Paper Code : **SWL:107**

Paper Name : **Software Lab I (IT Tools & Application and Programming in 'C)**

A. Programming in C

Assignment 1.

Write a program to find sum of all prime numbers between 100 and 500.

Assignment 2.

Write a program to obtain sum of the first 10 terms of the following series for any positive integer value of X :

$X + X^3/3! + X^5/5! ! + X^7/7! + …$

Assignment 3.

Write a program to reverse the digits of a given number. For example, the number 9876 should be returned as 6789.

Assignment 4.

Write an interactive program to demonstrate the process of multiplication. The program should ask the user to enter two-digit integers and print the product of integer as shown below.

		45
	X	37
7 X 45 is		315
3 X 45 is		135
Adding them we get		1665

Assignment 5.

Given an integer number, write a program that displays the numbers as follows:

First Line	:	All digits
Second Line	:	All except first digit
Third line	:	All except first two digits
…………		
Last line	:	The last digit

For example, the number 5678 will be displayed as:

5678
678
78
7

Assignment 6.

Write a program to input 20 arbitrary numbers in one-dimensional array. Calculate Frequency of each number. Print the number and its frequency in a tabular form.

Assignment 7.

Define 2 dimensional array a (3,3), b(3,3),sum(3,3),diff(3,3),mult(3,3). Store 9 arbitrary numbers in a(3,3) and 9 arbitrary numbers in b(3,3). Do the following:

a) Calculate sum of a(3,3) and b(3,3) and store in sum(3,3) where sum(i,j)=a(i,j)+b(i,j)

b) Calculate difference of a(3,3) and b(3,3) and store in diff(3,3) where diff(i,j)=a(i,j) - b(i,j)

c) Calculate product of two arrays a(3,3) and b(3,3) and store in mult(3,3) where mult(i,j) = summation of a(i,k)*b(k,j) over k where k=1 to 3. Print the result in a tabular form

Assignment 8.

Write a function, str_search(char* s1,char* s2, int n) , that takes two strings and an integer, as arguments and returns a pointer to the nth occurrence of 1st string s1 in 2nd string s2, or NULL if it is not present.

Assignment 9.

Write a C function to remove duplicates from an ordered array. For example, if input array contains 10,10,10,30,40,40,50,80,80,100 then output should be 10,30,40,50,80,100.

Assignment 10.

Apply recursive call to do the following:

(i) Input 'n'(1-200). Calculate sum of 'n' numbers.

(ii) Input 'n'(1-20). Calculate product of 'n' numbers.

(iii) Input 'n'(2-20). Print 'n' number of Fibonacci numbers. In Fibonacci sequence the sum of two successive terms gives the third term. The following are few terms of Fibonacci sequence :-

1 1 2 3 5 8 13 ………

Assignment 11.

Write a program which will arrange the positive and negative numbers in a one-dimensional array in such a way that all positive numbers should come first and then all the negative numbers will come without changing original sequence of the numbers.

Example:

Original array contains: 10,-15,1,3,-2,0,-2,-3,2,-9

Modified array: 10,1,3,0,2,-15,-2,-2,-3,-9

Assignment 12.

Write a menu driven program to maintain a Telephone Directory having following file

structure:

1. Name : Character type : Length =20 characters.

2. Address : Character type : Length =40 characters.

3. Phone: Character type : Length =12 characters.

Menu

1. Add record(s)

2. Display record(s)

3. Search record(s)

4. Modify record(s)

5. Delete record(s)

6. Backup copy of File

7. Exit

Type your choice= 1,2,3,4,5,6,7— ->

Assignment 13.

Write a program to extract words form any text file and store in another file. Sort the words in alphabetical order and store them in the same file. Read the sorted file and print the frequency of each word.

Assignment 14.

Write a program to remove all occurrences of word "the" and "The" from an input string. For example

Input : The Dhillon Theatre is now the Fun Republic.

Output : Dhillon atre is now Fun Republic.

Assignment 15.

Write a program to display the Following pattern called Floyed's Triangle.

1

2   3

4   5   6

7   8   9 1   0

<div align="center">

| 11 | 12 | 13 | 14 | 15 |
</div>

Assignment 16.

Write a program that accepts an input integer 'n' in the range 3-9 inclusive, and display the following pattern on a cleared screen.

Sample input for n=3   Sample input for n=4

Sample output   Sample output

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

Assignment 17.

Write a program to count the vowels in free text given as standard input. Read text one character at a time until you encounter end-of-data. Then print out the number of occurrences of each of these vowels.

Assignment 18.

