

### Array Based Task

Q1. Given an array of integers (in a series) and we have to find its missing elements (there will be a missing element)

Input/Output:

Input array: 1, 2, 3, 4, 6, 7

Output:

Missing element is: 5

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Q2.

Given an array of integers and we have to find their average .

Input/Output:

Enter number of elements you want in array : 10

Enter all the elements :

65

45

25

65

84

74

96

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74

15

36

Sum of the array elements is : 579

Average of the array elements is : 57.9

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Q3. Move all zero at the end of the array

Given an integer array with zeros (0's) and we have to move all zeros at the end of the array

Input/Output:

Input array: 5, 1, 6, 0, 0, 3, 9, 0, 6, 7, 8, 12, 10, 0, 2

After moving 0 at the end

Output array: 5, 1, 6, 3, 9, 6, 7, 8, 12, 10, 2, 0, 0, 0, 0

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Q4. Delete a specific element from a one dimensional array

Given an array and an element to delete and we have to delete it from array

Input/Output:

Input:

### Array Based Task

Given array (elements will be read in program): 10 20 30 40 50

Enter element to delete: 40

Output:

Array elements after deleting the element: 10 20 30 50

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Q5. Print EVEN and ODD elements from an array

Given a one dimensional array and we have to print its EVEN and ODD elements separately.

Input/Output:

Input:

Given array (elements will be read in program): 10 11 12 13 14

Output:

Odd numbers in the array are : 10 12 14

Even numbers in the array are : 11 13

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Q6. Merge two one dimensional arrays

Given two one-dimensional arrays and we have to merge them using java program.

Input/Output:

Input:

### Array Based Task

Array 1 (elements will be read in program): 1 2 3 4 5 6 7 8 9 10

Array 2 (elements will be read in program): 11 12 13 14 15

Output:

New array (After merging elements)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

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Q7. Read and print a two dimensional array

Read number of rows and columns, array elements for two dimensional array and print in matrix format using java program.

Input/Output:

Enter number of rows: 3

Enter number of columns: 3

Enter elements

1

2

3

4

5

6

7

8

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Output:

Matrix is:

1 2 3

4 5 6

7 8 9

=====

Q8. Count strings and integers from an array

Given an array with strings and integers and we have to count strings and integers using java program.

Input/Output:

Input:

Array = {"Raj", "77", "101", "99", "Jio"}

Output:

Numeric:3

Strings:2

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Q9. Remove duplicate elements from an array

Given an array of integers and we have to remove duplicate elements using java program.

## Array Based Task

Input/Output:

Input array elements:

1, 2, 3, 1, 2, 3, 4

Output:

Elements after removing duplicates

1, 2, 3, 4

=====

Q10. Find second largest element in an array

Given an array of N integers and we have to find its second largest element using Java program.

Input/Output:

Input:

Enter number of elements: 4

Input elements: 45, 25, 69, 40

Output:

Second largest element in: 45

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Q11. Find second smallest element in an array

### Array Based Task

Given an array of N integers and we have to find its second minimum/smallest element using Java program.

Input/Output:

Input:

Enter number of elements: 4

Input elements: 45, 25, 69, 40

Output:

Second smallest element in: 40

---

Q12. Find smallest element in an array

Given an array of N integers and we have to find its minimum/smallest element using Java program.

Input/Output:

Input:

Enter number of elements: 4

Input elements: 45, 25, 69, 40

Output:

Smallest element in: 25

### Array Based Task

Q13. Count total positives, negatives and zeros from an array

Given an array of integers and we have to count total negatives, positives and zeros using java program.

Input/Output:

Input:

Array elements: 20, -10, 15, 00, -85

Output:

Positive Numbers are: 2

Negative Numbers are: 2

Zeros are: 1

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Q14. Access elements of character array using for each loop

In this program, we will create an array of characters and access its elements using for each loop and print it on the screen.

Input/Output:

Input:

```
char charArray[] = {'A', 'B', 'C', 'D', 'E', 'F'};
```



## Array Based Task

Output:

Array elements:

A

B

C

D

E

F

=====

Q15. Find prime and non-prime numbers in the array

Given/input an integer array, we have to find prime and non-prime numbers in the array.

