Given an array of integers **arr**, replace each element with its rank.

The rank represents how large the element is. The rank has the following rules:

- Rank is an integer starting from 1.
- The larger the element, the larger the rank. If two elements are equal, their rank must be the same.
- Rank should be as small as possible.

Input Format

First line contains an integer n.

Second line contains an array of integers of size n.

Constraints

0 <= arr.length <= 10^5

109 <= arr[i] <= 10^9

Output Format

Returns an array.

Sample Input 0

```
4
40 10 20 30
```

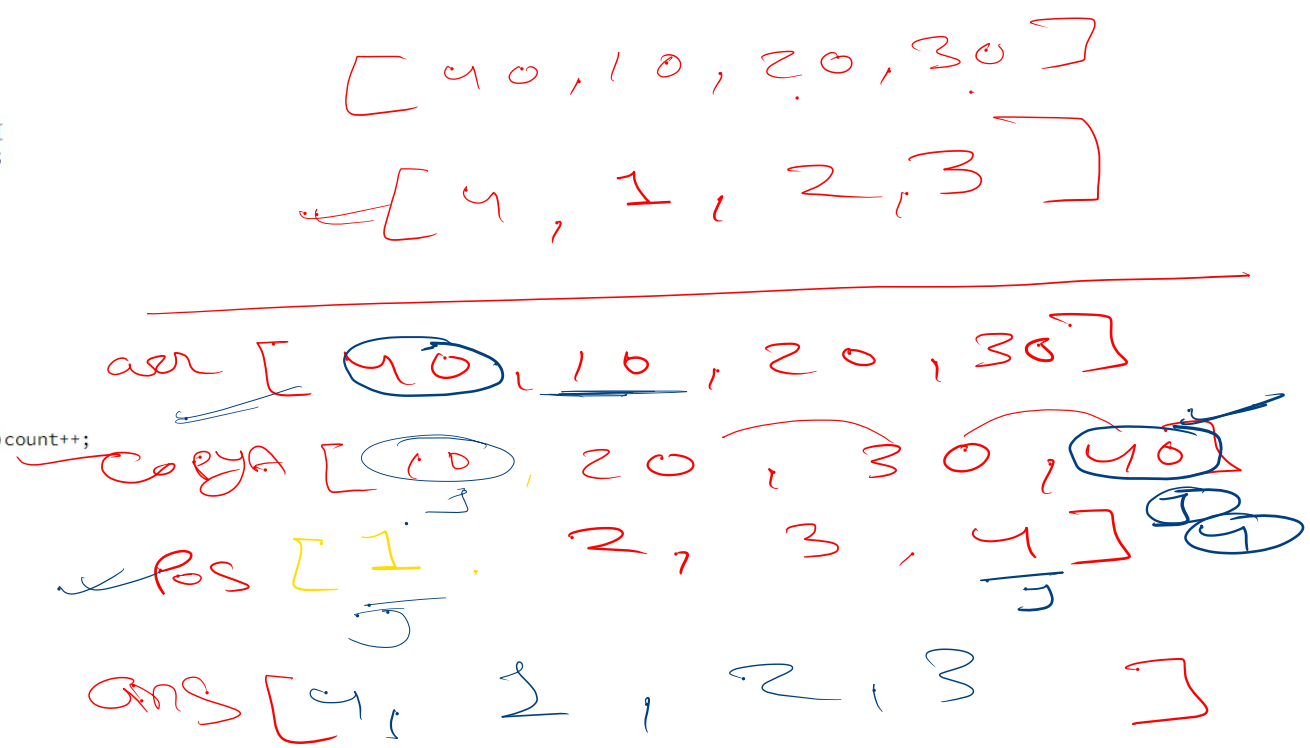
Sample Output 0

```
4 1 2 3
```

Explanation 0

40 is the largest element. 10 is the smallest. 20 is the second smallest. 30 is the third smallest.

```java
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 arr[]= new int[n];
        for(int i =0;i<n;i++){
            arr[i]=sc.nextInt();
        }
        int copyArray [] = arr.clone();
        Arrays.sort(copyArray);
        int pos[] = new int[n];
        int count =1;
        pos[0]=count;
        for(int i=1;i<n;i++){
            if(copyArray[i]!=copyArray[i-1])count++;
            pos[i]=count;
        }

        int ans [] = new int[n];
        for(int i=0;i<n;i++){
            int idx =0;
           for(int j=0;j<n;j++){
               if(arr[i]== copyArray[j]){
                   idx=j;
                   break;
               }
           }
            ans[i]= pos[idx];
        }

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

             System.out.print(ans[i]+" ");
    }
}
```



414. Third Maximum Number

Solved

Easy | Topics | Companies

Given an integer array `nums`, return *the **third distinct maximum** number in this array. If the third maximum does not exist, return the **maximum** number.*

Example 1:

Input: nums = [3,2,1]
Output: 1
Explanation:
The first distinct maximum is 3.
The second distinct maximum is 2.
The third distinct maximum is 1.

Example 2:

Input: nums = [1,2]
Output: 2
Explanation:
The first distinct maximum is 2.
The second distinct maximum is 1.
The third distinct maximum does not exist, so the maximum (2) is returned instead.

Example 3:

Input: nums = [2,2,3,1]
Output: 1
Explanation:
The first distinct maximum is 3.
The second distinct maximum is 2 (both 2's are counted together since they have the same value).
The third distinct maximum is 1.

