Zonal Computing Olympiad 2013, 10 Nov 2012

10:00 am-1:00 pm IST

Problem 1 : Tournament

N teams participate in a league cricket tournament on Mars, where each pair of distinct teams plays each other exactly once. Thus, there are a total of *(N × (N-1))/2* matches. An expert has assigned a strength to each team, a positive integer. Strangely, the Martian crowds love one-sided matches and the advertising revenue earned from a match is the absolute value of the difference between the strengths of the two matches. Given the strengths of the *N* teams, find the total advertising revenue earned from all the matches.

For example, suppose *N* is 4 and the team strengths for teams 1, 2, 3, and 4 are 3, 10, 3, and 5 respectively. Then the advertising revenues from the 6 matches are as follows:

Match	Team A	Team B	Ad revenue
1	1	2	7
2	1	3	0
3	1	4	2
4	2	3	7
5	2	4	5
6	3	4	2

Thus the total advertising revenue is 23.

Input format

Line 1 : A single integer, *N*.

Line 2 : *N* space-separated integers, the strengths of the *N* teams.

Output format

A single integer, the total advertising revenue from the tournament.

Sample input

```
4
3 10 3 5
```

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Sample output

```
23
```

Test data

In all subtasks, the strength of each team is an integer between 1 and 1,000 inclusive.

Subtask 1 (30 marks) : $2 \leq N \leq 1{,}000$.

Subtask 2 (70 marks) : $2 \leq N \leq 200{,}000$.

Limits

Time limit : 3s

Memory limit: 64 MB

Note

The answer might not fit in a variable of type `int`. We recommend that type `long long` be used for computing all advertising revenues. If you use `printf` and `scanf`, you can use `%lld` for `long long`.