Input/Output:

Input:

```
int intArr[] = {10, 11, 13, 15, 17, 19, 23, 25, 30};
```

Output:

10 - Not Prime

11 - Prime

13 - Prime

15 - Not Prime

17 - Prime

## Array Based Task

19 - Prime

23 - Prime

25 - Not Prime

30 - Not Prime

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Q16. Search an item into the array using linear search

The linear searching algorithm is used to find the item in an array, This algorithm consists the checking every item in the array until the required item is found or till the last item is in the array. The linear search algorithm is also known as a sequential algorithm.

In this program, we will create an array of integers then we will search an item into the array using linear search and print position of the item in the array.

Input/Output:

Input:

Enter array elements: 10 20 30 40 50

Enter item to search: 40

Output:

Item found at index 3.

## Array Based Task

Q17. Search an item in an array using binary search

The binary searching algorithm is used to find the item in a sorted array with the minimum number of comparisons, in this algorithm key element compares with the middle index item.

In this program, we will create an array of sorted integers then we will search an item into an array using binary search and print the position of the item in the array.

Input/Output:

Input:

```
int arr[] = {10, 20, 30, 40, 50};
```

Output:

Enter item to search: 30

Item found at index 2.

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### Array Based Task

Q18. This is the Java Program to Find Repeated Elements and the Frequency of Repetition.

#### Problem Description

Given an array of integers, find and print the repeated elements and their frequency of repetition.

Example:

Array: [1,2,3,4,5,5,3]

Output:

Element—>Frequency

3—>2

5—>2

=====

Q19. This is the Java Program to Find the Elements that do Not have Duplicates.

#### Problem Description

Given an array, print all the elements whose frequency is one, that is they do not have duplicates.

Example:

## Array Based Task

Array = [-1, -2, 3, 3, -2]

Output = -1

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Q20. his is the Java Program to Print Elements Which Occurs Even Number of Times.

### Problem Description

Given an array of elements, print the elements whose frequency is even.

Example:

array = {5, 5, 2, 2, 2, 4, 4, 1, 7, 1}

Output = 5 4 1

=====

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Q21. This is the Java Program to Print Elements Which Occur Odd Number of Times.

### Problem Description

Given an array of integers, print all the elements whose frequency are odd.

Example:

Array = [5, 4, 4, 2, 1]

## Array Based Task

Output: 5 2 1.

Q22. Given an array of integers, print the even numbers present at even index numbers.

Example:

Array = [2,1,4,4,5,7]

Output = 2 4

=====

Q23. Problem Description

Given an array of integers, find the longest contiguous subarray whose elements are increasing, that is, the elements following the preceding elements in the subarray must be greater than them.

Example:

Array = [5, 6, 3, 0, 7, 8, 9, 1, 2]

Output: 0 7 8 9

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Q24. Problem Description

### Array Based Task

Given an array of integers, find the longest contiguous subarray whose elements are decreasing, that is, the elements following the preceding elements in the subarray must be smaller than them.

Example:

Array = [5, 6, 3, 0, 7, 8, 9, 1, 2]

Output: 6 3 0

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Q25. This is a Java Program to Sort Names in an Alphabetical Order.

Enter size of array and then enter all the names in that array. Now with the help of compareTo operator we can easily sort names in Alphabetical Order.

Enter number of names you want to enter:5

Enter all the names:

bryan

adam

rock

chris

scott

Names in Sorted Order:adam,bryan,chris,rock,scott

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## Array Based Task

### Q26. Problem Description

Given an array of integers, shift all the zeroes present in it to the beginning.

Example:

Array = [1 0 2 3 0 4]

Output

Array = [0 0 1 2 3 4]

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### Q27. Problem Description

Given an array of integers, shift all the zeroes present in it to the end.

Example:

Array = [1 0 2 3 0 4]

Output

Array = [1 2 3 4 0 0]

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### Q28. Problem Description

Given two arrays of integers, find and print the union and intersection of the arrays.

Example:



## Array Based Task

Array: [1,2,3,4,5]

Array1: [5,3,6,7,9]

Output:

Union = [1,2,3,4,5,6,7,9]

Intersection = [3,5]

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Q29. Given an array arr of n elements that is first strictly increasing and then maybe strictly decreasing, find the maximum element in the array.

Note: If the array is increasing then just print the last element will be the maximum value.

