Find Missing And Repeating

Wednesday, December 22, 2021 8:59 PM

Find Missing And Repeating

From <https://practice.geeksforgeeks.org/problems/find-missing-and-repeating2512/1>

Medium Accuracy: 37.77% Submissions: 80510 Points: 4

Given an unsorted array **Arr** of size **N** of positive integers. **One number 'A'** from set {1, 2, …N} is missing and **one number 'B'** occurs twice in array. Find these two numbers.

Example 1:

Input:
N = 2
Arr[] = {2, 2}
Output: 2 1
Explanation: Repeating number is 2 and smallest positive missing number is 1.

Example 2:

Input:
N = 3
Arr[] = {1, 3, 3}
Output: 3 2
Explanation: Repeating number is 3 and smallest positive missing number is 2.

Your Task:

You don't need to read input or print anything. Your task is to complete the function **findTwoElement()** which takes the array of integers **arr** and **n** as parameters and returns an array of integers of size 2 denoting the answer (The first index contains **B** and second index contains **A.)**

Expected Time Complexity: O(N)

Expected Auxiliary Space: O(1)

Constraints:

$1 \leq N \leq 10^5$

$1 \leq Arr[i] \leq N$

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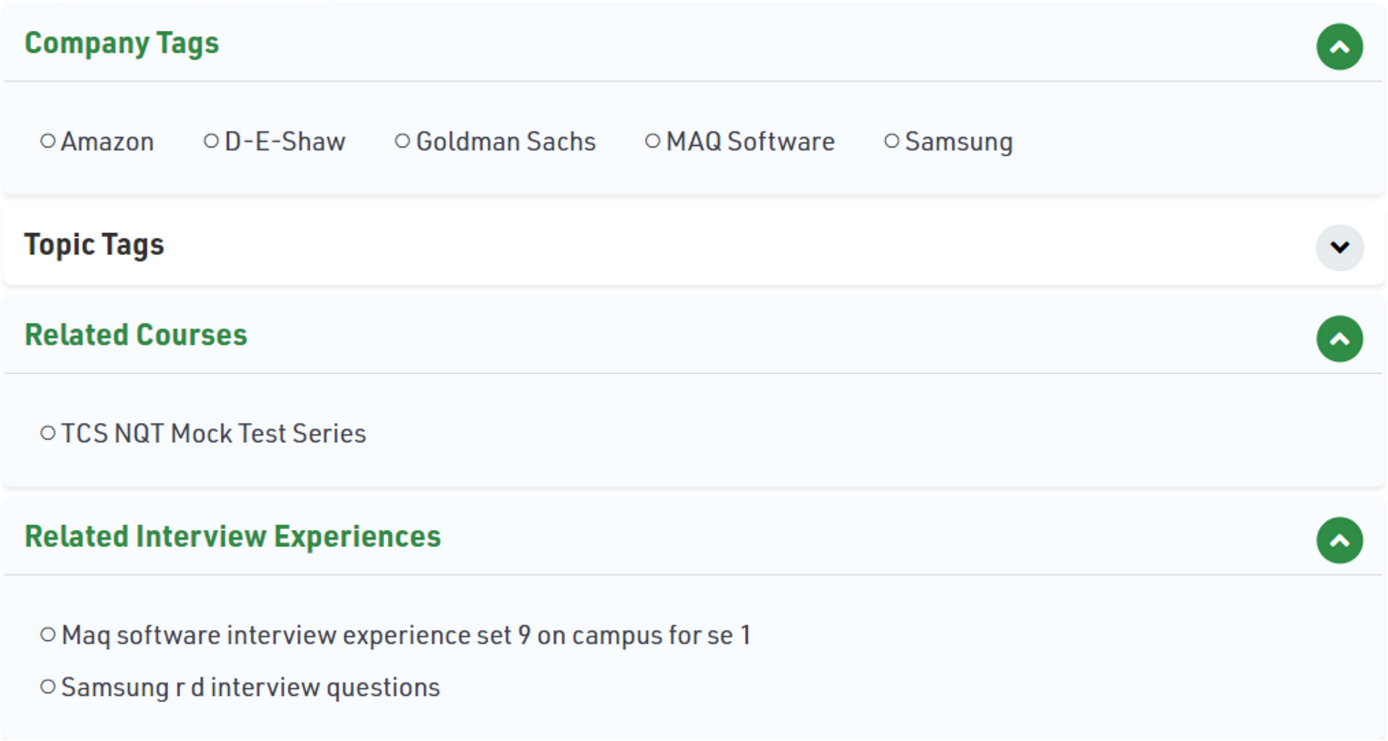

Examples:

```
 Input: arr[] = {3, 1, 3}
Output: Missing = 2, Repeating = 3
```

```
Explanation: In the array,
2 is missing and 3 occurs twice
```

```
Input: arr[] = {4, 3, 6, 2, 1, 1}
Output: Missing = 5, Repeating = 1
```

Below are various methods to solve the problems:

Method 1 (Use Sorting)

Approach:

- Sort the input array.
- Traverse the array and check for missing and repeating.

Time Complexity: O(nLogn)

Thanks to **LoneShadow** for suggesting this method.

Method 2 (Use count array)

Approach:

- Create a temp array temp[] of size n with all initial values as 0.
- Traverse the input array arr[], and do following for each arr[i]
  - if(temp[arr[i]] == 0) temp[arr[i]] = 1;
  - if(temp[arr[i]] == 1) output "arr[i]" //repeating
- Traverse temp[] and output the array element having value as 0 (This is the missing element)

Time Complexity: O(n)

Auxiliary Space: O(n)

Method 3 (Use elements as Index and mark the visited places)

Approach:

Traverse the array. While traversing, use the absolute value of every element as an index and make the value at this index as negative to mark it visited. If something is already marked negative then this is the repeating element. To find missing, traverse the array again and look for a positive value.

```
{
   inti;
   System.out.print("The repeating element is ");
   for(i=0; i<size; i++) {
      intabs_val=Math.abs(arr[i]);
      if(arr[abs_val-1] >0)
         arr[abs_val-1] =-arr[abs_val-1];
      else
         System.out.println(abs_val);
   }
   System.out.print("And the missing element is ");
   for(i=0; i<size; i++) {
      if(arr[i] >0)
         System.out.println(i+1);
   }
}
// Driver code
```

```
publicstaticvoidmain(String[] args)
{
   intarr[] ={ 7, 3, 4, 5, 5, 6, 2};
   intn=arr.length;
   printTwoElements(arr, n);
}
}
// This code is contributed by Gitanjali
```

Run

Python3C#PHPJavascript

Output

```
 The repeating element is 5
and the missing element is 1
```

Time Complexity: O(n)

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