ASANSOL ENGINEERING COLLEGE

PROGRAMMING FOR PROBLEM SOLVING LAB

ES-CS291

Chapter Name	Programs to be Performed	Performance
A	1. WAP in c to print the following information in the following way: **Asansol Engineering College** **IT Dept.** 2. WAP in C to print "INDIAN" in the following way: I IN IND INDI INDIA INDIAN **3.** WAP in C to accept two integer numbers with proper message. Perform different operations using the following operators : **+ , - , *, / , %** **Expected Output:** First Number = 15 Second Number = 4 Summation = 19 Subtraction = 11 Multiplication = 60 Division = 3 Remainder = 3 (***Note: Assuming 15 & 4 have been taken as input***) 4. Write a C program to print your name, date of birth and mobile number. **Expected Output:** Name : Dennis MacAlistair Ritchie DOB : September 9, 1941 Mobile: 99-9999999999 5. Write a C program to print a block F using hash (#), where the F has a height of six characters and width of five and four characters. And also, to print a big 'C'. **Expected Output:** ###### # # ##### # # # ###### ## ## # # # # # ## ## ###### 6. Write a C program to convert specified days into years, weeks and days. (Note: Ignore leap year.) **Test Data :** Number of days : 1329 **Expected Output :** Years: 3 Weeks: 33 Days: 3	

B

1. WAP to take the total marks of a particular student and provide the Grade according to the following table

Total Marks	Grade
Less than 40	Fail
From 40 to 49	D
From 50 to 59	C
From 60 to 69	B
From 70 to 79	A
From 80 to 89	E
From 90 to 100	O

2. WAP to take the Sale amount as input and provide the commission according to the following table

Sale Amount	Commission
Less than 500	Rs. 35
From 500 to 2000	10% of Sale Amount
From 2001 to 5000	15% of Sale Amount
More than 5000	20% of Sale Amount

3. Take the three sides of a Triangle and check whether the triangle is equilateral, isosceles or scalene. Provide necessary messages.
4. Write a C program to read the coordinates (x, y) (in Cartesian system) and find the quadrant to which it belongs (Quadrant -I, Quadrant -II, Quadrant -III, Quadrant -IV).
Note: A Cartesian coordinate system is a coordinate system that specifies each point uniquely in a plane by a pair of numerical coordinates.
These are often numbered from 1st to 4th and denoted by Roman numerals: I (where the signs of the (x,y) coordinates are I(+,+), II (−,+), III (−,−), and IV (+,−).**Test Data :**

Input the Coordinate(x,y): x: 25 y: 15 **Expected Output:** Quadrant-I(+,+)	Input the Coordinate(x,y): x: 25 y: -15 **Expected Output:** Quadrant-IV(+,-)

5. Write a program that reads two numbers and divide the first number by second number. If the division not possible print "Division not possible".
Test Data :

Input two numbers: x: 25 y: 5 **Expected Output:** 5.0	Input two numbers: x: 21 y: 5 **Expected Output:** Division not possible

6. Write a C program that accepts a real number x and prints out the corresponding value of sin(1/x) using 4-decimal places.
Test Data:

Input value of x: .6235 Value of sin(1/x) is 0.9995	Input value of x: 0 Value of sin(1/x) is “Not Possible”

7. Write a C program to remove any negative sign in front of a number.
Input a value (negative):
Expected Output:
Original value = -253
Absolute value = 253

B

8. Write a program in C to calculate and print the Electricity bill of a given customer. The customer id., name and unit consumed by the user should be taken from the keyboard and display the total amount to pay to the customer. The charge are as follow :

Unit	Charge/unit
upto 199	@1.20
200 and above but less than 400	@1.50
400 and above but less than 600	@1.80
600 and above	@2.00

If bill exceeds Rs. 400 then a surcharge of 15% will be charged and the minimum bill should be of Rs. 100/-

Test Data :
1001
Raman Chatterjee
800
Expected Output :
Customer IDNO :1001
Customer Name : Raman Chatterjee
unit Consumed :800
Amount Charges @Rs. 2.00 per unit : 1600.00
Surchage Amount : 240.00
Net Amount Paid By the Customer : 1840.00

9. Write a C program to read temperature in centigrade and display a suitable message according to temperature state below :
   Temp < 0 then **Freezing weather**
   Temp 0-10 then **Very Cold weather**
   Temp 10-20 then **Cold weather**
   Temp 20-30 then **Normal in Temp**
   Temp 30-40 then **Its Hot**
   Temp >=40 then **Its Very Hot**

