Assignments

C-PROGRAMS:

Program 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

Program2: Write a program to maintain a singly linked list having the following functions:
a) Creation of the list
b) Displaying the list.
c) Swap all nodes at consecutive even odd positions.
E.g.: The nodes at position 1 should be swapped with node 2, node 3 with node 4 and so on.

Program3: Write a program to maintain a singly linked list having the following functions:
a. Creation of the list
b. Displaying the list.
c. Traverse through the linked list and subtract two consecutive nodes. The result should be inserted just before the nodes subtracted.
E.g.: 5 15 8 9 2 6
Output: -10 5 15 -1 8 9 -4 2 6

Program4: 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.

Program5: Write a function to generate the following pyramid of numbers

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

Program 6: Write a program to maintain a singly linked list having the Following functions: a. Creation of the list b. Displaying the list.
c. Prompt the user for a position, and then detach a node from

that position. Now ask the user for a new position and attach the detached node into specific position.

Program7: Write a program to maintain a doubly linked list having the following functions:
a. Creation of the list.
b. Adding node at the end of the list.
c. Displaying the list by traversing from both ends.

Program8: Write a program to maintain a doubly linked list having the following functions:
a. Creation of the list.
b. Displaying the list by traversing from both ends. c. Counting the number of nodes in the list.

Program9: Get this output using simple loops. Here no of iterations are important.

zyxwvwxyz
zyxwxyz
zyxyz
zyz
z

Program10: 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

Program 11: 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.

Program12: Write a program to maintain a singly linked list having the following functions:
a. Creation of the list a. Displaying the list.
b. Traverse through the linked list and pick all the odd numbered nodes and place them in the beginning of the list and the rest will be all the even numbered nodes.
E.g. 25 15 18 7 26 11
Output: 25 18 26 15 7 11

Program13: Write a program to maintain a singly linked list having the following functions:
1. Creation of the list 2. Displaying the list.
3. Traverse through the linked list and add contents of two consecutive nodes. The result should be inserted soon after the nodes added.
E.g.: 5 15 8 9 2 6
Output: 5 15 20 8 9 17 2 6 8

Program 14: 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

Program15: Get this output using simple loops. Here no of iterations are important.

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

Program16: Write a program to maintain a singly linked list having the following functions:
a. Creation of the list b. Displaying the list.
c. Traverse through the linked list and subtract two consecutive nodes. The result should be inserted just after the nodes subtracted.
E.g.: 5 15 8 9 2 6
Output: 5 15 -10 8 9 -1 2 6 -4

Program 17: 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.

Program18: Write a program to maintain a singly linked list having the following functions:
a. Creation of the list b. Displaying the list.
c. Traverse through the linked list and add two consecutive nodes. The result should be inserted just before the nodes added.
E.g.: 5 15 8 9 2 6
Output: 17 2 15 17 8 9 18 12 6

Program 19: A program is to be written to implement the tower of Hanoi Problem.

Program 20: Add commands to print the top element of the stack without Popping, to duplicate it, and to swap the top two elements. Add a command to clear the stack.