

ASSIGNMENT

SUBJECT: Data Structure through 'C'-Language

1. Write a program that accept two integer numbers and find the sum where numbers are sufficiently large that beyond the scope of data type.
2. Write a function that convert value from one number system to another. The function prototype is given below:

```
void convert_number (n, from_base, to_base)
```

3. Write a program to calculate the factorial of a number using iteration and recursion and show the complexity difference.
4. Write a program to find the nature of the roots (real and imaginary) of a quadratic equation and also find the roots.
5. Write a program that accept a string and a sub-string and then find the occurrence of the sub-string within the string (preferably by KMP algorithm).
6. Write a program that accept a string in a link list where single node contains only one word and accept another two words which will be replaced by another by searching from the list.
7. Write a program, which accept a word and find the all possible sub-strings of that given word.
8. Write a program that create a students list class wise (I - X) and print them (using Jugged Array).
9. Write a program to maintain the stack operation-using array (Push, Pop, List).
10. Write a program to implement of Queue (simple) suing array (Push, Pop, List).
11. Write a program to implement of Queue (simple) using two Stacks.
12. Write a program that accept an array and convert into sparse array and finally print it.
13. Write a program that create a square of eight elements each, so that the row wise and column wise sum is equal to 9 for each row or column.
14. Create a singular link list and perform all the operations such as create, insert, delete, and modify elements from the list.
15. Create a doubly link list and perform all the operations such as create, insert before, insert after, delete and modify node information.
16. Write a program to implement a priority queue.
17. Write a program that accept an infix expression and convert to postfix expression.

18. Write a program that evaluates a postfix expression.
19. Write a program to implement the tower of Hanoi problem using recursion and iteration.
20. Write a program to search an element from an array elements using sequential search method.
21. Write a program to insert number in a link list in their appropriate position in sorted order without using any sorting algorithm.
22. A stack contains a set of 10 integers. It is required to assign the integers from the stack of variables X,Y,Z in the following order.

X= 3rd integer in the stack from bottom.

Y=3rd integer from the top

Z=5th integer from the top.

Write a C program to perform the operations without changing or configuration of the stack. You cannot have random access to the elements in stack.