

## Intensive Programming Unit

1. Write a program in C to calculate the sum of three numbers with getting input in one line separated by a comma.

*Expected Output :*

Input three numbers separated by comma : 5,10,15

The sum of three numbers : 30

2. Write a C program to find whether a given year is a leap year or not.
3. Write a C program to read the value of an integer m and display the value of n is 1 when m is larger than 0, 0 when m is 0 and -1 when m is less than 0.

Test Data : -5

*Expected Output :*

The value of n = -1

4. Write a C program to find the largest of three numbers

Test Data : 12 25 52

*Expected Output :*

1st Number = 12,      2nd Number = 25,      3rd Number = 52

The 3rd Number is the greatest among three

5. Write a C program to calculate the root of a Quadratic Equation.

Test Data : 1 5 7

*Expected Output :*

Root are imaginary;

No solution.

6. Write a C program print total number of days in a month using switch case.
7. Write a C program to check whether an alphabet is vowel or consonant using switch case.
8. Write a C program to find maximum between two numbers using switch case.
9. Write a C program to check whether a number is even or odd using switch case.
10. Write a C program to find roots of a quadratic equation using switch case.
11. Write a C program to create Simple Calculator using switch case.

12. Write a program in C to display the pattern like right angle triangle with a number.

The pattern like :

```
12
123
1234
```

13. 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
```

14. 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
```

15. Write a program in C to make such a pattern like a pyramid with numbers increased by 1.

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

16. Write a program in C to make such a pattern like a pyramid with an asterisk.

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

17. 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

18. 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

19. 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

```

20. Write a program in C to find the sum of the series [  $1 - X^{2/2!} + X^{4/4!} - \dots$  ].

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

21. Write a program in C to display the n terms of harmonic series and their sum.

$1 + 1/2 + 1/3 + 1/4 + 1/5 \dots 1/n$  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

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

```

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

23. 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 series = 111105

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

```

1
01
101
0101
10101
  
```

25. 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

26. 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 values of the series:

2

-8

32

-128

512

The sum = 410

27. Write a program in C to find the sum of the series  $1 + 11 + 111 + 1111 + \dots$  n terms.

Test Data :

Input the number of terms : 5

*Expected Output :*

$1 + 11 + 111 + 1111 + 11111$

The Sum is : 12345

28. 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.

29. 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

30. 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.

31. 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

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

```

      *
    * * *
  * * * * *
* * * * * *
* * * * * * *
* * * * * * *
  * * * * *
    * * * *
      * * *
        *

```

33. 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.

34. Write a C program to display Pascal's triangle.

Test Data :

Input number of rows: 5

*Expected Output :*

```

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

```

35. Write a program in C to find the prime numbers within a range of numbers.

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

36. 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

37. 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
 1 2 1
1 2 3 2 1

```

38. 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

39. 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.

40. 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

41. 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
  
```

42. Write a program in C to convert a decimal number into binary without using an array.

Test Data :

Enter a number to convert : 25

*Expected Output :*

The Binary of 25 is 11001.

43. Write a program in C to convert a binary number into a decimal number without using array, function and while loop.

Test Data :

Input a binary number :1010101

*Expected Output :*

The Binary Number : 1010101

The equivalent Decimal Number : 85

44. 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

45. 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

46. Write a program in C to find LCM of any two numbers.

Test Data :

Input 1st number for LCM: 15

Input 2nd number for LCM: 20

*Expected Output :*

The LCM of 15 and 20 is : 60

47. Write a program in C to convert a binary number into a decimal number using math function.

Test Data :

Input the binary number : 1010100

*Expected Output :*

The Binary Number : 1010100

The equivalent Decimal Number is : 84

48. Write a program in C to convert a decimal number into octal without using an array.

Test Data :

Enter a number to convert : 79

*Expected Output :*

The Octal of 79 is 117.

49. Write a program in C to convert an octal number to a decimal without using an array.

Test Data :

Input an octal number (using digit 0 - 7) :745

*Expected Output :*

The Octal Number : 745

The equivalent Decimal Number : 485

50. Write a program in C to convert an octal number into binary.

Test Data :

Input an octal number (using digit 0 - 7) :57

*Expected Output :*

The Octal Number : 57

The equivalent Binary Number : 101111

51. Write a program in C to convert a decimal number to hexadecimal.

Test Data :

Input any Decimal number: 79

*Expected Output :*

The equivalent Hexadecimal Number : 4F

52. 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

53. Write a program in C to check Armstrong number of n digits.

Test Data :

Input an integer : 1634

*Expected Output :*

1634 is an Armstrong number

54. Write a program to produce the following output:

```

A B C D E F G F E D C B A
A B C D E F   F E D C B A
A B C D E     E D C B A
A B C D       D C B A
A B C         C B A
A B           B A
A             A

```

55. Write a program in C to store elements in an array and print it.

Test Data :

Input 10 elements in the array :

element - 0 : 1

element - 1 : 1

element - 2 : 2

.....

