Subarray Maximization

Time Limit: 1.0s   **Memory Limit:** 128M

Given an integer array a of length N, find the maximum subarray sum.

A subarray is defined as a contiguous range in an array, and a subarray sum is defined as the sum of all elements in the contiguous range.

Input Specification

The first line will contain the integer N $(1 \leq N \leq 10^5)$.

The second line will contain N integers, $a_1, a_2, \ldots, a_N$ $(-10^9 \leq a_i \leq 10^9)$.

Output Specification

Output the maximum subarray sum in the array. Note that the subarray may be the entire array. However, the subarray **must contain at least one element**.

Subtasks

Subtask 1 [10%]

$N \leq 100$

Subtask 2 [30%]

$N \leq 1\ 000$

Subtask 2 [60%]

No further constraints.

Sample Input 1

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

Sample Output 1

```
8
```

Sample Input 2

```
7
5 2 -4 7 9 -2 1
```

Sample Output 2

```
19
```

Explanation For Sample 2

We can take the subarray $a[0, 4]$ (0-indexed) for a total sum of $5 + 2 + (-4) + 7 + 9 = 19$.