Lab program 5: Singly Linked List delete and display Implementation

Source code:

```
#include<stdio.h>
#include<stdlib.h>
struct node {
   int data;
   struct node *next;
};
struct node *head = NULL;
void display() {
   printf("Elements are: ");
   struct node *ptr = head;
   while (ptr != NULL) {
      printf("%d -> ", ptr->data);
      ptr = ptr->next;
   }
   printf("NULL\n");
}
void insert_begin() {
   struct node *temp = (struct node*)malloc(sizeof(struct node));
   printf("Enter the value to be inserted: ");
   scanf("%d", &temp->data);
   temp->next = head;
   head = temp;
}
void delete_begin() {
   if (head == NULL) {
      printf("List is empty. Deletion not possible.\n");
      return;
   }
   struct node *temp = head;
   head = head->next;
   printf("Element deleted from the beginning: %d\n", temp->data);
   free(temp);
}
void delete_end() {
   if (head == NULL) {
      printf("List is empty. Deletion not possible.\n");
      return;
   }
   struct node *temp, *prev;
   temp = head;
   while (temp->next != NULL) {
```

```
        prev = temp;
        temp = temp->next;
    }
    if (temp == head) {
        head = NULL;
    } else {
        prev->next = NULL;
    }
    printf("Element deleted from the end: %d\n", temp->data);
    free(temp);
}
void delete_at_position() {
    int position;
    printf("Enter the position to delete: ");
    scanf("%d", &position);

    if (head == NULL) {
        printf("List is empty. Deletion not possible.\n");
        return;
    }
    struct node *temp, *prev;
    temp = head;
    if (position == 0) {
        head = head->next;
        printf("Element at position %d deleted successfully.\n", position);
        free(temp);
        return;
    }
    for (int i = 0; temp != NULL && i < position; i++) {
        prev = temp;
        temp = temp->next;
    }
    if (temp == NULL) {
        printf("Position %d is out of bounds.\n", position);
        return;
    }
    prev->next = temp->next;
    printf("Element at position %d deleted successfully.\n", position);
    free(temp);
}
int main() {
    int choice;
    while (1) {
```

```
    printf("\n 1. to insert at the beginning\n 2. to delete beginning\n 3. to delete at end\n
4. to delete at any position\n 5. to display\n 6. to exit\n");
    printf("Enter your choice: ");
    scanf("%d", &choice);
    switch (choice) {
      case 1:
        insert_begin();
        break;
      case 2:
        delete_begin();
        break;
      case 3:
        delete_end();
        break;
      case 4:
        delete_at_position();
        break;
      case 5:
        display();
        break;
      case 6:
        exit(0);
        break;
      default:
        printf("Enter the correct choice\n");
        break;
    }
  }
  return 0;
}
```

OUTPUT:

"C:\Users\Admin\Desktop\1BM21CS050\delete and display singly linked list.exe"

```
 1. to insert at the beginning
 2. to delete beginning
 3. to delete at end
 4. to delete at any position
 5. to display
 6. to exit
Enter your choice: 1
Enter the value to be inserted: 19

 1. to insert at the beginning
 2. to delete beginning
 3. to delete at end
 4. to delete at any position
 5. to display
 6. to exit
Enter your choice: 1
Enter the value to be inserted: 28

 1. to insert at the beginning
 2. to delete beginning
 3. to delete at end
 4. to delete at any position
 5. to display
 6. to exit
Enter your choice: 5
Elements are: 28 -> 19 -> NULL

 1. to insert at the beginning
 2. to delete beginning
 3. to delete at end
 4. to delete at any position
 5. to display
 6. to exit
Enter your choice: 2
Element deleted from the beginning: 28

 1. to insert at the beginning
 2. to delete beginning
 3. to delete at end
 4. to delete at any position
 5. to display
 6. to exit
Enter your choice: 5
Elements are: 19 -> NULL

 1. to insert at the beginning
 2. to delete beginning
 3. to delete at end
 4. to delete at any position
 5. to display
 6. to exit
Enter your choice: 3
Element deleted from the end: 19

 1. to insert at the beginning
 2. to delete beginning
 3. to delete at end
 4. to delete at any position
 5. to display
 6. to exit
Enter your choice: 5
```

"C:\Users\Admin\Desktop\1BM21CS050\delete and display singly linked list.exe"

```
 5. to display
 6. to exit
Enter your choice: 4
Enter the position to delete: 1
Position 1 is out of bounds.

 1. to insert at the beginning
 2. to delete beginning
 3. to delete at end
 4. to delete at any position
 5. to display
 6. to exit
Enter your choice: 5
Elements are: 4 -> NULL

 1. to insert at the beginning
 2. to delete beginning
 3. to delete at end
 4. to delete at any position
 5. to display
 6. to exit
Enter your choice: 1
Enter the value to be inserted: 30

 1. to insert at the beginning
 2. to delete beginning
 3. to delete at end
 4. to delete at any position
 5. to display
 6. to exit
Enter your choice: 5
Elements are: 30 -> 4 -> NULL

 1. to insert at the beginning
 2. to delete beginning
 3. to delete at end
 4. to delete at any position
 5. to display
 6. to exit
Enter your choice: 4
Enter the position to delete: 1
Element at position 1 deleted successfully.

 1. to insert at the beginning
 2. to delete beginning
 3. to delete at end
 4. to delete at any position
 5. to display
 6. to exit
Enter your choice: 5
Elements are: 30 -> NULL

 1. to insert at the beginning
 2. to delete beginning
 3. to delete at end
 4. to delete at any position
 5. to display
 6. to exit
Enter your choice: 6

Process returned 0 (0x0)   execution time : 115.563 s
Press any key to continue.
```