   Test Data :
   42
   Expected Output :
   Its very hot.
10. Write a C program to check whether a triangle can be formed by the given value for the angles.
    Test Data :
    40 55 65
    Expected Output :
    The triangle is not valid.
11. Write a C program to check whether a number is ODD or EVEN.
    Test Data :
    25
    Expected Output :
    ODD
12. Write a program in C to read any Month Number in integer and display Month name in the word.
    Test Data :
    4
    Expected Output :
    April

13. Write a program to input three numbers (positive or negative). If they are unequal then display the greatest number otherwise, display they are equal. The program also displays whether the numbers entered by the user are 'All positive', 'All negative' or 'Mixed numbers'.
Sample Input: 56, -15, 12
Sample Output:
The greatest number is 56
Entered numbers are mixed numbers.

14. An air-conditioned bus charges fare from the passengers based on the distance travelled as per the tariff given below:

Distance Travelled	**Fare**
Up to 10 km	Fixed charge ₹80
11 km to 20 km	₹6/km
21 km to 30 km	₹5/km
31 km and above	₹4/km

Design a program to input distance travelled by the passenger. Calculate and display the fare to be paid.

15. An ICSE school displays a notice on the school notice board regarding admission in Class XI for choosing stream according to marks obtained in English, Maths and Science in Class 10 Council Examination.

Marks obtained in different subjects	**Stream**
Eng, Maths and Science >= 80%	Pure Science
Eng and Science >= 80%, Maths >= 60%	Bio. Science
Eng, Maths and Science >= 60%	Commerce

Print the appropriate stream allotted to a candidate. Write a program to accept marks in English, Maths and Science from the console.

16. Write a program to accept a number and check whether the number is divisible by 3 as well as 5. Otherwise, decide:
(a) Is the number divisible by 3 and not by 5?
(b) Is the number divisible by 5 and not by 3?
(c) Is the number neither divisible by 3 nor by 5?
The program displays the message accordingly.

17. An employee wants to deposit certain sum of money under 'Term Deposit' scheme in Syndicate Bank. The bank has provided the tariff of the scheme, which is given below:

No. of Days	**Rate of Interest**
Up to 180 days	5.5%
181 to 364 days	7.5%
Exact 365 days	9.0%
More than 365 days	8.5%

Write a program to calculate the maturity amount taking the sum and number of days as inputs.

18. Given below is a hypothetical table showing rate of income tax for an India citizen, who is below or up to 60 years.

Taxable income (TI) in ₹	Income Tax in ₹
Up to ₹ 2,50,000	Nil
More than ₹ 2,50,000 and less than or equal to ₹ 5,00,000	(TI - 1,60,000) * 10%
More than ₹ 5,00,000 and less than or equal to ₹ 10,00,000	(TI - 5,00,000) * 20% + 34,000
More than ₹ 10,00,000	(TI - 10,00,000) * 30% + 94,000

Write a program to input the age and taxable income of a person. If the age is more than 60 years then display the message "Wrong Category". If the age is less than or equal to 60 years then compute and display the income tax payable along with the name of tax payer, as per the table given above.

19. 'Kumar Electronics' has announced the following seasonal discounts on purchase of certain items.

Purchase Amount	Discount on Laptop	Discount on Desktop PC
Up to ₹ 25000	0.0%	5.0%
₹ 25,001 to ₹ 50,000	5%	7.5%
₹ 50,001 to ₹ 1,00,000	7.5%	10.0%
More than ₹ 1,00,000	10.0%	15.0%

Write a program to input name, amount of purchase and the type of purchase (`L' for Laptop and 'D' for Desktop) by a customer. Compute and print the net amount to be paid by a customer along with his name.
(Net amount = Amount of purchase - discount)

20. A Mega Shop has different floors which display varieties of dresses as mentioned below:

    1. Ground floor : Kids Wear
    2. First floor : Ladies Wear
    3. Second floor : Designer Sarees
    4. Third Floor : Men's Wear

    The user enters floor number and gets the information regarding different items of the Mega shop. After shopping, the customer pays the amount at the billing counter and the shopkeeper prints the bill

21. Using a switch case statement, write a menu driven program to convert a given temperature from Fahrenheit to Celsius and vice-versa. For an incorrect choice, an appropriate message should be displayed.

