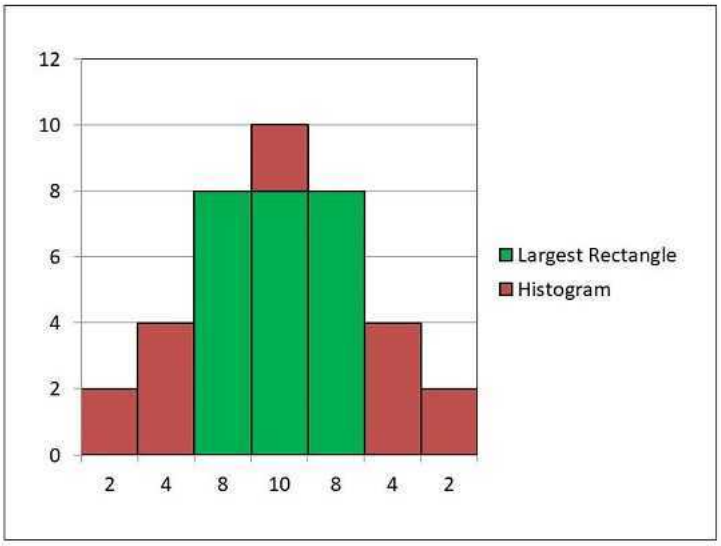
Longest Perimeter in Histogram

Input file:	`standard input`
Output file:	`standard output`
Time limit:	0.5 seconds
Memory limit:	256 megabytes

Amy loves questions on histogram. She wants you to try and solve one too. The problem goes as follows - You have been given an array of **n** integers where each element represents the **height** of a bar in a histogram. Each bar is considered to have a **width** of **1 unit**. A histogram is a graphical representation of data in the form of bars of different heights. The bars are placed in the **same order** as the given array. You need to find the value of the **longest perimeter** of any rectangle in the histogram.

For instance in the below figure, we have **7** bars of heights **[2, 4, 8, 10, 8, 4, 2]** in the histogram. The largest perimeter of size **22 units** is formed by the rectangle enclosing the bars of height 8, 10 and 8 as follows -



Input

The first input line is a single integer n, the number of bars in the histogram.

The second line contains n space separated integers, each the height of a bar in the histogram.

$1 \leq n \leq 10^5$, $1 \leq height[i] \leq 10^9$

Output

Print a single integer denoting the value of the longest perimeter.

Examples

standard input	standard output
7 2 1 4 5 1 3 3	16
7 2 4 8 10 8 4 2	22

Note

In Test case 1 a rectangle of height 1 and width 7 (i.e enclosing all the 7 bars) will give a total perimeter of 2 * (7 + 1) = 16 units