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Bit Manipulation: Lonely Integer



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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, $A = [a_0, a_1, \dots, a_{n-1}]$, 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 \boldsymbol{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

- $1 \le n < 100$
- ullet It is guaranteed that $oldsymbol{n}$ is an odd number.
- $0 \le a_i \le 100$, where $0 \le i < n$.

Output Format

Print the unique number that occurs only once in \boldsymbol{A} on a new line.

Sample Input 0

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

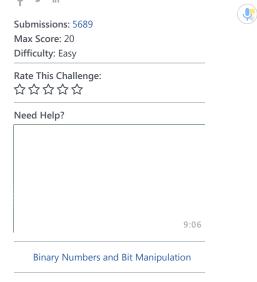
5 0 0 1 2 1

Sample Output 2

2

Explanation 2

We have two $\mathbf{0}$'s, two $\mathbf{1}$'s, and one $\mathbf{2}$. We print $\mathbf{2}$, because that's the only unique element in the array.



Run Code

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More

```
Current Buffer (saved locally, editable) & 🔊
                                                                                C#
                                                                                                              Ö
    using System;
    using System.Collections.Generic;
3
    using System.IO;
4
    using System.Linq;
5
    class Solution {
6
7
        static void Main(String[] args) {
            //1) Cualquier número xor'd consigo mismo dará cero.
8
                //2) Cualquier número xor'd con cero dará el número.
9
10
                //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.
11
12
                //Así que si xor todos los números de la matriz junto,
13
                 //entonces cualquier que son los mismos se anulan - y
14
                //dar cero como el resultado de todos los xors.
15
                //Entonces nos quedamos con el número único,
                 //que xor es con cero y así da el número único como la respuesta.
16
17
                int n = Convert.ToInt32(Console.ReadLine());
                string[] a_temp = Console.ReadLine().Split(' ');
18
19
                int[] a = Array.ConvertAll(a_temp, e => int.Parse(e) );
20
21
                int value = 0;
22
                 for (int i = 0; i < n; i++)
23
24
25
                     value \wedge = a[i];
26
27
                Console.WriteLine(value);
28
29
30
                                                                                                     Line: 27 Col: 38
```

Congrats, you solved this challenge!

1 Upload Code as File

Test against custom input

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