ARRAYS

1. Write a C program to find the sum of odd and even numbers in a given list of values.

2. Write a C program to print the smallest value and the greatest value in a given array along with its positions.

3. Write a C program to read a list of n integers and count the number of positives, negatives and zeroes in it.

4. Write a menu-driven C program to perform the following:
   (a) Addition of two matrices
   (b) Subtraction of two matrices
   (c) Multiplication of two matrices.

5. Write a C program to read a matrix and print its transpose. Also check whether it is symmetric or not.

Write a C program to read a string from a user and perform the following:

(i) Count the no of vowels
(ii) Count the no of consonants
(iii) count the no. of special characters
(iv) Count the no. of words.
(v) Count the no. of occurences of a particular character in the string

Write a menu-driven C program to read a line of text and perform the following:

(i) Extract a portion of string from the text
(ii) Count the occurence of a particular word.
(iii) Reverse the string (except the punctuation marks)
(iv) Delete all vowels from it.
(v) Search for the presence of any numeric digit in it and its positions.

Write a C program to input two strings and use in-built functions to do the following:

(i) Concatenate two strings
(ii) Compare two strings
(iii) Copy one string onto another
(iv) Calculate length of strings
(v) Concatenate n characters of one string with another
(vi) Copy n characters of one string onto another
(vii) Check whether one string is a portion of another string or not.

Write a C program to define a function gcd() to calculate the greatest common divisor of two integers m and n and use it to find the LCM (Lowest common multiple) using the formula: $LCM = m*n/GCD$.

Write a C program to define a function fibonacci() to generate the first n fibonacci numbers.

Write a C program to define a function cosine() and sine() to compute the respective cosine and sine values for an input integer x.

$$Formula: \cos(x) = 1 - \frac{x^2}{2!} + \frac{x^4}{4!} - \frac{x^6}{6!} + \dots \text{ upto 15 terms}$$

$$\sin(x) = x - \frac{x^3}{3!} + \frac{x^5}{5!} - \frac{x^7}{7!} + \dots \text{ upto 15 terms}$$

Write a C program to define a function round() that takes in a floating-point number as input and returns the number rounded off to two decimal places. Also print the number returned in words.

> Write a C program to define a recursive function that displays the first 'n' palindrome prime numbers. Display 5 numbers per line and align em properly as follows:

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    2    3    5    7   11
  101  131  151  313  363
         ⋮
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Write a C program to define a function to find the biggest, smallest and average value from a given list of 'n' values. Stored in a two-dimensional array.

Write a C program to define a function poly() that recursively evaluates the value of a polynomial of order n.

$$\left[\text{Note}: \quad P = (...(((a_0 x + a_1)x + a_2)x + a_3)x + ... + a_n) \right]$$

Write a menu-driven C program and define separate user-defined functions to perform the following:

(a) Compute Factorial of a number recursively.

(b) Compute nC_r using the recursive definition of factorial $nC_r = \dfrac{n!}{r!\,(n-r)!}$

(c) Compute x^n (x to the power n) recursively

Write a C program to define a function encrypt() that accepts two strings as input arguments and interchanges the vowels between them. In case of less number of matching number of vowels, use "*" as encryption character.