



Largest Rectangle

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Problem

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

Given n buildings, find the greatest such solid area formed by consecutive buildings.

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

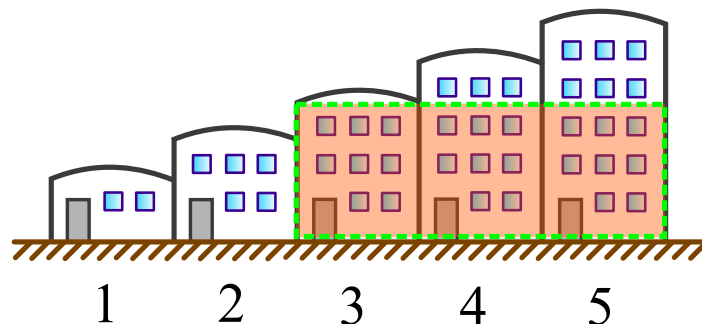
```
5
1 2 3 4 5
```

Sample Output

```
9
```

Explanation

An illustration of the test case follows.



Submissions: [15148](#)

Max Score: 50

Difficulty: Hard

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C++

```
1 #include <bits/stdc++.h>
2
3 using namespace std;
4
5 long largestRectangle(vector<int> h) {
6     // Complete this function
7 }
8
9 int main() {
10     int n;
11     cin >> n;
12     vector<int> h(n);
13     for(int h_i = 0; h_i < n; h_i++){
14         cin >> h[h_i];
15     }
16     long result = largestRectangle(h);
17     cout << result << endl;
18     return 0;
19 }
20
```

Line: 1 Col: 1

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