Lab Experiment: 03 **Batch: 1 & 2**
Subject: Data Structures Lab **MCA**
Semester: 1st

Objective: Explore linked lists, including types like singly and doubly linked lists, while using pointers, structures, and dynamic memory allocation. Demonstrate applications of linked lists.

Assignment Tasks

1. **Singly Linked List Implementation:**
   - Create a structure for a singly linked list node with data and a next pointer.
   - Implement functions for:
   - Insertion at the beginning, end, and a specified position.
   - Deletion from the beginning, end, and a specified position.
   - Displaying the list.

2. **Doubly Linked List Implementation:**
   - Modify the singly linked list to a doubly linked list by adding a prev pointer.
   - Implement the same insertion, deletion, and display functions.

3. **Application Example:**
   - Demonstrate an application of linked lists, such as managing a to-do list or implementing a simple stack/queue.

4. **Memory Usage and Dynamic Allocation:**
   - Use malloc and free to dynamically allocate and deallocate memory.
   - Ensure memory is correctly freed after operations to prevent memory leaks.