

Demo ticket

Session

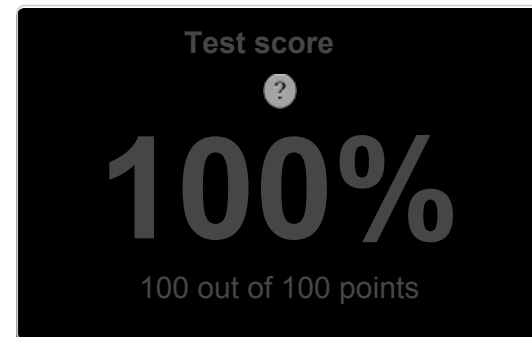
ID: demo8KFSNC-ZUN
Time limit: 120 min.

Status: closed

Created on: 2014-03-17 17:49 UTC
Started on: 2014-03-17 17:49 UTC
Finished on: 2014-03-17 18:04 UTC

Tasks in test

Task score



EASY

1. PermMissingElem

Find the missing element in a given permutation.

score: 100 of 100



Task description

A zero-indexed array *A* consisting of *N* different integers is given. The array contains integers in the range $[1..(N + 1)]$, which means that exactly one element is missing.

Your goal is to find that missing element.

Write a function:

```
int solution(vector<int> &A);
```

that, given a zero-indexed array *A*, returns the value of the missing element.

For example, given array *A* such that:

```
A[0] = 2
A[1] = 3
A[2] = 1
A[3] = 5
```

the function should return 4, as it is the missing element. Assume that:

- *N* is an integer within the range $[0..100,000]$;
- the elements of *A* are all distinct;
- each element of array *A* is an integer within the range $[1..(N + 1)]$.

Complexity:

- expected worst-case time complexity is $O(N)$;
- expected worst-case space complexity is $O(1)$, beyond input storage (not counting the storage required for input arguments).

Elements of input arrays can be modified.

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Solution

Programming language used: C++

Total time used: 16 minutes

Effective time used: 16 minutes

Notes: correct functionality and scalability

Task timeline



17:49:47

18:04:54

Code: 18:04:54 UTC, cpp, final, score: 100.00

```
01. // you can also use includes, for example:
02. // #include <algorithm>
03. int solution(vector<int> &A) {
04.     int n = A.size();
05.     int xor_sum = 0;
06.
07.     for (int i = 0; i < n; i++) {
08.         xor_sum = xor_sum ^ A[i] ^ (i+1);
09.     }
10.     return xor_sum ^ (n+1);
11. }
```

Analysis

Detected time complexity:

$O(N)$ or $O(N * \log(N))$

test	time	result
example example test	0.020 s.	OK
empty empty list	0.020 s.	OK
single single element	0.020 s.	OK
double two elements	0.020 s.	OK
simple simple test	0.020 s.	OK
medium1 medium test, length = ~10,000	0.020 s.	OK
medium2 medium test, length = ~10,000	0.020 s.	OK
large_range range sequence, length = ~100,000	0.030 s.	OK
large1 large test, length = ~100,000	0.040 s.	OK
large2 large test, length = ~100,000	0.030 s.	OK

Training center