QUESTION 3

There is a row of lego of different heights arranged at each index along a number line. The ball starts at lego 0 and at a height of 0.

You must determine the minimum energy his ball needs at the start so that he can jump to the top of each lego without his energy going below zero.

Units of height relate directly to units of energy. The ball's energy level is calculated as follows:

- If the ball's ***ballEnergy*** is less than the height of the lego, his

newEnergy = ballEnergy - (height - ballEnergy)

- If the ballt's ***ballEnergy*** is greater than the height of the lego, his

newEnergy = ballEnergy + (ballEnergy - height)

Example

arr = [2,3,4,3,2]

Starting with ***ballEnergy=4***, we get the following table:

```
ballEnergy         height   delta
    4               2       +2
    6               3       +3
    9               4       +5
    14              3       +11
    25              2       +23
    48
```

That allows the ball to complete the course, but may not be the minimum starting value. The minimum starting ***ballEnergy*** in this case is 3.

Function Description

Complete the “.....” function in the editor below.

The function has the following parameter(s):

- int arr[n]: legos heights

Returns

- int: the minimum starting **ballEnergy**

Input Format

The first line contains an integer n, the number of legos.

The next line contains n space-separated integers *arr[0]....arr[n]*, the heights of the legos.

Constraints

- For 1≤ n≤ 10^5
- For 1≤ arr[i] ≤ 10^5 where for 1≤ i ≤ n

Sample Input 0

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

Sample Output 0

```
4
```

Explanation 0

If initial energy is 4, after step 1 energy is 5, after step 2 it's 6, after step 3 it's 9 and after step 4 it's 16, finally at step 5 it's 28.
If initial energy were 3 or less, the ball could not complete the course.

Sample Input 1

```
3
4 4 4
```

Sample Output 1

```
4
```

Explanation 1

In the second test case if ball has energy 4, it's energy is changed by (4 - 4 = 0) at every step and remains 4.

Sample Input 2

```
3
1 6 4
```

Sample Output 2

```
3
```

Explanation 2

```
ballEnergy   height  delta
3           1       +2
5           6       -1
4           4       0
4
```

We can try lower values to assure that they won't work.