Programming Exercises

1. Write a program to find sum and average of n numbers using malloc(), calloc(), realloc(), and free() in C.
2. Write a program to implement Stack using array data structure.
3. Write a program to check an expression for balanced brackets.
4. Write a program to convert an infix expression to postfix.
5. Write a program to evaluate postfix expression.
6. Write a program to implement Linear Queue using array data structure.
7. Write a program to implement Circular Queue using array data structure.
8. Write a program to implement Priority Queue using array data structure.
9. Write both recursive and iterative program to
    a. find factorial of a number.
    b. find sum of first N natural numbers.
    c. find Fibonacci number.
    d. find greatest common divisor.
10. Write a recursive program to solve Tower of Hanoi (TOH) problem and hence count the number of moves required.
11. Write a program to find factorial of a number using tail recursion.
12. Write a program to insert and delete a node after some given node in a singly linked list (SLL).
13. Write a program to insert and delete a node at a given position in a singly linked list (SLL).
14. Write a program to search an element in a singly linked list.
15. Write a program to implement doubly linked list (DLL).
16. Write a program to implement Stack using linked list.
17. Write a program to implement Queue using linked list.
18. Write a program to merge two sorted arrays into a larger sorted array.
19. Write programs to implement:
    a. Bubble sort
    b. Selection sort
    c. Insertion sort
    d. Shell sort
    e. Merge sort
    f. Quick sort
20. Write programs to implement linear search for both unsorted and sorted data.
21. Write a program to implement binary search.
22. Write programs to implement
    a. Separate chaining
    b. Linear probing
    c. Quadratic probing
    d. Double hashing