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Algorithms Lab

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 $x_1, \ldots, x_n$ was a truly random sequence of bits, then it would have the property that the sum $x_i + \cdots + x_j$ is even for about half of the pairs $1 \leq i \leq j \leq n$ (and odd for the other half).

To check whether this is the case if $x_1, \ldots, x_n$ are generated by your PRNG, you need to be able to count the number of pairs $1 \leq i \leq j \leq n$ for which the sum is even.

Input   The first line of the input is an integer $n \leq 70000$ denoting the size of the dataset.

The second line of the input contains n values $x_1, \ldots, x_n$, separated by spaces. Each value x_i is either 0 or 1.

Output   The output should consist of a single line containing the number of pairs $1 \leq i \leq j \leq n$ such that the sum $x_i + \cdots + x_j$ is even.

Sample Input

```
4
0 1 1 1
```

Sample Output

```
4
```

(Points)*100