Single Dimension Array Exercises

1. What is an array in Java?
2. What are the types of an array?
3. Is it possible to declare array size as negative?
4. What is the difference between int array [] and int [] array?
5. When ArrayIndexOutOfBoundsException occurs?
6. What happens if we declare an array without assigning the size?
7. Which operations can be performed on an array?
8. What are the advantages and disadvantages of an array?
9. How can we check if an array contains values or not?
10. WAP to create an integer array of size 10 , read the array elements from the user and display the array elements.
11. **WAP to sum and average the elements of any array. Size of the array should be defined by the user and also input should be provided by the user.**
12. **WAP to find the largest and smallest element in the array.**
13. Create a array with elements
    and then find and display using functions
    a. All the even numbers of an array
    b. All the odd numbers of an array
    c. All the prime numbers
    d. All the negative numbers of an array
    e. All the numbers exactly divisible by 5
    f. Largest element in the array
    g. Second largest element in the array
    h. Sum of all the numbers
    i. Sum of all the prime numbers
    j. Copy all the negative numbers in separate array
    k. Copy all the positive numbers in a separate array and increment every element by 10.

14. Find the minimum and maximum element in an array.
15. Wap to reverse the array.
16. Wap to sort the given array.
17. Find the occurrence of an integer in the array.
18. Move all the negative elements to one side of the array.
19. Count pairs with given sum

    Example:

    ```
    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.
    ```

20. Find the duplicate element in an array.
21. Find the first repeating element in an array of integers.
22. Find the first non-repeating element in a given array of integers.
23. Rearrange the array in alternating positive and negative items.

    Example:

    ```
    Input:
    N = 9
    Arr[] = {9, 4, -2, -1, 5, 0, -5, -3, 2}
    Output:
    9 -2 4 -1 5 -5 0 -3 2
    ```

24. Find if there is any subarray with sum equal to zero.
25. Find the factorial of a largest number in an array.
26. Find maximum product subarray.
27. Find maximum sum subarray.
28. Find the Union and Intersection of the two sorted arrays.
29. Find a triplet that sums to a given value.

    Example:

    ```
    Input:
    n = 6, X = 13
    arr[] = [1 4 45 6 10 8]
    ```

Output:
1
Explanation:
The triplet {1, 4, 8} in
the array sums up to 13.

30. Find the smallest positive missing number.
    Example:
    Input:
    N = 5
    arr[] = {1,2,3,4,5}
    Output: 6
    Explanation: Smallest positive missing
    number is 6.

31. Find the maximum index.
32. Write a java program to calculate the average value of array elements.
33. Write a java program to remove a specific element from an array.
34. Write a java program to insert an element (specific position) into an array.
35. Write a java program to find the duplicate values of an array of string values.
36. Write a java program to find the second smallest element in an array.
37. Write a java program to convert an arrayList to an array.
38. Write a java program to find all pairs of elements in an array whose sum is equal to a specified number.
39. Write a java program to find the number of even and odd integers in a given array of integers.
40. Write a java program to get the difference between the largest and smallest values in an array of integers. The length of the array must be 1 and above.
41. Write a java program to compute the average value of an array of integers except the largest and smallest values.
42. Write a java program to check if an array of integers contains two specific elements 65 and 77.
43. Write a Java program to remove the duplicate elements of a given array and return the new length of the array.

Sample array: [20, 20, 30, 40, 50, 50, 50]. After removing the duplicate elements the program should return 4 as the new length of the array.

44. Write a java program to find the two elements from a given array of positive and negative numbers such that their sum is closest to zero.
45. Write a java program to find the smallest and second smallest elements of a given array.
46. Write a Java program to sort an array of positive integers of a given array, in the sorted array the value of the first element should be maximum, second value should be minimum value, third should be second maximum, fourth second be second minimum and so on.
47. Write a Java program to separate even and odd numbers of a given array of integers. Put all even numbers first, and then odd numbers.
48. Write a Java program to shuffle a given array of integers.
    Example:
    Input :
    nums = { 1, 2, 3, 4, 5, 6 }
    Output:
    Shuffle Array: [4, 2, 6, 5, 1, 3]
49. Write a Java program to form the largest number from a given list of non negative integers.
    Example:
    Input :
    nums = {1, 2, 3, 0, 4, 6}
    Output:
    Largest number using the said array numbers: 643210
50. Write a Java program to check if a given array contains a subarray with 0 sum.
    Example:
    Input :
    nums1= { 1, 2, -2, 3, 4, 5, 6 }
    nums2 = { 1, 2, 3, 4, 5, 6 }
    nums3 = { 1, 2, -3, 4, 5, 6 }
    Output:
    Does the said array contain a subarray with 0 sum: true
    Does the said array contain a subarray with 0 sum: false
    Does the said array contain a subarray with 0 sum: true