Largest Rectangle

by shashank21j

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 $k \times min(h_i, h_{i+1}, \ldots, h_{i+k-1})$.

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

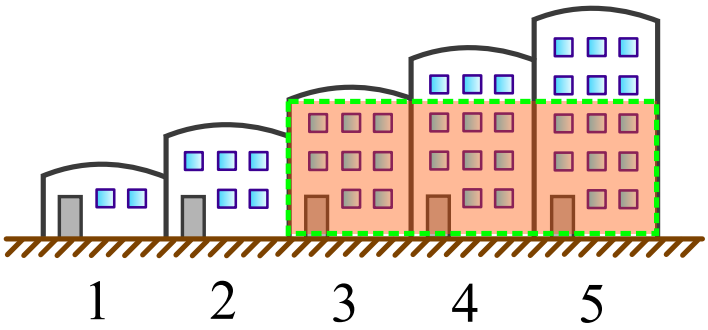
```
5
1 2 3 4 5
```

Sample Output

```
9
```

Explanation

An illustration of the test case follows.



Submissions:15148

Max Score:50
Difficulty: Hard

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```
#include <bits/stdc++.h>

using namespace std;

long largestRectangle(vector <int> h) {
    // Complete this function
}

int main() {
    int n;
    cin >> n;
    vector<int> h(n);
    for(int h_i = 0; h_i < n; h_i++){
       cin >> h[h_i];
    }
    long result = largestRectangle(h);
    cout << result << endl;
    return 0;
}

```

Line: 1 Col: 1

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