Array coding question :

1. Find the Largest and Smallest Element
   ○ Given an array, find the smallest and largest elements in it.
2. Reverse an Array
   ○ Reverse the given array in place.
3. Find the Second Largest Element
   ○ Find the second-largest element in the given array.
4. Count Even and Odd Numbers
   ○ Count the number of even and odd numbers in an array.
5. Find Sum and Average
   ○ Compute the sum and average of all elements in the array.
6. Remove Duplicates from a Sorted Array
   ○ Remove duplicate elements from a sorted array without using extra space.
7. Rotate an Array
   ○ Rotate the array to the right by k positions.
8. Merge Two Sorted Arrays
   ○ Merge two sorted arrays into a single sorted array without using extra space.
9. Find Missing Number in an Array
   ○ Given an array of size n-1 containing numbers from 1 to n, find the missing number.
10. Find Intersection and Union of Two Arrays
    ○ Find the intersection and union of two unsorted arrays.
11. Find a Subarray with Given Sum
    ○ Given an array of integers, find the subarray that sums to a given value S.
12. Write a program to accept 20 integer numbers in a single Dimensional Array. Find and Display the following:
    ○ Number of even numbers.
    ○ Number of odd numbers.
    ○ Number of multiples of 3
13. Write a program to accept the marks in Physics, Chemistry and Maths secured by 20 class students in a single Dimensional Array. Find and display the following:
    ○ Number of students securing 75% and above in aggregate.
    ○ Number of students securing 40% and below in aggregate.
14. Write a program in Java to accept 20 numbers in a single dimensional array arr[20]. Transfer and store all the even numbers in an array even[ ] and all the odd numbers in another array odd[ ]. Finally, print the elements of the even & the odd array.
15. Write a Java program to print all sub-arrays with 0 sum present in a given array of integers.

    Example:
    Input :
    nums1 = { 1, 3, -7, 3, 2, 3, 1, -3, -2, -2 }
    nums2 = { 1, 2, -3, 4, 5, 6 }
    nums3= { 1, 2, -2, 3, 4, 5, 6 }
    Output:
    Sub-arrays with 0 sum : [1, 3, -7, 3]
    Sub-arrays with 0 sum : [3, -7, 3, 2, 3, 1, -3, -2]

    Sub-arrays with 0 sum : [1, 2, -3]
    Sub-arrays with 0 sum : [2, -2]

16. Given two sorted arrays A and B of size p and q, write a Java program to merge elements of A with B by maintaining the sorted order i.e. fill A with first p smallest elements and fill B with remaining elements.

Example:

Input :

int[] A = { 1, 5, 6, 7, 8, 10 }

int[] B = { 2, 4, 9 }

Output:

Sorted Arrays:

A: [1, 2, 4, 5, 6, 7]

B: [8, 9, 10]

17. Write a Java program to find the maximum product of two integers in a given array of integers.

Example:

Input :

nums = { 2, 3, 5, 7, -7, 5, 8, -5 }

Output:

Pair is (7, 8), Maximum Product: 56

18. Print a Matrix
    ○ Given an m x n matrix, print all its elements row-wise.
19. Transpose of a Matrix
    ○ Given a matrix, return its transpose (swap rows and columns).
20. Sum of Two Matrices
    ○ Given two matrices of the same size, compute their sum.
21. Row-wise and Column-wise Sum
    ○ Find the sum of each row and each column of a given matrix.
22. Find the Maximum Element in a Matrix
    ○ Find the largest element in a given matrix.
23. Matrix Multiplication
    ○ Multiply two matrices and return the resultant matrix.
24. Rotate a Matrix by 90 Degrees
    ○ Rotate a given N x N matrix by 90 degrees clockwise.
25. Find the Diagonal Sum
    ○ Compute the sum of both diagonals in a square matrix.