
Description

n people have lined up in a straight line. There is some commotion at the front of the line and everyone wants to see what the big deal is.

The i 'th person in the line can see the front if every person ahead of i in the line is strictly shorter than i . Determine, for each person, if they can see past the front of the line. If they cannot, then print the largest index j such that j appears before i in the line but j is at least as tall as i . This is the person who directly obscures i 's view. Here, the front person in the line has index 0 and the last person has index $n - 1$.

Input

The only line will some number (say n) of space-separated integers h_0, \dots, h_{n-1} . Here, h_i is the height of the person at index i .

$$1 \leq n \leq 100,000$$

$$0 \leq h_i \leq 100,000 \text{ for each } 0 \leq i \leq n - 1$$

Output

For each input, output a single line containing n space-separated integers or characters.

The i 'th entry on this line should be the character X if person i can see past the front of the line. Otherwise, print the largest index j such that $0 \leq j < i$ and the height of j is at least the height of i . This is person who directly obscures i 's view.

Sample Input 1

1 2 4 2

Sample Output 1

X X X 2

Explanation: In every input, the person at index 0 can see past the front of the line. In this example, the person at index 1 has height 2 and they can see over the person at index 0, who has height 1.

The person at index 2 has height 4 and they can see over the two people ahead of them in the line. The last person (at index 3) has height 2 and the person who obscures their height of the line is at index 2 (height 4).

Sample Input 2

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2 4 4 7 5 3 7 8
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Sample Output 2

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X X 1 X 3 4 3 X
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Sample Input 3

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1 7 2 8 9 14
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Sample Output 3

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X X 1 X X X
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