

Array Assignment :-

Q.1 Peak an element

An element is called a peak element if its value is not smaller than the value of its adjacent elements(if they exists).

Given an array **arr[]** of size **N**, find the index of any one of its peak elements.

**Note:** The generated output will always be 1 if the index that you return is correct. Otherwise output will be 0.

**Example 1:**

**Input :**

N = 3

arr[] = {1,2,3}

**Output:** 1

**Explanation:** index 2 is 3.

It is the peak element as it is greater than its neighbour 2.

**Example 2:**

**Input :**

N = 2

arr[] = {3,4}

**Output:** 1

**Explanation:** 4 (at index 1) is the peak element as it is greater than its only neighbour element 3.

**Constraints:**

$1 \leq N \leq 10^5$

$1 \leq A[] \leq 10^6$

Q.2 Find minimum and maximum element in array

Q.3 Write a program to reverse the array.

Q.4 Write a program to sort the array

Q.5 Find the kth largest and kth smallest element in array.

Q.5 Find occurrence of an integer number in array.

Q.6 Sort the array of 0s , 1s and 2s.

Q.7 Sub array with given sum

Given an unsorted array **A** of size **N** that contains only non-negative integers, find a continuous sub-array which adds to a given number **S**.

**Example 1:**

**Input :**

$N = 5, S = 12$

$A[] = \{1, 2, 3, 7, 5\}$

**Output:** 2 4

**Explanation:** The sum of elements from 2nd position to 4th position is 12.

### Example 2:

**Input:**

$N = 10, S = 15$

$A[] = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$

**Output:** 1 5

**Explanation:** The sum of elements from 1st position to 5th position is 15.

$1 \leq N \leq 105$

$1 \leq A_i \leq 109$

Q.8

Given an unsorted array **arr[]** of size **N** having both negative and positive integers. The task is place all negative element at the end of array without changing the order of positive element and negative element.

### Example 1:

**Input :**

$N = 8$

$arr[] = \{1, -1, 3, 2, -7, -5, 11, 6\}$

**Output :**

1 3 2 11 6 -1 -7 -5

### Example 2:

**Input :**

$N=8$

$arr[] = \{-5, 7, -3, -4, 9, 10, -1, 11\}$

**Output :**

7 9 10 11 -5 -3 -4 -1

Q.9 Find the Union and Intersection of two sorted array.

Given two arrays **a[]** and **b[]** of size **n** and **m** respectively. The task is to find union between these two arrays.

Union of the two arrays can be defined as the set containing distinct elements from both the arrays. If there are repetitions, then only one occurrence of element should be printed in the union.

**Example 1:**

**Input :**

5 3  
1 2 3 4 5  
1 2 3

**Output :**

5

**Explanation:**

1, 2, 3, 4 and 5 are the elements which comes in the union set of both arrays. So count is 5.

**Example 2:**

**Input :**

6 2  
85 25 1 32 54 6  
85 2

**Output :**

7

**Explanation:**

85, 25, 1, 32, 54, 6, and 2 are the elements which comes in the union set of both arrays. So count is 7.

Q.10.

Write a program to cyclically rotate array by one.

Q.11 Count pair with given sum.

Given an array of **N** integers, and an integer **K**, find the number of pairs of elements in the array whose sum is equal to **K**.

**Example 1:**

**Input :**

N = 4, K = 6  
arr[] = {1,5,7,1}

**Output :** 2

**Explanation:**

arr[0] + arr[1] = 1 + 5 = 6  
and arr[1] + arr[3] = 5 + 1 = 6.

### Example 2:

#### Input:

$N = 4, X = 2$

$arr[] = \{1, 1, 1, 1\}$

**Output:** 6

#### Explanation:

Each 1 will produce sum 2 with any 1.

Q.12

Find common elements in three sorted arrays.

Given three arrays sorted in increasing order. Find the elements that are common in all three arrays.

**Note:** can you take care of the duplicates without using any additional Data Structure?

### Example 1:

#### Input:

$n1 = 6; A = \{1, 5, 10, 20, 40, 80\}$

$n2 = 5; B = \{6, 7, 20, 80, 100\}$

$n3 = 8; C = \{3, 4, 15, 20, 30, 70, 80, 120\}$

**Output:** 20 80

**Explanation:** 20 and 80 are the only common elements in A, B and C.

Q.13

Find the first repeating element in array of integers

Q.14. Find the first non-repeating element in given array of integers

Find the first non-repeating element in a given array **arr** of **N** integers.

**Note:** Array consists of only positive and negative integers and **not zero**.

### Example 1:

**Input :**  $arr[] = \{-1, 2, -1, 3, 2\}$

**Output :** 3

#### Explanation:

-1 and 2 are repeating whereas 3 is the only number occurring once.

Hence, the output is 3.

### Example 2:

**Input :**  $arr[] = \{1, 1, 1\}$

**Output :** 0

Q.15

Sub with equal 0s and 1s

Given an array containing 0s and 1s. Find the number of subarrays having equal number of 0s and 1s.

**Example 1:**

**Input :**

n = 7

A[] = {1, 0, 0, 1, 0, 1, 1}

**Output: 8**

**Explanation:** The index range for the 8 sub-arrays are: (0, 1), (2, 3), (0, 3), (3, 4), (4, 5), (2, 5), (0, 5), (1, 6)

**Example 2:**

**Input :**

n = 5

A[] = {1, 1, 1, 1, 0}

**Output: 1**

**Explanation:** The index range for the subarray is (3,4).

Q.16

Rearrange the array in alternating positive and negative items

Given an unsorted array **Arr** of **N** positive and negative numbers. Your task is to create an array of alternate positive and negative numbers without changing the relative order of positive and negative numbers.

**Note:** Array should start with positive number.

**Example 1:**

**Input :**

N = 9

Arr[] = {9, 4, -2, -1, 5, 0, -5, -3, 2}

**Output:**

9 -2 4 -1 5 -5 0 -3 2

**Example 2:**

**Input :**

N = 10

Arr[] = {-5, -2, 5, 2, 4, 7, 1, 8, 0, -8}

**Output:**

5 -5 2 -2 4 -8 7 1 8 0

Q.17 Find if there is any subarray with sum equals to zero

Given an array of positive and negative numbers. Find if there is a **subarray** (of size at-least one) with **0 sum**.

**Example 1:**

**Input :**

5  
4 2 -3 1 6

**Output :**

Yes

**Explanation:**

2, -3, 1 is the subarray  
with sum 0.

**Example 2:**

**Input :**

5  
4 2 0 1 6

**Output :**

Yes

**Explanation:**

0 is one of the element  
in the array so there exist a  
subarray with sum 0.