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Points: 810.00 Rank: 35468

Lonely Integer

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Problem

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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 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.

[f](#) [t](#) [in](#)

Submissions: 78958



Max Score: 20

Difficulty: Easy

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☆☆☆☆☆

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C++



```
19 #include <map>
20 #include <set>
21 #include <list>
22 #include <cmath>
23 #include <ctime>
24 #include <deque>
25 #include <queue>
26 #include <stack>
27 #include <bitset>
28 #include <cstdio>
29 #include <limits>
30 #include <vector>
31 #include <cstdlib>
32 #include <numeric>
33 #include <sstream>
34 #include <iostream>
35 #include <algorithm>
36 using namespace std;
37 int lonelyinteger(vector < int > a) {
38     /*
39     int integers[1000] = {0};
40     for (int i = 0; i < a.size(); i++) {
41         integers[a[i]]++;
42     }
43     for (int i = 0; i < 1000; i++) {
44         if (integers[i] == 1) {
45             return i;
46         }
47     }*/
48     int sum = 0;
49
50     // This is using the fact that  $a \oplus a \oplus b \oplus c \oplus c = b$ , derived from  $a \oplus 0 = a$  and  $a \oplus a = 0$ .
51     // This can be verified by using truth tables.
52     for (int i = 0; i < a.size(); i++) sum ^= a[i];
53
54     return sum;
55 }
56
57 int main() {
58     int res;
59
60     int _a_size;
61     cin >> _a_size;
62     cin.ignore (std::numeric_limits<std::streamsize>::max(), '\n');
63     vector<int> _a;
64     int _a_item;
65     for(int _a_i=0; _a_i<_a_size; _a_i++) {
66         cin >> _a_item;
67         _a.push_back(_a_item);
68     }
69
70     res = lonelyinteger(_a);
71     cout << res;
72
73     return 0;
74 }
```

Line: 1 Col: 1

 Upload Code as File Test against custom input

Run Code

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