O. Three Parts of the Array (hard Edition)

time limit per test: 1 second

memory limit per test: 256 megabytes

You are given an array $d_1, d_2, \ldots, d_n$ consisting of n integer numbers.

Your task is to split this array into three parts in such a way that each element of the array belongs to exactly one of the three parts, and each of the parts forms a consecutive contiguous subsegment of the original array.

Let the sum of elements of the first part be $sum1$, the sum of elements of the second part be $sum2$ and the sum of elements of the third part be $sum3$. Among all possible ways to split the array, you have to choose a way such that $sum1 = sum3$ and $sum1$ is maximum possible.

More formally, if the first part of the array contains a elements, the second part of the array contains b elements and the third part contains c elements, then:

$$sum1 = \sum_{1 \le i \le a} d_i$$
$$sum2 = \sum_{a+1 \le i \le a+b} d_i$$
$$sum3 = \sum_{a+b+1 \le i \le a+b+c} d_i$$

note : a and c not equal to zero.

Your task is to find a way to split the array such that $sum1 = sum3$ and $sum1$ is maximum possible.

Input

The first line of the input contains one integer n $(2 \le n \le 2 * 10^5)$.

The second line of the input contains n integers $d_1, d_2, \ldots, d_n$ $(-10^9 \le d_i \le 10^9)$

Output

Print a single integer — the maximum possible value of $sum1$, considering that the condition $sum1 = sum3$ must be met.

It's guaranteed that there is at least one answer that exists.

Examples

input Copy

```
5
1 3 1 1 4
```

output Copy

```
5
```

input Copy

```
5
1 3 2 1 4
```

output Copy

```
4
```

input Copy

```
5
-1 3 2 1 2
```

output Copy

```
2
```

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→ Group Contests

- Juniors Phase 1 Practice #5 (Bitmask, Bitset, Bits)
- Juniors Phase 1 Practice #4 (Binary search , Two pointers)
- Juniors Phase 1 Practice #3 (STL 2)
- Juniors Phase 1 Practice #2 (STL 1)
- Juniors Phase 1 Practice #1 (Prefix sum , Frequency Array)

Juniors Phase 1 Practice #3 (STL 2)

Finished

Practice

→ About Time Scaling

This contest uses time limits scaling policy (depending on a programming language). The system automatically adjusts time limits by the following multipliers for some languages. Despite scaling (adjustment), the time limit cannot be more than 30 seconds. Read the details by the link.

→ Virtual participation

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

Start virtual contest

→ Submit?

Language: GNU G++20 13.2 (64 bit, win

Choose file: Choose File No file chosen

Submit

→ Last submissions

Submission	Time	Verdict
312257268	Mar/25/2025 01:56	Accepted
312256814	Mar/25/2025 01:45	Wrong answer on test 105
312256313	Mar/25/2025 01:34	Wrong answer on test 1