LAB PROGRAM 5

WAP to Implement Singly Linked List with following operations a) Create a linked list. b) Deletion of first element, specified element and last element in the list. c) Display the contents of the linked list.

```
#include <stdio.h>

#include <stdlib.h>


struct Node {

    int data;

    struct Node* next;

};


struct Node* createNode(int data) {

    struct Node* newNode = (struct Node*)malloc(sizeof(struct Node));

    newNode->data = data;

    newNode->next = NULL;

    return newNode;

};


void insertatfirst(struct Node** head, int data){

    struct Node* newnode =createNode(data);

    newnode->next = *head;

    *head = newnode;

}


void deleteFirst(struct Node** head) {

    if (*head == NULL) {

        printf("The list is empty.\n");

        return;

    }

    struct Node* temp = *head;
```

```c
        *head = (*head)->next;

        free(temp);

    }


void deleteElement(struct Node** head, int key) {

    if (*head == NULL) {

        printf("The list is empty.\n");

        return;

    }

    struct Node *temp = *head, *prev = NULL;

    if (temp != NULL && temp->data == key) {

        *head = temp->next;

        free(temp);

        return;

    }

    while (temp != NULL && temp->data != key) {

        prev = temp;

        temp = temp->next;

    }

    if (temp == NULL) {

        printf("Element %d not found.\n", key);

        return;

    }

    prev->next = temp->next;

    free(temp);

}


void deleteLast(struct Node** head) {

    if (*head == NULL) {

        printf("The list is empty.\n");

        return;
```

```c
    }
    struct Node *temp = *head, *prev = NULL;
    if (temp->next == NULL) {
        *head = NULL;
        free(temp);
        return;
    }
    while (temp->next != NULL) {
        prev = temp;
        temp = temp->next;
    }
    prev->next = NULL;
    free(temp);
}

void displayList(struct Node* head) {
    if (head == NULL) {
        printf("The list is empty.\n");
        return;
    }
    struct Node* temp = head;
    while (temp != NULL) {
        printf("%d -> ", temp->data);
        temp = temp->next;
    }
    printf("NULL\n");
}

int main() {
    struct Node* head = NULL;
    int choice, value;
```

```c
    while (1) {
      printf("\nMenu:\n");
      printf("1. Insert element at the end\n 2.Delete first element\n 3.Delete specified element\n
4.Delete last element\n 5.Display list\n 6.Exit\n");
      printf("Enter your choice: ");
      scanf("%d", &choice);

      switch (choice) {
        case 1:
          printf("Enter value to insert: ");
          scanf("%d", &value);
          insertatfirst(&head, value);
          break;
        case 2:
          deleteFirst(&head);
          break;
        case 3:
          printf("Enter value to delete: ");
          scanf("%d", &value);
          deleteElement(&head, value);
          break;
        case 4:
          deleteLast(&head);
          break;
        case 5:
          displayList(head);
          break;
        case 6:
          exit(0);
        default:
```

```c
            printf("Invalid choice.\n");
        }
    }
    return 0;
}
```