Check out Codility training tasks

Demo ticket

Session

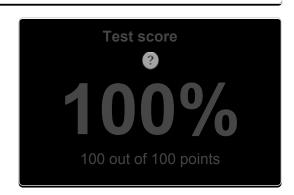
ID: demoNBEZ9P-43M Time limit: 120 min.

Status: closed

Created on: 2014-03-16 22:33 UTC Started on: 2014-03-16 22:33 UTC Finished on: 2014-03-16 23:06 UTC

Tasks in test

Task score



1. PassingCars

Count the number of passing cars on the road.

score: 100 of 100



23:06:36

Task description

A non-empty zero-indexed array A consisting of N integers is given. The consecutive elements of array A represent consecutive cars on a

Array A contains only 0s and/or 1s:

- 0 represents a car traveling east,
- 1 represents a car traveling west.

The goal is to count passing cars. We say that a pair of cars (P, Q), where 0 ≤ P < Q < N, is passing when P is traveling to the east and Q is traveling to the west.

For example, consider array A such that:

A[0] = 0

A[1] = 1

A[2] = 0

A[3] = 1A[4] = 1

We have five pairs of passing cars: (0, 1), (0, 3), (0, 4), (2, 3), (2, 4). Write a function:

int solution(vector<int> &A);

that, given a non-empty zero-indexed array A of N integers, returns the number of passing cars.

The function should return -1 if the number of passing cars exceeds 1,000,000,000.

For example, given:

A[0] = 0

A[1] = 1

A[2] = 0

A[3] = 1A[4] = 1

the function should return 5, as explained above. Assume that:

N is an integer within the range [1..100.000]:

Solution Programming language used: C++ Total time used: 33 minutes Task timeline

22:33:46

Effective time used: 33 minutes Notes: correct functionality and scalability

Code: 23:06:36 UTC, cpp, final, score: 100.00

// you can also use includes, for example: 02. // #include <algorithm> 03. int solution(vector<int> &A) { 04. // write your code in C++9805. long int npass = 0; long int nw = 0; 06. 07. long int ne = 0; 08. 09. for (int i = 0; i < (int)A.size(); i++) {</pre> // east 10. 11. if (A[i] == 0) { 12. ++ne; 13. // west 14. } else if (A[i] == 1) { 15. ++nw; npass += ne;
if (npass > 1000000000) 16. 17. 18. return -1; // invalid 19 20. } else

 each element of array A is an integer within the range [0..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.

Copyright 2009–2014 by Codility Limited. All Rights Reserved. Unauthorized copying, publication or disclosure prohibited.

21.	return -1;
22.	}
23.	return npass;
24.	}

Analysis



Detected time complexity: O(N)

test	time	result
example example test	0.020 s.	ок
single single element	0.020 s.	ок
double two elements	0.020 s.	ок
simple simple test	0.020 s.	ок
small_random random, length = 100	0.020 s.	ок
medium_random random, length = ~10,000	0.020 s.	ок
large_random random, length = ~100,000	0.040 s.	ок
large_big_answer 0011, length = ~100,000	0.030 s.	ок
large_alternate 010101, length = ~100,000	0.030 s.	ок
large_extreme large test with all 1s/0s, length = ~100,000	0.030 s.	ок

Training center