

Here's a list of **100 one-line array problem statements** for practice, covering basics to advanced topics:

1. Find the maximum element in an array.
2. Find the minimum element in an array.
3. Find the sum of all elements in an array.
4. Find the average of array elements.
5. Reverse an array.
6. Check if an array is sorted in ascending order.
7. Check if an array is sorted in descending order.
8. Count the number of even elements in an array.
9. Count the number of odd elements in an array.
10. Find the second largest element in an array.
11. Find the second smallest element in an array.
12. Move all zeros to the end of an array.
13. Move all zeros to the beginning of an array.
14. Find the largest sum of contiguous subarray (Kadane's Algorithm).
15. Find the product of all elements in an array.
16. Rotate an array by k positions to the left.
17. Rotate an array by k positions to the right.
18. Remove duplicate elements from an array.
19. Count the frequency of each element in an array.
20. Find the intersection of two arrays.
21. Find the union of two arrays.
22. Find the difference of two arrays.
23. Find the missing number in an array of 1 to n .
24. Find the repeating number in an array.
25. Find both missing and repeating numbers in an array.
26. Find the majority element in an array ($>n/2$ times).
27. Find the median of an array.
28. Find the k -th smallest element in an array.
29. Find the k -th largest element in an array.
30. Check if an array is a palindrome.
31. Merge two sorted arrays into a single sorted array.
32. Separate positive and negative numbers in an array.
33. Find the maximum product subarray.
34. Find the longest increasing subarray.
35. Find the length of the longest consecutive elements sequence.
36. Find all pairs in an array whose sum equals a given value.
37. Find all triplets in an array whose sum equals zero.
38. Count all triplets in an array whose sum is zero.
39. Find subarrays with a given sum.
40. Find the number of subarrays with a given sum.
41. Find the maximum sum subarray of size k .
42. Find the sliding window maximum of size k .
43. Find leaders in an array (elements greater than all to their right).
44. Find the equilibrium index of an array.
45. Find the first repeating element in an array.

46. Find the first non-repeating element in an array.
47. Count inversions in an array.
48. Find the maximum difference between two elements such that larger element comes after smaller.
49. Find the minimum number of jumps to reach end of array.
50. Find the maximum sum such that no two elements are adjacent.
51. Find maximum circular subarray sum.
52. Rearrange an array in alternating positive and negative items.
53. Sort an array of 0s, 1s, and 2s (Dutch National Flag Problem).
54. Find the peak element in an array.
55. Find the rotation count in a rotated sorted array.
56. Search in a rotated sorted array.
57. Find the floor of a number in a sorted array.
58. Find the ceiling of a number in a sorted array.
59. Find the closest pair to a given sum.
60. Count pairs with difference k.
61. Check if an array is subset of another array.
62. Find all leaders in an array.
63. Find the longest alternating subarray.
64. Find the number of subarrays with even sum.
65. Find the number of subarrays with odd sum.
66. Count number of strictly increasing subarrays.
67. Count number of strictly decreasing subarrays.
68. Find smallest subarray with sum greater than x.
69. Find largest subarray with sum equal to 0.
70. Find maximum repeating element using hashing.
71. Find the number that appears odd number of times.
72. Find the number that appears even number of times.
73. Find all elements that appear more than n/k times.
74. Find the sum of all unique elements.
75. Find the sum of maximum and minimum in all subarrays of size k.
76. Find max sum after rearranging array in wave form.
77. Convert an array into zig-zag fashion.
78. Find maximum difference between consecutive elements in sorted array.
79. Find maximum sum of $i * arr[i]$ among all rotations.
80. Check if array can be partitioned into two subsets of equal sum.
81. Count all subarrays with product less than k.
82. Find length of smallest subarray with sum greater than x.
83. Find maximum sum after one reversal in array.
84. Find two non-overlapping subarrays each with sum equal to k.
85. Find maximum sum of elements at even indices after rotations.
86. Count triplets with sum smaller than given value.
87. Count triplets with sum greater than given value.
88. Find maximum of all subarrays of size k.
89. Find minimum of all subarrays of size k.
90. Sort an array according to frequency of elements.
91. Replace every element with the greatest element on right side.
92. Rearrange array in maximum minimum form.
93. Maximum sum of two non-overlapping subarrays.
94. Maximum sum of circular subarray using prefix sum.

