



### Assignments

#### ----- **Assignments on Arrays in C Programming** -----

1. Find all odd and even no.'s in runtime array?
2. Find all prime no.'s in runtime array?
3. Write a program to create an array of integers and perform following operations on that array like finding the sum, average, maximum and minimum number in that array. Accept the numbers of the array from user.
4. Perform all the above operations for 2D arrays.
5. Enter data for two matrices. Multiply them to store result in third matrix & display result.
6. Enter data for one matrix. Find its Transpose & display result.

#### ----- **Assignments on Decision and Loops** -----

1. Write a C program to input basic salary of an employee and calculate its Gross salary according to following: Basic Salary  $\leq$  10000 : HRA = 20%, DA = 80% Basic Salary  $\leq$  20000 : HRA = 25%, DA = 90% Basic Salary  $>$  20000 : HRA = 30%, DA = 95%
2. Write a C program to input angles of a triangle and check whether triangle is valid or not.
3. Accept a number and display its multiplication table.
4. Accept a number and display its sum of digits.
5. Accept a number and display whether its an Armstrong number.
6. Write a C program to check whether a character is uppercase or lowercase alphabet.
7. Write a C program to input week number and print week day.
8. Write a C program to input month number and print number of days in that month.
9. Write a C program to count total number of notes in given amount.
10. Write a C program to invert the case of alphabet.
11. Write a C program to print all natural numbers from 1 to n. - using while loop
12. Write a C program to print all natural numbers in reverse (from n to 1). - using while loop
13. Write a C program to find sum of all even and odd numbers between 1 to n.
14. Write a C program to count number of digits in a number.
15. Write a C program to find first and last digit of a number.
16. Write a C program to enter a number and print its reverse.



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17. Write a C program to check whether a number is palindrome or not.

18. Write a C program to find power of a number using for loop.

19. Write a C program to find all factors of a number.

20. Write a C program to calculate factorial of a number.

21. Write a C program to find HCF (GCD) of two numbers.

22. Write a C program to find LCM of two numbers.

23. Write a C program to check whether a number is Prime number or not.

24. Write a C program to print all Prime numbers between 1 to n.

25. Write a C program to check whether a number is Perfect number or not.

*Perfect number* is a positive integer which is equal to the sum of its proper positive divisors. For example: 6 is the first perfect number Proper divisors of 6 are 1, 2, 3 Sum of its proper divisors =  $1 + 2 + 3 = 6$ . Hence 6 is a perfect number.

26. Write a C program to check whether a number is Strong number or not.

*Strong number* is a special number whose sum of factorial of digits is equal to the original number. For example: 145 is strong number. Since,  $1! + 4! + 5! = 145$

27. Write a C program to print Fibonacci series up to n terms.

28. Write a C program to print all alphabets from a to z

Write a function to generate the following pyramid of numbers

```
0
101
21012
3210123
432101234
54321012345
432101234
3210123
21012
101
0
```

29. Get this output using simple loops. Here no of iterations are important.

```
zyxwwwxyz
zyxwxyz
zyxyz
zyz
z
```



----- **Assignments on Strings in C Programming** -----

1: Write a program to sort a number of strings using bubble sort. Input is a number of strings and the output is the sorted list based on the length of strings.

For e.g.: If input is jyoti, sareeka, anisha, sangita, savita, suja

The output is suja, jyoti, anisha, savita, sareeka, sangita

2: Define a structure to represent time in hours (0-23), minutes (0-59), and seconds (0-59), and then write a function that accepts an argument of type time represented by this structure and updates it by one second & 30 seconds.

3: Using pointers write your own functions for the following:

a. String comparison b. String concatenate

c. String copy

d. String length.

Note: Do not include <string.h> in your program

4: Write a program that will read each line in a file and store it in another file with the sequence reversed, that is, the first line in file one should be the last line in file two and so on.

5: Write a program to cyclically permute a string one character at a time.

E.g.: If space is the input the output should produce

space paces acesp cespa espac

6: Write functions for the following base conversion operations: a. Octal to Hexadecimal. b.

Hexadecimal to Octal.

Take care to validate digits/characters while accepting the input.

7: A program is to be written to implement the tower of Hanoi Problem.

----- **C++ Assignments on Classes and Objects** -----

1. Create a class Person with data members as name, age, city. Write getters and setters for all the data members. Also add the display function. Create Default and Parameterized constructors. Create the object of this class in main method and invoke all the methods in that class.

2. Create a class Date with data members as dd, mm, yy. Write getters and setters for all the data



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members. Also add the display function. Create Default and Parameterized constructors. Create the object of this class in main method and invoke all the methods in that class.

3. Create a class Book with data members as bname,id,author,price. Write getters and setters for all the data members. Also add the display function. Create Default and Parameterized constructors. Create the object of this class in main method and invoke all the methods in that class.

4. Create a class Point with data members as x,y. Create Default and Parameterized constructors. Write getters and setters for all the data members. Also add the display function. Create the object of this class in main method and invoke all the methods in that class.

5. Create a class ComplexNumber with data members real, imaginary. Create Default and Parameterized constructors. Write getters and setters for all the data members. Also add the display function. Create the object of this class in main method and invoke all the methods in that class.