Array Questions (Medium-Level)

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1. Find the first repeating element

Input: `[1, 2, 3, 2, 1]`

Output: `1`

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2. Find the first non-repeating element

Input: `[4, 5, 1, 2, 0, 4]`

Output: `5`

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3. Find the difference between max and min elements

Input: `[8, 3, 5, 1]`

Output: `8 - 1 = 7`

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4. Find the Kth smallest element (K = 2)

Input: `[7, 10, 4, 3, 20]`

Output: `4`

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5. Find the Kth largest element (K = 2)

Input: `[7, 10, 4, 3, 20]`

Output: `10`

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6. Find all elements that appear more than once

Input: `[1, 2, 3, 1, 3, 6, 6]`

Output: `1 3 6`

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7. Find union of two arrays

Input: `[1, 2, 3]`, `[2, 3, 4]`

Output: `[1, 2, 3, 4]`

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8. Find intersection of two arrays

Input: `[1, 2, 3]`, `[2, 3, 4]`

Output: `[2, 3]`

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9. Count the number of subarrays with even sum

Input: `[1, 2, 3]`

Output: `3` (Subarrays: `[1,2,3]`, `[2]`, `[3]`)

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10. Count total number of subarrays

Input: `[1, 2, 3]`

Output: `6` (n*(n+1)/2 = 3*4/2)

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11. Find the longest subarray with all distinct elements

Input: `[1, 2, 3, 1, 4]`

Output: `3` (subarray `[1,2,3]`)

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12. Find maximum sum of a subarray (Kadane's Algorithm)

Input: `[1, -2, 3, 4, -1]`

Output: `7`

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13. Check if array contains a subarray with sum 0

Input: `[4, 2, -3, 1, 6]`

Output: `Yes`

14. Rearrange array in alternating positive & negative items

Input: `[1, 2, -3, -4, 5, -6]`

Output: `[-3, 1, -4, 2, -6, 5]`

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15. Find leaders in an array

Input: `[16, 17, 4, 3, 5, 2]`

Output: `17 5 2`

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16. Replace each element with the next greatest

Input: `[16, 17, 4, 3, 5, 2]`

Output: `[17, 5, 5, 5, 2, -1]`

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17. Find majority element (> n/2 times)

Input: `[3, 3, 4, 2, 3, 3, 5]`

Output: `3`

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18. Find all pairs with difference k = 2

Input: `[1, 5, 3, 4, 2]`

Output: `(1, 3), (3, 5), (2, 4)`

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19. Find all triplets with sum = 0

Input: `[-1, 0, 1, 2, -1, -4]`

Output: `[-1, 0, 1], [-1, -1, 2]`

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20. Rotate array by K positions (K = 2)

Input: `[1, 2, 3, 4, 5]`

Output: `[4, 5, 1, 2, 3]`

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21. Find maximum product subarray

Input: `[2, 3, -2, 4]`

Output: `6`

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22. Find the length of the longest consecutive sequence

Input: `[100, 4, 200, 1, 3, 2]`

Output: `4` (sequence: 1, 2, 3, 4)

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23. Find two repeating elements

Input: `[1, 2, 3, 4, 2, 3]`

Output: `2, 3`

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24. Find minimum number of swaps to sort array

Input: `[4, 3, 2, 1]`

Output: `2`

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25. Find the equilibrium index

Input: `[-7, 1, 5, 2, -4, 3, 0]`

Output: `3`

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26. Rearrange array in max-min form

Input: `[1, 2, 3, 4, 5, 6]`

Output: `[6, 1, 5, 2, 4, 3]`

27. Maximum sum of non-adjacent elements

Input: `[5, 5, 10, 100, 10, 5]`

Output: `110`

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28. Find if any subarray has given sum `K = 9`

Input: `[1, 2, 3, 7, 5]`

Output: `Yes` (Subarray: `[2, 3, 4]`)

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29. Count inversions in the array

Input: `[2, 4, 1, 3, 5]`

Output: `3` (Inversions: (2,1), (4,1), (4,3))

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30. Find maximum of all subarrays of size k = 3

Input: `[1, 3, 1, 2, 0, 5]`

Output: `[3, 3, 2, 5]`