## Largest Rectangle -Difficult

There are  buildings in a certain two-dimensional landscape. Each building has a height given by . If you join  adjacent buildings, they will form a solid rectangle of area .

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

**Input Format**   
The first line contains , the number of buildings altogether.   
The second line contains  space-separated integers, each representing the height of a building.

**Output Format**   
One integer representing the maximum area of rectangle formed.

**Sample Input 1**

5

1 2 3 4 5

**Sample Output 1**

9

**Sample Input 2**

7 2 1 4 5 1 3 3

**Sample Output 2**

8

Solution :

import java.io.\*;

import java.util.\*;

public class Solution {

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

int n = sc.nextInt();

int max=0,area;

int arr[] = new int[n];

for(int i=0;i<n;i++)

{

arr[i] = sc.nextInt();

}

for(int j=0;j<n;j++)

{

int L\_area = searchLeft(arr,j,0);

int R\_area = searchRight(arr,j,n-1);

area = (L\_area + R\_area + 1) \* arr[j];

//System.out.println("\t"+area);

if(area>max){ max=area; }

}

System.out.println(max);

}// end of main

public static int searchLeft(int arr[],int j,int end)

{

int cnt=0;

int x=arr[j];

while(j>end)

{

if(arr[j-1] >= x)

{

cnt++;

}else{ break; }

j--;

}

return cnt;

}

public static int searchRight(int arr[],int j,int end)

{

int cnt=0;

int x=arr[j];

while(j<end)

{

if(arr[j+1] >= x)

{

cnt++;

}else{ break; }

j++;

}

return cnt;

}

}