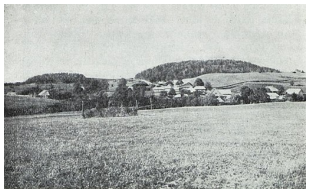
Problem H
Highest Hill



An old photograph of Suur Munamägi, public domain

Sweden may not have a particularly impressive mountain range compared to other NCPC countries such as Norway and Iceland, but at least it beats the flatlands of Denmark. The situation is not so clear when comparing other member countries though. For example, is Estonia more mountainous than Lithuania[1]? To settle this question, you want to determine which of the two countries has the most impressive mountain peak.

A mountain range is defined by sampling the heights h_i of n equidistant points. Within a mountain range, we call a triple of indices $1 \leq i < j < k \leq n$ a *peak* if $h_i \leq \cdots \leq h_j \geq \cdots \geq h_k$. The *height* of a peak is defined as the smaller of $h_j - h_i$ and $h_j - h_k$.

Given a mountain range, can you find the height of its highest peak?

Input

The first line contains a single integer N ($3 \leq n \leq 200\,000$), the number of sampled points of the mountain range.

The second and final line contains the heights $h_1, \ldots, h_N$ ($0 \leq h_i \leq 318 \cdot 10^9$) of the sampled points, in nanometers above sea level.

It is guaranteed that the mountain range contains at least one peak.

Output

Output a single integer: the height of the highest peak.

Sample Input 1

```
11
0 1 2 3 4 5 4 3 2 1 0
```

Sample Output 1

```
5
```

Sample Input 2

```
10
29 85 88 12 52 37 19 86 7 44
```

Sample Output 2

```
67
```

Sample Input 3

```
3
2147483647 318000000000 2147483647
```

Sample Output 3

```
315852516353
```

Sample Input 4

```
3
1 1 1
```

Sample Output 4

```
0
```

[1] Yes, but not by much! The highest point in Lithuania is Aukštojas Hill, 293.84 meters above sea level, while Estonia has the highest peak in the Baltics: Suur Munamägi is 318 meters above sea level.

This page is intentionally left blank.