

## Lab 06 – LinkedList

1. **Stack using a Linked List:** Implement a stack using a singly linked list.
2. **Queue using a Linked List:** Implement a queue using a singly linked list.
3. **Merging two Circular Linked List:** Two single circular linked list containing header node contains char data which are already sorted. Create a new linked list so that the final list is sorted after merging them.
4. **Deleting Duplicates from a Sorted Linked List:** Given the head node of a sorted singly linked list (ascending order), delete the duplicates. The head pointer could be null indicating that the list is empty.
5. **Reversing a Singly Linked List using Recursion:** Write a program to reverse a singly linked list using recursion.
6. **Set operations:** Write a program to perform set operations on a single linked list:
  - a. With a header node
  - b. Optional - Without a header node (don't skip the header node)
7. **Josephus Circle Problem:** There are **n** people standing in a circle waiting to be eliminated, here are the following instructions:
  - a. The counting out begins at some point in the circle and proceeds around the circle in a fixed direction.
  - b. In each step, a certain number of people are skipped and the number of people are eliminated.
  - c. The elimination proceeds around the circle (which begins smaller every round), until the last person remains – saved.
  - d. Task – choose the place in the initial circle so that you are the last one to survive. (Hint: Circular Linked List)