

C Program

1. Write a program to find largest among three numbers
2. Write a program to check whether the given number is Armstrong number or not

Sample I/O: n=153; calculate $a = 1^3 + 5^3 + 3^3$; if $(a==n)$, print Armstrong number

3. Write a program to find Factorial of a number

Formula : $n(n-1)$*

*Sample I/O: n=5; factorial of 5=5*4*3*2*1*

- 4. Write a program to print GCD of 2 numbers**
- 5. Write a program to print LCM of 2 numbers**
- 6. Write a program to print Prime number (range) (Example:
n=10, The prime numbers up to 10 are 1,2,3,5,7)**
- 7. Write a program to add two fractions**
- 8. Write a program to count number of digits in an Integer**
- 9. Write a program to reverse a given number (Example : 123
output: 321)**
- 10. Fibonacci series**

11. Write a program to check whether a number is Harshad number or not

**$n=21$
 $s=(2+1=3)$ and $n\%s==0$,
Harshad number**

❑ Algorithm:

- ***Get the input from the user (n)***
- ***Find the sum of its digits (s)***
- ***If the number is divisible by the sum (s), print “Harshad number”***
- ***Else, print “Given number is not Harshad number”***

12. Write a program to check whether a number is Abundant number or not.

***Number=18
Divisors = 1,2,3,6,9
s= 1+2+3+6+9 s=21
s>n, Abundant number***

□ Algorithm:

- ***Read an input value from the user (n)***
- ***Find the divisors (except the number itself) of 'n' and find their sum (s)***
- ***If $s > n$ then print 'Abundant number' on screen***
- ***Else, print 'Given number is not Abundant number'***

13. Write a program to check whether the given number is perfect number or not

*Take a number: 6
6 is a perfect number as $1 + 2 + 3 = 6$*

❑ Algorithm:

- *Read an input value from the user*
- *Find all divisors of the number except the number itself*
- *If sum of all divisors of the number is equal to the number, then print 'Perfect number'*
- *Else, print 'Not a Perfect number'*

14. Write a program to find if the given numbers are Friendly pair or not (Amicable or not)

$$(Sum\ of\ divisors\ of\ 6)/6 = (Sum\ of\ divisors\ of\ 28)/28$$

$$(1 + 2 + 3)/6 = (1 + 2 + 4 + 7 + 14)/28$$

$$1 = 1$$

❑ **Algorithm:**

- **Input the numbers (n1 and n2)**
- **Initialize s1=s2=0**
- **s1=Sum of all divisors of n1**
- **s2=Sum of all divisors of n2**
- **If ((s1/n1) == (s2/n2)), then print 'Friendly pair'**

Topic: Arrays

- 1. Write a program to find smallest and largest element in an unsorted array**
- 2. Write a program to print first half of an array in ascending order and second half in descending order**
- 3. Write a program to calculate the sum of elements in an array**

Sample I/O: $a[3]=\{1,2,3\}$; calculate $S=1+2+3$; print S

- 4. Write a program to find the frequency of elements in an array**

Example: $a[5]=\{1,2,3,1,2\}$; print 1 occurs 2 times, 2 occurs 2 times and 3 occurs 1 time

- 5. Write a program to count distinct elements in an Array**

6. Write a program to reverse an array

*Input: $a[5]=\{1,2,3,4,5\}$
Output: $a[5]=\{5,4,3,2,1\}$*

7. Given a number 'N'. Find if it can be expressed as sum of two prime numbers and store the numbers in an array 'a[2]'

Input $N=9$

Output: 9 can be expressed as sum of two prime numbers.

The numbers are 2 and 7

$a[2]=\{2,7\}$

- 8.** Given a sorted array of positive integers. Your task is to rearrange the array elements alternatively i.e. first element should be max value, second should be min value, third should be second max, fourth should be second min and so on.

Input: $a[5]=\{1,2,3,4,5\}$

Output: $\{5,1,4,2,3\}$

9. Write a program to return the sum of all numbers which is divisible by 2 or 3 from the given 'N' numbers (Funny divisors)

N= {1,2,3,5,6} As 2,3 and 6 is either divisible by 2 or 3 we return 2+3+6=11 as output

10.*Given an array of integers and you are supposed to return the subarray with the largest sum, and return *its sum*.

Input: $n = [-2, 1, -3, 4, -1, 2, 1, -5, 4]$
The subarray $[4, -1, 2, 1]$ has the largest sum 6
Output: 6 , $[4, -1, 2, 1]$

11.Sorting elements of an array by frequency

Input :arr[6]=[3, 2, 3, 1, 2, 2]
Output: 2 2 2 3 3 1