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95. Maximum subarray sum after at most one deletion.
 96. Minimum number of swaps required to sort an array.
 97. Count number of swaps required for bubble sort.
 98. Check if array can become sorted by reversing one subarray.
 99. Find longest subarray with alternating even-odd numbers.
 100. Find the longest subarray with equal number of 0s and 1s.
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If you want, I can **also make a categorized table** of these 100 problems by difficulty: **Easy**, **Medium**, **Hard** for faster practice planning.

Do you want me to do that?

You said:

string

ChatGPT said:

Here's a list of **100 one-line string problem statements** for practice, ranging from basic to advanced:

Basic Operations

1. Find the length of a string.
2. Reverse a string.
3. Check if a string is a palindrome.
4. Count vowels in a string.
5. Count consonants in a string.
6. Count digits in a string.
7. Count special characters in a string.
8. Convert a string to uppercase.
9. Convert a string to lowercase.
10. Toggle case of each character.
11. Find the first non-repeating character.
12. Find the first repeating character.
13. Check if two strings are anagrams.
14. Check if a string contains only digits.
15. Check if a string contains only alphabets.
16. Check if a string contains only alphanumeric characters.
17. Remove all spaces from a string.
18. Remove all duplicate characters from a string.
19. Remove all vowels from a string.
20. Count frequency of each character.

Substring & Searching

21. Find all occurrences of a substring.
22. Check if a substring exists.
23. Find the longest common prefix among strings.
24. Find the longest palindromic substring.
25. Find the first occurrence of a character.
26. Find the last occurrence of a character.
27. Count occurrences of a character.
28. Replace a character in a string.
29. Replace a substring in a string.
30. Remove a substring from a string.

String Transformations

31. Reverse words in a sentence.
32. Count words in a string.
33. Convert a string to integer.
34. Convert integer to string.
35. Check if string is a valid number.
36. Check if string is a valid floating-point number.
37. Remove leading zeros from a string number.
38. Capitalize first letter of each word.
39. Swap two strings without using a temporary variable.
40. Check if string is a rotation of another.

Advanced String Problems

41. Longest substring without repeating characters.
42. Count distinct substrings in a string.
43. Find longest substring with at most k distinct characters.
44. Check if a string can be palindrome after rearrangement.
45. Find all permutations of a string.
46. Generate all subsets (subsequences) of a string.
47. Find all anagrams of a string within another string.
48. Count all palindromic substrings.
49. Longest repeating character replacement substring.
50. Minimum insertions to make a string palindrome.

String Pattern Problems

51. Check if string matches a pattern.
52. Count pattern occurrences in a string.
53. Implement strstr() function.
54. Wildcard pattern matching.
55. Regular expression matching.
56. Count number of vowels between two indices.
57. Count number of consonants between two indices.
58. Longest substring with same characters.
59. Check if two strings are rotations of each other.
60. Check if two strings are k-anagrams.

String Compression & Encoding

61. Run-length encoding of a string.
62. Decode a run-length encoded string.
63. Compress string by replacing repeated characters.
64. Check if string is valid encoded string.
65. Count compressions possible in a string.
66. Convert string to ASCII values.
67. Convert ASCII values back to string.
68. Count frequency of words in a string.
69. Reverse words without changing spaces.
70. Replace multiple spaces with single space.

String Mathematics

71. Add two numeric strings.
72. Subtract two numeric strings.
73. Multiply two numeric strings.
74. Divide two numeric strings.
75. Check if string represents a prime number.
76. Convert binary string to decimal.
77. Convert decimal string to binary.
78. Convert hexadecimal string to decimal.
79. Convert decimal to hexadecimal string.
80. Find maximum numeric substring.

String Comparisons

81. Lexicographically compare two strings.
82. Find longest common subsequence between two strings.
83. Find shortest common supersequence.
84. Minimum operations to convert string A to B (edit distance).
85. Check if one string is a subsequence of another.
86. Find longest palindromic subsequence.
87. Count number of times a string appears in another string.
88. Check if string contains all characters of another string.
89. Merge two strings alternatively.
90. Interleave two strings to form a third string.

