



ICPC Pacific Northwest Regional Contest

# Problem AE

## Kangaroo Party

Time Limit: 1

A group of kangaroos live in houses on the number line. They all want to watch the Kangaroo Bowl!

Because not all of the kangaroos can fit a single house, they will designate two kangaroos to each host a party at their house. All other kangaroos will choose to go to the house that is closest to them, picking arbitrarily if they are the same distance from both.

A kangaroo expends  $(a - b)^2$  units of energy to travel from location  $a$  to location  $b$ . Compute the minimum total units of energy expended if the two party house locations are chosen optimally.

### Input

The first line of input contains a single integer  $n$  ( $2 \leq n \leq 50$ ), which is the number of kangaroos.

Each of the next  $n$  lines contains a single integer  $x$  ( $-1,000 \leq x \leq 1,000$ ), which is the location on the number line of the house of one of the kangaroos. Each location will be distinct.

### Output

Output, on a single line, the minimum total units of energy expended by all the kangaroos, given that the party house locations are chosen optimally.

#### Sample Input 1

```
5
0
3
-3
10
11
```

#### Sample Output 1

```
19
```