Example:

Input: array[]= {5, 10, 20, 15}

Output: 20

Explanation: The element 20 has neighbors 10 and 15, both of them are less than 20.

Input: array[] = {10, 20, 15, 2, 23, 90, 67}

Output: 20 or 90

### Array Based Task

Explanation: The element 20 has neighbors 10 and 15, both of them are less than 20, similarly 90 has neighbors 23 and 67.

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Q30. An array contains both positive and negative numbers in random order. Rearrange the array elements so that all negative numbers appear before all positive numbers.

Examples :

Input: -12, 11, -13, -5, 6, -7, 5, -3, -6

Output: -12 -13 -5 -7 -3 -6 11 6 5

Note: Order of elements is not important here.

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Q31. Given an array `arr[]` of non-negative integers and an integer sum, find a subarray that adds to a given sum.

Note: There may be more than one subarray with sum as the given sum, print first such subarray.

Examples:

Input: `arr[] = {1, 4, 20, 3, 10, 5}`, `sum = 33`

Output: Sum found between indexes 2 and 4

### Array Based Task

Explanation: Sum of elements between indices 2 and 4 is  $20 + 3 + 10 = 33$

Input:  $\text{arr}[] = \{1, 4, 0, 0, 3, 10, 5\}$ ,  $\text{sum} = 7$

Output: Sum found between indexes 1 and 4

Explanation: Sum of elements between indices 1 and 4 is  $4 + 0 + 0 + 3 = 7$

Input:  $\text{arr}[] = \{1, 4\}$ ,  $\text{sum} = 0$

Output: No subarray found

Explanation: There is no subarray with 0 sum

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Q32. Find the first repeating element in an array of integers

Given an array of integers  $\text{arr}[]$ , The task is to find the index of first repeating element in it i.e. the element that occurs more than once and whose index of the first occurrence is the smallest.

Examples:

Input:  $\text{arr}[] = \{10, 5, 3, 4, 3, 5, 6\}$

Output: 5

Explanation: 5 is the first element that repeats

Input:  $\text{arr}[] = \{6, 10, 5, 4, 9, 120, 4, 6, 10\}$

## Array Based Task

Output: 6

Explanation: 6 is the first element that repeats

### Q33. Maximum Product Subarray

Given an array that contains both positive and negative integers, the task is to find the product of the maximum product subarray.

Examples:

Input: arr[] = {6, -3, -10, 0, 2}

Output: 180

Explanation: The subarray is {6, -3, -10}

Input: arr[] = {-1, -3, -10, 0, 60}

Output: 60

Explanation: The subarray is {60}

### Q34. Program to remove duplicates from integer array without Collection

**Output :**

Array with Duplicates : [1, 1, 2, 2, 3, 4, 5]

### Array Based Task

After removing duplicates : [1, 0, 2, 0, 3, 4, 5]

Array with Duplicates : [1, 1, 1, 1, 1, 1, 1]

After removing duplicates : [1, 0, 0, 0, 0, 0, 0]

Array with Duplicates : [1, 2, 3, 4, 5, 6, 7]

After removing duplicates : [1, 2, 3, 4, 5, 6, 7]

Array with Duplicates : [1, 2, 1, 1, 1, 1, 1]

After removing duplicates : [1, 0, 0, 0, 0, 0, 2]

**Q35. Program to find the smallest and largest number in an integer array**

Output: Given integer array : [-20, 34, 21, -87, 92, 2147483647]

Largest number in array is : 2147483647

Smallest number in array is : -87

Given integer array : [10, -2147483648, -2]

Largest number in array is : 10

Smallest number in array is : -2147483648

Given integer array : [2147483647, 40, 2147483647]

Largest number in array is : 2147483647

Smallest number in array is : 40

Given integer array : [1, -1, 0]

