

Largest Rectangle

Skyline Real Estate Developers is planning to demolish a number of old, unoccupied buildings and construct a shopping mall in their place. Your task is to find the largest solid area in which the mall can be constructed.

There are a number of buildings in a certain two-dimensional landscape. Each building has a height, given by $h[i]$ where $i \in [1, n]$. If you join k adjacent buildings, they will form a solid rectangle of area $k \times \min(h[i], h[i + 1], \dots, h[i + k - 1])$.

Example

$h = [3, 2, 3]$

A rectangle of height $h = 2$ and length $k = 3$ can be constructed within the boundaries. The area formed is $h \cdot k = 2 \cdot 3 = 6$.

Function Description

Complete the function `largestRectangle` in the editor below. It should return an integer representing the largest rectangle that can be formed within the bounds of consecutive buildings.

`largestRectangle` has the following parameter(s):

- $int\ h[n]$: the building heights

Returns

- *long*: the area of the largest rectangle that can be formed within the bounds of consecutive buildings

Input Format

The first line contains n , the number of buildings.
The second line contains n space-separated integers, each the height of a building.

Constraints

- $1 \leq n \leq 10^5$
- $1 \leq h[i] \leq 10^6$

Sample Input

STDIN	Function
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5	h[] size n = 5
1 2 3 4 5	h = [1, 2, 3, 4, 5]

Sample Output

9

Explanation

An illustration of the test case follows.