Miscellaneous

91. Check if string has balanced parentheses.
92. Remove all adjacent duplicates in a string.
93. Decode nested encoded strings (like “3[a2[c]]”).
94. Find all starting indices of anagrams in a string.
95. Replace spaces with “%20” (URL encoding).
96. Check if string is pangram.
97. Count substrings with exactly k distinct characters.
98. Check if string is isomorphic to another.

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99. Check if string is a valid shuffle of two strings.
 100. Find longest substring with equal number of 0s and 1s.
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If you want, I can also make a categorized table for these 100 string problems: **Easy**, **Medium**, **Hard**, so you can practice progressively.

Do you want me to do that?

You said:

vector in STL

ChatGPT said:

Here's a list of **100 one-line C++ STL vector problem statements** for practice, ranging from basic to advanced:

Basic Operations

1. Create a vector and print its elements.
2. Initialize a vector with `n` elements.
3. Access the first element using `front()`.
4. Access the last element using `back()`.
5. Access element at index `i` using `at()`.
6. Add an element at the end using `push_back()`.
7. Remove the last element using `pop_back()`.
8. Insert an element at a given position using `insert()`.
9. Erase an element at a given position using `erase()`.
10. Clear all elements using `clear()`.
11. Check if a vector is empty using `empty()`.
12. Get the size of a vector using `size()`.
13. Get the capacity of a vector using `capacity()`.
14. Resize a vector to a new size.
15. Shrink vector capacity to fit its size using `shrink_to_fit()`.
16. Swap two vectors using `swap()`.
17. Access underlying array using `data()`.
18. Iterate vector using `for` loop.
19. Iterate vector using range-based `for` loop.
20. Iterate vector using iterators.

Searching & Sorting

21. Find an element using `std::find()`.
22. Count occurrences of an element using `count()`.
23. Sort vector in ascending order.
24. Sort vector in descending order.

25. Reverse vector elements.
26. Find maximum element using `max_element()`.
27. Find minimum element using `min_element()`.
28. Find sum of all elements using `accumulate()`.
29. Find difference between max and min elements.
30. Check if vector is sorted using `is_sorted()`.

Mathematical / Numeric Operations

31. Compute prefix sum of a vector.
32. Compute suffix sum of a vector.
33. Find cumulative product of elements.
34. Find k-th largest element using `nth_element()`.
35. Find k-th smallest element using `nth_element()`.
36. Count elements greater than x .
37. Count elements smaller than x .
38. Compute the average of all elements.
39. Find sum of even elements.
40. Find sum of odd elements.

Vector Manipulations

41. Remove duplicates from a vector.
42. Merge two vectors.
43. Concatenate two vectors.
44. Rotate vector by k positions using `rotate()`.
45. Left rotate vector by one element.
46. Right rotate vector by one element.
47. Reverse a subvector from l to r .
48. Split vector into two halves.
49. Replace all occurrences of x with y .
50. Remove all occurrences of a specific element.

Two-Dimensional Vectors

51. Create a 2D vector.
52. Initialize a 2D vector of size $n \times m$.
53. Access element at row i and column j .
54. Add a new row to a 2D vector.
55. Add a new column to a 2D vector.
56. Transpose a 2D vector.
57. Find sum of each row in 2D vector.
58. Find sum of each column in 2D vector.
59. Flatten a 2D vector into 1D vector.
60. Rotate a 2D vector 90 degrees clockwise.

Advanced STL Techniques

61. Use `emplace_back()` to add element.

62. Use `emplace()` to insert element at position.
63. Use `vector` of pairs.
64. Use `vector` of vectors (jagged array).
65. Use `vector` of strings.
66. Use `vector` of custom objects.
67. Sort `vector` of pairs by first element.
68. Sort `vector` of pairs by second element.
69. Sort `vector` of pairs by custom comparator.
70. Remove elements using `erase-remove` idiom.

Iterators and Algorithms

71. Iterate `vector` in reverse using `rbegin()` and `rend()`.
72. Find lower bound of an element using `lower_bound()`.
73. Find upper bound of an element using `upper_bound()`.
74. Count number of elements in a range using `distance()`.
75. Copy one `vector` to another using `copy()`.
76. Swap elements using iterators.
77. Use `advance()` to move iterator.
78. Use `next()` and `prev()` with iterator.
79. Find first element greater than `x` using `upper_bound()`.
80. Find first element not less than `x` using `lower_bound()`.

