

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 $k \times \min(h[i], h[i+1], \dots, h[i+k-1])$.

For example, the heights array $h = [3, 2, 3]$. 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):

- h : an array of integers representing building heights

Input Format

The first line contains n , the number of buildings.

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

Constraints

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

Output Format

Print a long integer representing the maximum area of rectangle formed.

Sample Input

```
5
1 2 3 4 5
```

Sample Output

```
9
```

Explanation

An illustration of the test case follows.

