Loops

1) Write a program in C to display the first 10 natural numbers.
2) Write a C program to find the sum of first 10 natural numbers.
   Expected Output :
   The first 10 natural number is :
   1 2 3 4 5 6 7 8 9 10
   The Sum is : 55

3) Write a program in C++ to display n terms of natural number and their sum.

   Test Data : 7

   Expected Output :
   The first 7 natural numbers is :
   1 2 3 4 5 6 7
   The Sum of Natural Number upto 7 terms : 28

4) Write a program in C__ to read 10 numbers from keyboard and find their sum and average.

   Test Data :

   Input the 10 numbers :
   Number-1 :2
   ...
   Number-10 :2

   Expected Output :
   The sum of 10 no is : 51
   The Average is : 5.100000

5) Write a program in C++ to display the cube of the number upto given an integer.
   Test Data :
   Input number of terms : 5
   Expected Output :
   Number is : 1 and cube of the 1 is :1
   Number is : 2 and cube of the 2 is :8
   Number is : 3 and cube of the 3 is :27
   Number is : 4 and cube of the 4 is :64
   Number is : 5 and cube of the 5 is :125

6) Write a program in C to display the multiplication table of a given integer.
   Test Data :
   Input the number (Table to be calculated) : 15
   Expected Output :
   15 X 1 = 15
   ...
   ...
   15 X 10 = 150

7) Write a program in C to display the multipliaction table vertically from 1 to n.
Test Data :
Input upto the table number starting from 1 : 8

Expected Output :
Multiplication table from 1 to 8
1x1 = 1, 2x1 = 2, 3x1 = 3, 4x1 = 4, 5x1 = 5, 6x1 = 6, 7x1 = 7, 8x1 = 8
...
1x10 = 10, 2x10 = 20, 3x10 = 30, 4x10 = 40, 5x10 = 50, 6x10 = 60, 7x10 = 70, 8x10 = 80

8) Write a program in C to display the n terms of odd natural number and their sum .
Test Data
Input number of terms : 10
Expected Output :
The odd numbers are :1 3 5 7 9 11 13 15 17 19
The Sum of odd Natural Number upto 10 terms : 100

9) Write a program in C++ to display the pattern like right angle triangle using an asterisk.

10) The pattern like :

```
*
**
***
****
```

11) **10.** Write a program in C++ to display the pattern like right angle triangle with a number.
The pattern like :

```
1
12
123
1234
```

12) Write a program in C++ to make such a pattern like right angle triangle with a number which will repeat a number in a row.
The pattern like :

```
1
22
333
4444
```

13) Write a program in C to make such a pattern like right angle triangle with number increased by 1.
The pattern like :

```
1
2 3
4 5 6
7 8 9 10
```

14) Write a program in C to make such a pattern like a pyramid with numbers increased by 1. Go to the editor

```
        1
      2   3
    4   5    6
7     8     9   10
```

15) Write a program in C++ to make such a pattern like a pyramid with an asterisk.

```
  *
 * *
* * *
* * * *
```

15) Write a C++ program to calculate the factorial of a given number. Test Data :
Input the number : 5
Expected Output :
The Factorial of 5 is: 120

16)**16.** Write a program in C to display the n terms of even natural number and their sum.
Test Data :
Input number of terms : 5
Expected Output :
The even numbers are :2 4 6 8 10
The Sum of even Natural Number upto 5 terms : 30
.

17)Write a program in C to make such a pattern like a pyramid with a number which will repeat the number in the same row.

```
  1
 2 2
3 3 3
4 4 4 4
```

18)Write a program in C++ to find the sum of the series [1-X^2/2!+X^4/4!-.....].
Test Data :
Input the Value of x :2
Input the number of terms : 5
Expected Output :
the sum = -0.415873
Number of terms = 5
value of x = 2.000000

19) Write a program in C++ to display the n terms of harmonic series and their sum.
1 + 1/2 + 1/3 + 1/4 + 1/5 ... 1/n terms
Test Data :
Input the number of terms : 5
Expected Output :
1/1 + 1/2 + 1/3 + 1/4 + 1/5 +

Sum of Series upto 5 terms : 2.283334

20) Write a program in C to display the pattern like a pyramid using asterisk and each row contain an odd number of asterisks.

```
*
***
*****
```

21. Write a program in C++ to display the sum of the series [9 + 99 + 999 + 9999 ...].
Test Data :
Input the number or terms :5
Expected Output :
9 99 999 9999 99999
The sum of the saries = 111105

21) Write a program in C to print the Floyd's Triangle.

```
1
01
101
0101
10101
```

22)Write a program in C to display the sum of the series [1+x+x^2/2!+x^3/3!+....].
Test Data :
Input the value of x :3
Input number of terms : 5
Expected Output :
The sum is : 16.375000
Number of terms = 5
The value of x = 3.000000

23) Write a program in C to find the sum of the series [x - x^3 + x^5 + ...].
Test Data :
Input the value of x :2
Input number of terms : 5
Expected Output :
The sum = 0.909347
Number of terms = 5
The value of x = 2.000000

24)Write a program in C to display the n terms of square natural number and their sum.
1 4 9 16 ... n Terms
Test Data :
Input the number of terms : 5
Expected Output :
The square natural upto 5 terms are :1 4 9 16 25
The Sum of Square Natural Number upto 5 terms = 55

25) Write a program in C to find the sum of the series 1 +11 + 111 + 1111 + .. n terms.

