Problem statement Send feedback

You are given an array ‘ARR’ of size ‘N’ containing each number between 1 and ‘N’ - 1 at least once. There is a single integer value that is present in the array twice. Your task is to find the duplicate integer value present in the array.
For example:

```
Consider ARR = [1, 2, 3, 4, 4], the duplicate integer value present in the array is 4.
Hence, the answer is 4 in this case.
```

Note :

```
A duplicate number is always present in the given array.
```

Detailed explanation (Input/output format, Notes, Images)

Constraints:

```
1 <=  T  <= 10
2 <=  N <= 10 ^ 5
1 <=  ARR[i]  <= N - 1

Where 'T' denotes the number of test cases, 'N' denotes the number of elements in the
array, and 'ARR[i]' denotes the 'i-th' element of the array 'ARR'.

Time limit: 1 sec
```

Sample Input 1:

```
2
5
4 2 1 3 1
7
6 3 1 5 4 3 2
```

Sample Output 1:

```
1
3
```

Explanation of sample input 1:

```
For the first test case,
The duplicate integer value present in the array is 1. Hence, the answer is 1 in this
case.

For the second test case,
The duplicate integer value present in the array is 3. Hence, the answer is 3 in this
case.
```

Sample Input 2:

```
2
6
5 1 2 3 4 2
9
8 7 2 5 4 7 1 3 6
```

Sample Output 2:

```
2
7
```

Hints:

1. Simply calculate the frequency of each value.
2. Try to optimise the above approach by using an array to store the frequencies.
3. Think of a solution using Floyd’s cycle finding algorithm.
4. Try to think of a solution based on bitwise XOR.