Java | Auto

```java
class Solution {
    public int thirdMax(int[] arr) {
          long fMax = Long.MIN_VALUE;
        long sMax = Long.MIN_VALUE;
        long tMax =Long.MIN_VALUE;

        for(int i =0 ;i<arr.length;i++){

            if(arr[i]== fMax || arr[i]==sMax || arr[i]==tMax)continue;
            if(fMax <arr[i]){
                tMax=sMax;
                sMax=fMax;
                fMax= arr[i];
            }
            else if( fMax > arr[i] && sMax <arr[i]){
                tMax = sMax;
                sMax = arr[i];
            }
            else if(fMax > arr[i] && sMax > arr[i] && tMax <arr[i]){
                tMax = arr[i];
            }
        }

        if(tMax== Long.MIN_VALUE)return (int)fMax;
        else return (int)tMax;
    }
}
```

HW_Maximum Product of 3 Numbers

Problem | Submissions | Leaderboard | Discussions

Once upon a time, there was a mathematician named Max who loved solving number puzzles. One day, he was given an array of integers and was challenged to find **the maximum product of three numbers** from the array.

Max eagerly accepted the challenge and began working on it. Help Max to find the maximum product of three numbers.

NOTE:- After answering the question, attempt the related question in the linked resource to improve your understanding of the question . Click here

Input Format

An integer **N**, which is the size of the array.

N integers, depicting the elements of the array.

Constraints

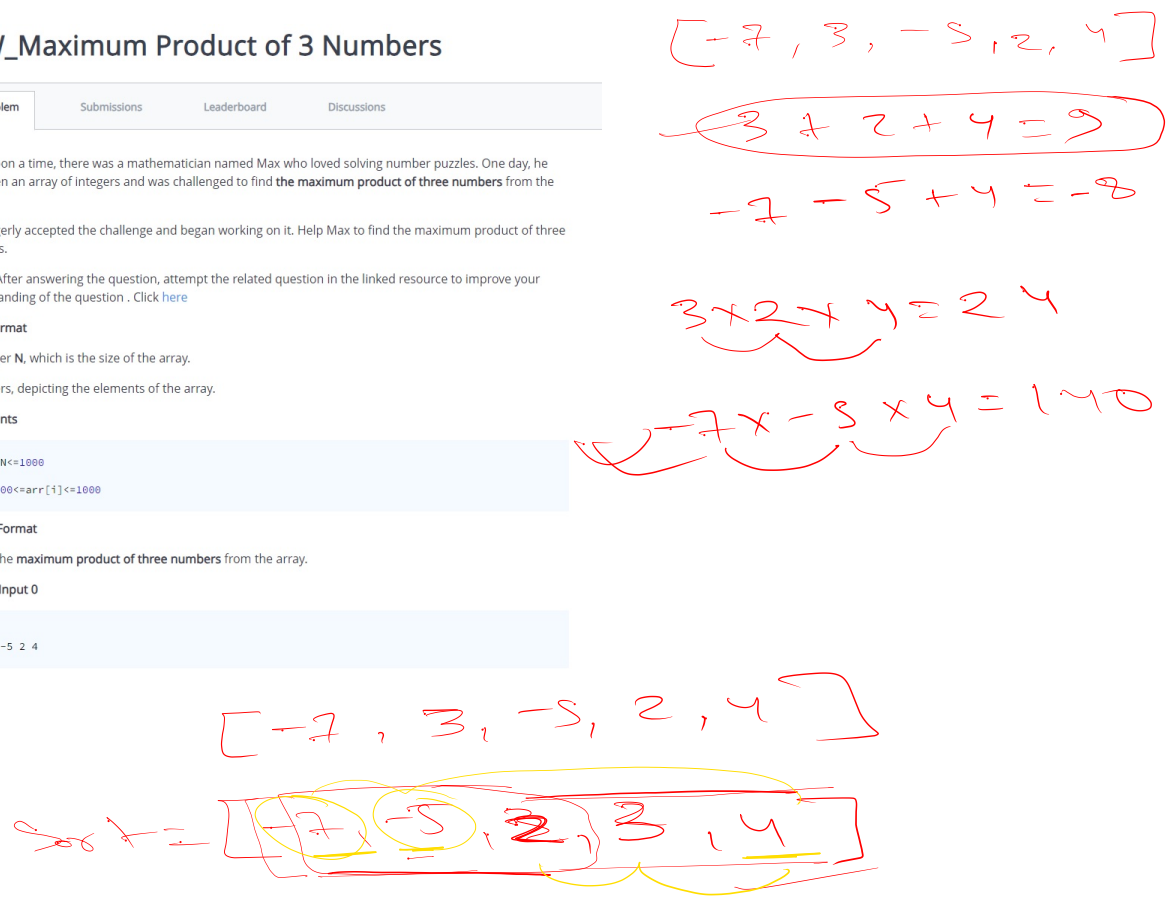
- 3<=N<=1000
- -1000<=arr[i]<=1000

Output Format

Return the **maximum product of three numbers** from the array.

Sample Input 0

```
5
-7 3 -5 2 4
```



Submitted Code

Language: Java 15

```
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 arr[] = new int[n];
        for(int i=0;i<n;i++)arr[i]=sc.nextInt();

        Arrays.sort(arr);

        int max= Math.max((arr[0]*arr[1]*arr[n-1]),(arr[n-1]*arr[n-2]*arr[n-3]));
        System.out.print(max);
    }
}
```