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array based top 15 problem commonly asked in interview questions. give input and output of the problem. list 5 easy, 5 medium, 5 hard difficulty problems.

Certainly! Here's a list of 15 common array-based problems categorized by difficulty, along with example inputs and outputs.

Easy Problems

1. Find the Maximum Element

- Problem:** Given an array of integers, find the maximum element.
- Input:** `[1, 3, 5, 2, 4]`
- Output:** `5`



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2. Find the Minimum Element

- Problem:** Given an array of integers, find the minimum element.
- Input:** `[7, 2, 8, 4, 1]`
- Output:** `1`

3. Check if Array Contains Duplicate

- Problem:** Given an array of integers, check if there are any duplicates.
- Input:** `[1, 2, 3, 4, 1]`
- Output:** `True`

4. Reverse an Array

- Problem:** Reverse the elements of an array in place.
- Input:** `[1, 2, 3, 4, 5]`
- Output:** `[5, 4, 3, 2, 1]`

5. Find the Average of Array Elements



- Problem:** Compute the average of all elements in the array.
- Input:** `[10, 20, 30, 40]`
- Output:** `25.0`

Medium Problems

1. Two Sum

- Problem:** Given an array of integers and a target value, return indices of the two numbers such that they add up to the target.
- Input:** `array = [2, 7, 11, 15], target = 9`
- Output:** `[0, 1]`

2. Rotate Array

- Problem:** Rotate an array to the right by `k` steps.
- Input:** `array = [1, 2, 3, 4, 5, 6, 7], k = 3`
- Output:** `[5, 6, 7, 1, 2, 3, 4]`



3. Find the Missing Number

- Problem:** Given an array containing `n` distinct numbers taken from `0, 1, 2, ..., n`, find the one that is missing.
- Input:** `[3, 0, 1]`
- Output:** `2`

4. Move Zeroes

- **Problem:** Move all zeroes in an array to the end while maintaining the order of non-zero elements.
- **Input:** `[0, 1, 0, 3, 12]`
- **Output:** `[1, 3, 12, 0, 0]`

5. Find Duplicates in Array

- **Problem:** Find all duplicates in an array.
- **Input:** `[4, 3, 2, 7, 8, 2, 3, 1]`
- **Output:** `[2, 3]`

Hard Problems

1. Longest Consecutive Sequence

- **Problem:** Find the length of the longest consecutive elements sequence.
- **Input:** `[100, 4, 200, 1, 3, 2]`
- **Output:** `4`

2. Container With Most Water

- **Problem:** Given an array representing the heights of bars, find the container that holds the most water.
- **Input:** `[1, 8, 6, 2, 5, 4, 8, 3, 7]`
- **Output:** `49`

3. Product of Array Except Self

- **Problem:** Given an array `nums`, return an array `output` where `output[i]` is the product of all elements of `nums` except `nums[i]`.
- **Input:** `[1, 2, 3, 4]`
- **Output:** `[24, 12, 8, 6]`

4. Subarray Sum Equals K

- **Problem:** Given an array of integers and an integer `k`, find the total number of continuous subarrays whose sum equals `k`.
- **Input:** `array = [1, 1, 1], k = 2`
- **Output:** `2`

5. Median of Two Sorted Arrays

- **Problem:** Given two sorted arrays, find the median of the two sorted arrays.
- **Input:** `nums1 = [1, 3], nums2 = [2]`
- **Output:** `2.0`

These problems span a range of difficulty levels and cover a broad spectrum of common array manipulations and algorithms.

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