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LIVE EVENTS

## Monk and Multiplication

Attempted by: 2367 / Accuracy: 69% / Maximum Score: 20 / ★★★★★☆ 78 Votes

Tag(s): Easy, Priority Queue

PROBLEM

EDITORIAL

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The Monk learned about priority queues recently and asked his teacher for an interesting problem. So his teacher came up with a simple problem. He now has an integer array **A**. For each index **i**, he wants to find the product of the largest, second largest and the third largest integer in the range **[1,i]**.

**Note:** Two numbers can be the same value-wise but they should be distinct index-wise.

### Input:

The first line contains an integer **N**, denoting the number of elements in the array **A**.

The next line contains **N** space separated integers, each denoting the **ith** integer of the array **A**.

### Output:

Print the answer for each index in each line. If there is no second largest or third largest number in the array **A** upto that index, then print "-1", without the quotes.

### Constraints:

 $1 \leq N \leq 100000$  $0 \leq A[i] \leq 1000000$ 

#### SAMPLE INPUT



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

#### SAMPLE OUTPUT



```
-1
-1
6
24
60
```

### Explanation

There are 5 integers 1,2,3,4 and 5.

For the first two indexes, since the number of elements is less than 3, so -1 is printed.

For the third index, the top 3 numbers are 3,2 and 1 whose product is 6.

For the fourth index, the top 3 numbers are 4,3, and 2 whose product is 24.

For the fifth index, the top 3 numbers are 5,4 and 3 whose product is 60.