*Expected Output :*

Elements in array are: 1 1 2 3 4 5 6 7 8 9

56. Write a program in C to read n number of values in an array and display it in reverse order.

Test Data :

Input the number of elements to store in the array :3

Input 3 number of elements in the array :

element - 0 : 2

element - 1 : 5

element - 2 : 7

*Expected Output :*

The values store into the array are :

2 5 7

The values store into the array in reverse are :

7 5 2

57. Write a program in C to find the sum of all elements of the array.

Test Data :

Input the number of elements to be stored in the array :3

Input 3 elements in the array :

element - 0 : 2

element - 1 : 5

element - 2 : 8

*Expected Output :*

Sum of all elements stored in the array is : 15

58. Write a program in C to copy the elements one array into another array.

Test Data :

Input the number of elements to be stored in the array :3

Input 3 elements in the array :

element - 0 : 15

element - 1 : 10

element - 2 : 12

*Expected Output :*

The elements stored in the first array are :

15 10 12

The elements copied into the second array are :

15 10 12

59. Write a program in C to count a total number of duplicate elements in an array.

Test Data :

Input the number of elements to be stored in the array :3

Input 3 elements in the array :

element - 0 : 5

element - 1 : 1

element - 2 : 1

*Expected Output :*

Total number of duplicate elements found in the array is : 1

60. Write a program in C to print all unique elements in an array.

Test Data :

Input the number of elements to be stored in the array :3

Input 3 elements in the array :

element - 0 : 1

element - 1 : 5

element - 2 : 1

*Expected Output :*

The unique elements found in the array are :

5

61. Write a program in C to merge two arrays of same size sorted in descending order.

Test Data :

Input the number of elements to be stored in the first array :3

Input 3 elements in the array :

element - 0 : 1

element - 1 : 2

element - 2 : 3

Input the number of elements to be stored in the second array :3

Input 3 elements in the array :

element - 0 : 1

element - 1 : 2

element - 2 : 3

*Expected Output :*

The merged array in descending order is :

3 3 2 2 1 1

62. Write a program in C to count the frequency of each element of an array.

Test Data :

Input the number of elements to be stored in the array :3

Input 3 elements in the array :

element - 0 : 25

element - 1 : 12

element - 2 : 43

*Expected Output :*

The frequency of all elements of an array :

25 occurs 1 times

12 occurs 1 times

43 occurs 1 times

63. Write a program in C to find the maximum and minimum element in an array.

Test Data :

Input the number of elements to be stored in the array :3

Input 3 elements in the array :

element - 0 : 45

element - 1 : 25

element - 2 : 21

*Expected Output :*

Maximum element is : 45

Minimum element is : 21

64. Write a program in C to separate odd and even integers in separate arrays.

Test Data :

Input the number of elements to be stored in the array :5

Input 5 elements in the array :

element - 0 : 25

element - 1 : 47

element - 2 : 42

element - 3 : 56

element - 4 : 32

*Expected Output :*

The Even elements are :

42 56 32

The Odd elements are :

25 47

65. Write a program in C to sort elements of array in ascending order.

Test Data :

Input the size of array : 5

Input 5 elements in the array :

element - 0 : 2

element - 1 : 7

element - 2 : 4

element - 3 : 5

element - 4 : 9

*Expected Output :*

Elements of array in sorted ascending order:

2 4 5 7 9

66. Write a program in C to sort elements of the array in descending order.

Test Data :

Input the size of array : 3

Input 3 elements in the array :

element - 0 : 5

element - 1 : 9

element - 2 : 1

*Expected Output :*

Elements of the array in sorted descending order:

9 5 1

67. Write a program in C to insert New value in the array (sorted list )..

Test Data :

Input the size of array : 3

Input 3 elements in the array in ascending order:

element - 0 : 5

element - 1 : 7

element - 2 : 9

Input the value to be inserted : 8

*Expected Output :*

The exist array list is :

5 7 9

After Insert the list is :

5 7 8 9

68. Write a program in C to insert New value in the array (unsorted list ).

Test Data :

Input the size of array : 4

Input 4 elements in the array in ascending order:

element - 0 : 1

element - 1 : 8

element - 2 : 7

element - 3 : 10

Input the value to be inserted : 5

Input the Position, where the value to be inserted :2

*Expected Output :*

The current list of the array :

1 8 7 10

After Insert the element the new list is :

1 5 8 7 10

69. Write a program in C to delete an element at desired position from an array.

Test Data :

Input the size of array : 5

Input 5 elements in the array in ascending order:

element - 0 : 1

element - 1 : 2

element - 2 : 3

element - 3 : 4

element - 4 : 5

Input the position where to delete: 3



*Expected Output :*

The new list is : 1 2 4 5

70. Write a program in C to find the second largest element in an array.

Test Data :

Input the size of array : 5

Input 5 elements in the array :

element - 0 : 2

element - 1 : 9

element - 2 : 1

element - 3 : 4

element - 4 : 6

*Expected Output :*

The Second largest element in the array is : 6

71. Write a program in C to find the second smallest element in an array.

Test Data :

Input the size of array : 5

Input 5 elements in the array (value must be <9999) :

element - 0 : 0

element - 1 : 9

element - 2 : 4

element - 3 : 6

element - 4 : 5

*Expected Output :*

The Second smallest element in the array is : 4