Rectangular area under Histogram

Given height of adjacent buildings, find the largest rectangular area possible, where the largest rectangle can be made of a number of contiguous buildings. For simplicity, assume that all buildings have same width and the width is 1 unit.
Note: The sides of rectangle has to be parallel to the axes.

Input Format

First line of input contains T - number of test cases. Its followed by 2T lines - the first line contains N - the number of buildings. The second line contains the height of the buildings.

Constraints

50 points
$1 <= T <= 100$
$1 <= N <= 10^3$
$1 <= A[i] <= 1000$

150 points
$1 <= T <= 100$
$1 <= N <= 10^5$
$1 <= A[i] <= 10^4$

Output Format

For each test case, print the area of the largest possible rectangle, separated by new line.

Sample Input 0

```
2
7
6 2 5 4 5 1 6
4
5 10 12 4
```

Sample Output 0

```
12
20
```

Explanation 0

Test Case 1

You can form the following rectangles:
6x1 = 6, 2x5 = 10, 5x1 = 5, 4x3 = 12, 5x1 = 5, 1x7 = 7, 6x1 = 6 : max = 12 [axb means rectangle with height a and width b]

Test Case 2

You can form the following rectangles:
5x3 = 15, 10x2 = 20, 12x1 = 12, 4x4 = 16 : max = 20 [axb means rectangle with height a and width b]