Functional / Lambda Operations

81. Apply a function to all elements using `for_each()`.
82. Increment each element using lambda function.
83. Square all elements using lambda function.
84. Filter elements greater than `x` using `copy_if()`.
85. Remove elements satisfying a condition using `remove_if()`.
86. Transform one `vector` to another using `transform()`.
87. Reverse all strings in a `vector` of strings.
88. Sort `vector` using lambda for custom order.
89. Count elements satisfying a condition using `count_if()`.
90. Find first element satisfying a condition using `find_if()`.

Problem Solving Using Vectors

91. Find maximum subarray sum using `vector`.
92. Implement prefix sum array using `vector`.
93. Implement sliding window maximum using `vector`.
94. Find first duplicate element in a `vector`.
95. Find all triplets with sum zero.
96. Implement stack using `vector`.
97. Implement queue using `vector`.
98. Implement dynamic array manually using `vector`.
99. Solve two-sum problem using `vector`.
100. Find length of longest increasing subsequence using `vector`.

If you want, I can also **make a categorized version of these 100 vector problems: Easy, Medium, Hard**, so it's easier to plan your practice.

Do you want me to do that?

You said:

Matrix

ChatGPT said:

Here's a list of **100 one-line matrix problem statements** for practice, from basic to advanced:

Basic Operations

1. Create a matrix of size $n \times m$.
2. Print all elements of a matrix.
3. Find the sum of all elements in a matrix.
4. Find the sum of each row.
5. Find the sum of each column.
6. Find the sum of the main diagonal.
7. Find the sum of the secondary diagonal.
8. Find the maximum element in the matrix.
9. Find the minimum element in the matrix.
10. Count number of even elements.
11. Count number of odd elements.
12. Count number of zero elements.
13. Count number of positive elements.
14. Count number of negative elements.
15. Transpose a matrix.
16. Rotate a matrix 90 degrees clockwise.
17. Rotate a matrix 90 degrees anti-clockwise.
18. Rotate a matrix 180 degrees.
19. Reverse rows of a matrix.
20. Reverse columns of a matrix.

Row & Column Manipulations

21. Swap two rows.
22. Swap two columns.
23. Find row with maximum sum.
24. Find column with maximum sum.
25. Find row with minimum sum.
26. Find column with minimum sum.
27. Sort each row individually.

28. Sort each column individually.
29. Sort matrix in row-major order.
30. Sort matrix in column-major order.

Searching

31. Search for an element in a row-wise sorted matrix.
32. Search for an element in a column-wise sorted matrix.
33. Find all occurrences of an element.
34. Check if matrix contains a specific number.
35. Count frequency of a given element.
36. Find maximum frequency element.
37. Find minimum frequency element.
38. Find first occurrence of an element.
39. Find last occurrence of an element.
40. Search in a sorted rotated matrix.

Special Matrices

41. Check if matrix is square.
42. Check if matrix is symmetric.
43. Check if matrix is identity.
44. Check if matrix is diagonal.
45. Check if matrix is upper triangular.
46. Check if matrix is lower triangular.
47. Check if matrix is sparse.
48. Check if matrix is magic square.
49. Find trace of a matrix.
50. Check if matrix is Toeplitz.

Matrix Arithmetic

51. Add two matrices.
52. Subtract two matrices.
53. Multiply two matrices.
54. Multiply matrix by a scalar.
55. Find determinant of a matrix.
56. Find inverse of a matrix.
57. Find rank of a matrix.
58. Find adjoint of a matrix.
59. Check if matrix is singular or non-singular.
60. Find power of a matrix.

Pattern Problems

61. Print spiral order of a matrix.
62. Print zig-zag order.
63. Print boundary elements.
64. Print elements in diagonal order.

65. Print elements in snake pattern.
66. Print elements in wave pattern.
67. Fill matrix in spiral pattern.
68. Fill matrix in diagonal pattern.
69. Fill matrix in concentric rectangles.
70. Fill matrix in Pascal's triangle pattern.

