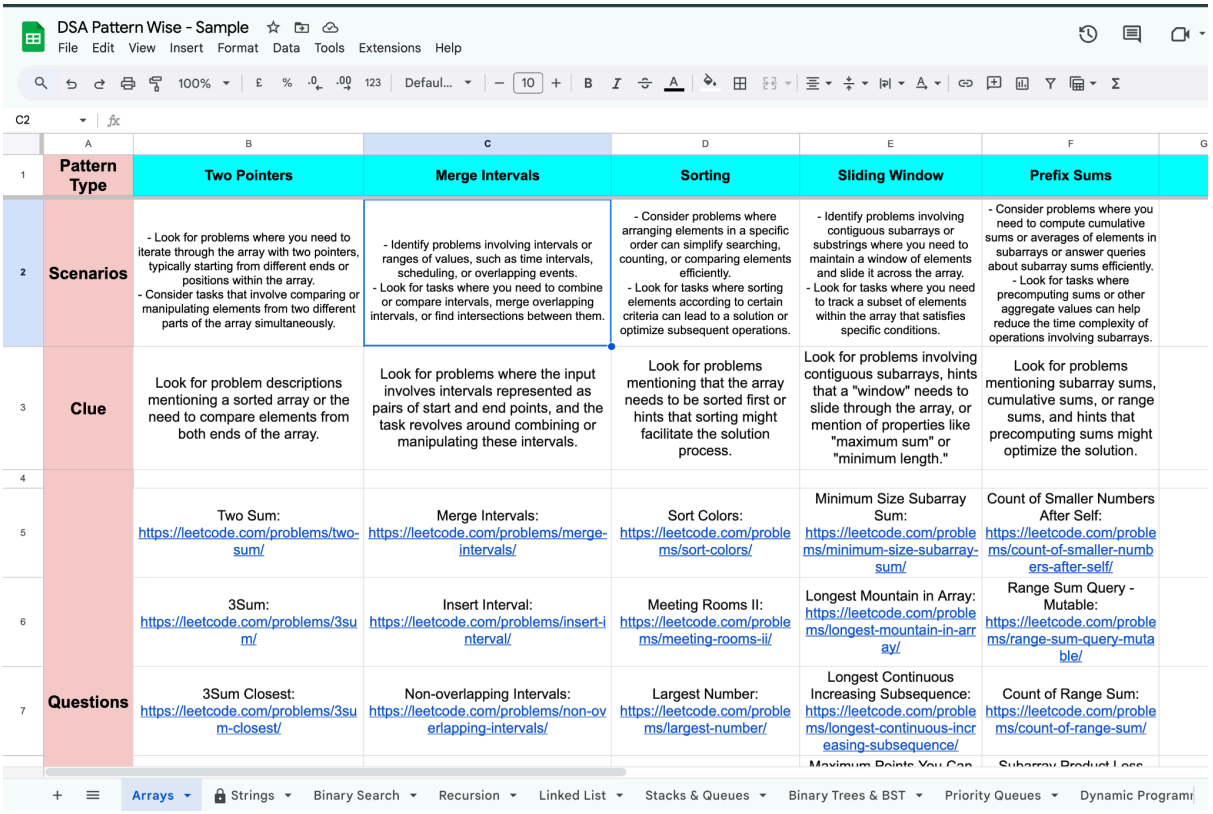
# Array Patterns With Question Sets



DSA Pattern Wise - Sample

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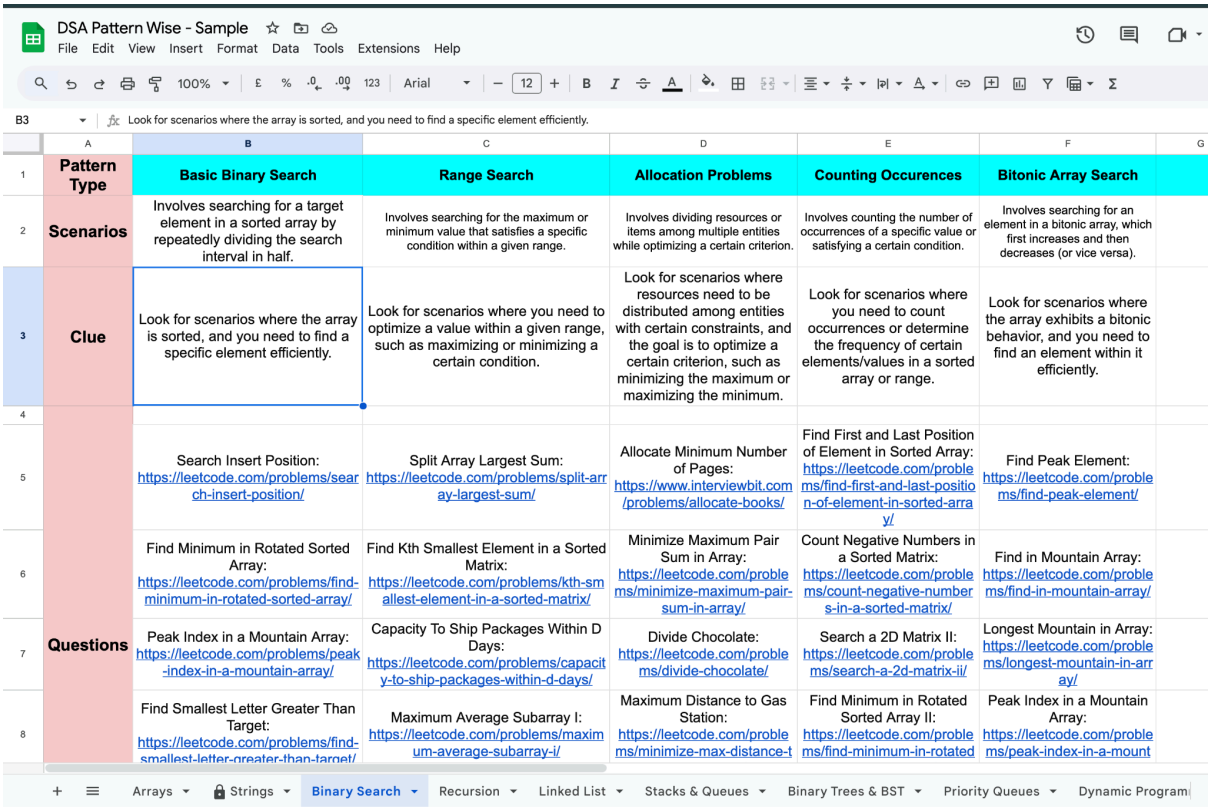
| Pattern Type | Two Pointers | Merge Intervals | Sorting | Sliding Window | Prefix Sums |
|---|---|---|---|---|---|
| Scenarios | - Look for problems where you need to iterate through the array with two pointers, typically starting from different ends or positions within the array.<br>- Consider tasks that involve comparing or manipulating elements from two different parts of the array simultaneously. | - Identify problems involving intervals or ranges of values, such as time intervals, scheduling, or overlapping events.<br>- Look for tasks where you need to combine or compare intervals, merge overlapping intervals, or find intersections between them. | - Consider problems where arranging elements in a specific order can simplify searching, counting, or comparing elements efficiently.<br>- Look for tasks where sorting elements according to certain criteria can lead to a solution or optimize subsequent operations. | - Identify problems involving contiguous subarrays or substrings where you need to maintain a window of elements and slide it across the array.<br>- Look for tasks where you need to track a subset of elements within the array that satisfies specific conditions. | - Consider problems where you need to compute cumulative sums or averages of elements in subarrays or answer queries about subarray sums efficiently.<br>- Look for tasks where precomputing sums or other aggregate values can help reduce the time complexity of operations involving subarrays. |