    Hint: c = 5/9*(f-32) and f=1.8*c+32

22. A company announces revised Dearness Allowance (DA) and Special Allowances (SA) for their employees as per the tariff given below:

Basic	Dearness Allowance (DA)	Special Allowance (SA)
Up to ₹ 10,000	10%	5%
₹ 10,001 - ₹ 20,000	12%	8%
₹ 20,001 - ₹ 30,000	15%	10%
₹ 30,001 and above	20%	12%

Write a program to accept name and Basic Salary (BS) of an employee. Calculate and display gross salary.
Gross Salary = Basic + Dearness Allowance + Special Allowance

23. Mr. Kumar is an LIC agent. He offers discount to his policy holders on the annual premium. However, he also gets commission on the sum assured as per the given tariff.

Sum Assured	Discount	Commission
Up to ₹ 1,00,000	5%	2%
₹ 1,00,001 and up to ₹ 2,00,000	8%	3%
₹ 2,00,001 and up to ₹ 5,00,000	10%	5%
More than ₹ 5,00,000	15%	7.5%

Write a program to input the sum assured and first annual premium. Calculate the discount of the policy holder and the commission of the agent. The program displays all the details as:

Sum assured:
Premium:
Discount on the first premium:
Commission of the agent:

C

1. Write a program in C to take 10 numbers as input and display how many of them are Odd number and Even number.

Test Data : 10 11 75 89 56 44 22 77 55 65 **Expected Output :** Total number of "ODD" numbers: 6 Total number of "EVEN" numbers:4	**Test Data :** 10 20 30 41 50 51 60 6 8 10 **Expected Output :** Total number of "ODD" numbers: 2 Total number of "EVEN" numbers:8

2. Write a program in C to display n terms of natural number and their sum and average.

Test Data :
7
Expected Output :
The first 7 natural number is :
1 2 3 4 5 6 7
The Sum of Natural Number upto 7 terms : 28
The Average of Natural Number upto 7 terms : 4.000

3. Write a program in C to take a number and check whether it is Prime or not.

Enter a number: 25 **Expected Output :** 25 is NOT PRIME	Enter a number: 11 **Expected Output :** 11 is NOT PRIME

4. Write a program in C to generate all the prime numbers from M to N.(M<N)

Test Data :
Enter M and N: 10 23
Expected Output :
[11] [13] [17] [19] [23].

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

6. Write a program in C to take a number & find its factorial.

Test Data :
Enter a number: 5
Expected Output :
Factorial of 5 is =120

7. Write a program in C to take a number & find all the factors of it.

Test Data :
Enter a number: 16
Expected Output :
Factors of 16 are =[1][2][4][8][16]

C

8. Write a c program to check whether a given number is a perfect number or not.

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.	Input the number : 6 **Expected Output :** The positive divisor : 1 2 3 The sum of the divisor is : 6 So, the number is perfect.

9. Write a program in C to take a number & find all its PRIME FACTORS.

Test Data :
Enter a number: 36
Expected Output :
All Factors of 36 are =[2] [3][4] [6][9][12][18]
Prime Factors of 36 are =[2] [3]

10. Write a program in C to display the first n terms of Fibonacci series.
Fibonacci series is : 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

11. 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

12. Write a program in C to Check Whether a Number can be expressed as Sum of Two Prime Numbers.

Test Data :
Input a positive integer: 16
Expected Output :
16 = 3 + 13
16 = 5 + 11

D

1. 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

2. 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
Sum of Series upto 5 terms : 111105

D

3. Write a program in C to accept an Integer number as input and perform the following operations on that integer number
    a. Print the total number of digits present in that inputted number
    b. Print summation of all the digits present in that inputted number
    c. Reverse the inputted number and print it
    d. Check whether the inputted number is a Palindrome number or not.
    e. Check whether the inputted number is an Armstrong number or not.

Enter a number : 153	Enter a number : 121
Expected Output :	**Expected Output :**
Total No. digits : 3	Total No. digits : 3
Sum of all digits : 9	Sum of all digits : 4
Reverse of 153 is : 351	Reverse of 121 is : 121
153 is not a Palindrome Number	121 is a Palindrome Number
153 is an Armstrong Number	121 is not an Armstrong Number

4. 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 :
Number of terms = 5
value of x = 2.000000
the sum = -0.415873

5. Write a program in C to display the n terms of harmonic series and their sum.
[x - x^3 + x^5 + ...nth term].

Test Data :
Input the value of x :2
Input number of terms : 5
Expected Output :
The sum= 410

6. 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

7. Write a program in C to display all Prime Fibonacci numbers within a Fibonacci series of nth Term.

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
The Prime Fibonacci Numbers are:
[2] [3] [5] [13]