Submatrices

71. Find sum of submatrix.
72. Count number of submatrices with sum equal to k.
73. Find maximum sum submatrix of size $k \times k$.
74. Find minimum sum submatrix of size $k \times k$.
75. Find largest square submatrix of all 1s.
76. Find largest rectangle submatrix of all 1s.
77. Find number of submatrices containing only zeros.
78. Find number of submatrices containing only ones.
79. Find maximum sum rectangular submatrix.
80. Count all square submatrices with all ones.

Advanced Problems

81. Rotate matrix by 90 degrees without extra space.
82. Rotate matrix by 180 degrees without extra space.
83. Rotate matrix by 270 degrees without extra space.
84. Rotate matrix layers individually.
85. Spiral traversal of rectangular matrix.
86. Diagonal traversal of rectangular matrix.
87. Print boundary elements clockwise.
88. Print anti-diagonals of matrix.
89. Find number of distinct elements in each row.
90. Find number of distinct elements in each column.

Search & Optimization

91. Search element in sorted 2D matrix in $O(n+m)$.
92. Find row with maximum number of ones.
93. Find column with maximum number of ones.
94. Find nearest zero for each element.
95. Find largest island of 1s in binary matrix.
96. Count total islands of 1s in binary matrix.
97. Find largest square of zeros in matrix.
98. Find minimum path sum from top-left to bottom-right.
99. Count number of unique paths in a grid.
100. Multiply sparse matrices efficiently.

I can also make a **categorized version of these 100 matrix problems** into **Easy, Medium, Hard** so you can practice systematically.

Do you want me to do that?

You said:

Two pointer

ChatGPT said:

Here's a list of **100 one-line Two-Pointer technique problems** for practice, ranging from basic to advanced:

Basic Two-Pointer Problems

1. Find a pair with given sum in a sorted array.
2. Count all pairs with given sum in a sorted array.
3. Remove duplicates from a sorted array.
4. Move all zeros to the end of the array.
5. Move all zeros to the beginning of the array.
6. Reverse an array using two pointers.
7. Check if a string is a palindrome.
8. Merge two sorted arrays.
9. Intersection of two sorted arrays.
10. Union of two sorted arrays.

Array Partitioning & Rearrangement

11. Partition array into even and odd numbers.
12. Partition array by positive and negative numbers.
13. Sort array of 0s and 1s.
14. Sort array of 0s, 1s, and 2s (Dutch National Flag Problem).
15. Rearrange array in alternating positive and negative numbers.
16. Move all negative numbers to the left.
17. Move all positive numbers to the right.
18. Partition array around a pivot.
19. Pair elements to minimize the maximum sum.
20. Partition array into two equal sum halves.

Subarray / Subsequence Problems

21. Find subarray with given sum (for non-negative numbers).
22. Count subarrays with sum equal to k (sorted positive array).
23. Find longest subarray with sum $\leq k$.
24. Find smallest subarray with sum $\geq k$.
25. Count subarrays with product $< k$.
26. Maximum sum subarray of size k.
27. Maximum average subarray of size k.
28. Sliding window maximum of size k.
29. Sliding window minimum of size k.

30. Longest subarray with at most k distinct numbers.

Pairs / Triplets Problems

31. Find all pairs with sum = k.
32. Count all pairs with sum = k.
33. Find all unique pairs with sum = k.
34. Find triplets with sum = 0.
35. Find triplets with sum closest to target.
36. Count triplets with sum < target.
37. Count triplets with sum > target.
38. Find maximum product pair in array.
39. Find two numbers closest to given sum.
40. Find two numbers farthest from a given sum.

Strings / Palindrome

41. Longest palindromic substring.
42. Minimum insertions to make string palindrome.
43. Count palindromic substrings.
44. Check if string can be palindrome by removing at most one character.
45. Longest substring with k unique characters.
46. Check if two strings are anagrams (using two pointers).
47. Check if string is rotation of another.
48. Reverse words in a string.
49. Remove duplicate characters from string.
50. Remove adjacent duplicates from string.

Sorted Array / Binary Search Related

51. Pair with sum closest to target.
52. Count pairs with sum closest to target.
53. Find triplet with sum closest to target.
54. Count triplets with sum closest to target.
55. Count pairs with difference = k.
56. Count pairs with difference < k.
57. Count pairs with difference > k.
58. Find pair with given product.
59. Count pairs with product < k.
60. Count pairs with product > k.

