Codility_

## Candidate Report: trainingSBW5Q6-9ZN

Check out Codility training tasks

Test Name:

Summary Timeline

### Tasks summary

| Task | Time spent | Score |
|---|---|---|
| **Triangle**<br>C | 7 min | 100% |

### Total score

100%

## 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:

```
int solution(int A[], int N);
```

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:

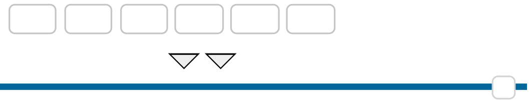
```
A[0] = 10    A[1] = 2     A[2] = 5
A[3] = 1     A[4] = 8     A[5] = 20
```

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

### Solution

| | |
|---|---|
| Programming language used: | C |
| Total time used: | 7 minutes |
| Effective time used: | 7 minutes |
| Notes: | *not defined yet* |

### Task timeline



08:01:04 08:07:20

Code: 08:07:20 UTC, c, final, score: **100**

show code in pop-up

```
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].

```
// you can write to stdout for debugging purposes, e.g.
// printf("this is a debug message\n");

// Function to Merge Arrays L and R into A.
// lefCount = number of elements in L
// rightCount = number of elements in R.
void Merge(int *A,int *L,int leftCount,int *R,int rightCoun
        int i,j,k;

        // i - to mark the index of left aubarray (L)
        // j - to mark the index of right sub-raay (R)
        // k - to mark the index of merged subarray (A)
        i = 0; j = 0; k =0;

        while(i<leftCount && j< rightCount) {
                if(L[i]  < R[j]) A[k++] = L[i++];
                else A[k++] = R[j++];
        }
        while(i < leftCount) A[k++] = L[i++];
        while(j < rightCount) A[k++] = R[j++];
}

// Recursive function to sort an array of integers.
void MergeSort(int *A,int n) {
        int mid,i, *L, *R;
        if(n < 2) return; // base condition. If the array h

        mid = n/2;  // find the mid index.

        // create left and right subarrays
        // mid elements (from index 0 till mid-1) should be
        // and (n-mid) elements (from mid to n-1) will be p
        L = (int*)malloc(mid*sizeof(int));
        R = (int*)malloc((n- mid)*sizeof(int));

        for(i = 0;i<mid;i++) L[i] = A[i]; // creating left
        for(i = mid;i<n;i++) R[i-mid] = A[i]; // creating r

        MergeSort(L,mid);  // sorting the left subarray
        MergeSort(R,n-mid);  // sorting the right subarray
        Merge(A,L,mid,R,n-mid);  // Merging L and R into A
        free(L);
        free(R);
}

