**Basic Problems**

1. **Find the Maximum and Minimum Elements in an Array**
   * Input: An integer array.
   * Output: The largest and smallest numbers in the array.
2. **Reverse an Array**
   * Input: An array of integers.
   * Output: The array in reverse order.
3. **Find the Sum of All Elements**
   * Input: An array of integers.
   * Output: The sum of all elements in the array.
4. **Count the Frequency of Each Element**
   * Input: An array of integers.
   * Output: A count of how many times each element appears in the array.
5. **Check if an Array is Sorted**
   * Input: An array of integers.
   * Output: A boolean indicating whether the array is sorted in ascending order.

**Intermediate Problems**

1. **Remove Duplicates from an Array**
   * Input: An array with duplicate values.
   * Output: An array with unique values only.
2. **Rotate an Array**
   * Input: An array of integers and a number k.
   * Output: The array rotated to the right by k positions.
3. **Find the Second Largest Element**
   * Input: An array of integers.
   * Output: The second largest number in the array.
4. **Find the Missing Number in a Series**
   * Input: An array containing numbers from 1 to n with one missing.
   * Output: The missing number.
5. **Find Pairs with a Given Sum**
   * Input: An array of integers and a target sum.
   * Output: All pairs of integers in the array that add up to the target sum.

**Advanced Problems**

1. **Find the Subarray with Maximum Sum (Kadane’s Algorithm)**
   * Input: An array of integers (can contain negatives).
   * Output: The maximum sum of a subarray.
2. **Sort an Array of 0s, 1s, and 2s**
   * Input: An array containing only 0s, 1s, and 2s.
   * Output: The array sorted in ascending order.
3. **Find the Majority Element**
   * Input: An array of integers.
   * Output: The element that appears more than n/2 times (if any).
4. **Find the Longest Consecutive Sequence**
   * Input: An unsorted array of integers.
   * Output: The length of the longest sequence of consecutive numbers.
5. **Merge Two Sorted Arrays**
   * Input: Two sorted arrays.
   * Output: A single sorted array containing all elements from both arrays.

**Challenge Problems**

1. **Trapping Rain Water Problem**
   * Input: An array representing the height of bars in a histogram.
   * Output: The maximum amount of water that can be trapped between the bars.
2. **Find the Product of Array Except Self**
   * Input: An array of integers.
   * Output: An array where each element is the product of all elements except itself (without division).
3. **Find All Subarrays with a Given Sum**
   * Input: An array of integers and a target sum.
   * Output: All subarrays whose sum equals the target sum.
4. **Find the Intersection of Two Arrays**
   * Input: Two arrays of integers.
   * Output: An array containing common elements.
5. **Find the Smallest Positive Missing Number**
   * Input: An unsorted array of integers.
   * Output: The smallest positive integer that does not appear in the array.