




# ARRAYS

## Difficulty -Easy :

 1. Find the Maximum Element

 2. Find the Minimum Element

 3. Sum of Elements

 4. Average of Elements

5. Count Occurrences

6. Check Existence

 7. Reverse Array

8. Find Second Largest Element

9. Find Second Smallest Element

 10. Merge Two Arrays

11. Remove Duplicates

12. Find Missing Number

13. Find Duplicate Number

 14. Move Zeroes to End

15. Find Intersection of Two Arrays

16. Find Union of Two Arrays

17. Find Pair with Given Sum

18. Rotate Array

19. Find Majority Element

20. Check if Array is Sorted

21. Find Minimum in Rotated Sorted Array

22. Find Maximum Product of Two Elements

23. Separate Even and Odd Numbers

24. Find Longest Increasing Subsequence

25. Find k-th Largest Element

26. Find the Frequency of Each Element

27. Find Common Elements in Three Arrays

28. Find First Repeating Element

29. Find First Non-Repeating Element

30. Find Subarray with Given Sum

31. Find the Missing and Repeating Number

32. Sort Array of 0s, 1s, and 2s

33. Find Leaders in Array

34. Find Equilibrium Index

35. Find Largest Sum Contiguous Subarray

36. Implement Binary Search

37. Left Rotate Array by One

38. Right Rotate Array by One

39. Find Pairs with Given Product

40. Check if Array is Palindrome

## **Difficulty -Medium:**

1. Find the Length of the Longest Subarray with Sum Zero
2. Find the Longest Consecutive Sequence in an Array
3. Find the Maximum Product Subarray
4. Find the Minimum Number of Jumps to Reach the End of an Array
5. Rearrange Array Alternately with Maximum and Minimum Elements
6. Find the Median of Two Sorted Arrays
7. Find the Kth Smallest Element in an Unsorted Array
8. Find the Kth Largest Element in a Stream
9. Find the Smallest Subarray with Sum Greater than a Given Value
10. Find the Maximum Sum of M Elements in an Array
11. Find the Next Greater Element for Each Element in an Array
12. Find the Minimum Number of Swaps to Sort an Array
13. Find the Longest Substring with At Most K Distinct Characters
14. Find All Triplets in an Array that Form a Geometric Progression
15. Find the Maximum Length Bitonic Subarray

16. Rearrange Array such that  $Arr[i]$  Becomes  $Arr[Arr[i]]$
17. Find the Minimum Number of Platforms Required for a Railway/Bus Station
18. Find the Longest Subarray with Equal Number of 0s and 1s
19. Find All Pairs in an Array with Difference Equal to K
20. Find the Maximum Sum of Non-Adjacent Elements
21. Find the Minimum Difference Between the Maximum and Minimum Elements After K Increments/Decrements
22. Find the Minimum Length Unsorted Subarray that Sorts the Whole Array
23. Find the Largest Subarray with Equal Number of 0s, 1s, and 2s
24. Find the Longest Palindromic Subarray
25. Find the Minimum Number of Operations to Make All Array Elements Equal
26. Find the Largest Subarray with Sum Divisible by K
27. Find the Maximum Length of a Subarray with Given Sum
28. Find the Maximum Sum Increasing Subsequence
29. Find the Maximum Profit by Buying and Selling a Share at Most Twice
30. Find the Minimum Cost to Convert an Array into a Palindromic Array

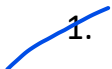
**Difficulty -Hard:**

1. Find the Maximum Sum Subarray with at Least K Elements
2. Find the Maximum Product of Three Numbers in an Array
3. Find the Smallest Range Covering Elements from K Lists
4. Find the Minimum Number of Moves to Make Array Elements Equal
5. Find the Maximum Length of a Subarray with Product Less than K
6. Find the Minimum Number of Operations to Make Two Arrays Equal
7. Find the Longest Subarray with At Most K Odd Numbers
8. Find the Longest Subarray with Sum Divisible by K
9. Find the Minimum Operations to Make Array Palindromic
10. Find the Minimum Cost to Connect Sticks
11. Find the Minimum Swaps to Group All 1s Together in an Array
12. Find the Minimum Cost to Cut a Stick
13. Find the Number of Subarrays with Sum Exactly Equal to K
14. Find the Maximum Number of Non-Overlapping Subarrays with Sum Equals Target
15. Find the Maximum XOR of Two Numbers in an Array
16. Find the Longest Increasing Path in a Matrix
17. Find the Minimum Number of Increments to Make Array Non-Decreasing
18. Find the Minimum Number of Steps to Make Array Non-Decreasing

