Codility_

CodeCheck Report: trainingEGSTRQ-CBB

Test Name:

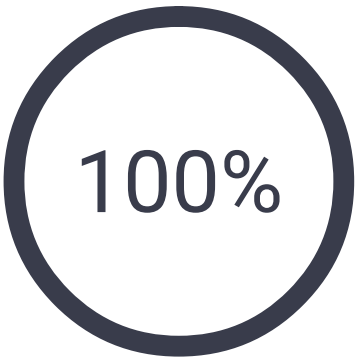
Check out Codility training tasks

Summary | Timeline

Tasks summary

Task	Time spent	Score
Triangle C# ⚠	3 min	100%

Total score



Tasks Details

Easy

1. Triangle

Determine whether a triangle can be built from a given set of edges.

Task Score	Correctness	Performance
100%	100%	100%

Task description

An array A consisting of N integers is given. A triplet (P, Q, R) is *triangular* if 0 ≤ P < Q < R < N and:

- A[P] + A[Q] > A[R],
- A[Q] + A[R] > A[P],
- A[R] + A[P] > A[Q].

For example, consider array A such that:

```
A[0] = 10    A[1] = 2    A[2] = 5
A[3] = 1     A[4] = 8    A[5] = 20
```

Triplet (0, 2, 4) is triangular.

Write a function:

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

that, given an array A consisting of N integers, returns 1 if there exists a triangular triplet for this array and returns 0 otherwise.

For example, given array A such that:

Solution

Programming language used:	C#
Total time used:	3 minutes
Effective time used:	3 minutes
Notes:	*not defined yet*

Task timeline

18:41:43 — 18:44:41

```
A[0] = 10    A[1] = 2    A[2] = 5
A[3] = 1     A[4] = 8    A[5] = 20
```

the function should return 1, as explained above. Given array A such that:

```
A[0] = 10    A[1] = 50    A[2] = 5
A[3] = 1
```

the function should return 0.

Write an **efficient** algorithm for the following assumptions:

- N is an integer within the range [0..100,000];
- each element of array A is an integer within the range [−2,147,483,648..2,147,483,647].

Code: 18:44:41 UTC, cs, final, score: **100** show code in pop-up

```
using System;

/**
 * 6.3 - Triangle
 * Paulo Santos
 * 07.Dec.2022
 */
class Solution {
    public int solution(int[] A) {

        /*
         * Check inputs
         */
        if (A == null)
            throw new ArgumentNullException();
        if (A.Length < 3)
            return 0;

        /*
         * Sort the array
         */
        Array.Sort(A);

        /*
         * This way we only have to
         * deal with 3 consecutive
         * elements.
         */
        for (var i = 0; i < A.Length - 2; i++) {
            if ((((A[i]     + A[i + 1]) > A[i + 2])
                 ((A[i + 1] + A[i + 2]) > A[i]    )
                 ((A[i + 2] + A[i]    ) > A[i + 1])
                 /*
                  * Deal with an outlier case when
                  * there's a silent overflow on
                  * the operations above
                  */
                 ((A[i]     == int.MaxValue) &&
                  (A[i]     == A[i + 1]    ) &&
                  (A[i + 1] == A[i + 2]    )))  {
                /*
                 * A triangle was found
                 */
                return 1;
            }
        }
        return 0;
    }
}
```

Analysis summary

The solution obtained perfect score.

Analysis

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

expand all | Example tests

▶

example example, positive answer, length=6	✓ OK	
▶ example1 example, answer is zero, length=4	✓ OK	
expand all	**Correctness tests**	
▶ extreme_empty empty sequence	✓ OK	
▶ extreme_single 1-element sequence	✓ OK	
▶ extreme_two_elems 2-element sequence	✓ OK	
▶ extreme_negative1 three equal negative numbers	✓ OK	
▶ extreme_arith_overflow1 overflow test, 3 MAXINTs	✓ OK	
▶ extreme_arith_overflow2 overflow test, 10 and 2 MININTs	✓ OK	
▶ extreme_arith_overflow3 overflow test, 0 and 2 MAXINTs	✓ OK	
▶ medium1 chaotic sequence of values from [0..100K], length=30	✓ OK	
▶ medium2 chaotic sequence of values from [0..1K], length=50	✓ OK	
▶ medium3 chaotic sequence of values from [0..1K], length=100	✓ OK	
expand all	**Performance tests**	
▶ large1 chaotic sequence with values from [0..100K], length=10K	✓ OK	
▶ large2 1 followed by an ascending sequence of ~50K elements from [0..100K], length=~50K	✓ OK	
▶ large_random chaotic sequence of values from [0..1M], length=100K	✓ OK	
▶ large_negative chaotic sequence of negative values from [-1M..-1], length=100K	✓ OK	
▶ large_negative2 chaotic sequence of negative values from [-10..-1], length=100K	✓ OK	
▶ large_negative3 sequence of -1 value, length=100K	✓ OK	