CMPUT 274 - Tangible Computing **Fall 2017**
Morning Problem: Falling Down Stairs

Description

I recently bought new shoes. They are mostly for show and have terrible grip. Now I am scared about falling down stairs. Did I mention, I hate stairs?

I have to cross a very tricky terrain with uneven stairs. I don't seem to have any problem going up stairs, but if I go down stairs I might slip and tumble down consecutive steps.

Given an array of integers representing heights of consecutive steps, we say that a **tumble** is a sequence of strictly decreasing numbers and the height of the tumble is the difference between the height of the top step and the bottom step.

For example, if there are consecutive steps with heights 16, 9, 4 then they form a tumble of height 12 ($= 16 - 4$). With consecutive steps of heights, 0, 4, 12, 4, 5, 7, 2, 1 there is a tumble 12, 4 (with height 8) and another tumble 7, 2, 1 (with height 6). Note that we do not say 0, 4, 12 is a tumble because tumbles must be decreasing.

Output the maximum height of a tumble. If there is no tumble (i.e. there are never consecutive steps that decrease in height) then output 0.

Input

The first line contains a single integer $1 \leq n \leq 100,000$ denoting the number of steps. The second line contains n space-separated integers, each between 0 and 10^9, denoting the heights of the steps.

Output

Output a single line containing an integer indicating the maximum height of a tumble in the input sequence.

Sample Input 1

```
4
1 7 6 2
```

Sample Output 1

```
5
```

Explanation: The tumble 7, 6, 2 has height 5 ($= 7 - 2$).

Sample Input 2

```
4
3 6 6 8
```

Sample Output 2

```
0
```

Explanation: There is no tumble.

Sample Input 3

```
4
2 2 1 2
```

Sample Output 3

```
1
```

Explanation: There is only one tumble, namely 2, 1 which has height 1.

Sample Input 4

```
11
10 14 14 8 3 7 19 18 17 16 10
```

Sample Output 4

```
11
```

Explanation: Tumble 14, 8, 3 has height 11 ($= 14 - 3$). Another long tumble is 19, 18, 17, 16, 10 but it only has height 9.

Sample Input 5

```
4
5 3 3 2
```

Sample Output 5

```
2
```

Explanation: 5,3,3,2 is not a tumble because it is not strictly decreasing. The only tumbles are 5,3 and 3,2, with 5,3 being largest.