int solution(int A[], int N) {
    // write your code in C99 (gcc 6.2.0)
    MergeSort(A, N);
    for (int i = N-1; i>=2; i--){
        if ((A[i]-A[i-1])<A[i-2])
            return 1;
    }
    return 0;
}
```

## Analysis summary

The solution obtained perfect score.

## Analysis ?

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

collapse all Example tests

▼ example ✓ OK

example, positive answer, length=6

1. 0.001 s **OK**

▼ example1 ✓ OK

example, answer is zero, length=4

1. 0.001 s **OK**

collapse all **Correctness tests**

▼ extreme_empty ✓ OK

empty sequence

1. 0.001 s **OK**
2. 0.001 s **OK**
3. 0.001 s **OK**
4. 0.001 s **OK**
5. 0.001 s **OK**
6. 0.001 s **OK**

▼ extreme_single ✓ OK

1-element sequence

1. 0.001 s **OK**
2. 0.001 s **OK**
3. 0.001 s **OK**
4. 0.001 s **OK**
5. 0.001 s **OK**
6. 0.001 s **OK**

▼ extreme_two_elems ✓ OK

2-element sequence

1. 0.001 s **OK**
2. 0.001 s **OK**
3. 0.001 s **OK**
4. 0.001 s **OK**
5. 0.001 s **OK**
6. 0.001 s **OK**

▼ extreme_negative1 ✓ OK

three equal negative numbers

1. 0.001 s **OK**
2. 0.001 s **OK**
3. 0.001 s **OK**
4. 0.001 s **OK**
5. 0.001 s **OK**
6. 0.001 s **OK**

▼ extreme_arith_overflow1 ✓ OK

overflow test, 3 MAXINTs

1. 0.001 s **OK**
2. 0.001 s **OK**
3. 0.001 s **OK**
4. 0.001 s **OK**

5. 0.001 s **OK**

6. 0.001 s **OK**

▼ extreme_arith_overflow2 ✓ **OK**

overflow test, 10 and 2 MININTs

1. 0.001 s **OK**

2. 0.001 s **OK**

3. 0.001 s **OK**

4. 0.001 s **OK**

5. 0.001 s **OK**

6. 0.001 s **OK**

▼ extreme_arith_overflow3 ✓ **OK**

overflow test, 0 and 2 MAXINTs

1. 0.001 s **OK**

2. 0.001 s **OK**

3. 0.001 s **OK**

4. 0.001 s **OK**

5. 0.001 s **OK**

6. 0.001 s **OK**

▼ medium1 ✓ **OK**

chaotic sequence of values from [0..100K], length=30

1. 0.001 s **OK**

2. 0.001 s **OK**

3. 0.001 s **OK**

4. 0.001 s **OK**

5. 0.001 s **OK**

6. 0.001 s **OK**

▼ medium2 ✓ **OK**

chaotic sequence of values from [0..1K], length=50

1. 0.001 s **OK**

2. 0.001 s **OK**

3. 0.001 s **OK**

4. 0.001 s **OK**

5. 0.001 s **OK**

6. 0.001 s **OK**

▼ medium3 ✓ **OK**

chaotic sequence of values from [0..1K], length=100

1. 0.001 s **OK**

2. 0.001 s **OK**

3. 0.001 s **OK**

4. 0.001 s **OK**

5. 0.001 s **OK**

6. 0.001 s **OK**

collapse all

Performance tests

▼ large1 ✓ **OK**

chaotic sequence with values from [0..100K], length=10K

1. 0.001 s **OK**
2. 0.001 s **OK**
3. 0.001 s **OK**
4. 0.001 s **OK**
5. 0.001 s **OK**
6. 0.001 s **OK**

▼ large2 ✓ **OK**

1 followed by an ascending sequence of ~50K elements from [0..100K], length=~50K

1. 0.012 s **OK**
2. 0.001 s **OK**
3. 0.001 s **OK**
4. 0.001 s **OK**
5. 0.001 s **OK**
6. 0.001 s **OK**

▼ large_random ✓ **OK**

chaotic sequence of values from [0..1M], length=100K

1. 0.024 s **OK**
2. 0.001 s **OK**
3. 0.001 s **OK**
4. 0.001 s **OK**
5. 0.001 s **OK**
6. 0.001 s **OK**

▼ large_negative ✓ **OK**

chaotic sequence of negative values from [-1M..-1], length=100K

1. 0.024 s **OK**
2. 0.001 s **OK**
3. 0.001 s **OK**
4. 0.001 s **OK**
5. 0.001 s **OK**
6. 0.001 s **OK**

▼ large_negative2 ✓ **OK**

chaotic sequence of negative values from [-10..-1], length=100K

1. 0.016 s **OK**
2. 0.001 s **OK**
3. 0.001 s **OK**

4. 0.001 s **OK**

5. 0.001 s **OK**

6. 0.001 s **OK**

▼ large_negative3 ✓ **OK**

sequence of -1 value, length=100K

1. 0.012 s **OK**

2. 0.001 s **OK**

3. 0.001 s **OK**

4. 0.001 s **OK**

5. 0.001 s **OK**

6. 0.001 s **OK**

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