



1.- Given an array of integers `nums` and an integer `target`, return indices of the two numbers such that they add up to `target`.

You may assume that each input would have exactly one solution, and you may not use the same element twice.

You can return the answer in any order.

Example 1:

```
Input: nums = [2,7,11,15], target = 9
Output: [0,1]
Output: Because nums[0] + nums[1] == 9, we return [0, 1].
```

Example 2:

```
Input: nums = [3,2,4], target = 6
Output: [1,2]
```

Example 3:

```
Input: nums = [3,3], target = 6
Output: [0,1]
```

2.- Write a C++ program to add two fractions and display the result fraction. Your program will prompt the user to input fraction 1 and fraction 2. The numerator and denominator of each fraction are input separately by space. See the example output below. You will need to use a C++ structure to define a fraction. The structure has two members: numerator and denominator.

Enter fraction 1(numerator denominator): 1 2

Enter fraction 2(numerator denominator): 2 5

Result: 9/10

3.- Write a C++ program to keep records and perform statistical analysis for a class of 5 students. The information of each student contains ID, Name, Sex, quizzes Scores (3 quizzes per semester), mid-term score, final score, and total score.

Name/mid-term score/final score/total score

Defining the `showmax(class student st[], int itemcount)` and `showmin(class student st[], int itemcount)` functions show about the student who gets the maximum score and the student who gets the minimum score.

Name/mid-term score/final score/total score.



4.- Given a string, you need to reverse the order of characters in each word within a sentence while still preserving whitespace and initial word order.

Input: "Let's take IA contest"

Output: "s'teL ekat AI tsetnoc"

5.- An array is *monotonic* if it is either monotone increasing or monotone decreasing.

An array A is monotone increasing if for all $i \leq j$, $A[i] \leq A[j]$. An array A is monotone decreasing if for all $i \leq j$, $A[i] \geq A[j]$.

Return `true` if and only if the given array A is monotonic.

Example 1:

Input: [1,2,2,3]

Output: true

Example 2:

Input: [6,5,4,4]

Output: true

Example 3:

Input: [1,3,2]

Output: false

6.- Given two integer arrays `arr1` and `arr2`, and the integer `d`, return the distance value between the two arrays.

The distance value is defined as the number of elements `arr1[i]` such that there is not any element `arr2[j]` where $|arr1[i] - arr2[j]| \leq d$



Example 1:

Input: arr1 = [4,5,8], arr2 = [10,9,1,8], d = 2

Output: 2

Explanation:

For arr1[0]=4 we have:

$$|4-10|=6 > d=2$$

$$|4-9|=5 > d=2$$

$$|4-1|=3 > d=2$$

$$|4-8|=4 > d=2$$

For arr1[1]=5 we have:

$$|5-10|=5 > d=2$$

$$|5-9|=4 > d=2$$

$$|5-1|=4 > d=2$$

$$|5-8|=3 > d=2$$

For arr1[2]=8 we have:

$$|8-10|=2 \leq d=2$$

$$|8-9|=1 \leq d=2$$

$$|8-1|=7 > d=2$$

$$|8-8|=0 \leq d=2$$

Example 2:

Input: arr1 = [1,4,2,3], arr2 = [-4,-3,6,10,20,30], d = 3

Output: 2

Example 3:

Input: arr1 = [2,1,100,3], arr2 = [-5,-2,10,-3,7], d = 6

Output: 1