Matrix / 2D Problems

61. Search in row-wise and column-wise sorted matrix.
62. Count pairs in 2D sorted matrix with sum = k.
63. Spiral traversal of matrix.
64. Anti-diagonal traversal of matrix.
65. Flatten 2D matrix and find pair with sum = k.
66. Find maximum sum rectangle with sum $\leq k$ (using 1D two-pointer).

- 67. Count all rectangles with sum = k.
- 68. Find largest square of 1s in binary matrix.
- 69. Count islands in binary matrix.
- 70. Minimum path sum in matrix (optimized with two pointers).

Advanced Array Problems

- 71. Container With Most Water (LeetCode).
- 72. Trapping Rain Water (two-pointer approach).
- 73. Sort array by absolute difference from a value.
- 74. Minimize maximum difference between heights.
- 75. Maximum distance between two elements with $\text{arr}[j] > \text{arr}[i]$.
- 76. Count triplets satisfying $\text{arr}[i] < \text{arr}[j] < \text{arr}[k]$.
- 77. Count pairs with sum divisible by k.
- 78. Count subarrays with exactly k odd numbers.
- 79. Longest contiguous subarray with equal 0s and 1s.
- 80. Minimum operations to make array strictly increasing.

Interval / Sliding Window

- 81. Maximum consecutive ones after flipping at most k zeros.
- 82. Longest subarray with at most k zeros.
- 83. Minimum size subarray sum \geq target.
- 84. Maximum sum of subarray after at most one deletion.
- 85. Maximum sum subarray of length $\leq k$.
- 86. Maximum average subarray of length $\leq k$.
- 87. Longest substring with at most k vowels.
- 88. Count substrings with exactly k distinct characters.
- 89. Longest substring with at most k repeating characters.
- 90. Sliding window median of size k.

Miscellaneous Two-Pointer Problems

- 91. Merge two sorted arrays in-place.
 - 92. Reverse vowels in a string.
 - 93. Move all even numbers to the left and odd to the right.
 - 94. Partition array by parity while maintaining relative order.
 - 95. Count pairs with sum in a given range.
 - 96. Minimum number of swaps to bring elements $\leq k$ together.
 - 97. Find intersection of two arrays (without extra space).
 - 98. Find union of two arrays (without extra space).
 - 99. Find closest sum of triplets to zero.
 - 100. Minimum window substring containing all characters of another string.
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If you want, I can also make a categorized version of these 100 two-pointer problems: **Easy**, **Medium**, **Hard**, so you can practice progressively.

Do you want me to do that?

You said:

sliding window

ChatGPT said:

Here's a list of **100 one-line Sliding Window problems** for practice, from basic to advanced:

Basic Sliding Window Problems

1. Find maximum sum of subarray of size k.
2. Find minimum sum of subarray of size k.
3. Find average of subarrays of size k.
4. Find maximum element in each subarray of size k.
5. Find minimum element in each subarray of size k.
6. Find maximum difference in subarray of size k.
7. Count subarrays with sum equal to k.
8. Count subarrays with sum less than k.
9. Count subarrays with sum greater than k.
10. Find first subarray with sum $\geq k$.

Variable Size Windows

11. Find smallest subarray with sum $\geq x$.
12. Find largest subarray with sum $\leq x$.
13. Count subarrays with product $< k$.
14. Maximum sum subarray of variable size $\leq k$.
15. Minimum length subarray with sum $\geq k$.
16. Longest subarray with sum $\leq k$.
17. Shortest subarray with sum = k.
18. Longest subarray with sum = 0.
19. Count subarrays with sum = 0.
20. Maximum average subarray of variable size.

String Sliding Window

21. Longest substring without repeating characters.
22. Longest substring with k distinct characters.
23. Count substrings with k distinct characters.
24. Longest substring with at most k vowels.
25. Minimum window substring containing all characters of another string.
26. Count anagrams of a pattern in a string.
27. Find all starting indices of anagrams of a pattern.
28. Longest substring with exactly k unique characters.
29. Longest substring with at most k repeating characters.
30. Count substrings containing all vowels.

