codility

Training center

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Demo ticket

Session

ID: demoHSQY7A-8Z5
Time limit: 120 min.

Status: closed

Created on: 2014-06-01 18:33 UTC
Started on: 2014-06-01 18:33 UTC
Finished on: 2014-06-01 18:41 UTC

Tasks in test	Correctness	Performance	Task score
1 | {} Distinct	100%	100%	100%

Test score

100%

100 out of 100 points

EASY

1. Distinct

Compute number of distinct values in an array.

score: 100 of 100

Task description

Write a function

```
def solution(A)
```

that, given a zero-indexed array A consisting of N integers, returns the number of distinct values in array A.
Assume that:

- N is an integer within the range [0..100,000];
- each element of array A is an integer within the range [−1,000,000..1,000,000].

For example, given array A consisting of six elements such that:

```
A[0] = 2    A[1] = 1    A[2] = 1
A[3] = 2    A[4] = 3    A[5] = 1
```

the function should return 3, because there are 3 distinct values appearing in array A, namely 1, 2 and 3.
Complexity:

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

Elements of input arrays can be modified.

Solution

Programming language used: Python

Total time used: 8 minutes

Effective time used: 8 minutes

Notes: correct functionality and scalability

Task timeline

18:33:40 18:41:30

Code: 18:41:30 UTC, py, final, score: **100.00**

```
01. def solution(A):
02.     n = len(A)
03.     dist = 0
04.
05.     if n == 0:
06.         return 0
07.
08.     A.sort()
09.     dist = 1
10.     for i in xrange(1, n):
11.         if A[i] != A[i-1]:
12.             dist += 1
13.
14.     return dist
```

Analysis

Detected time complexity:
O(N*log(N))

test	time	result
Example tests		
example1 example test, positive answer	0.060 s.	**OK**
Correctness tests		
extreme_empty empty sequence	0.056 s.	**OK**
extreme_single sequence of one element	0.052 s.	**OK**
extreme_two_elems sequence of three distinct elements	0.060 s.	**OK**
extreme_one_value sequence of 10 equal elements	0.056 s.	**OK**
extreme_negative sequence of negative elements, length=5	0.052 s.	**OK**
extreme_big_values sequence with big values, length=5	0.056 s.	**OK**
medium1 chaotic sequence of value sfrom [0..1K], length=100	0.056 s.	**OK**
medium2 chaotic sequence of value sfrom [0..1K], length=200	0.060 s.	**OK**
medium3 chaotic sequence of values from [0..10], length=200	0.048 s.	**OK**
Performance tests		
large1 chaotic sequence of values from [0..100K], length=10K	0.084 s.	**OK**
large_random1 chaotic sequence of values from [-1M..1M], length=100K	0.272 s.	**OK**
large_random2 another chaotic sequence of values from [-1M..1M], length=100K	0.280 s.	**OK**

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