Bit Manipulation: Lonely Integer

by dheeraj

Check out the resources on the page's right side to learn more about bit manipulation. The video tutorial is by Gayle Laakmann McDowell, author of the best-selling interview book Cracking the Coding Interview.

Consider an array of n integers, $A = [a_0, a_1, \ldots, a_{n-1}]$, where all but one of the integers occur in pairs. In other words, every element in A occurs exactly twice except for one unique element.

Given A, find and print the unique element.

Input Format

The first line contains a single integer, n, denoting the number of integers in the array.
The second line contains n space-separated integers describing the respective values in A.

Constraints

- $1 \leq n < 100$
- It is guaranteed that n is an odd number.
- $0 \leq a_i \leq 100$, where $0 \leq i < n$.

Output Format

Print the unique number that occurs only once in A on a new line.

Sample Input 0

```
1
1
```

Sample Output 0

```
1
```

Explanation 0
The array only contains a single 1, so we print 1 as our answer.

Sample Input 1

```
3
1 1 2
```

Sample Output 1

```
2
```

Explanation 1
We have two 1's and one 2. We print 2, because that's the only unique element in the array.

Sample Input 2

```
5
0 0 1 2 1
```

Sample Output 2

```
2
```

Explanation 2

We have two **0**'s, two **1**'s, and one **2**. We print **2**, because that's the only unique element in the array.

Current Buffer (saved locally, editable) C#

```
using System;
using System.Collections.Generic;
using System.IO;
using System.Linq;
class Solution {

    static void Main(String[] args) {
        //1) Cualquier número xor'd consigo mismo dará cero.
            //2) Cualquier número xor'd con cero dará el número.
            //3) Se nos dice que hay un número impar de números en la matriz
            //    y que son todos los pares del mismo número, aparte de uno.
            //Así que si xor todos los números de la matriz junto,
            //entonces cualquier que son los mismos se anulan - y
            //dar cero como el resultado de todos los xors.
            //Entonces nos quedamos con el número único,
            //que xor es con cero y así da el número único como la respuesta.
            int n = Convert.ToInt32(Console.ReadLine());
            string[] a_temp = Console.ReadLine().Split(' ');
            int[] a = Array.ConvertAll(a_temp, e => int.Parse(e) );

            int value = 0;

            for (int i = 0; i < n; i++)
            {
                value ^= a[i];

            }
            Console.WriteLine(value);
    }
}

```

Line: 27 Col: 38

Upload Code as File Test against custom input Run Code Submit Code

Congrats, you solved this challenge!

- ✔ Test Case #0
- ✔ Test Case #1
- ✔ Test Case #2
- ✔ Test Case #3
- ✔ Test Case #4
- ✔ Test Case #5
- ✔ Test Case #6
- ✔ Test Case #7
- ✔ Test Case #8

Next Challenge