BASICS

1. WAP to calculate simple interest

2. WAP to calculate area and perimeter of a rectangle

3. WAP to swap two numbers with and without using third variable

4. Check whether the year is leap or not

5. Convert Upper to lower case and vice versa

6. Convert Celsius into Fahrenheit and vice versa

7. WAP to calculate net salary of employee, take basic salary of employee        and calculate

        HRA 30% of basic salary,

        DA 20% of the basic salary,

        TA 10% of the basic salary and

        Net salary is sum up of basic salary + allowances-pf.

        Pf is 1400 fixed.

8. WAP to check whether the triangle is isosceles , equilateral or scalene.

9. Find out entered number is Positive or Negative Number.

10. Find out the grade , according to given percentage of the user.

        a. >=90 print ‘A’ Grade

        b. 89 to 70 print ‘B’ Grade

        c. 69 to 50 print ‘C’ Grade

        d. <50 print ‘D’ Grade

11. A Insurance Company have a following polices (Insurance Premium Calculation program)

        User Input :

        a. Person Name

        b. Person gender

        c. Person Age

        d. Person city (Metro or Non-Metro)

        Conditions:

        if person age is 25 to 35 and gender is male and city is metro , Output is Premium is 6%

        if person age is 25 to 40 and gender is male and city is non-metro, Output is Premium 4%

        if person age is 25 to 42 and gender is female and city is Metro, Output is Premium 3%

        if person age is 25 to 45 and gender is female and city is non-metro , output is Premium 2%

        else

        Not Insured

12. WAP to print the Days of week and months of the year.

13. WAP to check whether the entered character is vowel or not.

14. WAP to create a menu driven program

        Press 1 for Addition

        Press 2 for Subtraction

        Press 3 for Multiplication

        Press 4 for Division

15. WAP to check whether the given no. is prime or not.

16. WAP to print the  prime number between 1 to 100.

17. WAP to print the even number and odd number between 1 to 100.

18. WAP to print the sum of digit of a no.

19. WAP to print the Fibonacci series

20. WAP to find the factorial of a no.

21. WAP to reverse the no.

22. WAP to print the Armstrong no.

23. WAP to print the square root of a no.

24. WAP to print sum of  1+2+3+.............................n

25. WAP to print sum of 12+22+32+..........................n2

26. WAP to print the following:-

27. Pattern Programs

            Solid Square

            Hollow Square

            Left Pyramid (Solid + Hollow)

            Left Inverted Pyramid (Solid + Hollow)

            Right Pyramid (Solid + Hollow)

            Right Inverted Pyramid (Solid + Hollow)

            Half Pyramid

Full Pyramid

            Rhombus

            Go and try next 10 patterns from wherever you want (codeforwin)

            Must visit : https://www.skillrisers.com/course/learn-pattern-programs-in-java

FUNCTIONS

1. Sum of Two Numbers (With all types)
2. Calculator
   1. Implement a basic calculator that can perform addition, subtraction, multiplication, and division.
3. Factorial Calculator
4. Palindrome Checker
5. FizzBuzz
   1. Write a program that prints the numbers from 1 to 100. But for multiples of three, print "Fizz" instead of the number, and for the multiples of five, print "Buzz." For numbers that are multiples of both three and five, print "FizzBuzz.”
6. Prime Number Checker
7. Reverse a String
8. Fibonacci Sequence
9. Binary Search Write a program that performs a binary search on a sorted array.
10. Guess the Number Game
11. Create a simple number guessing game where the computer generates a random number, and the player has to guess it.