8. Write a c program to find out the sum of an 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

D

9. Write a program in C to display the n terms of series and their sum.
[1-12+123-1234+12345 nth term].

Test Data :
Enter the term number: 5
Expected Output :
The series is= 1-12+123-1234+12345
The sum= 11223

10. Write a program in C to display the n terms of the series and their sum.
[1+2+3+5+7+11+13+17+19….. nth term].

Test Data :
Enter the term number: 5
Expected Output :
The series is= 1+2+3+5+7
The sum= 18

E

1. Draw the triangle up to nth term

```
1
1  2
1  2  3
1  2  3  4
1  2  3  4  5
```

2. Draw the triangle up to nth term

```
1
1  0
1  0  1
1  0  1  0
1  0  1  0  1
```

3. Draw the triangle up to nth term

```
1
2  3
4  5  6
7  8  9  10
11 12 13 14 15
```

4. Draw the triangle up to nth term

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

5. Draw the triangle up to nth term

```
          1
       1  2  1
    1  2  3  2  1
 1  2  3  4  3  2  1
1  2  3  4  5  4  3  2  1
```

6. Draw the triangle up to nth term

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

7. Draw the triangle up to nth term:

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

8. Draw the triangle up to nth term

```
          1
       2  3  4
    5  6  7  8  9
10 11 12 13 14 15 16
```

9. Draw the triangle up to nth term

```
4444
333
22
1
```

10. Draw the triangle up to nth term

```
1
22
333
4444
```

E

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

```
1
01
101
0101
10101
```

12. Draw the pattern

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

13. Write a program in C to print the Pascal's Triangle.

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

14. Print the following Patteren

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

F

1. Write a program in C using a single dimension Array and perform the following operations
   a. Print the maximum and minimum number of the array
   b. Count how many numbers are Even numbers of the array
   c. Print all the prime numbers, present in that array

Test Data :
Enter the total number of data : 5
Enter the data: 5 2 44 6 33
Expected Output :
Maximum number : 44
Minimum number : 2
Total No.of even number : 3
Prime numbers are : [5] [2]

2. Write a program in C using a single dimension Array and Sort that array in ascending order.

Test Data :
Enter the total number of data : 5
Enter the data: 5 2 44 6 33
Expected Output :
Sorted data in ascending order : 2 5 6 33 44

F

3. 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 :4
Input 4 elements in the array :
element - 0 : 1
element - 1 : 5
element - 2 : 1
element - 3 : 45
Expected Output :
The unique elements found in the array are :
[5] [45]

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

Test Data :
Input the number of elements to be stored in the array :4
Input 3 elements in the array :
element - 0 : 1
element - 1 : 5
element - 2 : 1
element - 3 : 45
Expected Output :
The frequency of all elements of an array :
1 occurs 2 times
5 occurs 1 times
3 occurs 1 times

5. 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 :4
Input 4 elements in the array :
element - 0 : 1
element - 1 : 5
element - 2 : 1
element - 3 : 45
Expected Output :
Total number of duplicate elements found in the array is : 1

6. 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 of EVEN array are :
42 56 32
The Odd elements of ODD array are :
25 47

F

7. 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 existing array list is :
5 7 9
After Inserting NEW element the array list is :
5 7 8 9

8. 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 : 11
element - 1 : 20
element - 2 : 32
element - 3 : 46
element - 4 : 53
Input the position where to delete: 3
Expected Output :
The new list is : 11 20 46 53

9. Write a program in C and take two single dimensional arrays and make a third array to store the result of their summation. Print the arrays in the following way

Expected Output :

```
Array 1   Array 2   Array 3
  10   +   12    =   22
  50   +   15    =   65
  33   +   17    =   50
  12   +    4    =   16
```

10. Write a program in C and take two single dimensional sorted arrays. Merge these two sorted arrays and make a resultant array which will be also sorted.

