Sample Problems: Group B

Here is a collection of practice interview questions to work through. For each of these problems, try to find the most efficient solutions you can. Some solutions might be incomparable to one another (for example, an O(n log n)-time, O(1)-space algorithm versus and O(n)-time, O(n)-space algorithm), so if you find incomparable solutions, try thinking about the tradeoffs.

1. You are given an array of n values. Determine which value appears most frequently in the array. If there is a tie, you can return any of the most-frequently-occurring values.
2. You are given a *unimodal array* of real numbers. A unimodal array is one that consists of a strictly increasing sequence followed by a strictly decreasing sequence. For example, the array [1, 3, 7, 15, 29, 23, 14, 13, 12] is unimodal. Find the maximum value in the array.
3. Given two strings, determine whether those strings are anagrams of one another.
4. You are given a list of n closed intervals whose endpoints represent times in a day. Some of these intervals might overlap one another. We'll say that a set of intervals is *overlapping* if all of the intervals in the range overlap one another. For example, the set {[0, 4], [1, 3], [2, 8]} is overlapping, while the set {[0, 2], [1, 3], [2, 4], [3, 5]} is not (because [0, 2] and [3, 5] don't overlap). Find the maximum number of intervals from the list that overlap.
5. You are given a list of positive integers. Determine the smallest positive integer that cannot be written as a sum of some of those integers. For example, given the list [4, 8, 1, 2], the answer is 16. Given the list [1, 2, 5, 8], the answer is 4.