

**Exercise – Even pairs**

You are part of a team to develop a new kind of pseudorandom number generator (PRNG). To gauge how good your algorithm is at producing random sequences of bits, you are running several different statistical tests.

For example, if  $x_0, \dots, x_{n-1}$  was a truly random sequence of bits, then it would have the property that the sum  $x_i + \dots + x_j$  is even for about half of the pairs  $0 \leq i \leq j < n$  (and odd for the other half).

To check whether this is the case, if  $x_0, \dots, x_{n-1}$  are generated by your PRNG, you need to be able to count the number of pairs  $0 \leq i \leq j < n$  for which the sum is even.

**Input** The first line of the input contains the number  $t \leq 30$  of test cases. Each of the  $t$  test cases is described as follows.

- It starts with a line that contains an integer  $n$ , such that  $1 \leq n \leq 5 \cdot 10^4$ .
- The following line contains  $n$  integers  $x_0 \dots x_{n-1}$ , separated by a space, such that  $x_i \in \{0, 1\}$ , for all  $i \in \{0, \dots, n-1\}$ .

**Output** For each test case output a single line containing the number of pairs  $0 \leq i \leq j < n$  such that the sum  $x_i + \dots + x_j$  is even.

**Points** There are three groups of test sets, worth 100 points in total.

1. For the first group of test sets, worth 40 points, you may assume that  $1 \leq n \leq 200$ .
2. For the second group of test sets, worth 40 points, you may assume that  $1 \leq n \leq 5000$ .
3. For the third group of test sets, worth 20 points, there are no additional assumptions.

Corresponding sample test sets are contained in `testi.in/out`, for  $i \in \{1, 2, 3\}$ .

**Sample Input**

```
2
4
0 1 1 1
3
0 0 0
```

**Sample Output**

```
4
6
```