

1. Write a C++ program to find the absolute difference between n and 51. If n is greater than 51 return triple the absolute difference.
2. Write a C++ program to create a string where 'if' is added to the front of a given string. If the string already begins with 'if', return the string unchanged.
3. Write a program that uses recursion to print nth Fibonacci number.
4. Write a C++ program to check if a given positive number is a multiple of 3 or a multiple of 7.
5. Write a well commented code to check whether an entered year is leap or not.
6. Create a structure Employee with attributes id, name, and salary, and create an array of employees and print out the data for 5 employees. Data needs to be entered by the user.
7. Write a C++ program to check whether a given string begins with "F" or ends with "B". If the string starts with "F" return "Fizz" and return "Buzz" if it finishes with "B". If the string starts with "F" and ends with "B" return "FizzBuzz". In other cases return the original string.
8. Write a Program to Rotate the Elements of a Matrix.
9. Write a C++ program to implement a recursive function to find the sum of all prime numbers in a given range.
10. Write a C++ program to check if three given numbers are in strict increasing order. For example, 4, 7, 15, or 45, 56, 67, but not 4, 5, 8 or 6, 6, 8. However, if a fourth parameter is true, equality is allowed, such as 6, 6, 8 or 7, 7, 7.
 Sample Input:
 1, 2, 3, false
 1, 2, 3, true
 10, 2, 30, false
 10, 10, 30, true
 Sample Output:
 1
 1
 0
 1
11. Write a C++ program to sort (in descending order) an array of distinct elements according to the absolute difference of array elements and with a given value.
12. Write a C++ program to return the total number of Negatives, Non-negatives, and repeating digits in an array of n numbers.
13. Write a C++ program to find the second lowest and highest numbers in a given array.
14. Write a C++ program to return the total number of vowels, consonants, and repeating characters in an entered string.
15. Write a Program to Reverse a Sentence Using Recursion.
16. Write a program to define a class Student with private attributes name, stream, and marks, create methods to enter data for students, and the class should have public member functions to set data, get marks, and display details.
17. Write a program containing a possible exception. Use a try block to throw and catch block to promptly handle the exception.
18. Write a program to illustrate the application of multiple catch statement.

19. Write a program showcasing the concept of re-throwing the exception.
20. Write a C++ program to manage employee class details like name, ID, and salary. Include methods for calculating bonuses and displaying employee information.
21. Write a C++ program to find the sum of all elements in an array using recursion.
22. Write a C++ program to calculate the factorial of a given number using recursion.
23. Write a C++ program to implement a recursive function to find the maximum and minimum elements in an array.
24. Write a C++ program to create a class called Rectangle that has private member variables for length and width. Implement member functions to calculate the rectangle's area and perimeter.
25. Write a C++ program to implement a class called BankAccount that has private member variables for account number and balance. Include member functions to deposit and withdraw money from the account.
26. Write a C++ program to implement a class called Date that has private member variables for day, month, and year. Include member functions to set and get these variables, as well as to validate if the date is valid.
27. Define two classes Polar and Rectangle to represent points in the polar and rectangular system. Use conversion routines to convert from one system to the other.
28. Write a C++ program to sort a collection of integers using Quick sort.
29. Write a C++ program to sort an array of elements using the Insertion sort algorithm.
30. Write a program in C++ to calculate the sum of the series $(1*1) + (2*2) + (3*3) + (4*4) + (5*5) + \dots + (n*n)$.
31. Write a C program to implement the bubble sort algorithm to sort an array of integers in ascending order.
32. Write a C program to implement the linear search algorithm to search for an element in an array.
33. Write a C program to count the number of words in a given sentence.
34. Write a C program to print a pyramid pattern of numbers.

Input: 5

Output:

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1
2 2
3 3 3
4 4 4 4
5 5 5 5 5
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35. Write a program to reverse a given string.
Input: "hello", Output: "olleh"
36. Write a program to print the area of a rectangle by creating a class named 'Area' taking the values of its length and breadth as parameters of its constructor and having a function named 'returnArea' which returns the area of the rectangle. Length and breadth of the rectangle are entered through keyboard.
37. Write a program that would print the information (name, year of joining, salary, address) of three employees by creating a class named 'Employee'. The output should be as follows:

Name	Year of joining	Address
Robert	1994	64C- WallsStreat
Sam	2000	68D- WallsStreat
John	1999	26B- WallsStreat

38. Write a program by creating an 'Employee' class having the following functions and print the final salary.
- 1 - 'getInfo()' which takes the salary, number of hours of work per day of employee as parameters
 - 2 - 'AddSal()' which adds \$10 to the salary of the employee if it is less than \$500.
 - 3 - 'AddWork()' which adds \$5 to the salary of the employee if the number of hours of work per day is more than 6 hours.
39. Write a C++ program to implement a class called Shape with virtual member functions for calculating area and perimeter. Derive classes such as Circle, Rectangle, and Triangle from the Shape class and override virtual functions accordingly.
40. Write a C++ program to append new data to an existing text file.