Write a program to copy one file to another such that every word is reversed before being written to the target file. Assume the maximum size of each word is 10 characters and each word is separated either by new line(s), tab(s) or space(s). For example, if source file contains "I am an Indian", the target file should contain "I ma na naidnI".

Assignment 19.

Define a structure for an Employee having EmployeeName, EmployeeCode, BasicPay, DearnessAllowance, HRA, PF, GrossPay, NetPay Take an array of 10 Employees. Write 'C'

functions to :-

a) Accept data for EmployeeName, EmployeeCode, BasicPay for all the employees.

b) Compute :-

a. DearnessAllowance = 50% of BasicPay

b. HRA = 20% of BasicPay + DearnessAllowance

c. PF = 12% of BasicPay + DearnessAllowance

d. GrossPay = BasicPay + DearnessAllowance + HRA

e. NetPay = GrossPay – PF

c) Display the name of employee who has highest GrossPay.

d) Compute and display average net pay.

e) Display list of all employees in the alphabetical order of employee name.

Assignment 20.

Write a program to convert a given decimal number to its binary equivalent and vice versa.

Assignment 21.

Input any positive integer number (n<=9999999). Convert the number into words.

Assignment 22.

Write a menu driven program to create a linked list and perform the following operations

   a. Insert an item
       i.   At the front of the list
       ii.   End of the list
       iii. Before a specified Node
   b. Delete an item
       i.   The first Node
       ii.   Last Node
       iii. A specified Node
   c. Search for an Item in the list
   d. Display the List

Assignment 23.

Write a program to combine two sorted lists to produce a third sorted lists which contains one occurrence of each of the elements in the original lists.

Assignment 24:

Write a program to traverse a singly link list in reverse and write out the contents in reverse order.

Assignment 25

Write a program to sort a given list of numbers.

Assignment 26

Write a program to replace 'a' with 'b', 'b' with 'c',….,'z' with 'a' and similarly for 'A' with 'B','B' with 'C', …., 'Z' with 'A' in a file. The other characters should remain unchanged.

Assignment 27.

Write a function char* stuff(char* s1,char* s2,int sp, int rp) to stuff string s2 in string s1 at position sp, replacing rp number of characters (rp may be zero).

Assignment 29.

Write a program to display the content of a Text file which means it will behave like TYPE command of MSDOS. Suppose the name of your program file: FILETYPE.C and FILETYPE.EXE and the name of the source file is MYFILE.TXT. The following command should work: C: \PROGRAM> FILETYPE MYFILE.TXT

Assignment 30.

Two files DATA1 and DATA2 contain sorted lists of integers. Write a program to produce a third file DATA which holds a single sorted, merged lists of these two lists. Use command line arguments to specify the file name.

Assignment 31

Write a program to input name, address and telephone number of 'n' persons (n<=20). Sort according to the name as a primary key and address as the secondary key. Print the sorted telephone directory.

B. IT TOOLS

1. **MS-DOS OPERATING SYSTEM**
   a. DOS commands for files management and processing file
   b. File name & definition
   c. Internal commands and external commands
   d. Autoexec.bat & Config.sys
2. **WINDOWS OPERATING SYSTEM**
   a. Windows elements-desktop, icons, taskbars etc…
   b. Configuring the system- Checking the system configuration ,wallpaper, screen, refresh rate, Date/time , Pointer, Disk Partitions , Start menu(configure), Add/remove programs
   c. Utilities – disk cleanup, disk defragmenter etc…
   d. Working with files and folders-Create, rename, edit, move, delete etc…
   e. Typing skill(fingering)
   f. Print screen
3. **MS-OFFICE**
   Ms-word
   a. Cursor
   b. Basic window elements- Title bar, rulers, Status bar, Scrollbars, Menu bar, toolbars (formatting, standard, and drawing), etc…
   c. Word essentials- Bold, *Italics,* Underline, strikethrough, bullets and numbers, columns, formatting text, formatting and sorting lists, subscript and superscript, find and replace, autocorrect and auto text, reusing text and graphics, formatting paragraphs, macro, mail merge, page design and layout, page setup, margins, page numbers, tables, protecting documents, printing, short cut keys.
   MS-Excel

Essential skills, selecting cells, cell address, adding, renaming and deleting sheets, formatting cells, different pointer shapes, commands, entering data (autofill and fill series), copying and pasting cells, inserting graphics, cell referencing, formulas, charts, formatting a chart, organizing and analyzing data in a list, protecting a workbook, exchanging data with other applications, importing and exporting documents, printing.

MS-POWERPOINT

Creating slides, slide layouts, custom animation, inserting picture, sound and videos, charts, slide show, slide transitions.