Maximum / Minimum Windows

31. Maximum of all subarrays of size k.
32. Minimum of all subarrays of size k.
33. Maximum difference in all subarrays of size k.
34. Count maximum elements in all subarrays of size k.
35. Count minimum elements in all subarrays of size k.
36. Sliding window median of size k.
37. Sliding window mode of size k.
38. Maximum sum after sliding window transformation.
39. Minimum sum after sliding window transformation.
40. Maximum product of elements in subarrays of size k.

Binary Array / 0-1 Problems

41. Maximum consecutive 1s in binary array.
42. Maximum consecutive 0s in binary array.
43. Maximum consecutive 1s after flipping at most k zeros.
44. Longest subarray with at most k zeros.
45. Longest subarray with exactly k ones.
46. Count subarrays with exactly k ones.
47. Count subarrays with at most k ones.
48. Longest subarray with equal number of 0s and 1s.
49. Minimum flips to make binary subarray all 1s.
50. Minimum flips to make binary subarray all 0s.

Sum / Product Constraints

51. Count subarrays with sum $\leq k$.
52. Count subarrays with sum $\geq k$.
53. Count subarrays with product $\leq k$.
54. Count subarrays with product $\geq k$.
55. Maximum sum subarray with sum $\leq k$.
56. Maximum sum subarray with sum $\geq k$.
57. Maximum product subarray with product $\leq k$.
58. Maximum product subarray with product $\geq k$.
59. Minimum sum subarray with sum $\geq k$.
60. Minimum product subarray with product $\geq k$.

Pattern Matching / Strings

61. Count substrings matching a pattern with sliding window.
62. Find first substring matching a pattern.
63. Count substrings containing all characters of pattern.
64. Find all substrings containing all vowels.
65. Longest substring avoiding repeated characters.
66. Longest substring containing only vowels.
67. Count substrings with exactly 2 distinct characters.
68. Count substrings with exactly 3 distinct characters.
69. Longest substring with distinct characters.
70. Minimum window substring containing pattern in string.

Array Problems

71. Maximum sum of k consecutive elements.
72. Minimum sum of k consecutive elements.
73. Longest subarray with sum divisible by k.
74. Count subarrays with sum divisible by k.
75. Longest subarray with alternating even and odd numbers.
76. Count subarrays with alternating even and odd numbers.
77. Maximum sum circular subarray.
78. Count subarrays with sum < k.
79. Count subarrays with sum > k.
80. Maximum length subarray with sum = k.

Advanced Sliding Window

81. Longest substring with at most k replacements.
82. Count substrings with at most k replacements.
83. Maximum sum of subarrays after at most one deletion.
84. Minimum sum of subarrays after at most one deletion.
85. Longest substring after replacing at most k characters.
86. Minimum window to cover all characters in string.
87. Longest substring without repeating vowels.
88. Maximum sum subarray with exactly k elements.
89. Minimum sum subarray with exactly k elements.
90. Maximum product subarray of size k.

Two-Pointer + Sliding Window

91. Longest subarray with absolute difference $\leq k$.
92. Count subarrays with absolute difference $\leq k$.
93. Longest subarray with difference between max and min $\leq k$.
94. Count subarrays with difference between max and min $\leq k$.
95. Maximum sum subarray after at most k operations.
96. Minimum sum subarray after at most k operations.
97. Longest subarray with sum divisible by k.
98. Count subarrays with sum divisible by k.
99. Maximum length subarray with sum $\leq k$.
100. Minimum length subarray with sum $\geq k$.

I can also **categorize these 100 sliding window problems** into **Easy, Medium, Hard** so you can practice progressively.

Do you want me to do that?

You said:

hashing

ChatGPT said:

Here's a list of **100 one-line Hashing problems** for practice, ranging from basic to advanced:

Basic Hashing / Frequency Counting

1. Count frequency of each element in an array.
2. Find the element with maximum frequency.
3. Find the element with minimum frequency.
4. Find all elements that appear more than n/k times.
5. Count distinct elements in an array.
6. Check if array contains duplicates.
7. Remove duplicates from an array.
8. Find first repeating element.
9. Find first non-repeating element.
10. Count elements appearing exactly once.