Test Data :
Input the size of First array : 5
Input 5 elements in the First array in ascending order:
10 22 30 45 59
Input the size of Second array : 7
Input 5 elements in the Second array in ascending order:
5 12 18 20 35 42 55
Expected Output :
Elements in the First array:
10 22 30 45 59
Elements in the Second array:
5 12 18 20 35 42 55
Elements in the Merged array:
5 10 12 18 20 22 30 35 42 45 55 59

G

1. Write a program in C for a 2D array of size 3x3 and print the matrix.

Test Data :
Input elements in the matrix :
element - [0],[0] : 1
element - [0],[1] : 2
element - [0],[2] : 3
element - [1],[0] : 4
element - [1],[1] : 5
element - [1],[2] : 6
element - [2],[0] : 7
element - [2],[1] : 8
element - [2],[2] : 9
Expected Output :
The matrix is :
1 2 3
4 5 6
7 8 9

2. Write a program in C for addition of two Matrices of same size.

Test Data :
Input the size of the square matrix (less than 5): 2
Input elements in the first matrix :
element - [0],[0] : 1
element - [0],[1] : 2
element - [1],[0] : 3
element - [1],[1] : 4
Input elements in the second matrix :
element - [0],[0] : 5
element - [0],[1] : 6
element - [1],[0] : 7
element - [1],[1] : 8
Expected Output :
The First matrix is :
1 2
3 4
The Second matrix is :
5 6
7 8
The Addition of two matrix is :
6 8
10 12

3. Write a program in C to find transpose of a given matrix.

Test Data :
Input the rows and columns of the matrix : 2 2
Input elements in the first matrix :
element - [0],[0] : 1
element - [0],[1] : 2
element - [1],[0] : 3
element - [1],[1] : 4
Expected Output :
The Original matrix is :

1 2
3 4

G

The transpose of a matrix is :
1 3
2 4

4. Write a program in C to find sum of Right diagonal, Left diagonal elements of a matrix.

Test Data :
Input the size of the square matrix : 2
Input elements in the first matrix :
element - [0],[0] : 1
element - [0],[1] : 9
element - [1],[0] : 3
element - [1],[1] : 4
Expected Output :
The matrix is :
1 9
3 4
Addition of the Right Diagonal elements is :5
Addition of the Left Diagonal elements is :12

5. Write a program in C to find sum of rows and columns of a Matrix.

Test Data :
Input the size of the square matrix : 2
Input elements in the first matrix :
element - [0],[0] : 5
element - [0],[1] : 6
element - [1],[0] : 7
element - [1],[1] : 8
Expected Output :
The First matrix is :
The matrix is :
5 6
7 8
The sum or rows and columns of the matrix is :
5 6 = 11
7 8 = 15

12 14

6. Write a program in C to take input in two matrices. Multiply these two matrices and store the result in a third matrix. Print all the matrices in the matrix format. You will have to check whether multiplication is possible or not.

7. WAP to take one integer number and convert that number to its equivalent binary number and octal number.

8. Write a program in C to rotate an array by N positions.

Expected Output :
The given array is : 0 3 6 9 12 14 18 20 22 25 27
From 4th position the values of the array are : 12 14 18 20 22 25 27
Before 4th position the values of the array are : 0 3 6 9
After rotating from 4th position the array is:
12 14 18 20 22 25 27 0 3 6 9

H	1. Write a menu driven program to implement a Basic Calculator and perform the following operations. (You will have to use the functions with argument passing mechanism) a. Summation b. Subtraction c. Multiplication d. Division 2. Write a menu driven program using functions with argument passing mechanism to perform the following operations on a particular number a. Print all the factors of that number b. Print all the prime factors of that number c. Print the factorial of that number d. Check whether that number is Prime or Not. e. Check whether that number is a Fibonacci number or not. f. Count the number of digits present in that Number g. Check that number is a armstrong number or not h. Check that number is a perfect number or not 3. Write a program in C to take two arrays as input. Pass those arrays in a function, named as **isEqual**() and check whether those arrays are equal or not. 4. Write a program in C to take one Matrix of size N X N as input. Pass that Matrix in a function, named as **makeDiagonalZero**(). This function will assign 0 to all diagonal elements of the matix. Print the Original & modified Matrix. 5. Write a program in C to take one Matrix of size M X N as input and **Sparse Percentage** value as input. Pass that Matrix in a function, named as **isSparseMatrix**(). This function will check whether it is a sparse matrix or not depending on **Sparse Percentage** value.If that matrix holds more percentage of ZERO values than **Sparse Percentage value then that matrix is known as sparse matrix.** Print the Original with Percentage of ZERO value. 6. Write a program in C to take an array as input. Pass that array in a function, named as **doSort**(). This function will do a sort tha data in decending order .Print the Original & sorted Array.	
I	1. WAP to take one String as input and perform the following operations a. How many vowels are present b. How many consonant are present c. How many digits are present d. How many words are present 2. Write a program in C to find the length of a string without using library function. **Test Data :** Input the string : ASANSOL ENGINEERING COLLEGE **Expected Output :** Length of the string is : 27 3. Write a program in C to compare two strings without using string library functions. **Test Data :** Input the 1st string : This is first string Input the 2nd string : This is first string Expected Output : The length of both strings are equal and also both strings are equal. 4. Write a program in C to reverse of a string without using library function. **Test Data :** Input the string : TEACHER **Expected Output :** Reversed of the string is :REHCAET 5. Write a program in C to encode & decode a Message. Encode() method will do the job of encoding & Decode() method / function will do the decoding job. In case of encoding every alphabet will be replaced by next to next alphabet. i.e A will be encoded to C, B will be encoded by D and Z will be encoded as B. Docding process is just opposite operation of encoding process. Print the original Message/String , Encodded message and Decodded	