You can try all the basic programs via function as well4

RECURSION

1. Print 1 to N
2. Print N to 1
3. Table
4. 1 to N : Sum
5. 1 to N : Even Sum
6. 1 to N : Odd Sum
7. Print Digits of a Num ::: input : 2545 output : 2,5,4,5
8. Sum of digits of a Num ::: input : 2545 output : 2+5+4+5 : 16
9. Reverse a number : i/p -> 2568 : o/p -> 8652
10. Reverse a string : i/p -> hello : o/p -> olleh
11. Palindrome Number (Boolean)
12. Palindrome String   (Boolean)
13. Factorial of a number
14. Power of 2 LC
15. Power of 3 LC
16. Power of 4 LC
17. Pow(x,n) LC
18. Prime Number
19. Armstrong Number
20. Upper Case to Lower Case Conversion
21. Replace Character in a String
22. Find Character in a String

Array Questions :

1. Array is Sorted or Not
2. Search Element in Array
3. Occurance of Element in Array
4. Replace Element in Array
5. Max & Min Element in Array
6. Decimal To Binary
7. Binary To decimal
8. Add \*
9. Replace With #
10. Binary Search
11. AtoI
12. Roman To Integer
13. String Subsequences
14. Permutations Of A Set
15. JosePhus
16. Tower Of Hanoi
17. Sudoku Solver
18. Word Search
19. Rope Cutting Problem
20. N Queen

BACKTRACKING

1. N Queen
2. Sudoku Solver
3. Word Search
4. Phone Number Combination
5. Rat in a Maze
6. Generate Parenthesis
7. Permutation
8. Combination Sum
9. Coin Change
10. LCS, LIS
11. Rope Cutting
12. Target Sum
13. Partition to K Equal Sum
14. Knight Tour Problem
15. Palindrome Partition

ARRAY

1. Largest Element in an Array
2. Second Largest Element in an Array
3. Third Largest Element in an Array
4. Span of an Array - Difference between the max and min element of the array
5. Print Bar Chart
6. Check if the array is sorted or not
7. Reverse an Array
8. Pair Sum
9. Rotate Array by One
10. Rotate Array by K
11. Remove Duplicate from Sorted Array
12. Convert Array into Zig Zag Fashion (a < b > c < d > e < f)
13. Addition of Array
14. Subtraction of Array
15. Find Odd Element from a sorted array (All the elements appear twice except for one)
16. Find the missing number
17. Sort 0 and 1 in an array
18. Sort 0, 1, and 2 / Dutch National Flag / Sort Colors
19. Running Sum of an array
20. Pair Difference
21. Leader Element
22. Stock Buy and Sell
23. Frequency in a sorted array
24. Arrange positive and negative numbers
25. Trapping rainwater
26. Numbers smaller than the current number
27. Majority Element
28. Gas Station
29. Binary Search
30. Find Nearest Lowest and Nearest Greater value in a sorted array
31. First and last index of an element
32. Find the frequency of an element in a sorted array
33. Peak Element
34. Subarray Sum
35. Maximum sum of k consecutive elements
36. Subarray sum whose sum is equal to the given sum
37. Frequency of X in every window of size k
38. Next Greater Element to the right
39. Next Greater Element Part-2
40. NBonacii Series
41. Product of an array except itself
42. Two Sum
43. Remove Duplicates from Sorted Array
44. Best Time to Buy and Sell Stock
45. Contains Duplicate
46. Single Number
47. Intersection of Two Arrays
48. Plus One
49. Move Zeroes
50. Two Sum II - Input array is sorted
51. Find All Numbers Disappeared in an Array
52. Maximum Subarray
53. Best Time to Buy and Sell Stock II
54. Valid Mountain Array
55. Third Maximum Number
56. Remove Element
57. Maximum Product of Two Elements in an Array
58. Squares of a Sorted Array
59. Replace Elements with Greatest Element on Right
60. Running Sum of 1D Array
61. Check If N and Its Double Exist
62. Medium Problems:
63. Container With Most Water
64. Three Sum
65. Subarray Sum Equals K
66. Product of Array Except Self
67. Minimum Size Subarray Sum
68. Find All Duplicates in an Array
69. Jump Game
70. Best Time to Buy and Sell Stock III
71. Max Consecutive Ones
72. Kth Largest Element in an Array
73. Find the Duplicate Number
74. Next Permutation
75. Find First and Last Position of Element in Sorted Array
76. Shortest Unsorted Continuous Subarray
77. Find All Numbers Disappeared in an Array
78. Maximum Subarray
79. Best Time to Buy and Sell Stock II
80. 4Sum
81. Count Primes
82. Merge Intervals
83. Minimum Size Subarray Sum
84. Majority Element
85. Sort Colors
86. Maximum Product Subarray
87. Sort an Array
88. Can Place Flowers
89. Increasing Triplet Subsequence
90. Missing Number
91. Find All Anagrams in a String
92. Continuous Subarray Sum
93. Longest Substring Without Repeating Characters
94. Unique Paths
95. Longest Increasing Subsequence
96. Permutations
97. Find Peak Element
98. Valid Parentheses
99. Product of Array Except Self
100. Spiral Matrix
101. Sort List
102. First Missing Positive
103. Hard Problems:
104. Trapping Rain Water
105. Jump Game II
106. Maximum Gap
107. Subarray Sum Equals K
108. Number of Longest Increasing Subsequence
109. Minimum Window Substring
110. Sliding Window Maximum
111. Product of Array Except Self
112. Shortest Unsorted Continuous Subarray
113. Count of Smaller Numbers After Self
114. Maximal Rectangle
115. Longest Consecutive Sequence
116. Median of Two Sorted Arrays
117. Merge Intervals
118. Kth Smallest Element in a Sorted Matrix
119. Largest Rectangle in Histogram
120. 4Sum
121. Longest Valid Parentheses
122. First Missing Positive
123. Maximum Product of Word Lengths
124. Longest Substring with At Most Two Distinct Characters
125. Maximum Subarray Sum Circular
126. Candy
127. Longest Substring Without Repeating Characters
128. Next Permutation
129. Find Peak Element
130. Shortest Palindrome
131. Longest Subarray with Ones After Replacement
132. Kth Missing Positive Number
133. Shortest Unsorted Continuous Subarray
134. Maximum Number of Achievable Transfer Requests
135. Minimum Deletions to Make Character Frequencies Unique
136. Longest Mountain in Array
137. Split a String Into the Max Number of Unique Substrings
138. Design a Leaderboard
139. Longest Increasing Path in a Matrix
140. Maximum Score Words Formed by Letters
141. Minimum Number of Operations to Move All Balls to Each Box
142. Longest Subsequence Repeated k Times
143. Restore The Array