| Clue | Look for problem descriptions mentioning a sorted array or the need to compare elements from both ends of the array. | Look for problems where the input involves intervals represented as pairs of start and end points, and the task revolves around combining or manipulating these intervals. | Look for problems mentioning that the array needs to be sorted first or hints that sorting might facilitate the solution process. | Look for problems involving contiguous subarrays, hints that a "window" needs to slide through the array, or mention of properties like "maximum sum" or "minimum length." | Look for problems mentioning subarray sums, cumulative sums, or range sums, and hints that precomputing sums might optimize the solution. |
| Questions | Two Sum: https://leetcode.com/problems/two-sum/ | Merge Intervals: https://leetcode.com/problems/merge-intervals/ | Sort Colors: https://leetcode.com/problems/sort-colors/ | Minimum Size Subarray Sum: https://leetcode.com/problems/minimum-size-subarray-sum/ | Count of Smaller Numbers After Self: https://leetcode.com/problems/count-of-smaller-numbers-after-self/ |
| | 3Sum: https://leetcode.com/problems/3sum/ | Insert Interval: https://leetcode.com/problems/insert-interval/ | Meeting Rooms II: https://leetcode.com/problems/meeting-rooms-ii/ | Longest Mountain in Array: https://leetcode.com/problems/longest-mountain-in-array/ | Range Sum Query - Mutable: https://leetcode.com/problems/range-sum-query-mutable/ |
| | 3Sum Closest: https://leetcode.com/problems/3sum-closest/ | Non-overlapping Intervals: https://leetcode.com/problems/non-overlapping-intervals/ | Largest Number: https://leetcode.com/problems/largest-number/ | Longest Continuous Increasing Subsequence: https://leetcode.com/problems/longest-continuous-increasing-subsequence/ | Count of Range Sum: https://leetcode.com/problems/count-of-range-sum/ |