Subarray / Subsequence Problems

11. Count subarrays with sum = k.
12. Count subarrays with sum divisible by k.
13. Find longest subarray with sum = 0.
14. Find longest subarray with sum divisible by k.
15. Count subarrays with equal number of 0s and 1s.
16. Longest subarray with equal number of 0s, 1s, 2s.
17. Count subarrays with given XOR.
18. Longest subarray with given XOR.
19. Count subarrays with product divisible by k.
20. Count subarrays with distinct elements only.

Pair / Triplet Problems

21. Find pair with given sum in unsorted array.
22. Count all pairs with given sum in unsorted array.
23. Find all unique pairs with given sum.
24. Count triplets with sum = 0.
25. Find triplets with sum closest to target.
26. Count triplets with sum = target.
27. Find pair with given difference.
28. Count pairs with given difference.
29. Count pairs with $\text{XOR} = k$.
30. Count pairs with product = k.

Set / Map Operations

31. Union of two arrays using hashing.
32. Intersection of two arrays using hashing.
33. Difference of two arrays using hashing.

34. Symmetric difference of two arrays.
35. Subset check using hashing.
36. Check if two arrays are equal using hashing.
37. Find missing number using hashing.
38. Find repeating number using hashing.
39. Find both missing and repeating numbers.
40. Count elements with frequency greater than threshold.

String / Character Problems

41. Count frequency of characters in a string.
42. First non-repeating character in a string.
43. First repeating character in a string.
44. Check if two strings are anagrams.
45. Find all anagrams of a pattern in a string.
46. Count anagrams of a pattern in a string.
47. Check if string contains all characters of another string.
48. Find smallest window containing all characters of a pattern.
49. Count substrings with exactly k distinct characters.
50. Longest substring with k distinct characters.

Advanced Hashing Problems

51. Subarray with sum divisible by n.
52. Count subarrays with sum less than k.
53. Count subarrays with sum greater than k.
54. Count number of subarrays with $\text{XOR} = k$.
55. Maximum length subarray with sum = k.
56. Longest subarray with alternating positive and negative numbers.
57. Count pairs with sum divisible by k.
58. Count pairs with product divisible by k.
59. Find element occurring odd number of times.
60. Find elements occurring even number of times.

Matrix / 2D Problems

61. Count pairs with given sum in 2D matrix.
62. Count submatrices with sum = k.
63. Maximum sum submatrix using hashing.
64. Count submatrices with all 1s.
65. Largest rectangle of 1s in binary matrix.
66. Count islands in a binary matrix using hashing.
67. Find largest square of 1s in binary matrix.
68. Count distinct rows in matrix.
69. Count distinct columns in matrix.
70. Find row with maximum frequency element.

Prefix / Suffix Problems

71. Count prefix sums with given property.
72. Count suffix sums with given property.
73. Count subarrays with sum = multiple of k using prefix sum.
74. Maximum length subarray with sum divisible by k using prefix sum.
75. Count subarrays with cumulative XOR = k.
76. Maximum length subarray with cumulative XOR = k.
77. Count subarrays with even sum using prefix sum.
78. Count subarrays with odd sum using prefix sum.
79. Maximum length subarray with equal 0s and 1s using prefix sum.
80. Count subarrays with exactly k distinct elements using sliding window + hashmap.

Geometric / Coordinate Problems

81. Count pairs of points with same x-coordinate.
82. Count pairs of points with same y-coordinate.
83. Count distinct points in plane.
84. Count rectangles formed by points.
85. Find number of squares formed by points.
86. Count collinear points.
87. Check if four points form rectangle.
88. Count pairs with Manhattan distance = k.
89. Count pairs with Euclidean distance = k.
90. Maximum points on a line.

Miscellaneous Hashing Problems

91. Longest consecutive sequence in array.
92. Find smallest missing positive number.
93. Find longest subarray with difference between max and min $\leq k$.
94. Count pairs with difference $\leq k$.
95. Count triplets with difference $\leq k$.
96. Subarray with sum divisible by 3.
97. Subarray with sum divisible by 5.
98. Count pairs with sum divisible by n.
99. Count triplets with sum divisible by n.
100. Find number of distinct elements in all sliding windows of size k.

I can also categorize these 100 hashing problems into **Easy, Medium, and Hard** for systematic practice.

Do you want me to do that?



