Bit Manipulation: Lonely Integer

by dheeraj

Problem | Submissions | Leaderboard | Discussions | Editorial

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

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.

Easy Submitted 29294 times
Max Score **20**

Need Help?

View Discussions

View Editorial Solution

View Top Submissions

Rate This Challenge:

Resources

9:06

Binary Numbers and Bit Manipulation

Download problem statement

Download sample test cases

```cpp
#include <map>
#include <set>
#include <list>
#include <cmath>
#include <ctime>
#include <deque>
#include <queue>
#include <stack>
#include <string>
#include <bitset>
#include <cstdio>
#include <limits>
#include <vector>
#include <climits>
#include <cstring>
#include <cstdlib>
#include <fstream>
#include <numeric>
#include <sstream>
#include <iostream>
#include <algorithm>
#include <unordered_map>

using namespace std;

int lonely_integer(vector < int > a) {
     int cont[101];
    for(int i =0; i<=100; i++) {
        cont[i]=0;
    }

    for(int i =0; i<a.size(); i++) {
        cont[a[i]]++;
    }

    for(int i =0; i<=100; i++) {
        if(cont[i] == 1) return i;
    }
    return -1;
}

int main(){
    int n;
    cin >> n;
    vector<int> a(n);
    for(int a_i = 0;a_i < n;a_i++){
       cin >> a[a_i];
    }
    cout << lonely_integer(a) << endl;
    return 0;
}
```

Challenge your friends:

Share it as a snippet.

- ✔ 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