Largest number in array is : 1

Smallest number in array is : -1

## Array Based Task

### Q36. Reverse int and String array

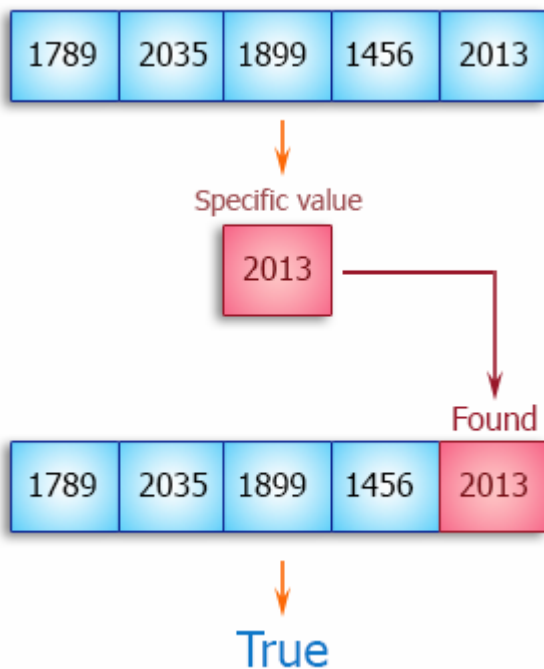
Output: Original int array : [101, 102, 103, 104, 105]

reversed int array : [105, 104, 103, 102, 101]

Original String array : [one, two, three, four, five]

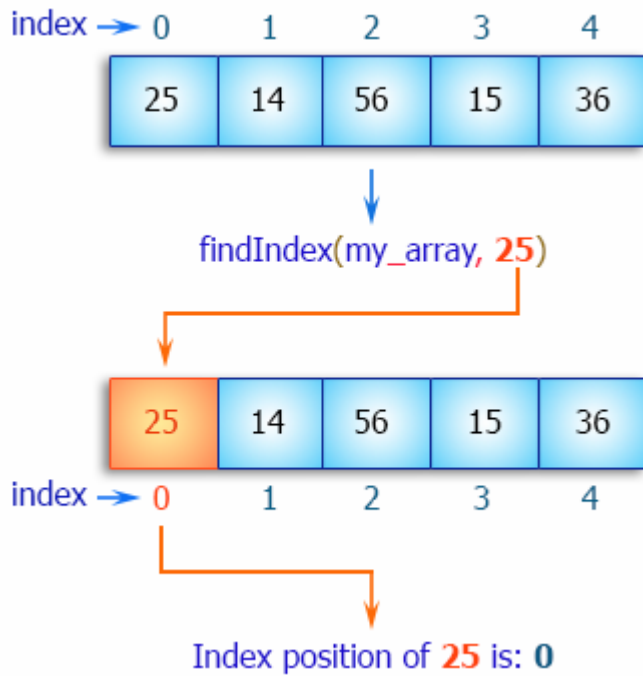
reversed String array in Java : [five, four, three, two, one]

Q37. Write a program to test if an array contains a specific value.

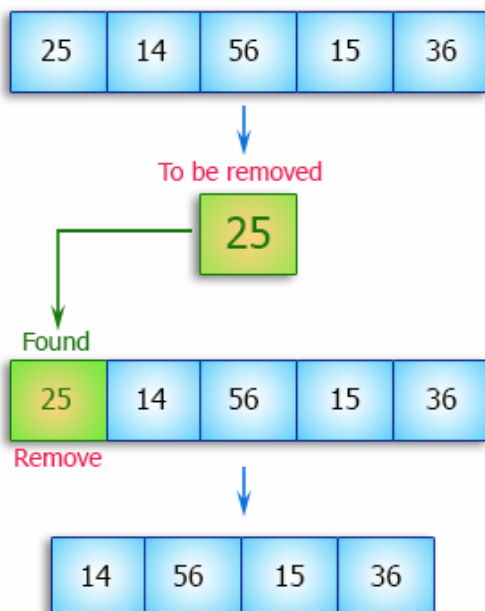


### Array Based Task

Q38. Write a program to find the index of an array element.



Q39. Write a program to remove a specific element from an array.