Arrays | Strings | Binary Search | Recursion | Linked List | Stacks & Queues | Binary Trees & BST | Priority Queues | Dynamic Programi

## Binary Search Pattern With Question Sets




| Pattern Type | Basic Binary Search | Range Search | Allocation Problems | Counting Occurences | Bitonic Array Search |
|---|---|---|---|---|---|
| Scenarios | Involves searching for a target element in a sorted array by repeatedly dividing the search interval in half. | Involves searching for the maximum or minimum value that satisfies a specific condition within a given range. | Involves dividing resources or items among multiple entities while optimizing a certain criterion. | Involves counting the number of occurrences of a specific value or satisfying a certain condition. | Involves searching for an element in a bitonic array, which first increases and then decreases (or vice versa). |
| Clue | Look for scenarios where the array is sorted, and you need to find a specific element efficiently. | Look for scenarios where you need to optimize a value within a given range, such as maximizing or minimizing a certain condition. | Look for scenarios where resources need to be distributed among entities with certain constraints, and the goal is to optimize a certain criterion, such as minimizing the maximum or maximizing the minimum. | Look for scenarios where you need to count occurrences or determine the frequency of certain elements/values in a sorted array or range. | Look for scenarios where the array exhibits a bitonic behavior, and you need to find an element within it efficiently. |
| Questions | Search Insert Position: https://leetcode.com/problems/search-insert-position/ | Split Array Largest Sum: https://leetcode.com/problems/split-array-largest-sum/ | Allocate Minimum Number of Pages: https://www.interviewbit.com/problems/allocate-books/ | Find First and Last Position of Element in Sorted Array: https://leetcode.com/problems/find-first-and-last-position-of-element-in-sorted-array/ | Find Peak Element: https://leetcode.com/problems/find-peak-element/ |
| | Find Minimum in Rotated Sorted Array: https://leetcode.com/problems/find-minimum-in-rotated-sorted-array/ | Find Kth Smallest Element in a Sorted Matrix: https://leetcode.com/problems/kth-smallest-element-in-a-sorted-matrix/ | Minimize Maximum Pair Sum in Array: https://leetcode.com/problems/minimize-maximum-pair-sum-in-array/ | Count Negative Numbers in a Sorted Matrix: https://leetcode.com/problems/count-negative-numbers-in-a-sorted-matrix/ | Find in Mountain Array: https://leetcode.com/problems/find-in-mountain-array/ |
| | Peak Index in a Mountain Array: https://leetcode.com/problems/peak-index-in-a-mountain-array/ | Capacity To Ship Packages Within D Days: https://leetcode.com/problems/capacity-to-ship-packages-within-d-days/ | Divide Chocolate: https://leetcode.com/problems/divide-chocolate/ | Search a 2D Matrix II: https://leetcode.com/problems/search-a-2d-matrix-ii/ | Longest Mountain in Array: https://leetcode.com/problems/longest-mountain-in-array/ |
| | Find Smallest Letter Greater Than Target: https://leetcode.com/problems/find-smallest-letter-greater-than-target/ | Maximum Average Subarray I: https://leetcode.com/problems/maximum-average-subarray-i/ | Maximum Distance to Gas Station: https://leetcode.com/problems/minimize-max-distance-t | Find Minimum in Rotated Sorted Array II: https://leetcode.com/problems/find-minimum-in-rotated | Peak Index in a Mountain Array: https://leetcode.com/problems/peak-index-in-a-mount |



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