Test Data :
Input the number of terms : 5
Expected Output :
1 + 11 + 111 + 1111 + 11111 +
The Sum is : 12345

26)**27.** Write a c program to check whether a given number is a perfect number or not.
Test Data :
Input the number : 56
Expected Output :
The positive divisor : 1 2 4 7 8 14 28
The sum of the divisor is : 64
So, the number is not perfect.

27)Write a c program to find the perfect numbers within a given number of range.
Test Data :
Input the starting range or number : 1
Input the ending range of number : 50
Expected Output :
The Perfect numbers within the given range : 6 28

28)Write a C program to check whether a given number is an armstrong number or not.
Test Data :
Input a number: 153
Expected Output :
153 is an Armstrong number.

29)Write a C program to find the Armstrong number for a given range of number.
Test Data :
Input starting number of range: 1
Input ending number of range : 1000
Expected Output :
Armstrong numbers in given range are: 1 153 370 371 407

30)Write a program in C to display the pattern like a diamond.

```
   *
  ***
 *****
*******
*********
*******
 *****
  ***
   *
```

31)Write a C program to determine whether a given number is prime or not.
Test Data :
Input a number: 13
Expected Output :

13 is a prime number.

32)Write a C program to display Pascal's triangle.

Test Data :
Input number of rows: 5
Expected Output :

```
    1
   1 1
  1 2 1
 1 3 3 1
1 4 6 4 1
```

33)Write a program in C++ to find the prime numbers within a range of numbers.
34)
Test Data :
Input starting number of range: 1
Input ending number of range : 50
Expected Output :
The prime number between 1 and 50 are :
2 3 5 7 11 13 17 19 23 29 31 37 41 43 47

35) Write a program in C to display the first n terms of Fibonacci series.
Fibonacci series 0 1 2 3 5 8 13 .....
Test Data :
Input number of terms to display : 10
Expected Output :
Here is the Fibonacci series upto to 10 terms :
0 1 1 2 3 5 8 13 21 34

36) Write a program in C to display the such a pattern for n number of rows using a number which will start with the number 1 and the first and a last number of each row will be 1.

```
 1
121
12321
```

37) Write a program in C to display the number in reverse order. Test Data :
Input a number: 12345
Expected Output :
The number in reverse order is : 54321

38) Write a program in C to check whether a number is a palindrome or not.
Test Data :
Input a number: 121
Expected Output :
121 is a palindrome number.

39)**39.** Write a program in C to find the number and sum of all integer between 100 and 200 which are divisible by 9.
Expected Output :
Numbers between 100 and 200, divisible by 9 :
108 117 126 135 144 153 162 171 180 189 198

The sum : 1683

40) Write a C Program to display the pattern like pyramid using the alphabet.

```
    A
   A B A
  A B C B A
 A B C D C B A
```

41) Write a C++ program to find HCF (Highest Common Factor) of two numbers.
Test Data :
Input 1st number for HCF: 24
Input 2nd number for HCF: 28
Expected Output :
HCF of 24 and 28 is : 4

42) Write a program in C to find LCM of any two numbers using HCF.

Test Data :
Input 1st number for LCM: 15
Input 2nd number for LCM: 20
Expected Output :
The LCM of 15 and 20 is : 60

43) Write a program in C to find LCM of any two numbers.
44) Test Data :
Input 1st number for LCM: 15
Input 2nd number for LCM: 20
Expected Output :
The LCM of 15 and 20 is : 60

45)Write a C++ program to check whether a number is a Strong Number or not.
Test Data :
Input a number to check whether it is Strong number: 15
Expected Output :
15 is not a Strong number.

Hint: If the sum of factorial of the digits in any number is equal the given number then the number is called as STRONG number.

Ex=1! +4! +5!= 1+24+120 = 145

46) Write a C program to find Strong Numbers within a range of numbers.
Test Data :
Input starting range of number : 1
Input ending range of number: 200
Expected Output :
The Strong numbers are :
1 2 145

47) Write a c program to find out the sum of in A.P. series.

Test Data :
Input the starting number of the A.P. series: 1
Input the number of items for the A.P. series: 10

Input the common difference of A.P. series: 4
Expected Output :
The Sum of the A.P. series are :
1 + 5 + 9 + 13 + 17 + 21 + 25 + 29 + 33 + 37 = 190

48)Write a program in c to find the Sum of GP series.

Test Data :
Input the first number of the G.P. series: 1
Input the number or terms in the G.P. series: 5
Input the common ratio of G.P. series: 2
Expected Output :
The numbers for the G.P. series:
1 2 4 8 16 32
The n terms of G.P. : 16.000000

The Sum of the G.P. series : 63.000000

49)**56.** Write a program in C++ to Check Whether a Number can be Express as Sum of Two Prime Numbers.
Test Data :
Input a positive integer: 16
Expected Output :
16 = 3 + 13
16 = 5 + 11

50)Write a program in C to check Armstrong number of n digits. Go to the editor
Test Data :
Input an integer : 1634
Expected Output :
1634 is an Armstrong number