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https://codility.com/demo/take-sample-test/passing_cars/

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Training ticket

Session

ID: training3X4J9Q-CKQ
Time limit: 120 min.

Status: closed

Created on: 2016-06-22 17:31 UTC
Started on: 2016-06-22 17:31 UTC
Finished on: 2016-06-22 17:32 UTC

Tasks in test	Correctness	Performance	Task score
1 PassingCars Submitted in: Java	100%	100%	100%

Test score

100%

100 out of 100 points

EASY

1. PassingCars

Count the number of passing cars on the road.

score: 100 of 100

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 road.

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] = 1
A[4] = 1
```

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

Write a function:

```
class Solution { public int solution(int[] A); }
```

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

The function should return −1 if the number of pairs of passing cars

Solution

Programming language used: Java

Total time used: 2 minutes

Effective time used: 2 minutes

Notes: *not defined yet*

Task timeline

17:31:52 17:32:55

Code: 17:32:55 UTC, java, final, score: **100**

show code in pop-up

```
1  class Solution {
2      private static final int EAST = 0;
3      private static final int LIMIT = 1_000_000_000;
4
5      public int solution(int[] A) {
6          int multiplier = 0;
7          int counter = 0;
8
```

exceeds 1,000,000,000.

For example, given:

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

the function should return 5, as explained above.

Assume that:

- N is an integer within the range [1..100,000];
- each element of array A is an integer that can have one of the following values: 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.


```
 9          for (int carDirection : A) {
10              if(carDirection == EAST) {
11                  multiplier++;
12              } else {
13                  counter += multiplier;
14                  if(counter > LIMIT) {
15                      return -1;
16                  }
17              }
18          }
19
20          return counter;
21      }
22  }
```

Analysis summary

The solution obtained perfect score.

Analysis

Detected time complexity:
O(N)

expand all	Example tests	
▶	example example test	✔ OK
expand all	Correctness tests	
▶	single single element	✔ OK
▶	double two elements	✔ OK
▶	simple simple test	✔ OK
▶	small_random random, length = 100	✔ OK
▶	small_random2 random, length = 1000	✔ OK
expand all	Performance tests	
▶	medium_random random, length = ~10,000	✔ OK
▶	large_random random, length = ~100,000	✔ OK
▶	large_big_answer 0..01..1, length = ~100,000	✔ OK
▶	large_alternate 0101..01, length = ~100,000	✔ OK
▶	large_extreme large test with all 1s/0s, length = ~100,000	✔ OK

Training center