## Array Based Task

Original Array : [25, 14, 56, 15, 36, 56, 77, 18, 29, 49]

After removing the second element: [25, 56, 15, 36, 56, 77, 18, 29, 49, 49]

### Q40. Matrix Multiplication Program

In case of matrix multiplication, one row element of first matrix is multiplied by all columns of second matrix.

$$\text{Matrix 1} \begin{Bmatrix} 1 & 1 & 1 \\ 2 & 2 & 2 \\ 3 & 3 & 3 \end{Bmatrix} \quad \text{Matrix 2} \begin{Bmatrix} 1 & 1 & 1 \\ 2 & 2 & 2 \\ 3 & 3 & 3 \end{Bmatrix}$$

$$\begin{matrix} \text{Matrix 1} \\ * \\ \text{Matrix 2} \end{matrix} \begin{Bmatrix} 1*1+1*2+1*3 & 1*1+1*2+1*3 & 1*1+1*2+1*3 \\ 2*1+2*2+2*3 & 2*1+2*2+2*3 & 2*1+2*2+2*3 \\ 3*1+3*2+3*3 & 3*1+3*2+3*3 & 3*1+3*2+3*3 \end{Bmatrix}$$

$$\begin{matrix} \text{Matrix 1} \\ * \\ \text{Matrix 2} \end{matrix} \begin{Bmatrix} 6 & 6 & 6 \\ 12 & 12 & 12 \\ 18 & 18 & 18 \end{Bmatrix}$$



## Array Based Task

### Q41. Passing Division Program

Enter marks out of 100

Enter marks of math=45

Enter marks of english=65

Enter marks of science=78

Enter marks of art=75

Enter marks of computer=42

Total marks out of 500=305

Percent of marks=61

First Division

### Q42. Find second largest element in an array

Given an array of N integers and we have to find its second largest element

#### Input/Output:

Input:

Enter number of elements: 4

Input elements: 45, 25, 69, 40

Output:

Second largest element in: 45

## Array Based Task

Q43. Find second smallest element in an array

Given an array of N integers and we have to find its second minimum/smallest element

Input/Output:

Input:

Enter number of elements: 4

Input elements: 45, 25, 69, 40

Output:

Second smallest element in: 40

Q44. Count total positives, negatives and zeros from an array

Given an array of integers and we have to count total negatives, positives and zeros

Input/Output:

Input:

Array elements: 20, -10, 15, 00, -85

## Array Based Task

Output:

Positive Numbers are: 2

Negative Numbers are: 2

Zeros are: 1

Q45. Find the length of an array

In this program, we will create an array of 10 integers then we will find the length of the array

Input/Output:

Input:

```
int[] intArr = new int[10];
```

Output:

Length of array is: 10

Q46. Find prime and non-prime numbers in the array

Given/input an integer array, we have to find prime and non-prime numbers in the array.

## Array Based Task

Input/Output:

Input:

```
int intArr[] = {10, 11, 13, 15, 17, 19, 23, 25, 30};
```

Output:

10 - Not Prime

11 - Prime

13 - Prime

15 - Not Prime

17 - Prime

19 - Prime

23 - Prime

25 - Not Prime

30 - Not Prime

Q48. Program to Find the Largest Two Numbers in a Given Array.

Enter size of array and then enter all the elements of that array.

Enter no. of elements you want in array:5

Enter all the elements:

1

5

4

## Array Based Task

8

7

The First largest is 8

The Second largest is 7

Enter no. of elements you want in array:7

Enter all the elements:

3

2

1

3

2

1

3

The First largest is 3

The Second largest is 2

Q49. Program to Separate Odd and Even Numbers from an Array

Program to Put Even & Odd Elements of an Array in 2 Separate Arrays.

Enter no. of elements you want in array:8

Enter all the elements:

1

## Array Based Task

2

3

4

5

6

7

8

Odd:1,3,5,7

Even:2,4,6,8

### Q50. Problem Description

Given an array of integers, find the longest contiguous subarray whose elements are increasing, that is, the elements following the preceding elements in the subarray must be greater than them.

Example:

Array = [5, 6, 3, 0, 7, 8, 9, 1, 2]

Output: 0 7 8 9

Case 1 (Simple Test Case - Mixed Elements):

## Array Based Task

Enter the size of the array

9

Enter array elements

5

6

3

0

7

8

9

1

2

The longest decreasing subarray is

0 7 8 9

Case 2 (Simple Test Case - Elements in Ascending Order):

Enter the size of the array

5

Enter array elements

1

2

3

4

## Array Based Task

5

The longest increasing subarray is

1 2 3 4 5

Case 3 (Simple Test Case - Elements in Descending Order):

Enter the size of the array

6

Enter array elements

6

5

4

3

2

1

The longest increasing subarray is

6



## Array Based Task