I	message. **Test Data :** Input the string : Zig-zag **Expected Output :** Original string : Zig-zag Encodded string : Bki-bci Decoddedl string : Zig-zag 6. WAP to take one String as input and change the case of the string. (Lower case will be upper case and Upper case will be lower case). **Test Data :** Input a String : i lovE t20 Match. **Expected Output :** I LOVe T20 mATCH 7. Write a program in C to check whether two given strings are an anagram. **Test Data :** Input the first String : spare Input the second String : pears **Expected Output :** spare and pears are Anagram. 8. WAP to take one string as input and check whether that string is a palindrome or not. **Test Data :** Input a string: MADAM **Expected Output :** MADAM is Palindrome **Test Data :** Input a string: APPLE **Expected Output :** APPLE is NOT Palindrome 9. Write a program in C to extract a substring from a given string. **Test Data :** Input the string : this is test string Input the position to start extraction :9 Input the length of substring :4 **Expected Output :** The substring retrieve from the string is : " test " 10. Write a C program to check whether a given substring is present in the given string. **Test Data :** Input the string : This is a test string. Input the substring to be search : search **Expected Output :** The substring is not exists in the string.	

J	1. Write a c program to store and access the "id, name and percentage" for one student. Use the concept of Structure. Assign 25, Babai, 89.67 in id, name and percentage respectively. Print all the information in separate line.
	2. Write a program in C to show the concept of passing structure in function and returning structure from function program in C to store the "id, name and percentage" for one student. Pass the structure variable in a function, called as Input() and take the necessary inputs. Then pass that structure variable in Output() function and display all the necessary information.
	3. Write a program in C which will have a structure named **distance** with two integer members **feet** and **inches**. Define a function named **addDistance**() that will take two structure variables and print sum (addition) of their elements.
	`Enter first distance in feet & inches: 10 8`
	`Enter second distance in feet & inches: 5 7`
	`Total distance- Feet: 16, Inches: 3`	

J	4. Write a menu driven program to build a student database of 20 students using structure that will include name, roll_no, subject1, subject2, average_marks, and total_marks as fields. Do the following operations
	a. Searching a particular student using roll number
	b. Searching a particular student using name
	c. Print the number students who got above 80
	d. Sort the data with respect to name in ascending order using either bubble or selection sort.
	5. Write a C program to demonstrate example of Nested Structure. Design a structure named as **Student** (members are Name, Roll) . Create a structure **DateOfBirth (**Members are: DD, MM, YYYY) which will be declared inside the structure student.
	`Enter name: Ratan Naval Tata`
	`Enter roll number: 10001`
	`Enter Date of Birth [DD MM YYYY] format: 28 12 1937`
	
	`Name : Ratan Naval Tata`
	`RollNo : 10001`
	`Date of birth : 28/12/1937`
	6. Write a program in C which will have a structure named **DateOfBirth (**Members are: DD, MM, YYYY). Define a function named **findAge**() that will take two structure variables and print age in Years—Months--Days.
	`Enter Date of Birth [DD MM YYYY] format: 28 12 2018`
	`Enter Date of Birth [DD MM YYYY] format: 30 12 2020`
	
	`Age is : 2 Years 0 Month 2 days.`	

K	1. WAP to for copying one file to another using Command line argument passing mechanism. You should provide the necessary messages. 2. WAP to read a file, named as "Knowledge.txt", and count how many vowels, consonants and digits are present. Print the result into a file, named as "result.txt". You should provide the necessary messages. 3. WAP to open two existing files, named as "computer.txt" and "Science.txt", and merge them and make a merged file, named as "ComputerScience.txt". You should provide the necessary messages. 4. WAP to open an existing file named as College.txt and count how many times the word "AEC" are present. You should provide the necessary messages.	
