

## Demo ticket

### Session

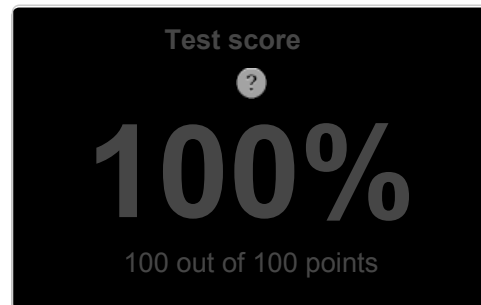
ID: demoEY7CH8-5WH  
Time limit: 120 min.

### Status: closed

Created on: 2014-03-17 16:01 UTC  
Started on: 2014-03-17 16:01 UTC  
Finished on: 2014-03-17 16:06 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:

```
def solution(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: Python

Total time used: 5 minutes

Effective time used: 5 minutes

Notes: correct functionality and scalability

#### Task timeline



16:01:36

16:06:14

Code: 16:06:14 UTC, py, final, score: 100.00

```
01. def solution(A):
02.     miss = 0
03.     for a in A:
04.         miss ^= a
05.
06.     for i in xrange(1, len(A) + 2):
07.         miss ^= i
08.
09.     return miss
```

#### Analysis

Detected time complexity:  
 **$O(N)$  or  $O(N * \log(N))$**

test	time	result
example example test	0.050 s.	OK

empty empty list	0.050 s.	<b>OK</b>
single single element	0.050 s.	<b>OK</b>
double two elements	0.050 s.	<b>OK</b>
simple simple test	0.050 s.	<b>OK</b>
medium1 medium test, length = ~10,000	0.070 s.	<b>OK</b>
medium2 medium test, length = ~10,000	0.070 s.	<b>OK</b>
large_range range sequence, length = ~100,000	0.140 s.	<b>OK</b>
large1 large test, length = ~100,000	0.230 s.	<b>OK</b>
large2 large test, length = ~100,000	0.160 s.	<b>OK</b>

Training center