19. Find the Maximum Sum of Subarray with Size Exceeding K
20. Find the Minimum Deletions to Make Array Divisible by Another Array
21. Find the Maximum Difference Between Increasing Elements
22. Find the Minimum Cost to Merge Stones
23. Find the Maximum Product Subarray with Size K
24. Find the Minimum Number of Operations to Make Array Equal to  
Another Array
25. Find the Minimum Number of Inversions to Sort an Array
26. Find the Maximum Length of a Subarray with At Most K Distinct  
Elements
27. Find the Maximum Area of a Rectangle Formed Only by 1s in a Binary  
Matrix
28. Find the Maximum Sum of M Non-Overlapping Subarrays
29. Find the Minimum Cost to Reduce Array to a Single Element
30. Find the Longest Subarray with Exactly K Distinct Elements
31. Find the Maximum Product of Two Non-Overlapping Subarrays
32. Find the Longest Subarray with Sum Less than or Equal to K
33. Find the Minimum Time to Collect All Apples in a Tree
34. Find the Maximum Product of a Subsequence of Size K

- 35. Find the Maximum Sum of a Subsequence with No Three Elements Consecutive
- 36. Find the Minimum Cost to Connect Ropes
- 37. Find the Longest Subarray with Sum Equal to 0
- 38. Find the Minimum Number of Deletions to Make Array Palindromic
- 39. Find the Minimum Number of Swaps to Make Two Binary Arrays Equal
- 40. Find the Maximum Number of Subarrays with Sum Equals K

## Binary-Search :

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- 1. Find an Element in a Sorted Array
  - 2. Find the First Occurrence of an Element
  - 3. Find the Last Occurrence of an Element
  - 4. Find the Number of Occurrences of an Element
  - 5. Find the Peak Element
  - 6. Find the Rotation Count in a Rotated Sorted Array
  - 7. Find the Minimum Element in a Rotated Sorted Array
  - 8. Search in a Rotated Sorted Array
  - 9. Find the Floor of an Element in a Sorted Array

10. Find the Ceiling of an Element in a Sorted Array

## Searching -Questions:

1. **Linear Search:** Implement linear search to find an element in an array.
2. **Binary Search:** Implement binary search on a sorted array to find an element.



3. **Exponential Search:** Implement exponential search to find an element in a sorted, unbounded/infinite array.
4. **Interpolation Search:** Implement interpolation search to find an element in a sorted array where elements are uniformly distributed.
5. **Search in Rotated Sorted Array:** Find an element in a rotated sorted array using binary search.
6. **Search in a 2D Matrix:** Search for an element in a sorted 2D matrix.
7. **Search in a Nearly Sorted Array:** Find an element in an array where each element is at most  $k$  away from its correct position.
8. **Search Insert Position:** Find the index where an element should be inserted to maintain sorted order in an array (binary search variation).
9. **Minimum Difference Element in Sorted Array:** Find the element in a sorted array closest to a given target value.
10. **Find Peak Element:** Find a peak element in an array (an element greater than its neighbors).

### Sorting -Questions :

1. **Bubble Sort:** Implement bubble sort to sort an array.
2. **Selection Sort:** Implement selection sort to sort an array.

3. **Insertion Sort:** Implement insertion sort to sort an array.

4. **Merge Sort:** Implement merge sort to sort an array.

5. **Quick Sort:** Implement quick sort to sort an array.

6. **Heap Sort:** Implement heap sort to sort an array.

7. **Counting Sort:** Implement counting sort for integers in a given range.

8. **Radix Sort:** Implement radix sort to sort integers using digit by digit sorting.

9. **Bucket Sort:** Implement bucket sort to sort elements uniformly distributed over a range.

10. **Top K Elements:** Find the top K elements in an array using sorting or heap-based approaches.