v_i \leq 1000$. The game is played in turns and you are the one to start. Every time it is your turn you can either take the first or last coin in the row. Once you took the coin of your choice your friend will do the same (also either take the now first or last coin in the row), and this procedure will be iterated till someone has taken the last coin. The money you get at the end is the sum of the values of the coins you have collected while playing this game.

For a given row of coins with corresponding values $v_1, v_2, \ldots, v_n$, you want to know what is the largest amount of money you are *guaranteed* to win if you manage to play optimally, assuming you start the game. (Independent of the strategy of your friend.)

Input The first line of the input contains the number of test cases $t \leq 60$. Each of the t test cases is described as follows.

- It starts with a line that contains one integer $1 \leq n \leq 1000$, the number of coins used for the game.

- The following line contains integers $v_1, \ldots, v_n$ ($1 \leq v_i \leq 1000$), separated by single spaces, where v_i denotes the value of the ith coin.

Output For every test case the corresponding output appears on a separate line. It consists of one integer, the largest amount you are *guaranteed* to win if you start the game.

Points There are three groups of test sets. The individual points are specified below; the total number of points is 100.

1. For the first group of test sets, worth 30 points, you may assume that $n \leq 10$.

2. For the second group of test sets, worth 40 points, you may assume that $n \leq 100$.

3. For the third group of test sets, worth 30 points, you may assume that $n \leq 1000$.

Sample Input

```
2
3
3 1 2
4
```

`1 4 9 4`

Sample Output

```
4
10
```