Beginner Array Patterns – Step by Step Complete Sheet

This document covers ALL beginner array patterns. Only arrays, loops, and conditions are required. Follow patterns in order.

1. Linear Traversal

When to use: Use when you need max, min, sum, count, or validation in a single pass.

- **Find Largest Element**
  https://leetcode.com/problems/largest-element-in-an-array/
  Asked in: TCS, Infosys
- **Check if Array is Sorted**
  https://leetcode.com/problems/check-if-array-is-sorted-and-rotated/
  Asked in: Wipro
- **Count Even Numbers**
  https://leetcode.com/problems/count-even-numbers/
  Asked in: Capgemini

2. Reverse Array

When to use: Use for reversing, palindrome checks, and as a base for rotation.

- **Reverse Array**
  https://leetcode.com/problems/reverse-string/
  Asked in: Accenture
- **Valid Palindrome**
  https://leetcode.com/problems/valid-palindrome/
  Asked in: Infosys
- **Reverse an Array**
  https://www.geeksforgeeks.org/reverse-an-array/
  Asked in: TCS

3. Array Rotation

When to use: Use when circular left/right shifting is required.

- **Rotate Array by K**
  https://leetcode.com/problems/rotate-array/
  Asked in: Cognizant
- **Left Rotate by One**
  https://www.geeksforgeeks.org/array-rotation/
  Asked in: Wipro

- **Check Rotated Sorted Array**
  https://leetcode.com/problems/check-if-array-is-sorted-and-rotated/
  Asked in: Capgemini

4. Frequency Counting

When to use: Use when counting occurrences, duplicates, or majority.

- **Majority Element**
  https://leetcode.com/problems/majority-element/
  Asked in: TCS
- **First Unique Element**
  https://leetcode.com/problems/first-unique-character-in-a-string/
  Asked in: HCL
- **Frequency of Elements**
  https://www.geeksforgeeks.org/counting-frequencies-of-array-elements/
  Asked in: Infosys

5. Second Largest / Smallest

When to use: Use ranking logic without sorting.

- **Second Largest Element**
  https://www.geeksforgeeks.org/find-second-largest-element-array/
  Asked in: Infosys
- **Second Smallest Element**
  https://www.geeksforgeeks.org/find-second-smallest-element-array/
  Asked in: Wipro
- **Largest & Second Largest**
  https://practice.geeksforgeeks.org/problems/largest-and-second-largest/1
  Asked in: TCS

6. Move / Rearrangement

When to use: Use when repositioning elements while keeping order.

- **Move Zeroes**
  https://leetcode.com/problems/move-zeroes/
  Asked in: Amazon
- **Move Negatives to One Side**
  https://www.geeksforgeeks.org/move-negative-numbers-beginning-positive-end-constant-extra-space/
  Asked in: Flipkart
- **Segregate Even and Odd**
  https://www.geeksforgeeks.org/segregate-even-and-odd-numbers/
  Asked in: TCS

7. Validation Pattern

When to use: Use for checking array conditions and neighbour comparison.

- **Valid Mountain Array**
  https://leetcode.com/problems/valid-mountain-array/
  Asked in: Microsoft
- **Non-Decreasing Array**
  https://leetcode.com/problems/non-decreasing-array/
  Asked in: Infosys
- **Check Sorted Array**
  https://leetcode.com/problems/check-if-array-is-sorted-and-rotated/
  Asked in: Wipro

8. Merge Two Arrays

When to use: Use when combining sorted arrays.

- **Merge Sorted Array**
  https://leetcode.com/problems/merge-sorted-array/
  Asked in: Amazon
- **Union of Arrays**
  https://leetcode.com/problems/intersection-of-two-arrays/
  Asked in: TCS
- **Merge Without Extra Space**
  https://www.geeksforgeeks.org/merge-two-sorted-arrays/
  Asked in: Accenture

9. Subarray (Brute Force)

When to use: Use for small constraints and fundamentals.

- **Print All Subarrays**
  https://www.geeksforgeeks.org/print-subarrays-array/
  Asked in: Infosys
- **Maximum Subarray**
  https://leetcode.com/problems/maximum-subarray/
  Asked in: Wipro
- **Count Subarrays**
  https://www.geeksforgeeks.org/count-subarrays-with-given-sum/
  Asked in: TCS

10. Sliding Window (Fixed Size)

When to use: Use for contiguous subarray of fixed size k.

- **Max Sum Subarray Size K**
  https://www.geeksforgeeks.org/find-maximum-average-subarray-of-k-length/
  Asked in: Amazon
- **Maximum Average Subarray**
  https://leetcode.com/problems/maximum-average-subarray-i/
  Asked in: Google
- **Sliding Window Basics**
  https://www.geeksforgeeks.org/sliding-window-technique/
  Asked in: Infosys

11. Prefix Sum

When to use: Use for fast range queries after preprocessing.

- **Running Sum**
  https://leetcode.com/problems/running-sum-of-1d-array/
  Asked in: Amazon
- **Range Sum Query**
  https://leetcode.com/problems/range-sum-query-immutable/
  Asked in: Microsoft
- **Subarray Sum Equals K**
  https://leetcode.com/problems/subarray-sum-equals-k/
  Asked in: Google

12. Missing / Duplicate (1…N)

When to use: Use when elements lie in fixed range.

- **Missing Number**
  https://leetcode.com/problems/missing-number/
  Asked in: Amazon
- **Find the Duplicate Number**
  https://leetcode.com/problems/find-the-duplicate-number/
  Asked in: Google
- **First Missing Positive**
  https://leetcode.com/problems/first-missing-positive/
  Asked in: Microsoft