

5. WAP to Implement SLL 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>

// Structure for a node
struct Node {
    int data;
    struct Node *next;
};

// Function to create a linked list
struct Node* createList() {
    struct Node *head = NULL, *temp, *newNode;
    int n, value;

    printf("Enter number of nodes: ");
    scanf("%d", &n);

    for (int i = 0; i < n; i++) {
        newNode = (struct Node*)malloc(sizeof(struct Node));
        printf("Enter data: ");
        scanf("%d", &value);
        newNode->data = value;
        newNode->next = NULL;

        if (head == NULL) {
            head = newNode;
        } else {
            temp = head;
            while (temp->next != NULL)
                temp = temp->next;
            temp->next = newNode;
        }
    }
    return head;
}
```

```

        }
    }

    return head;
}

// Delete first element

struct Node* deleteFirst(struct Node *head) {

    if (head == NULL) {
        printf("List is empty\n");
        return head;
    }

    struct Node *temp = head;
    head = head->next;
    free(temp);
    printf("First element deleted\n");
    return head;
}

// Delete last element

struct Node* deleteLast(struct Node *head) {

    if (head == NULL) {
        printf("List is empty\n");
        return head;
    }

    if (head->next == NULL) {
        free(head);
        printf("Last element deleted\n");
        return NULL;
    }

    struct Node *temp = head;
    while (temp->next->next != NULL)

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temp = temp->next;

free(temp->next);
temp->next = NULL;
printf("Last element deleted\n");
return head;
}

// Delete specified element
struct Node* deleteSpecified(struct Node *head, int key) {
    struct Node *temp = head, *prev = NULL;

    if (head == NULL) {
        printf("List is empty\n");
        return head;
    }

    if (head->data == key) {
        head = head->next;
        free(temp);
        printf("Element %d deleted\n", key);
        return head;
    }

    while (temp != NULL && temp->data != key) {
        prev = temp;
        temp = temp->next;
    }

    if (temp == NULL) {
        printf("Element not found\n");
        return head;
    }
}

```

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    }

prev->next = temp->next;
free(temp);
printf("Element %d deleted\n", key);
return head;
}
```

```
// Display linked list
void display(struct Node *head) {
    if (head == NULL) {
        printf("List is empty\n");
        return;
    }
}
```

```
printf("Linked List: ");
while (head != NULL) {
    printf("%d ", head->data);
    head = head->next;
}
printf("\n");
}
```

```
// Main function
int main() {
    struct Node *head = NULL;
    int choice, key;

    while (1) {
        printf("\nMenu:\n");
        printf("1. Create List\n");
        printf("2. Delete First Element\n");

```

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printf("3. Delete Specified Element\n");
printf("4. Delete Last Element\n");
printf("5. Display List\n");
printf("6. Exit\n");
printf("Enter your choice: ");
scanf("%d", &choice);

switch (choice) {
    case 1:
        head = createList();
        break;
    case 2:
        head = deleteFirst(head);
        break;
    case 3:
        printf("Enter element to delete: ");
        scanf("%d", &key);
        head = deleteSpecified(head, key);
        break;
    case 4:
        head = deleteLast(head);
        break;
    case 5:
        display(head);
        break;
    case 6:
        return 0;
    default:
        printf("Invalid choice\n");
}
}
```

```
Menu:  
1. Create List  
2. Delete First Element  
3. Delete Specified Element  
4. Delete Last Element  
5. Display List  
6. Exit  
Enter your choice: 1  
Enter number of nodes: 5  
Enter data: 10  
Enter data: 20  
Enter data: 30  
Enter data: 40  
Enter data: 50
```

```
Menu:  
1. Create List  
2. Delete First Element  
3. Delete Specified Element  
4. Delete Last Element  
5. Display List  
6. Exit  
Enter your choice: 2  
First element deleted
```

```
Menu:  
1. Create List  
2. Delete First Element  
3. Delete Specified Element  
4. Delete Last Element  
5. Display List  
6. Exit  
Enter your choice: 3  
Enter element to delete: 40  
Element 40 deleted
```

```
Menu:  
1. Create List  
2. Delete First Element  
3. Delete Specified Element  
4. Delete Last Element  
5. Display List  
6. Exit  
Enter your choice: 4  
Last element deleted
```

```
Menu:  
1. Create List  
2. Delete First Element  
3. Delete Specified Element  
4. Delete Last Element  
5. Display List  
6. Exit  
Enter your choice: 5  
Linked List: 20 30
```