1. Which algorithm is used to find the longest common subsequence of two strings?
   1. **LCS Algorithm**
   2. Merge Sort Algorithm
   3. Quick Sort Algorithm
   4. Binary Search Algorithm
2. Which data structure is commonly used for pattern matching in strings?
   1. Stack
   2. Queue
   3. **Trie**
   4. Binary Tree
3. The two-pointer technique is commonly used to solve problems involving:
   1. Sorting arrays
   2. String concatenation
   3. Tree traversal
   4. **Subarray problems**
4. What is the time complexity of checking if a string is a palindrome using the two-pointer technique?
   1. O(log n)
   2. **O(n)**
   3. O(n^2)
   4. O(1)
5. Which of the following algorithms uses a frequency array to count the occurrences of characters in a string?
   1. Selection Sort
   2. **Counting Sort**
   3. Bubble Sort
   4. Merge Sort
6. Given two strings, "ABCD" and "DCBA," what will be the output of their longest common subsequence length?
   1. 0
   2. 1
   3. 3
   4. **4**
7. The two-pointer technique can be applied to find a substring within a string in:
   1. O(1) time complexity
   2. **O(n) time complexity**
   3. O(log n) time complexity
   4. O(n^2) time complexity
8. In the context of strings, what is a suffix array?
   1. **An array of sorted suffixes of a string**
   2. An array of common prefixes of a string
   3. An array of characters in a string
   4. An array of frequencies of characters in a string
9. Which algorithm uses the concept of a sliding window to solve substring problems efficiently?
   1. BFS Algorithm
   2. DFS Algorithm
   3. **Two Pointer Algorithm**
   4. Quick Sort Algorithm
10. How can we check if two strings are anagrams using the frequency array approach?
    1. Compare their lengths
    2. Sort both strings and compare them
    3. **Count occurrences of characters in both strings and compare the frequency arrays**
    4. Use the two-pointer technique to compare characters
11. Which algorithm uses a prefix sum array to efficiently calculate substring sums?
    1. Prefix Sum Algorithm
    2. Merge Sort Algorithm
    3. **Kadane's Algorithm**
    4. Rabin-Karp Algorithm
12. The longest palindromic substring is a subsequence that:
    1. Appears only once in the string
    2. **Reads the same backward as forward**
    3. Has the most unique characters
    4. Contains only consonants
13. What is the time complexity of the Boyer-Moore algorithm for pattern matching?
    1. O(n)
    2. O(m)
    3. O(n\*m)
    4. **O(n+m)**
14. Given two strings "ABC" and "CDE," what will be the output of their longest common subsequence length?
    1. 0
    2. **1**
    3. 2
    4. 3
15. The sliding window technique is commonly used to solve problems involving:
    1. Sorting arrays
    2. Tree traversal
    3. **Subarray problems**
    4. Graph traversal
16. How can we efficiently find the most frequent character in a string using a frequency array?
    1. Sort the string and find the character with the highest frequency
    2. Use a priority queue to track the character frequencies
    3. **Iterate through the frequency array and find the character with the highest count**
    4. Convert the string into a set of characters and find the most frequent one
17. The Manacher's algorithm is used to find the:
    1. **Longest Palindromic Substring**
    2. Longest Common Subsequence
    3. Longest Increasing Subsequence
    4. Shortest Palindromic Substring
18. Which algorithm uses the concept of a prefix sum array to efficiently find the sum of elements in a subarray?
    1. **Prefix Sum Algorithm**
    2. Quick Sort Algorithm
    3. Merge Sort Algorithm
    4. Binary Search Algorithm
19. The longest common prefix of two strings is a substring that:
    1. Appears only once in both strings
    2. Reads the same backward as forward
    3. Contains only vowels
    4. **Appears at the beginning of both strings**
20. Given two strings, "ABCD" and "DCBA," what will be the output of their longest common prefix length?
    1. **0**
    2. 1
    3. 2
    4. 4
21. Which algorithm uses a suffix array to efficiently search for patterns in a text?
    1. Rabin-Karp Algorithm
    2. Boyer-Moore Algorithm
    3. Knuth-Morris-Pratt Algorithm
    4. **Aho-Corasick Algorithm**
22. The sliding window technique can be applied to find the longest substring with:
    1. **No repeating characters**
    2. The most repeating characters
    3. Only vowels
    4. Only consonants
23. How can we check if two strings are rotations of each other using the frequency array approach?
    1. Compare their lengths
    2. Sort both strings and compare them
    3. **Count occurrences of characters in both strings and compare the frequency arrays**
    4. Use the two-pointer technique to compare characters
24. Given two strings "ABC" and "CDE," what will be the output of their longest common prefix length?
    1. **0**
    2. 1
    3. 2
    4. 3
25. The longest common suffix of two strings is a substring that:
    1. Appears only once in both strings
    2. Reads the same backward as forward
    3. Contains only vowels
    4. **Appears at the end of both strings**
26. The Manacher's algorithm is used to find the:
    1. **Longest Palindromic Substring**
    2. Longest Common Subsequence
    3. Longest Increasing Subsequence
    4. Shortest Palindromic Substring
27. Which algorithm uses the concept of a prefix sum array to efficiently find the sum of elements in a subarray?
    1. **Prefix Sum Algorithm**
    2. Quick Sort Algorithm
    3. Merge Sort Algorithm
    4. Binary Search Algorithm
28. In the context of strings, what is the purpose of the Z algorithm?
    1. Pattern matching
    2. Finding the longest common subsequence
    3. **Finding all occurrences of a pattern in a text**
    4. Counting the frequency of characters in a string
29. What is the time complexity of finding the frequency of each character in a string using a frequency array?
    1. **O(n)**
    2. O(log n)
    3. O(n^2)
    4. O(nlogn)
30. In the two pointers approach for strings, the two pointers usually move in which direction?
    1. Left to right
    2. Right to left
    3. **Inward from both ends**
    4. Outward from the middle