STRING

|  |  |
| --- | --- |
| Reverse a string without using built-in reverse functions. |  |
| Check if a string is a palindrome. |  |
| Implement string concatenation without using the + operator. |  |
| Count the number of vowels in a string. |  |
| Check if a string contains only digits. |  |
| Remove duplicate characters from a string. |  |
| Replace spaces in a string with '%20' (URL encoding). |  |
| Implement a function to perform basic string compression (e.g., "aabcccccaaa" becomes "a2b1c5a3"). |  |
| Find the first non-repeating character in a string. |  |
| Determine if two strings are anagrams. |  |
| Implement strstr (substring search). |  |
| Determine if a string has all unique characters. |  |
| Rotate a string to the left by a given number of positions. |  |
| Count the number of words in a sentence. |  |
| Check if a string is a rotation of another string. |  |
| Capitalize the first letter of each word in a sentence. |  |
| Reverse the order of words in a sentence. |  |
| Implement Run Length Encoding (RLE) for a given string. |  |
| Check if a string is a valid number (integer or floating point). |  |
| Find the longest common prefix among an array of strings. |  |
| Group anagrams from a list of strings. |  |
| Determine if a string is a valid palindrome after removing at most one character. |  |
| Find the length of the last word in a sentence. |  |
| Implement a basic regular expression matching algorithm (support '.' and '\*'). |  |
| Implement a function to check if a string is a valid IPv4 address. |  |
| Find the minimum window in a string containing all characters of another string. |  |
| Count and Say: Given an integer n, generate the nth term of the count-and-say sequence. |  |
| Implement a basic calculator to evaluate a simple arithmetic expression in string form. |  |
| Longest Palindromic Substring: Find the longest palindromic substring in a string. |  |
| Implement a function to perform string pattern matching using the KMP algorithm. |  |