Passing Apples

Description

There are n children sit in a circle, each of them has a_i apples.

Each child can only pass the apple to the two child on his left and right. The cost of passing one apple is 1. Now we want to know the minimum cost to make every child get the same number of apples.

Input Format

The first line contains one integer n.

The second line contains n numbers, the ith one is a_i.

Output Format

One integer, which is the minimum cost.

Sample

Sample Input

```
4
1 2 5 4
```

Sample Output

```
4
```

For 100% testcases: $n \leq 10^6, a_i \leq 10^9$.